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Delta Integrated Elevator Drive - IED-S Series User Manual

Delta Integrated Elevator Drive IED-S Series User Manual

www.deltaww.com

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PLEASE READ PRIOR TO INSTALLATION FOR SAFETY.

DANGER

- ☑ Disconnect power before connecting any wiring to IED-S.
- ☑ Even if the power has been turned off, a charge may still remain in the DC-link capacitors with hazardous voltages before the POWER LED is OFF. Do NOT touch the internal circuits and components.
- ☑ There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. Take anti-static measure before touching these components or the circuit boards.
- ☑ Never modify the internal components or wiring.
- ☑ Ground IED-S by using the ground terminal. The grounding method must comply with the laws of the country where IED-S is to be installed.
- ☑ Do NOT install IED-S in a location with high temperature, direct sunlight or inflammable materials or gases.

CAUTION

- ☑ Never connect the IED-S output terminals U/T1, V/T2 and W/T3 directly to the AC mains circuit power supply.
- ☑ After finishing the wiring of IED-S, check if U/T1, V/T2, and W/T3 are short-circuited to ground with a multimeter. Do NOT power IED-S if short circuits occur. Eliminate the short circuits before IED-S is powered.
- ☑ The rated voltage for IED-S must be ≤ 240V for 230V series (480V for 460V series) and the mains supply current capacity must be ≤ 5000A RMS (≤ 10000A RMS for the ≥ 40 HP (30 kW) models).
- ☑ Only qualified persons are allowed to install, wire and maintain IED-S.
- ☑ Even if the three-phase AC motor is stopped, a charge with hazardous voltages may still remain in the main circuit terminals of IED-S.
- ☑ The performance of electrolytic capacitor will degrade if it is not charged for a long time. It is recommended to charge IED-S which is stored in no charge condition every 2 years for 3–4 hours to restore the performance of electrolytic capacitor in IED-S. Note: When power up IED-S, use adjustable AC power source (e.g. AC autotransformer) to charge IED-S at 70%–80% of rated voltage for 30 minutes (do not run IED-S). Then charge IED-S at 100% of rated voltage for an hour (do not run IED-S). By doing these, restore the performance of electrolytic capacitor before starting to run IED-S. Do NOT run IED-S at 100% rated voltage right away.
- ☑ Pay attention to the following precautions when transporting and installing this package (including wooden crate and wood stave)
  1. If you need to deworm the wooden crate, do NOT use fumigation or you will damage IED-S. Any damage to IED-S caused by using fumigation voids the warranty.
  2. Use other methods, such as heat treatment or any other non-fumigation treatment, to deworm the wood packaging material.
  3. If you use heat treatment to deworm, leave the packaging materials in an environment of over 56°C for a minimum of thirty minutes.
- ☑ Connect IED-S to a three-phase three-wire or three-phase four-wire Wye system to comply with UL standards.
- ☑ If IED-S generates leakage current over AC 3.5 mA or over DC 10 mA on a grounding conductor, compliance with local grounding regulations or IEC61800-5-1 standard is the minimum requirement for grounding.

NOTE

The content of this manual may be revised without prior notice. Please consult our distributors or download the latest version at http://www.deltaww.com/iadownload_acmotordrive

Table of Contents

Issued Edition: 01
Firmware Version: V1.10
(Refer to Parameter 00-97 on the product to get the firmware version.)
Issued Date: March, 2021

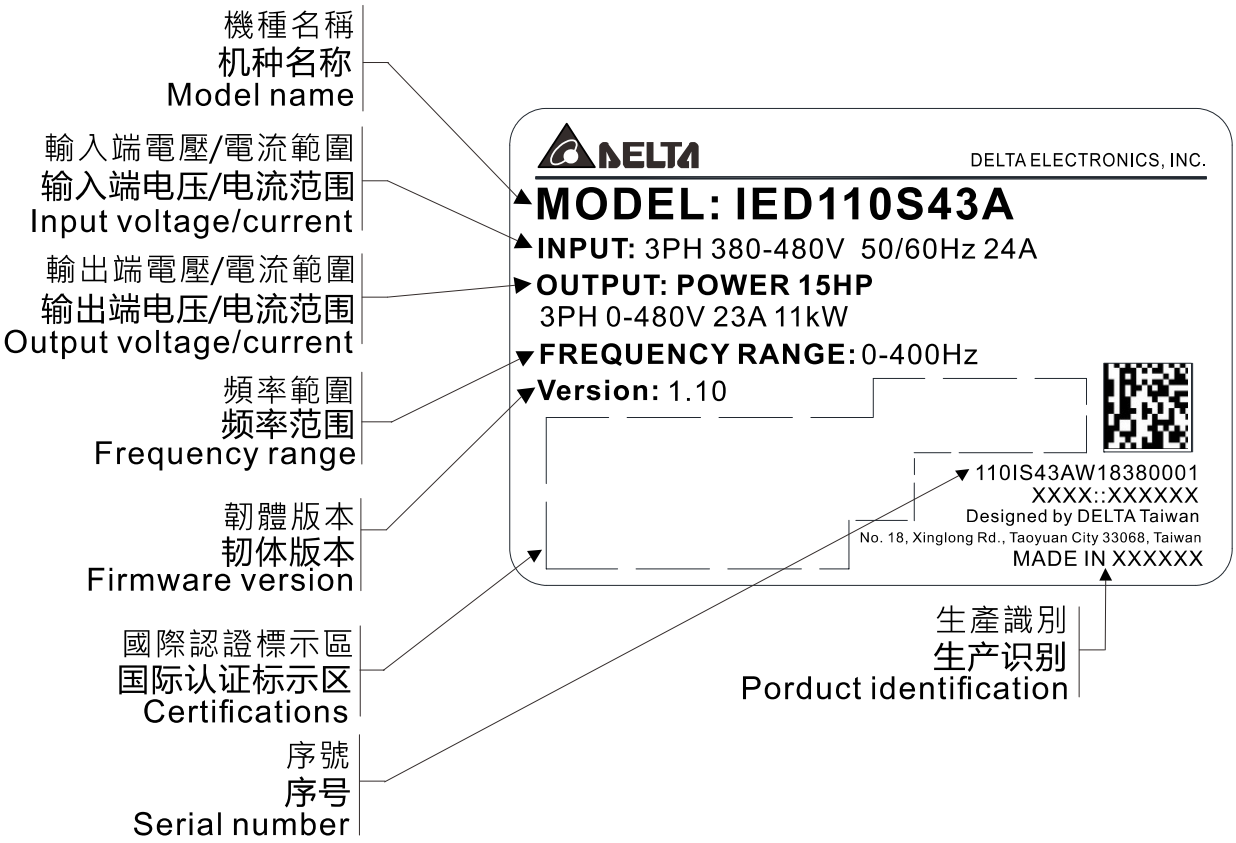
Chapter 1 Introduction

After you receive the AC motor drive, check the following:

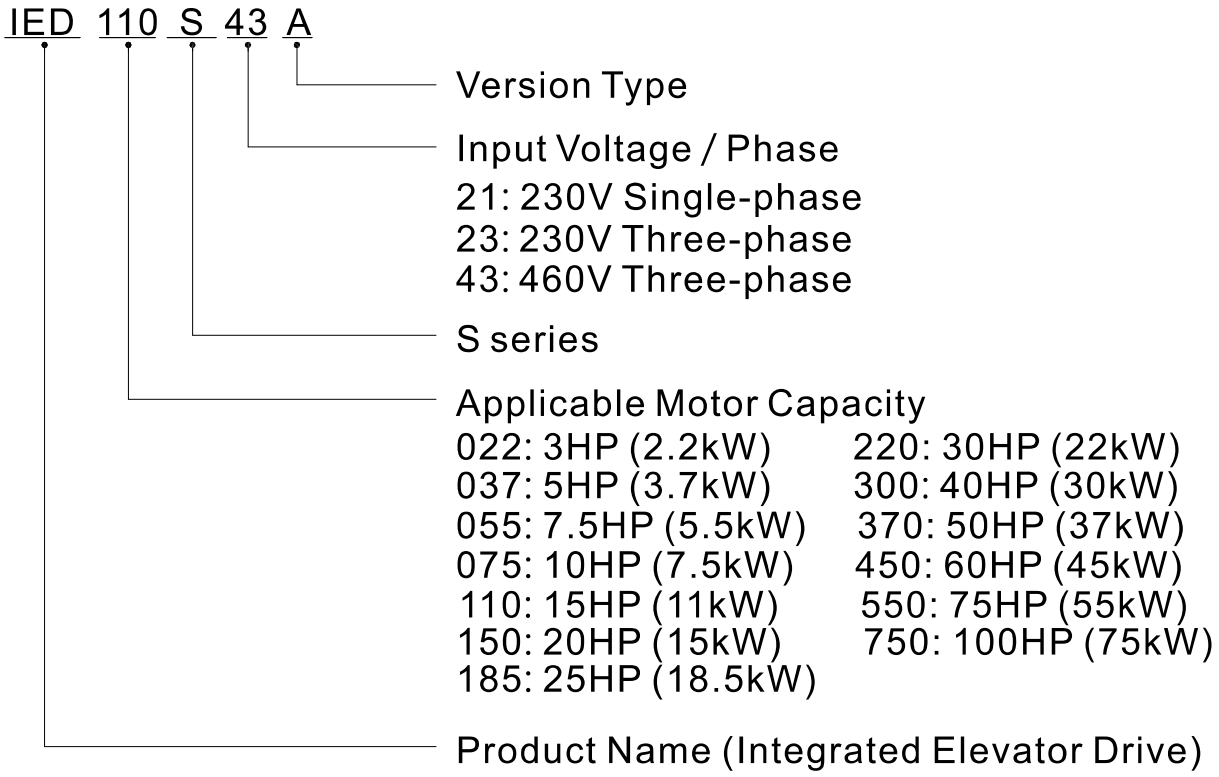
1. Inspect the unit after unpacking to ensure that it was not damaged during shipment. Make sure that the part number printed on the package corresponds with the part number indicated on the nameplate.
2. Make sure that the voltage for the wiring is in the range indicated on the nameplate. Install the AC motor drive according to this manual.
3. Before applying the power, make sure that all the devices, including power, motor, control board and digital keypad are connected correctly.
4. When wiring the AC motor drive, make sure that the wiring for input terminals “R/L1, S/L2, T/L3” and output terminals “U/T1, V/T2, W/T3” is correct to prevent drive damage.
5. When power is applied, select the language and set parameter groups with the digital operation panel. When executing a trial run, begin with a low speed and then gradually increase the speed until reaching the desired speed.

1-1 Nameplate Information

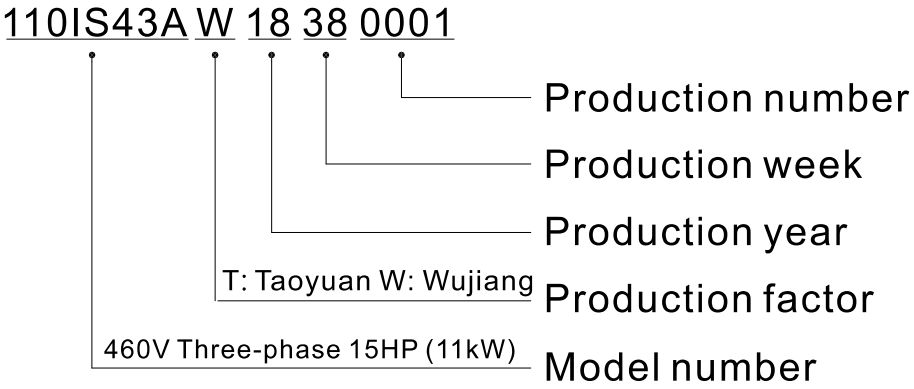
This example uses the 15 HP/11 kW 460V, three-phase motor drive.



1-2 Model Name



1-3 Serial Number

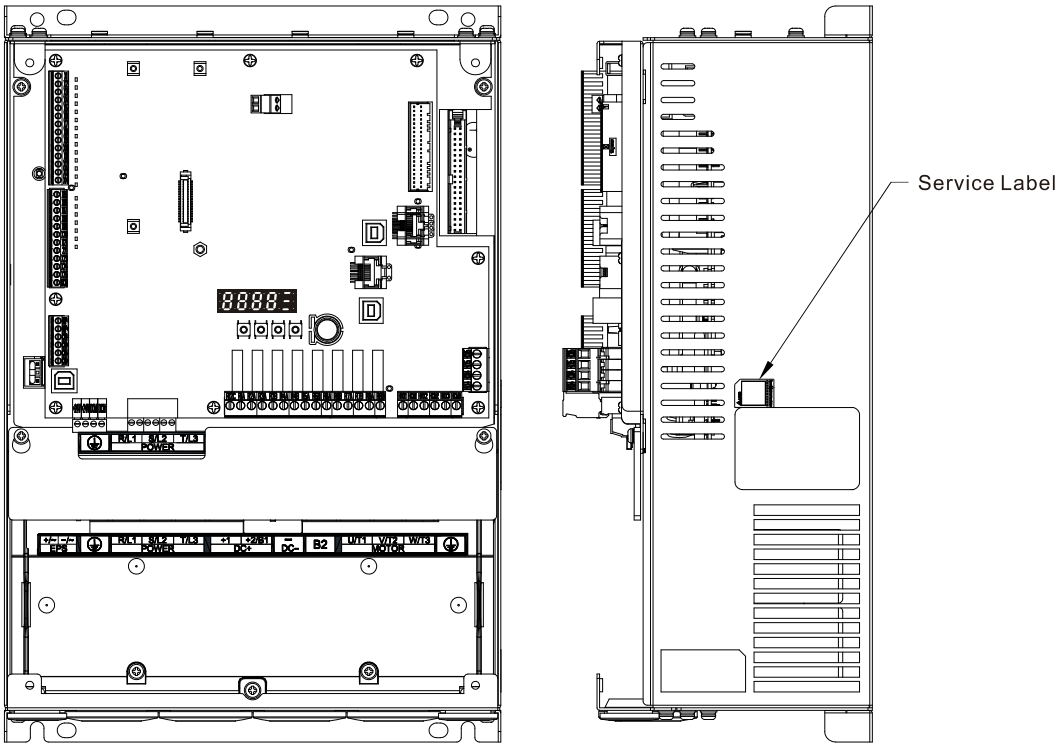


1-4 Apply After Service by Mobile Device

1-4-1 Location of Service Link Label

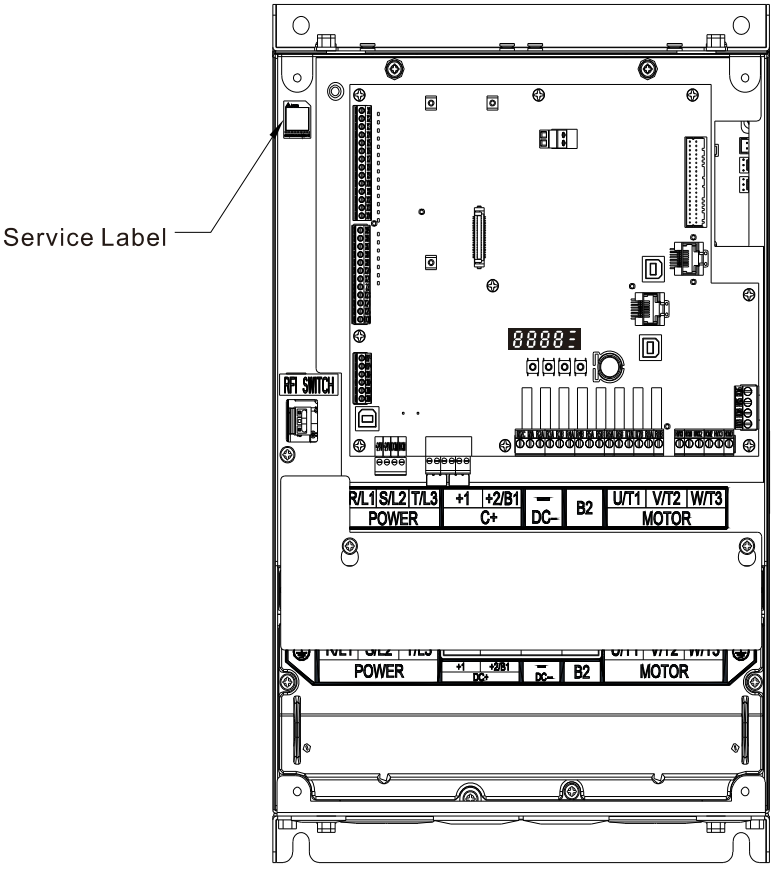
Frame C

The service link label (service label) is located at the right side of the drive, as the image below shows.



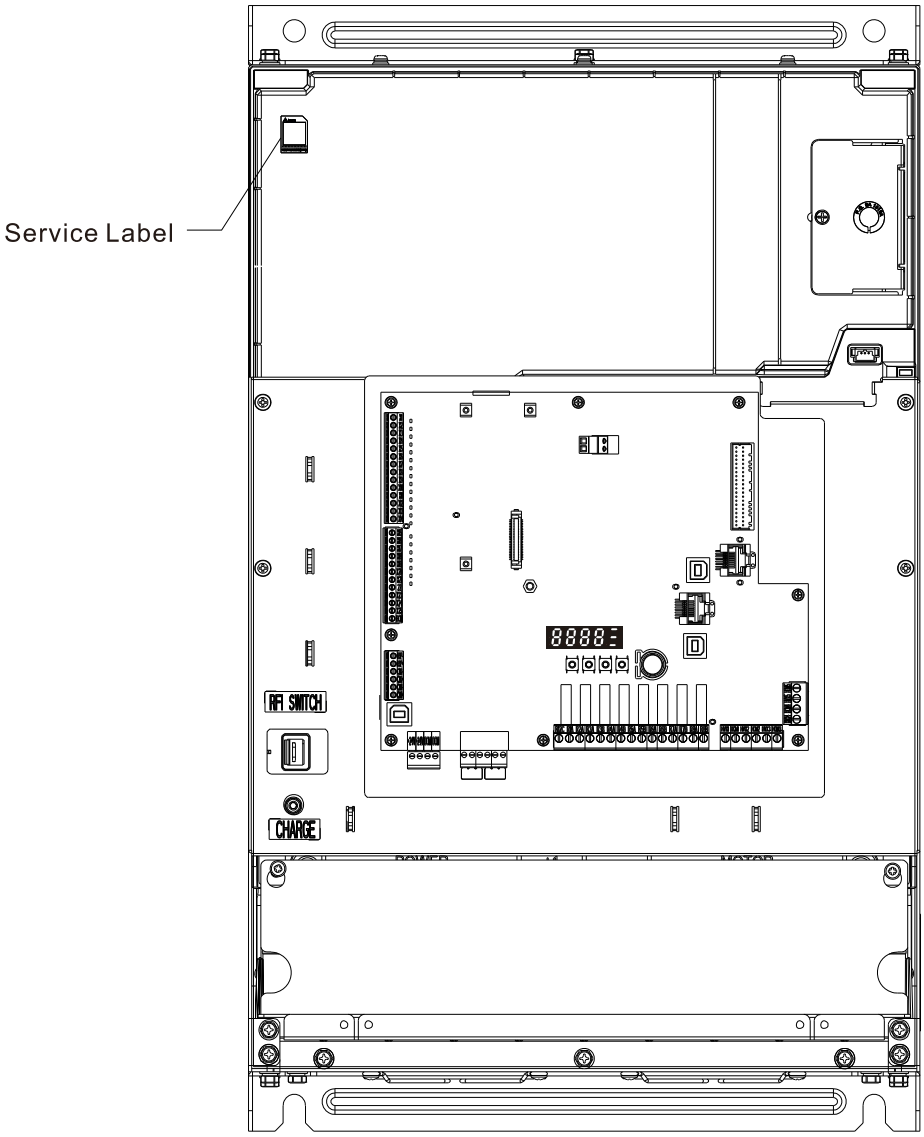
Frame D

The service link label (service label) is located on the upper left corner at the front side of the drive, as the image below shows.

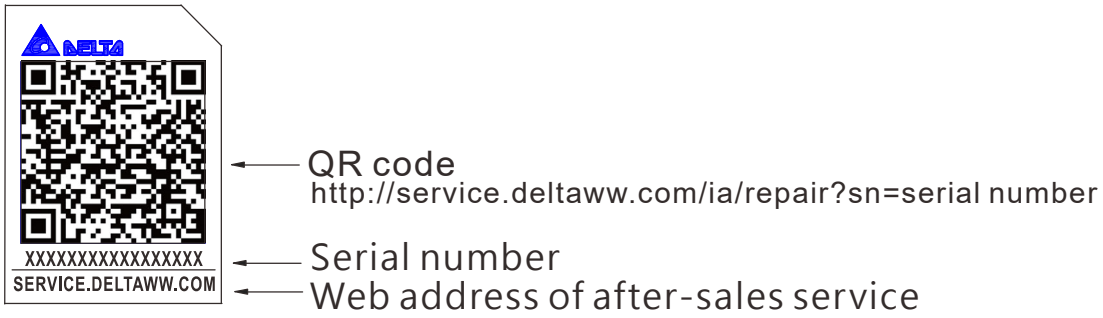


Frame E

The service link label (service label) is located on the upper left corner at the front side of the drive, as the image below shows.



1-4-2 Service Link Label



Scan QR Code to request service

1. Find the QR code sticker (as shown above).
2. Run the QR code reader App on your smartphone.
3. Point your camera at the QR Code. Hold your camera steady until the QR code comes into focus.
4. Access the Delta After-Sales Service website.
5. Fill in the information in the columns marked with an orange star.
6. Enter the CAPTCHA and click **Submit** to complete the request.

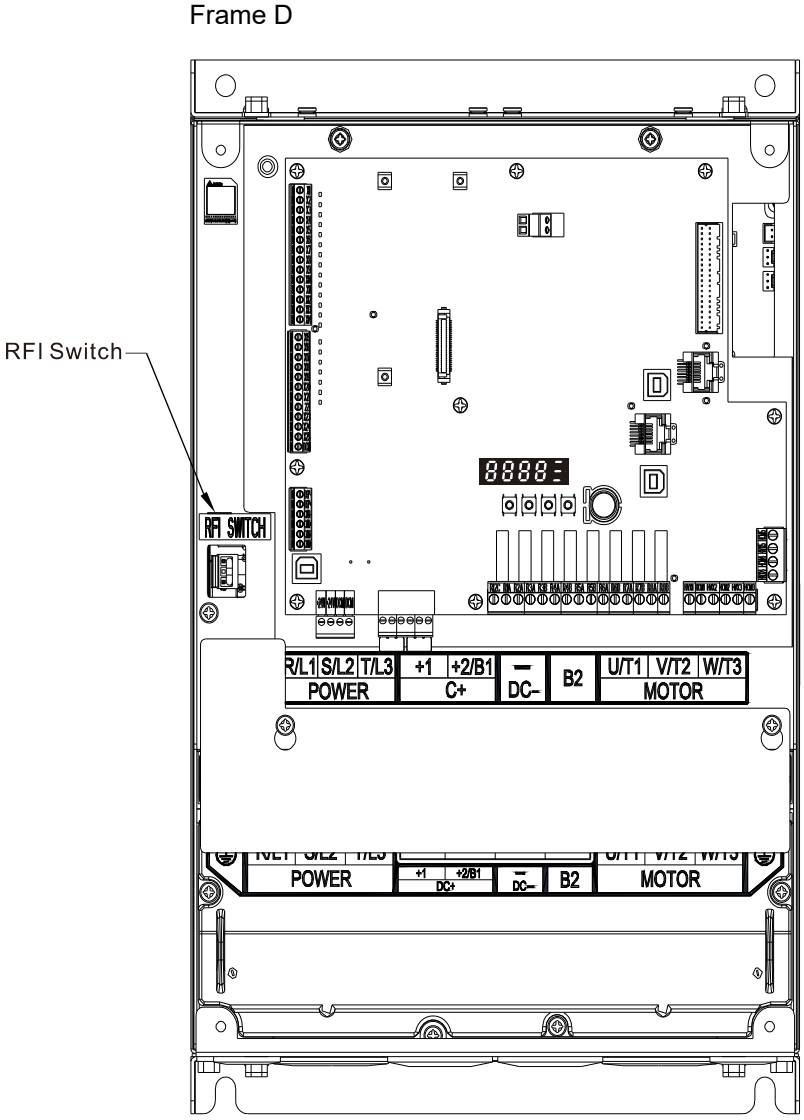
Cannot find the QR Code?

1. Open a web browser on your computer or smartphone.
2. Enter https://service.deltaww.com/ia/repair in the browser address bar and press the Enter key.
3. Fill in the information in the columns marked with an orange star.
4. Enter the CAPTCHA and click **Submit** to complete the request.

1-5 RFI Switch

The AC motor drive may emit electrical noise. You can use the RFI (Radio Frequency Interference) switch to suppress interference on the power line. The RFI switches on Frames C, D, and E are at similar locations. Remove the RFI switch as shown in the following image.

Frame D



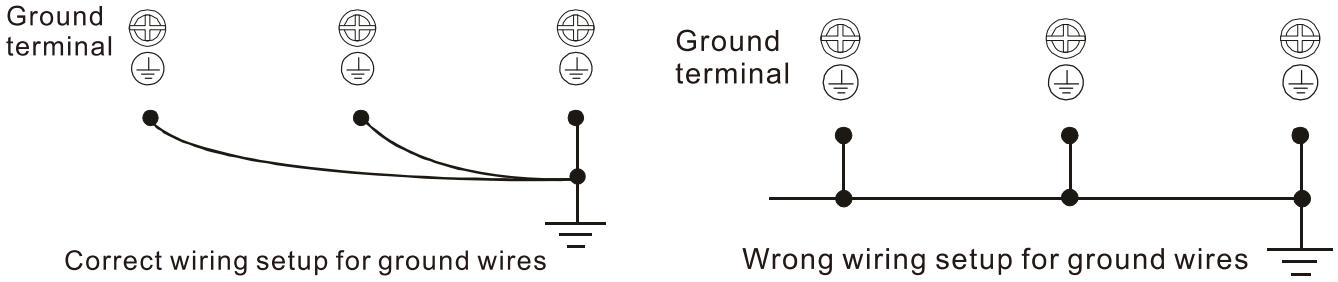
NOTE: The RFT switches on Frames C / D / E are at similar locations.

Isolating main power from ground

When the power distribution system for the motor drive is a floating ground system (IT) or an asymmetric ground system (TN), you must remove the RFI switch. Removing the switch also cuts off the internal RFI capacitor (filter capacitor) between the system's frame and the central circuits to avoid damaging the central circuits and reduces the ground leakage current.

Important points regarding ground connection

- ☑ To ensure the safety of personnel, ensure proper operation, and reduce electromagnetic radiation, you must properly ground the motor and drive during installation.
- ☑ The diameter of the grounding cables must meet the size specified by safety regulations.
- ☑ You must connect the shielded cable to the motor drive's ground to meet safety regulations.
- ☑ Only use the shielded cable as the ground for equipment when the above points are met.
- ☑ When installing multiple sets of motor drives, do not connect the motor drives' grounds in series. See the following image.



Pay particular attention to the following points

- ☑ Do not remove the RFI switch while the power is ON.
- ☑ Make sure the main power is OFF before removing the RFI switch.
- ☑ Removing the RFI switch also cuts the capacitor conductivity. Gap discharge may occur once the transient voltage exceeds 1000 V.

If you remove the RFI switch, you remove the reliable electrical isolation. In other words, all controlled inputs and outputs become low-voltage terminals with basic electrical isolation. Also, when you remove the internal RFI switch, the motor drive is no longer electromagnetic compatible (EMC).

- ☑ Do not remove the RFI switch if the main power is a grounded power system.
- ☑ You must remove the RFI switch when conducting high voltage tests. When conducting a high voltage test for the entire facility, disconnect the main power and the motor if the leakage current is too high.

Floating Ground System (IT Systems)

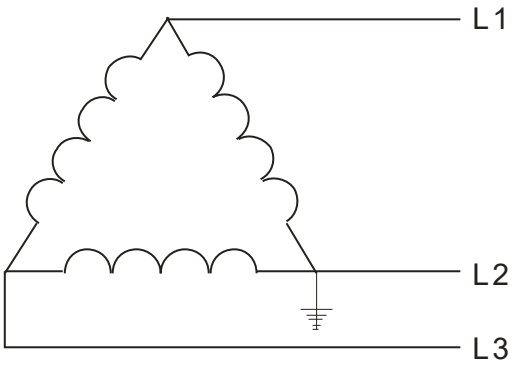
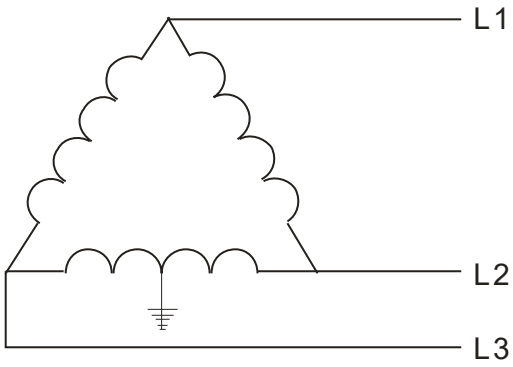
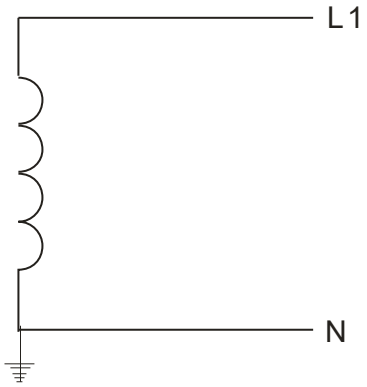
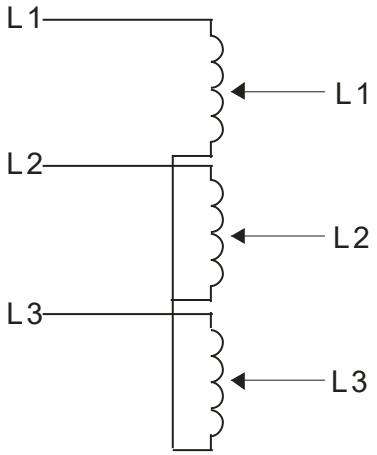
A floating ground system is also called an IT system, ungrounded system, or high impedance/resistance (greater than 30 Ω) grounding system.

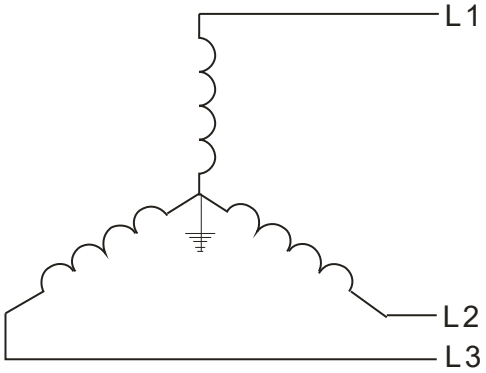
- ☑ Disconnect the ground cable from the internal EMC filter.
- ☑ In situations where EMC is required, check for excess electromagnetic radiation affecting nearby low-voltage circuits. In some situations, the adapter and cable naturally provide enough suppression. If in doubt, install an extra electrostatic shielded cable on the power supply side between the main circuit and the control terminals to increase shielding.
- ☑ Do not install an external RFI/EMC filter. The external EMC filter passes through a filter capacitor and connects power input to the ground. This is very dangerous and damages the motor drive.

Asymmetric Ground System (Corner Grounded TN Systems)

Caution: Do not remove the RFI switch while power to the motor drive input terminal is ON.

In the following four situations, you must remove the RFI switch. This is to prevent the system from grounding through the RFI capacitor and damaging the motor drive.

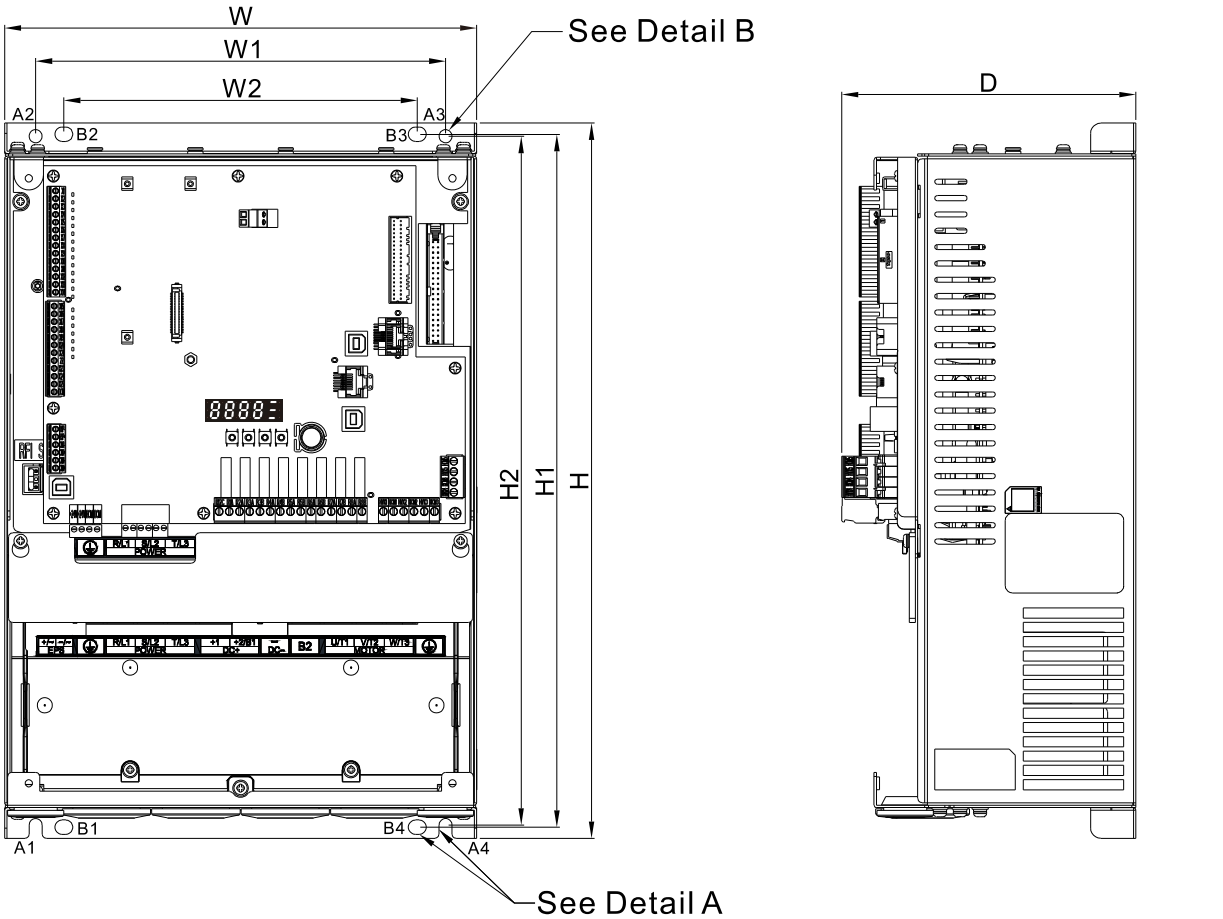
Conditions for removing the RFI switch	
1. Grounding at a corner in a triangle configuration  	2. Grounding at a midpoint in a polygonal configuration 
3. Grounding at one end in a single-phase configuration  	4. No stable neutral grounding in a three-phase autotransformer configuration 

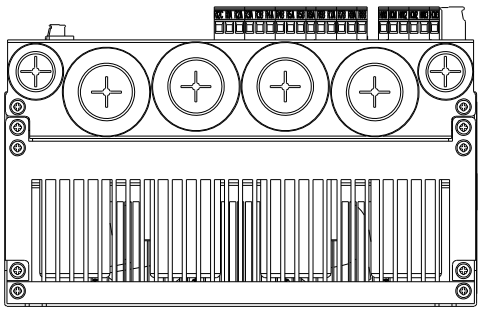
Using the RFI switch	
In the situation as the diagram on the right shows, you can use the RFI switch to pass through RFI capacitor to make an internal grounding and reduce electromagnetic radiation. In a situation with higher requirements for electromagnetic compatibility and a symmetrical grounding power system, you can install an EMC filter. For example, the diagram on the right is a symmetrical grounding power system.	

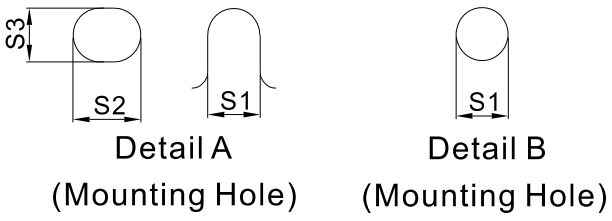
1-6 Dimensions

Frame C

IED022S21A; IED037S21A; IED055S23A; IED075S23A; IED110S23A; IED055S43A; IED075S43A; IED110S43A; IED150S43A; IED185S43A







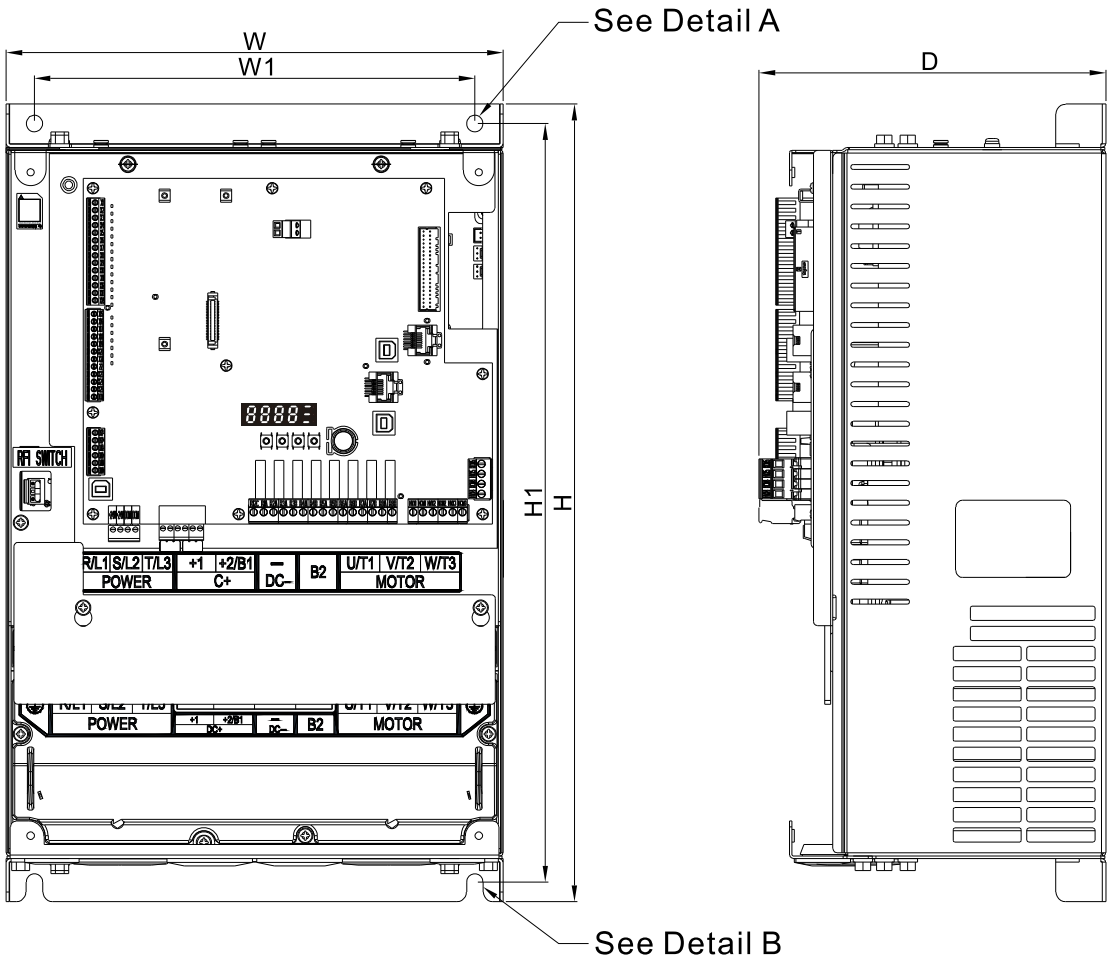
Unit: mm [inch]

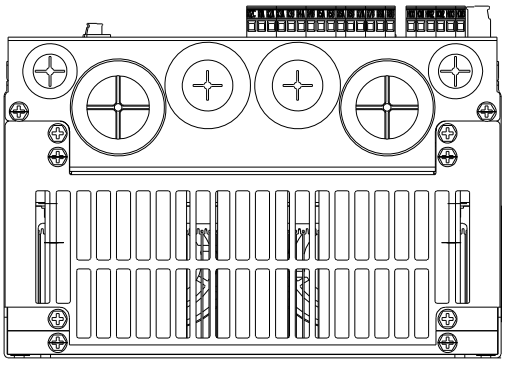
Frame	W	W1	W2	H	H1	H2	D	S1	S2	S3
C	235.0 [9.25]	204.0 [8.03]	176.0 [6.93]	350.0 [13.78]	339.0 [13.35]	337.0 [13.27]	146.0 [5.76]	6.5 [0.26]	9.0 [0.35]	7.0 [0.28]

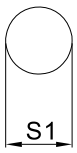
NOTE: A1–A4 and B1–B4 can be used for screwdriver installation; B1–B4 can also be used for sleeve installation.

Frame D

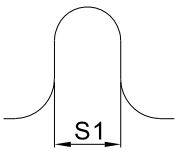
IED150S23A; IED185S23A; IED220S23A; IED220S43A; IED300S43A







Detail A
(Mounting Hole)



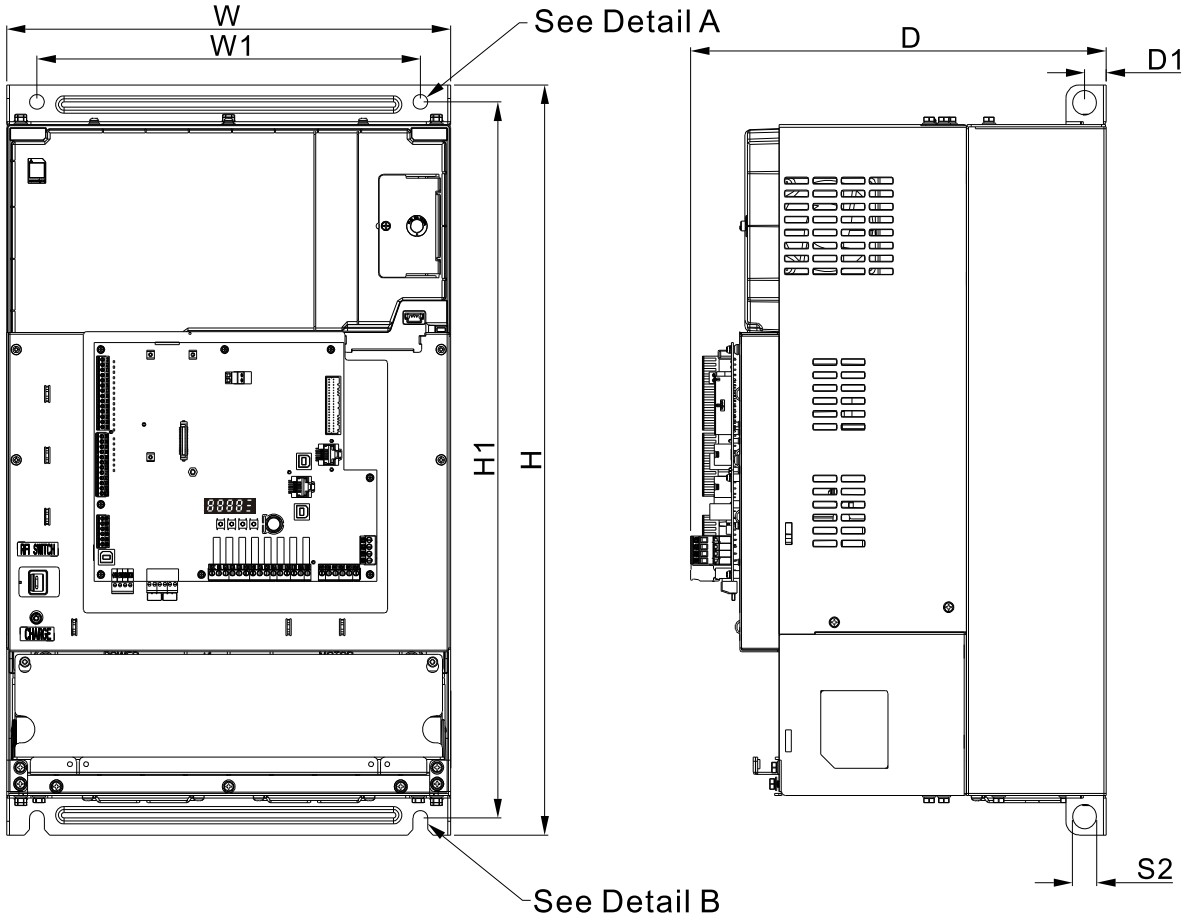
Detail B
(Mounting Hole)

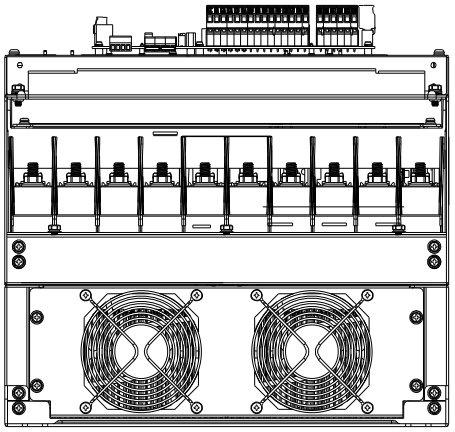
Unit: mm [inch]

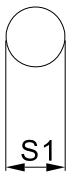
Frame	W	W1	H	H1	D	S1
D	255.0 [10.04]	226.0 [8.90]	403.8 [15.90]	384.0 [15.12]	178.0 [7.01]	8.5 [0.33]

Frame E

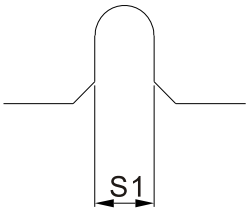
IED370S43A; IED450S43A; IED550S43A; IED750S43A







Detail A
(Mounting Hole)



Detail B
(Mounting Hole)

Unit: mm [inch]

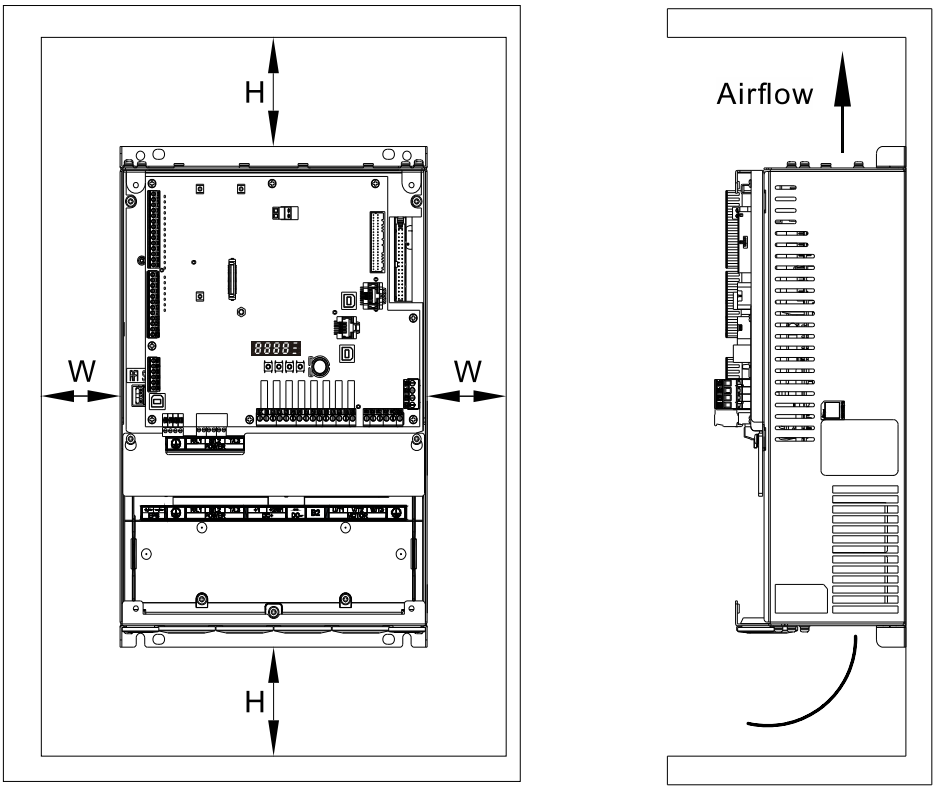
Frame	W	W1	H	H1	D	D1	S1	S2
E	330.0 [12.99]	285.0 [11.22]	550.0 [21.65]	525.0 [20.67]	308.9 [12.16]	16.0 [0.63]	11.0 [0.43]	18.0 [0.71]

Chapter 2 Installation

2-1 Mounting Clearance

- ☑ Do not allow material such as fiber particles, scraps of paper, shredded wood, sawdust, and metal particles to adhere to the heat sink.
- ☑ Install the AC motor drive in a metal cabinet to prevent the risk of fire.
- ☑ Install the AC motor drive in a Pollution Degree 2 (IEC 60664-1) environment with clean and circulating air. A clean and circulating environment means air without polluting substances and dust.

The motor drives' figures shown below are for reference only. The actual motor drives may look different.



Minimum Mounting Clearance

Frame	Capacity	Model No.	W (Width) mm [inch]	H (Height) mm [inch]
C	3–25 HP (2.2–18.5 kW)	IED022S21A ; IED037S21A ; IED055S23A ; IED075S23A ; IED110S23A ; IED055S43A ; IED075S43A ; IED110S43A ; IED150S43A ; IED185S43A	75 [3]	175 [7]
D	20–40 HP (15–30 kW)	IED150S23A ; IED185S23A ; IED220S23A ; IED220S43A ; IED300S43A	75 [3]	200 [8]
E	50–100 HP (37–75 kW)	IED370S43A ; IED450S43A ; IED550S43A ; IED750S43A	75 [3]	200 [8]

NOTE

The minimum mounting clearances stated in the table above apply to AC motor drives frame C, D and E. Failure to follow the minimum mounting clearances may cause the motor drive fan to malfunction and cause heat dissipation problems.

2-2 Airflow and Power Dissipation

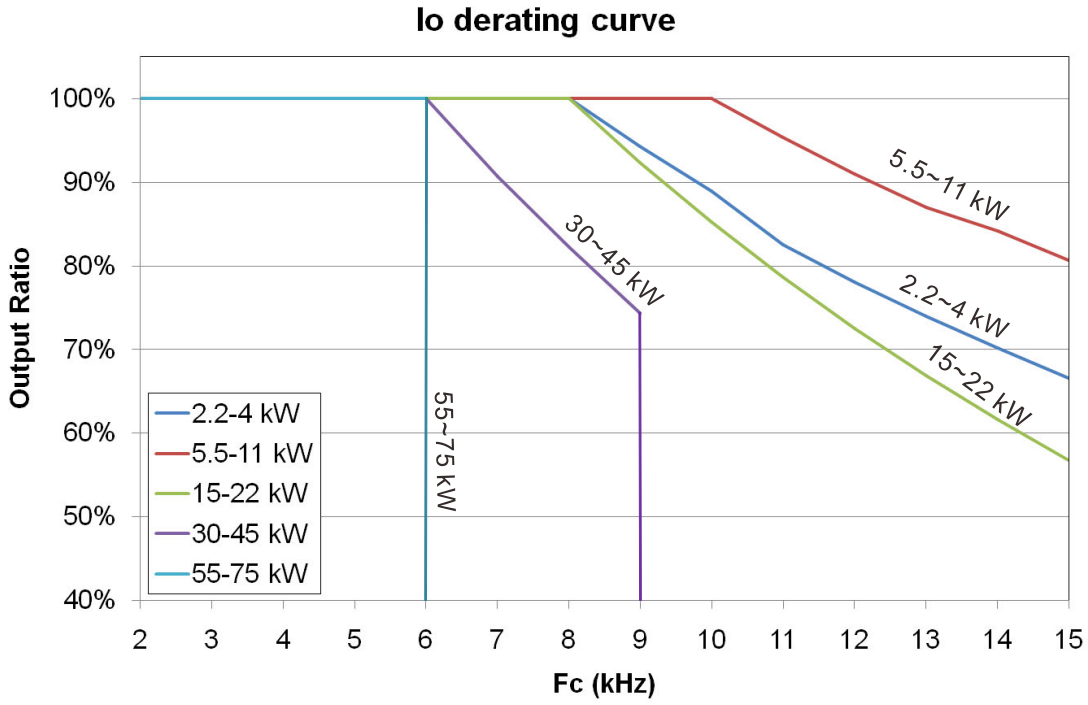
Model No.	Airflow Rate for Cooling						Power Dissipation for AC Motor Drive		
	Flow Rate [cfm]			Flow Rate [m^3/hr]			Power Dissipation [W]		
	External	Internal	Total	External	Internal	Total	Loss External (Heat Sink)	Internal	Total
IED022S21A	48.5	-	48.5	82.4	-	82.4	60	36	96
IED037S21A	48.5	-	48.5	82.4	-	82.4	84	46	130
IED055S23A	48.5	-	48.5	82.4	-	82.4	212	67	279
IED075S23A	48.5	-	48.5	82.4	-	82.4	292	86	379
IED110S23A	47.9	-	47.9	81.4	-	81.4	355	121	476
IED150S23A	64.6	-	64.6	109.8	-	109.8	490	161	651
IED185S23A	102.3	-	102.3	173.8	-	173.8	638	184	822
IED220S23A	102.8	-	102.8	174.7	-	174.7	723	217	939
IED055S43A	48.5	-	48.5	82.4	-	82.4	185	55	240
IED075S43A	48.5	-	48.5	82.4	-	82.4	249	71	320
IED110S43A	47.9	-	47.9	81.4	-	81.4	337	94	431
IED150S43A	46.1	-	46.1	78.4	-	78.4	302	123	425
IED185S43A	46.1	-	46.1	78.4	-	78.4	391	139	529
IED220S43A	102.8	-	102.8	174.7	-	174.7	642	141	783
IED300S43A	83.7	-	83.7	142.2	-	142.2	839	180	1019
IED370S43A	179	30	209	304	51	355	803	252	1055
IED450S43A	179	30	209	304	51	355	1014	270	1284
IED550S43A	179	30	209	304	51	355	1244	275	1519
IED750S43A	186	30	216	316	51	367	1541	338	1878

2-3 Derating Curve for Ambient Temperature, Altitude and Carrier Frequency

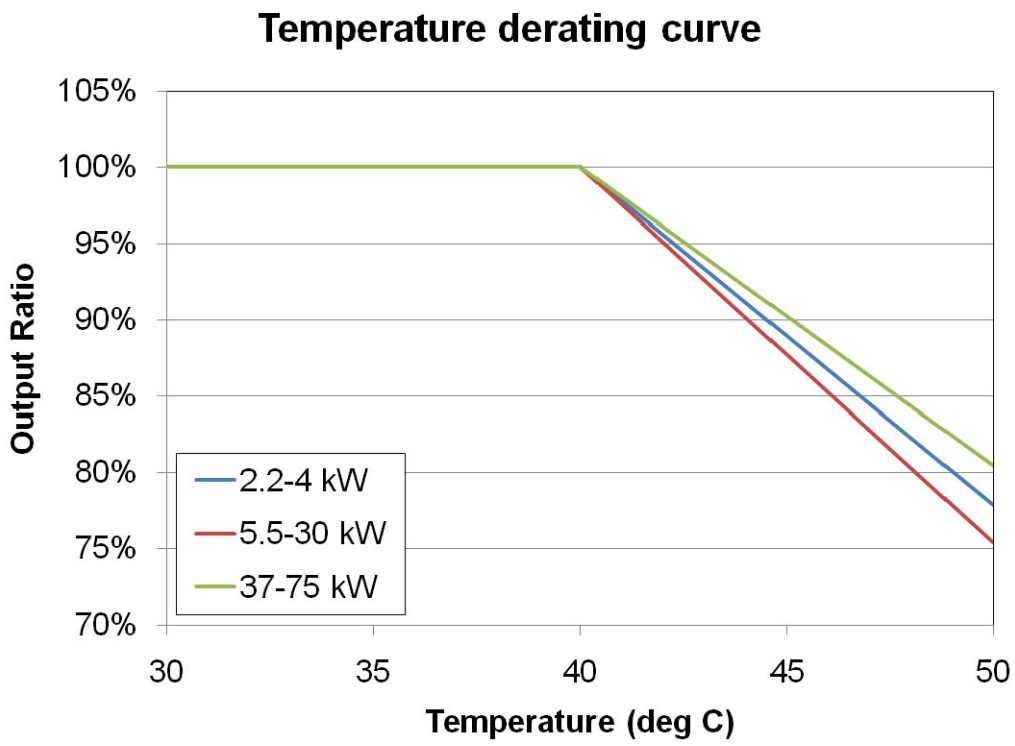
Carrier Frequency (Fc) Derating Capacity

Frame	C		D	E	E
Fc (kHz)	2.2–4 kW	5.5–11 kW	15–22 kW	30–45 kW	55–75kW
0	100%	100%	100%	100%	100%
1	100%	100%	100%	100%	100%
2	100%	100%	100%	100%	100%
3	100%	100%	100%	100%	100%
4	100%	100%	100%	100%	100%
5	100%	100%	100%	100%	100%
6	100%	100%	100%	100%	100%
7	100%	100%	100%	90.73%	-
8	100%	100%	100%	82.20%	-
9	94.24%	100%	92.32%	74.31%	-
10	88.92%	100%	85.21%	-	-
11	82.54%	95.35%	78.63%	-	-
12	78.08%	91.02%	72.53%	-	-
13	73.95%	86.98%	66.87%	-	-
14	70.14%	84.14%	61.62%	-	-
15	66.61%	80.67%	56.74%	-	-

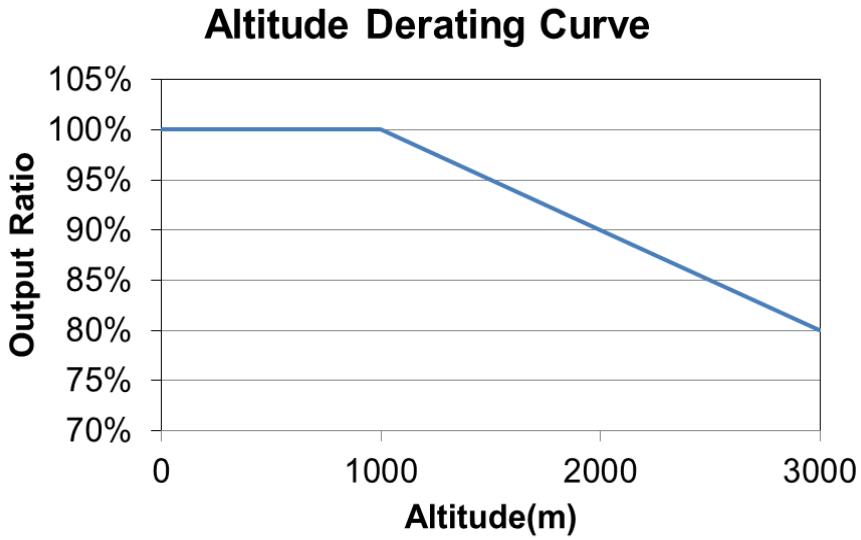
Carrier Frequency (Fc) Derating Curve



Ambient Temperature Derating Curve



Altitude Derating Curve



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Chapter 3 Wiring

After removing the front cover, verify that the power and control terminals are clear. Be sure to observe the following precautions when wiring.

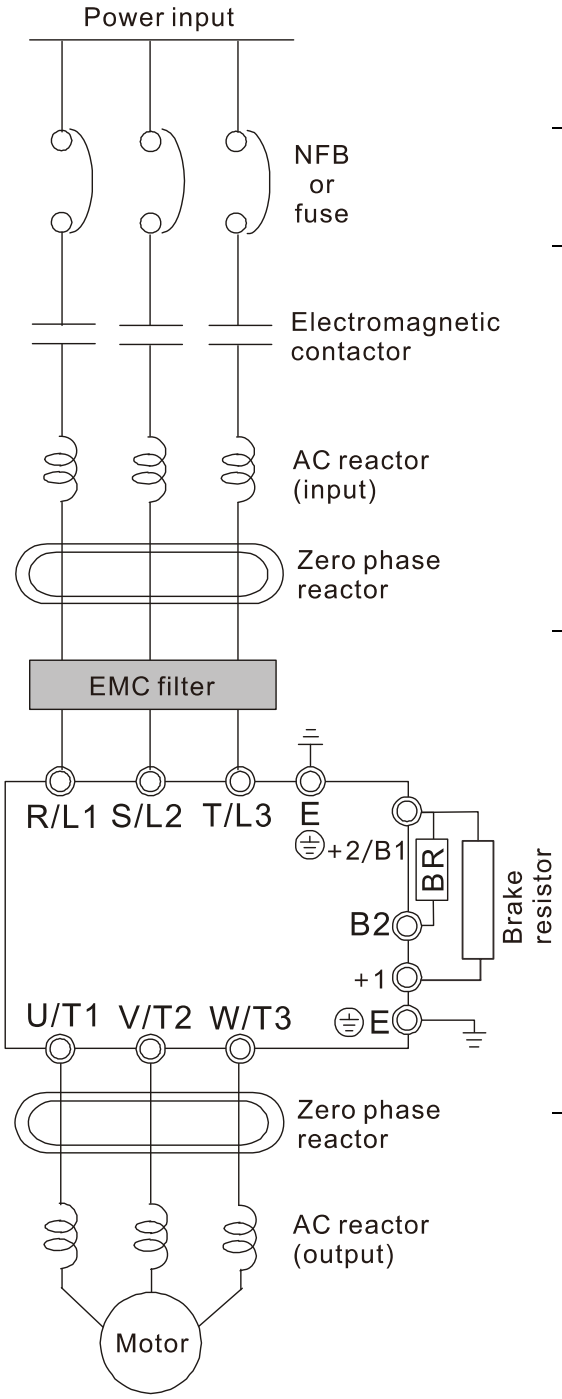
☑ Make sure that power is only applied to the R/L1, S/L2, and T/L3 terminals. Failure to comply may result in damage to the equipment. The voltage and current should be within the range indicated on the AC motor drive nameplate (see Section 1-1 Nameplate Information).

☑ All the units must be grounded directly to a common ground terminal to prevent damage from a lightning strike or electric shock.

☑ Make sure you correctly tighten the main circuit terminal screws to prevent sparks from screws that have been loosened due to vibration.

 **DANGER**	☑ Turn off the IED-S power before installing any wiring. A hazardous charge may still remain in the DC bus capacitors after the power has been turned off. Measure the remaining voltage before wiring. For your safety, do not perform any wiring before the voltage drops to a safe level < 25 V_{DC}. Performing a wiring installation while voltage remains may cause sparks and short circuits. ☑ Only qualified personnel familiar with IED-S are allowed to perform installation, wiring and commissioning. Make sure the power is turned off before wiring to prevent electric shock.
 **CAUTION**	☑ When wiring, choose wires that comply with local regulations for your safety. ☑ Check the following items after finishing the wiring: 1. Are all connections correct? 2. Are there any loose wires? 3. Are there any short circuits between the terminals or to ground?

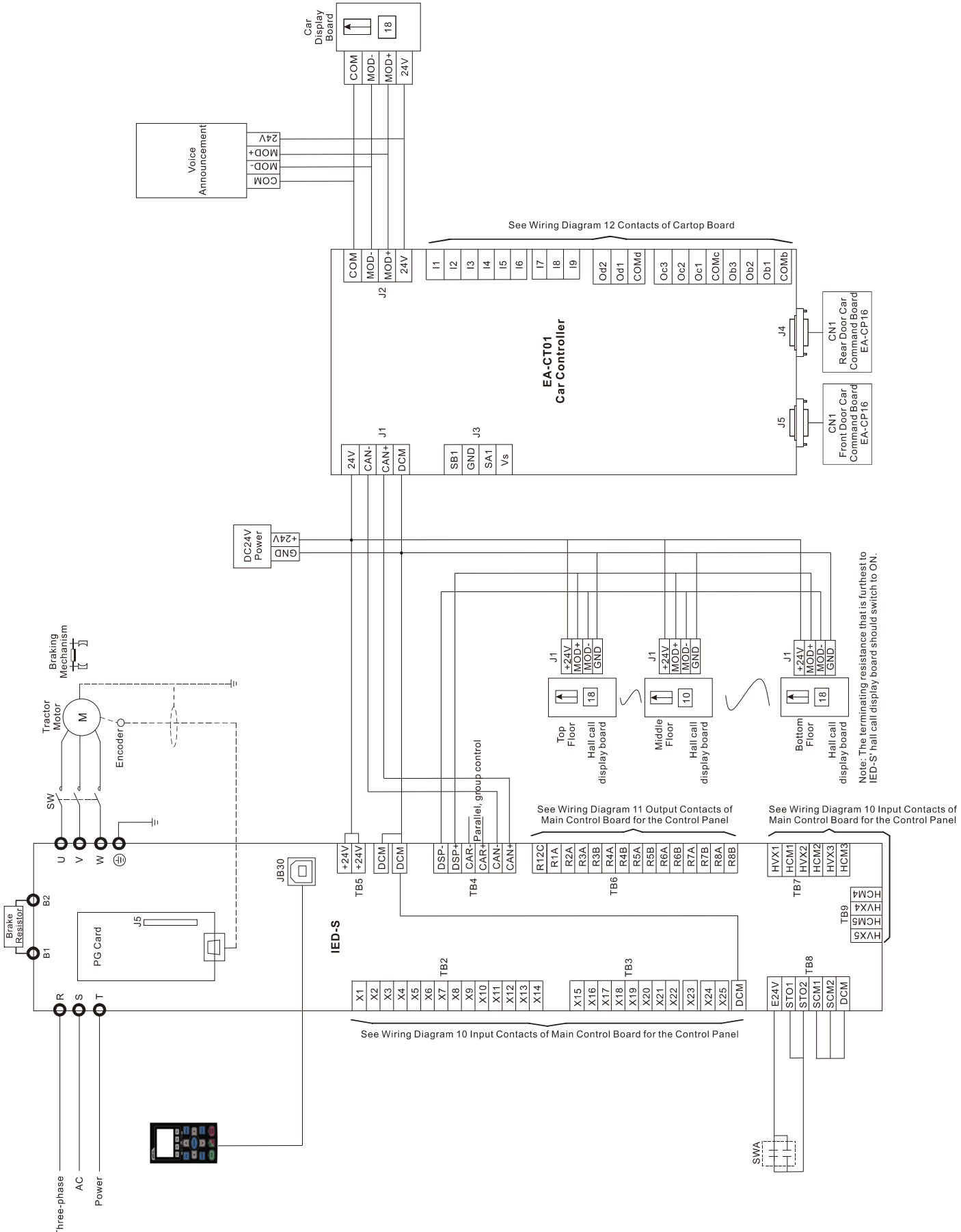
3-1 System Wiring Diagram



Power input	Supply power according to the rated power specifications indicated in the manual (see Chapter 08 Specifications).
NFB or fuse	There may be a large inrush current during power on. See Section 6-2 NFB to select a suitable NFB or fuse.
Electromagnetic contactor	Switching the power ON/OFF on the primary side of the electromagnetic contactor can make IED-S run/stop, but frequent switching can cause machine failure. Do not switch ON/OFF more than once an hour. Do not use the electromagnetic contactor as the power switch for IED-S; doing so shortens the life of IED-S.
AC reactor (input)	When the main power supply capacity is greater than 500 kVA, or when it switches into the phase capacitor, the instantaneous peak voltage and current generated may destroy the internal circuit of IED-S. It is recommended that you install an AC reactor at input side in IED-S. This also improves the power factor and reduces power harmonics. The wiring distance should be within 10 m. See Chapter 06 Optional Accessories for details.
Zero phase reactor	Use to reduce radiated interference, especially in environments with audio devices, and reduce input and output side interference. The effective range is AM band to 10 MHz. See Chapter 06 Optional Accessories for details.0 MHz ◦
EMC filter	Use to reduce electromagnetic interference.
Brake resistor (BR)	Use to shorten the deceleration time of the motor. See Chapter 06 Optional Accessories for details.
AC reactor (output)	The motor cable length affects the size of the reflected wave on the motor end. It is recommended that you install an AC output reactor when the motor wiring length exceeds 20 meters. See Chapter 06 Optional Accessories for details..

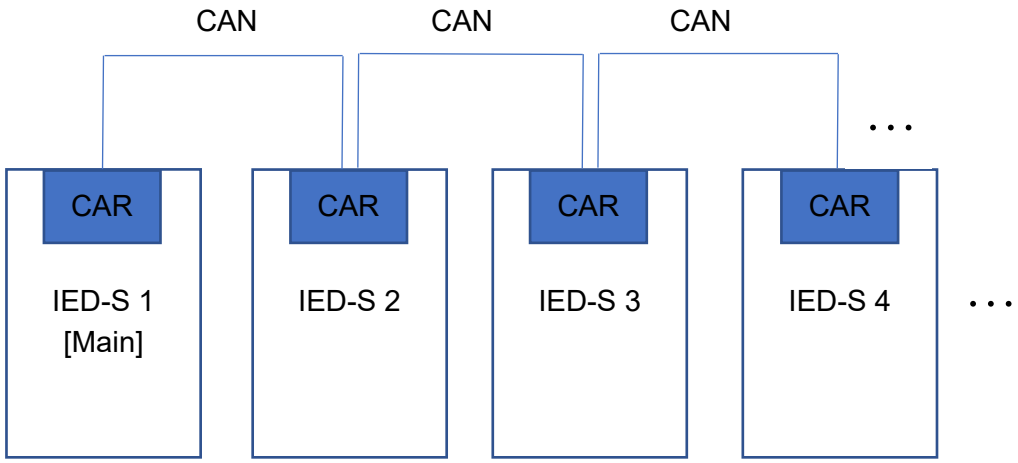
IED-S (Integrated Elevator Drive) System Wiring Diagram

01 System Configuration



02 Wiring Diagram for Group Control

Example of Group Control

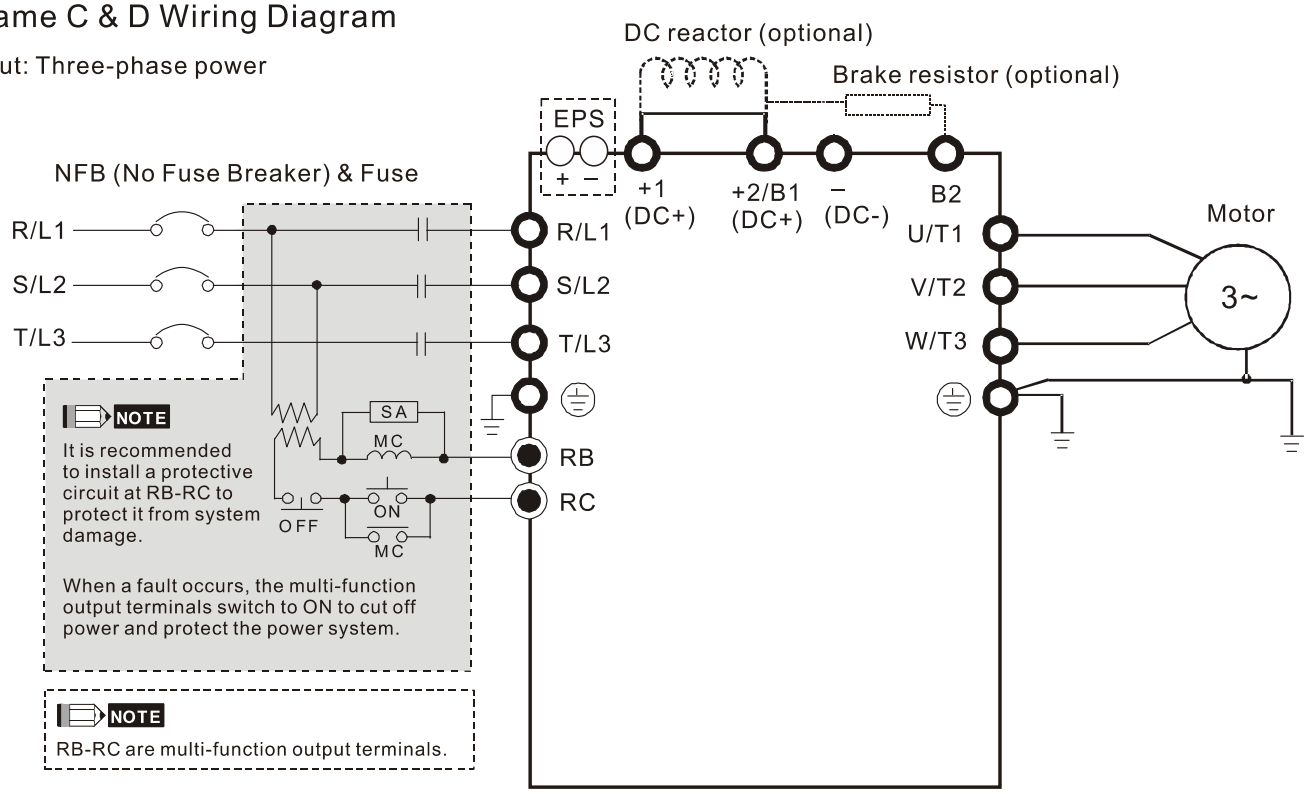


Pr.03-03 Elevator No.: 0 1 2 3
Pr.03-04 = 4

3-2 Wiring

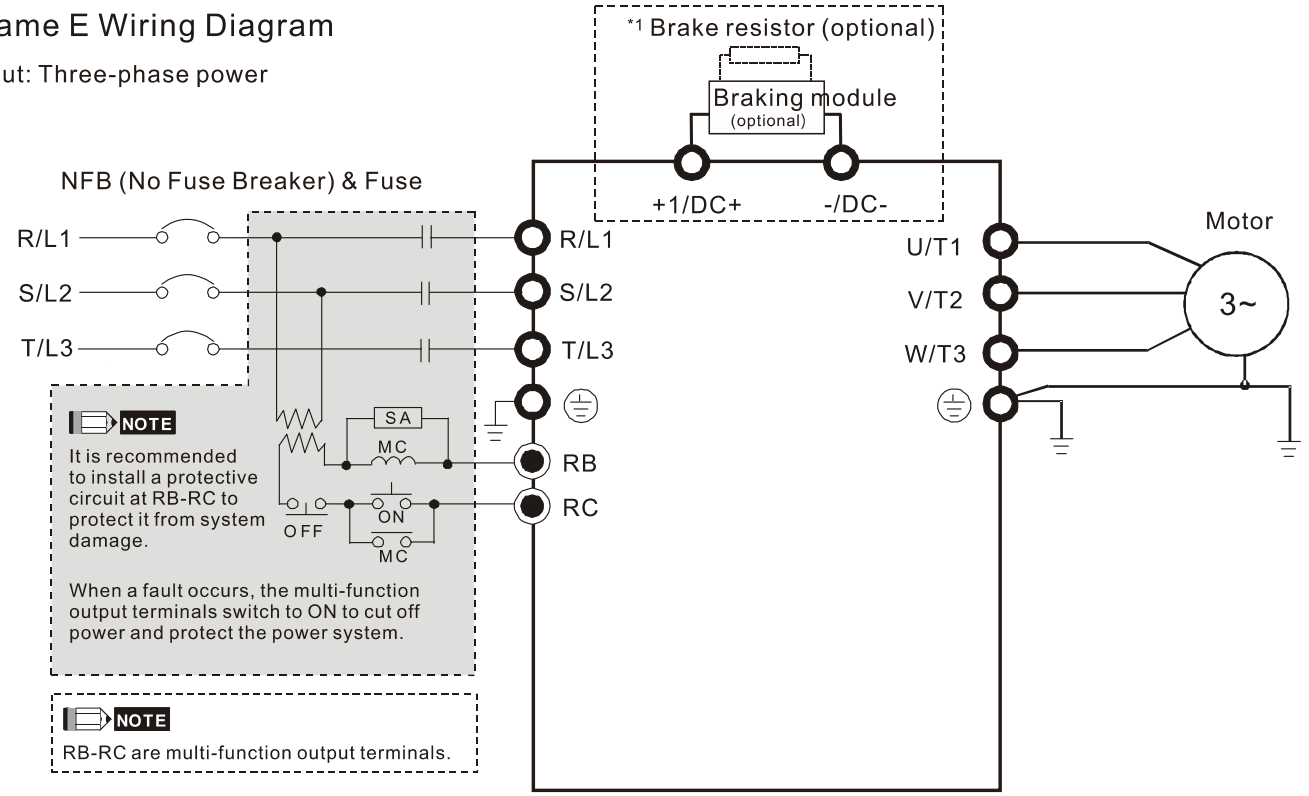
Frame C & D Wiring Diagram

Input: Three-phase power



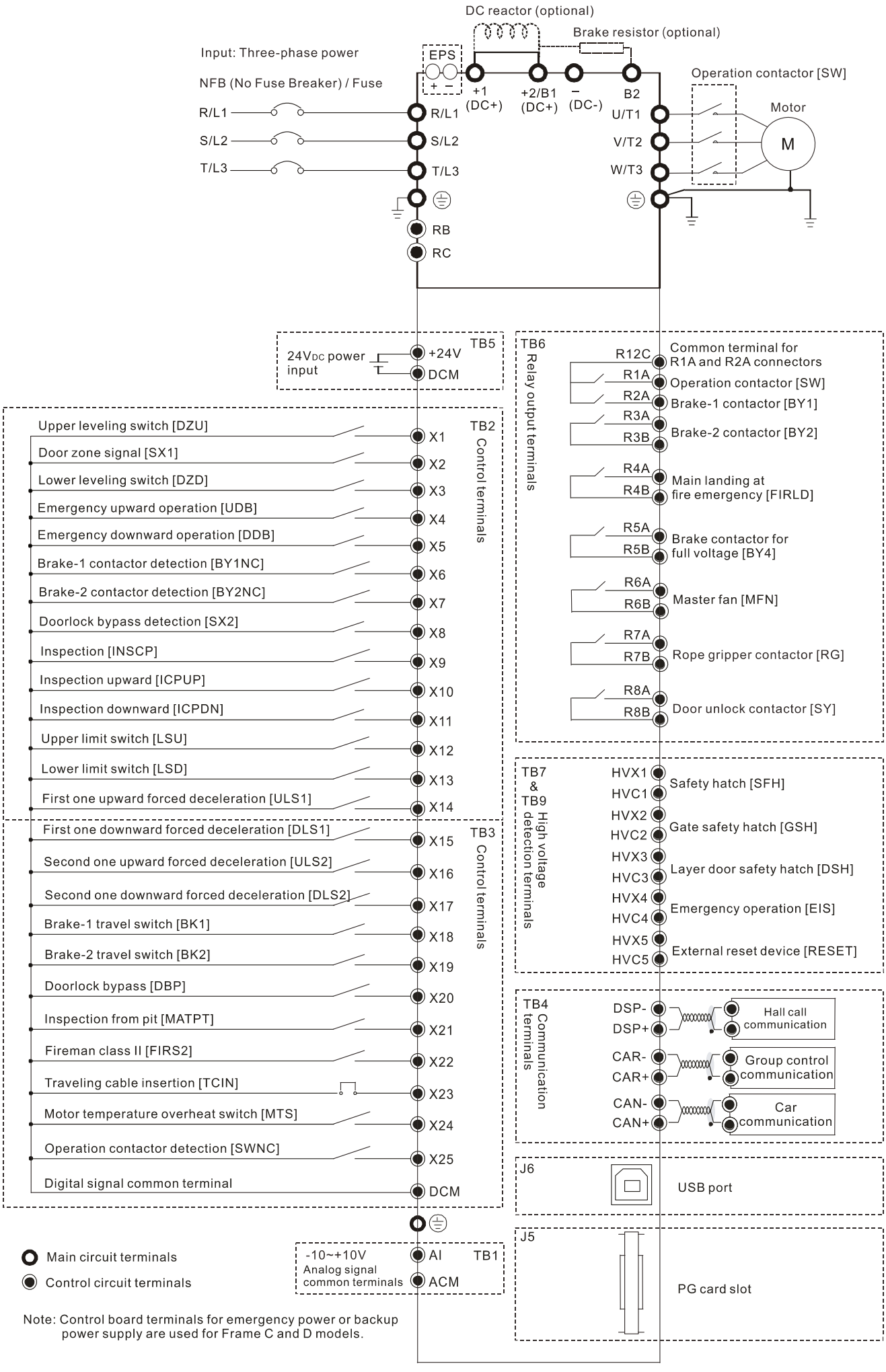
Frame E Wiring Diagram

Input: Three-phase power



* See Figure 2 on page 3-8 for the Emergency Power Supply (EPS) system wiring diagrams.

*1: See Section 6-1 Brake Resistors & Brake Units Used in AC Motor Drives for details.



Note: Control board terminals for emergency power or backup power supply are used for Frame C and D models.

Figure 1

SOURCE (PNP) Terminal

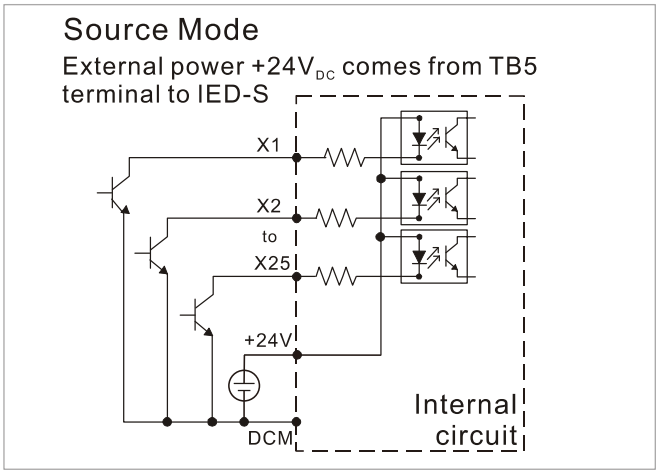
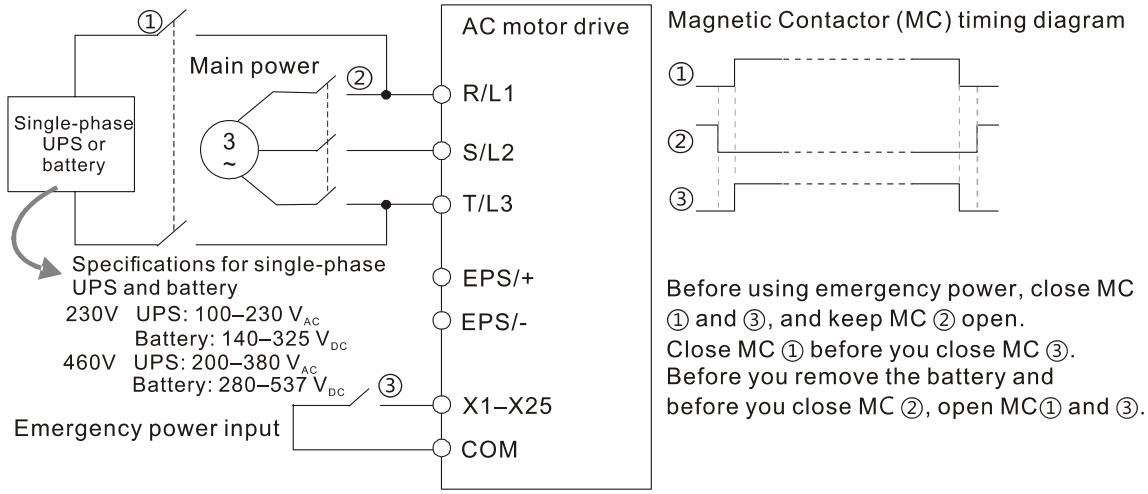


Figure 2

Emergency Power Supply (EPS) system wiring diagrams

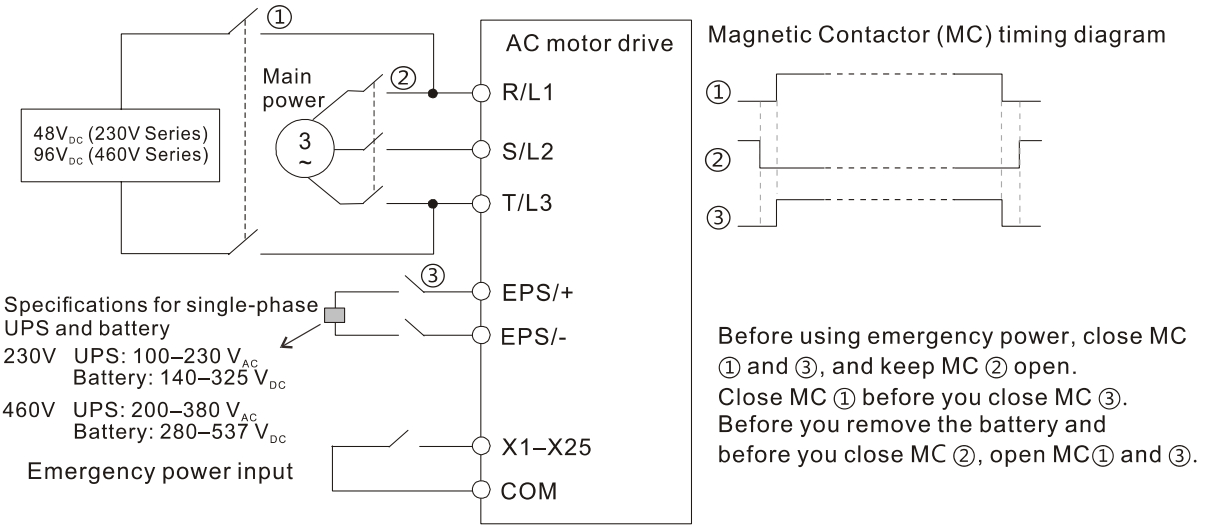
Frames C, D and E

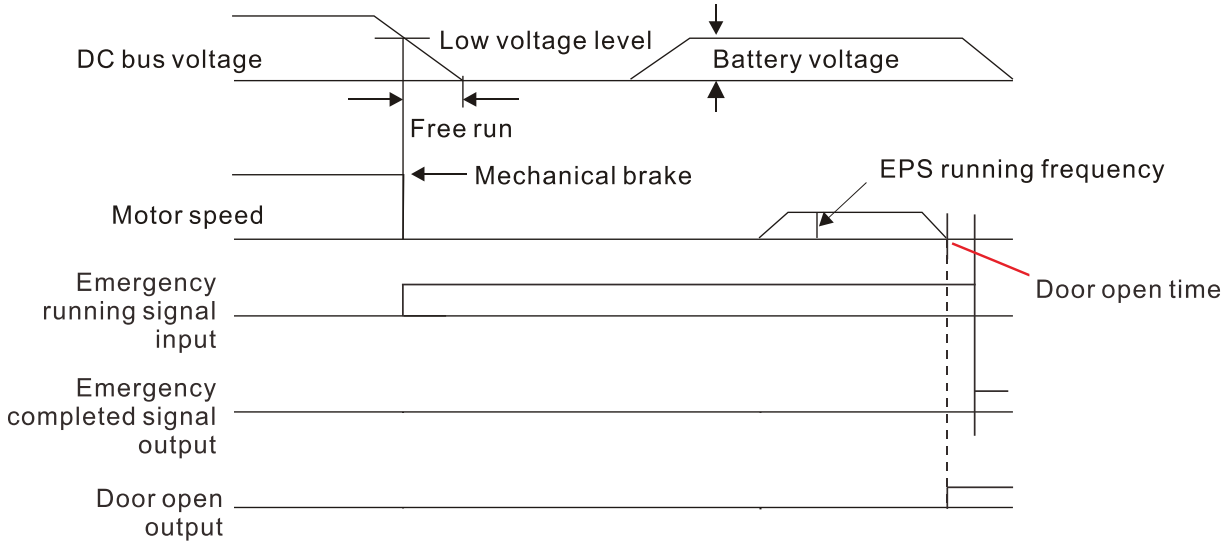
1. Single-phase UPS or battery can only be used on the main power supply side



Frames C and D

2. When the voltage of the main power supply is lower than 140 V_{DC} (230V series) / 280 V_{DC} (460V series), connect the control power to single-phase UPS or battery.



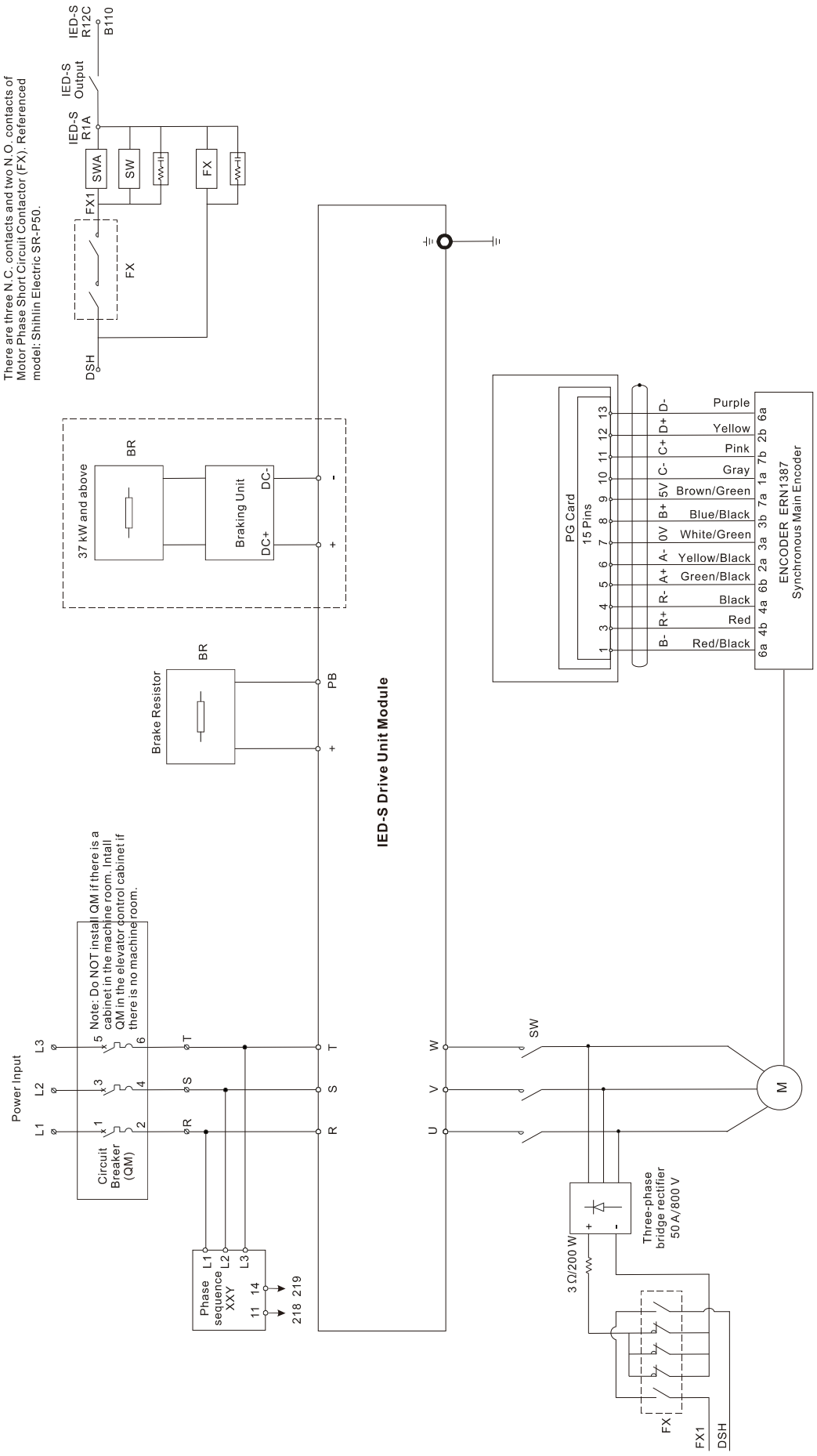


Notes on Emergency Power Supply (EPS):

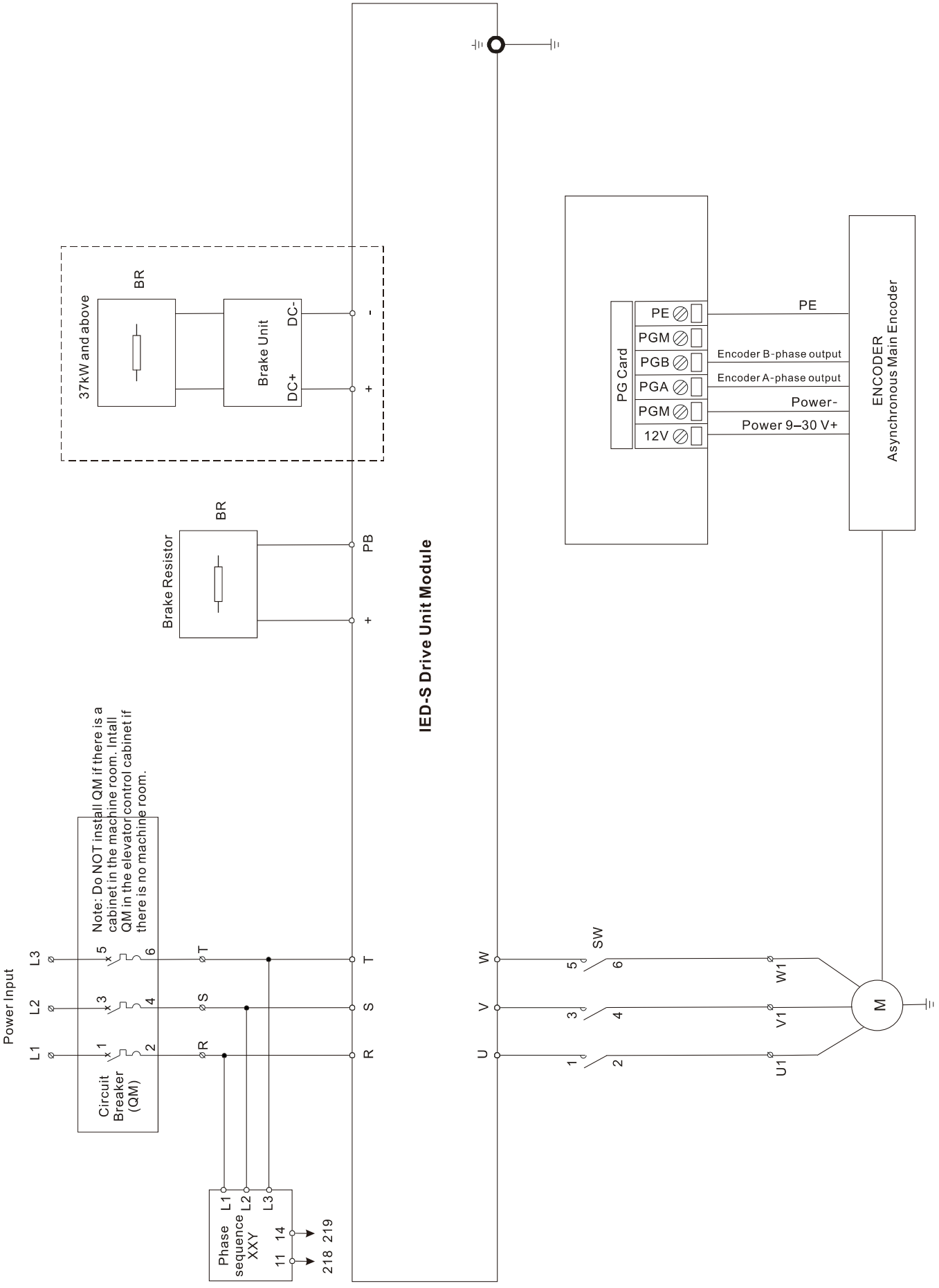
1. When EPS is enabled, do NOT make the fan run in order to prevent voltage drop during EPS.
2. When EPS is enabled, parameter settings cannot be saved and will be lost after cycling power.
3. When EPS is enabled, set the running speed through Pr.13-49.
4. When EPS is enabled, functions of low voltage and phase loss protection are unavailable.
5. When EPS is enabled, set the DC bus voltage through Pr.13-48.

3-3 Related Wiring Diagrams

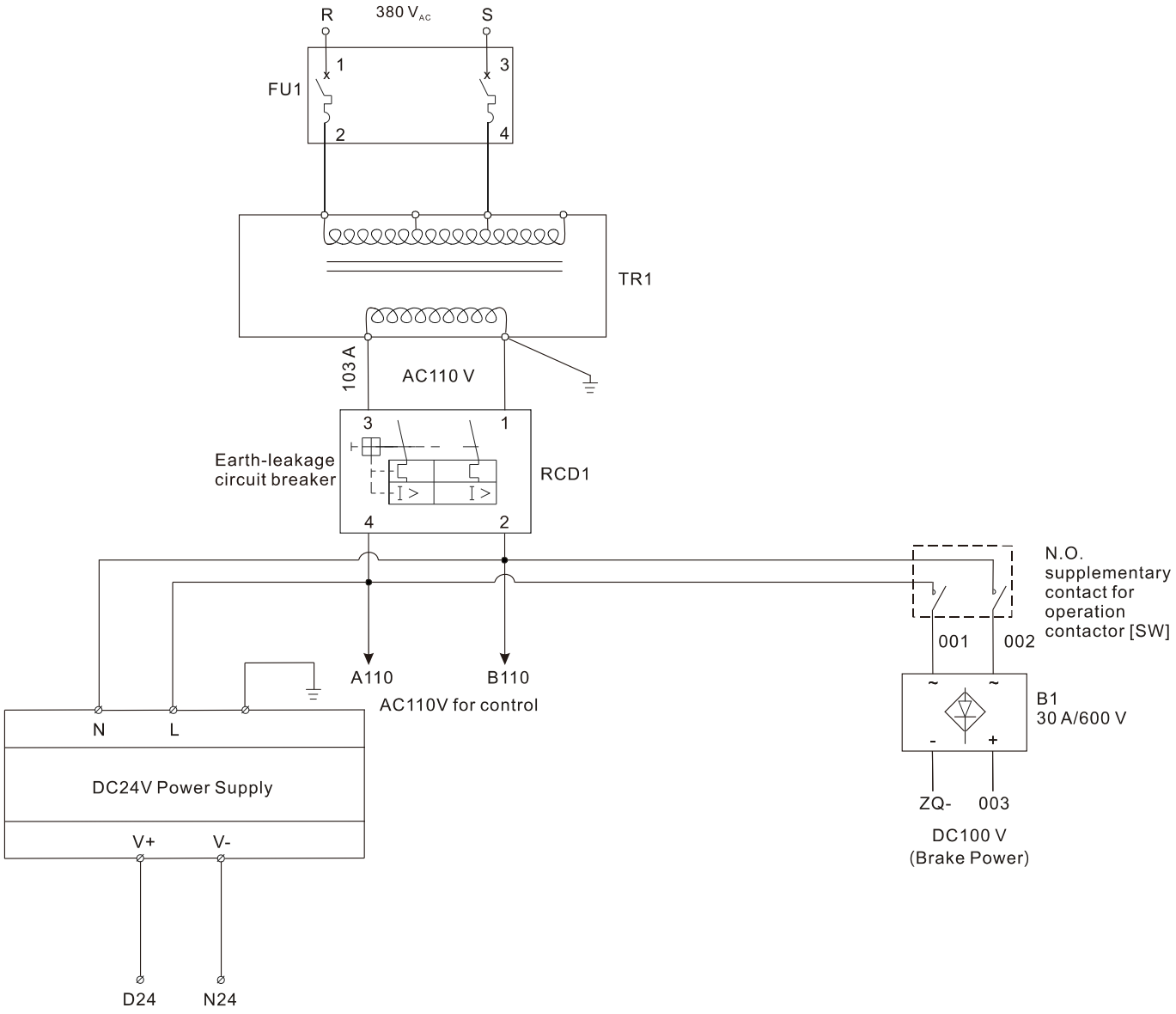
03 Main Circuit for Drive Control (Synchronous)



04 Main Circuit for Drive Control (Asynchronous)

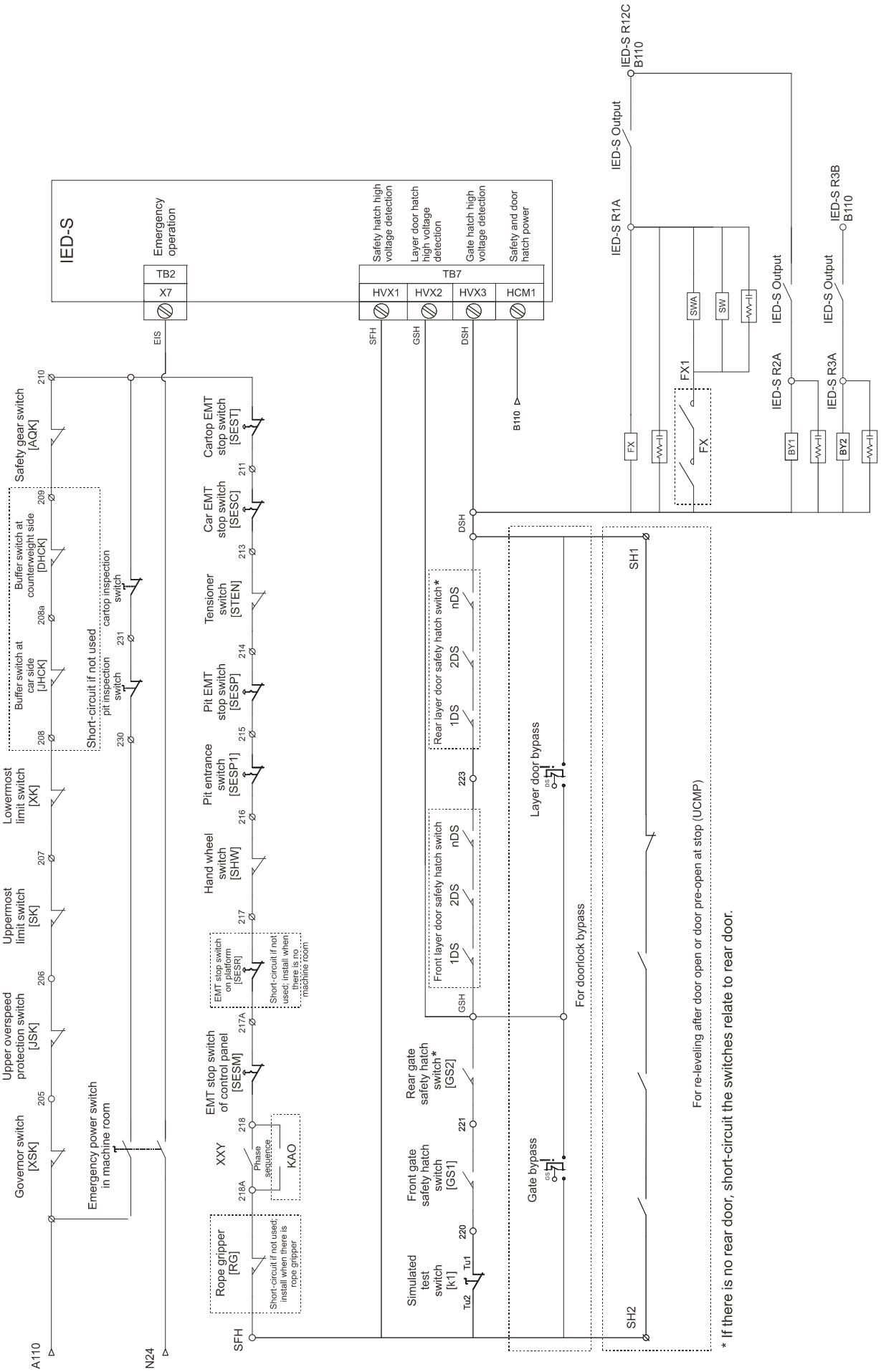


05 Control Power Configuration

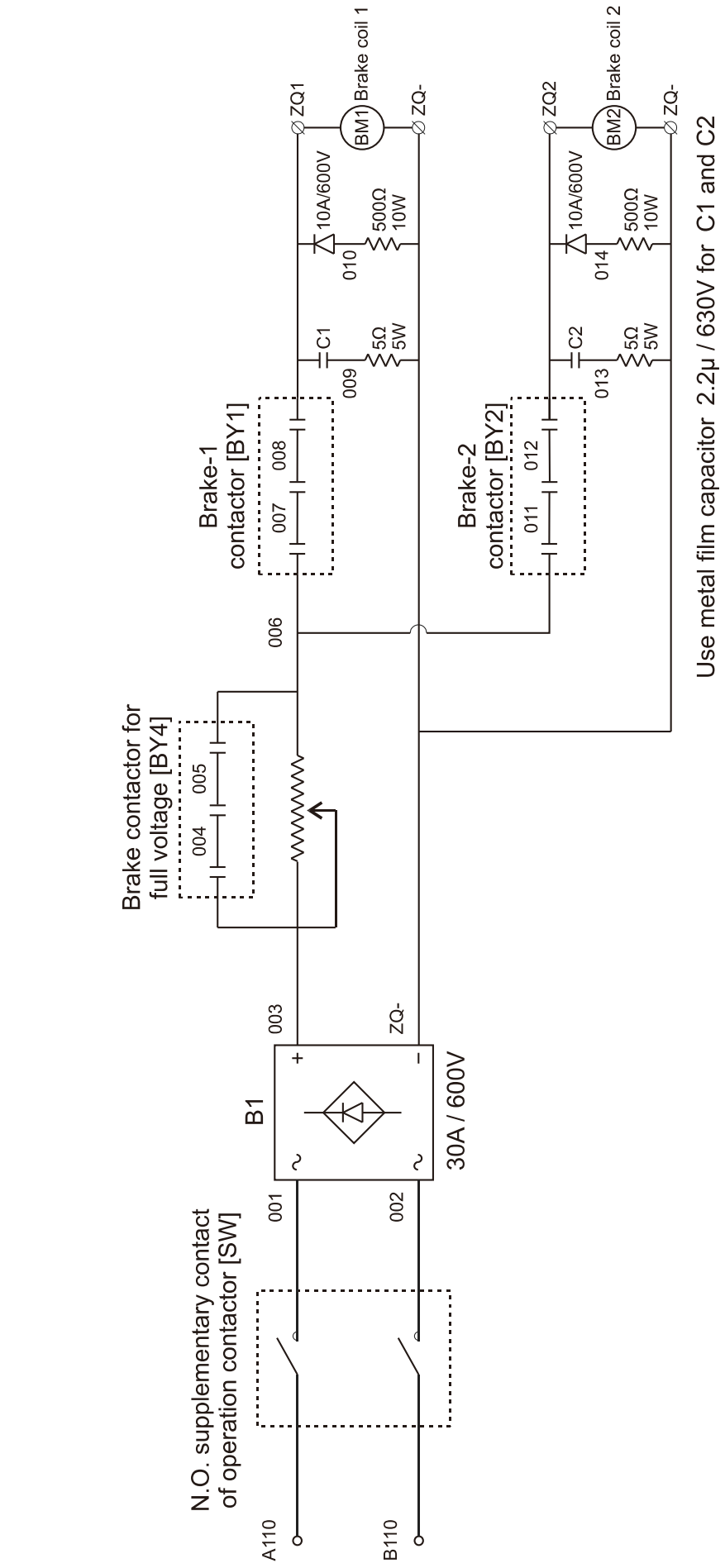


1. Current for DC24V power supply (normally ≥ 4.5 A / DC24 V; 2.5 A / AC110 V)
   Current = 1.5 + (X + 2Y) x Z + N x Y
   X: Rated current of one piece of hall call board
   Y: Current of one button
   Z: A few pieces of common hall call boards
   N: A few common car buttons
2. Use AC110 V / 0.2 A for control
3. Brake power capacity = 0.6 x brake rated current, normally ≥ 0.6 x 4 = 2.4 A
4. Door controller power capacity = 0.6 x door motor rated current, normally ≥ 0.6 x 3 = 1.8 A
5. Transformer (TRI) capacity ≥ 1 + 2 + 3 + 4 = 2.5 + 0.2 + 2.4 + 1.8 = 6.9 A

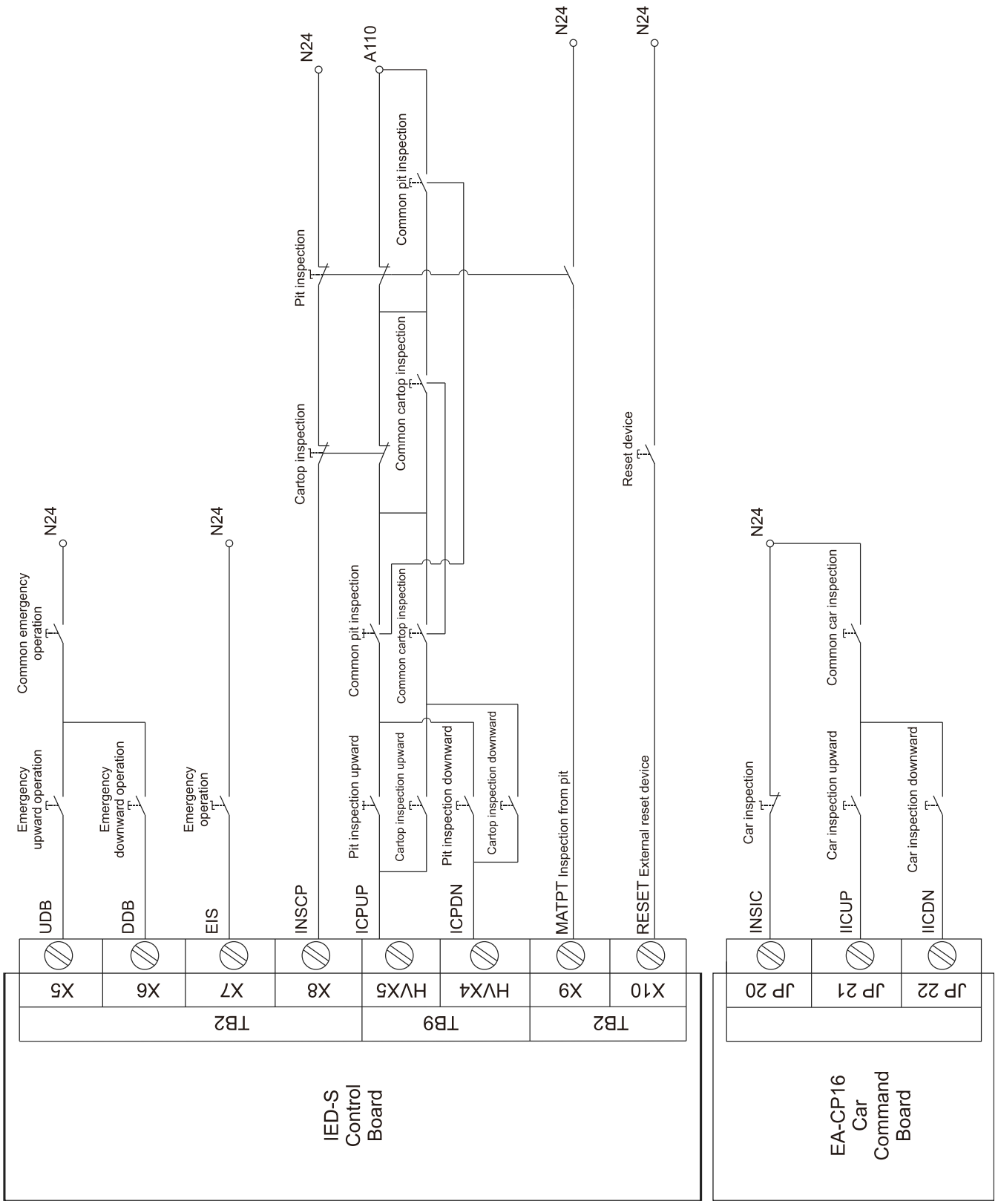
06 Safety Hatch



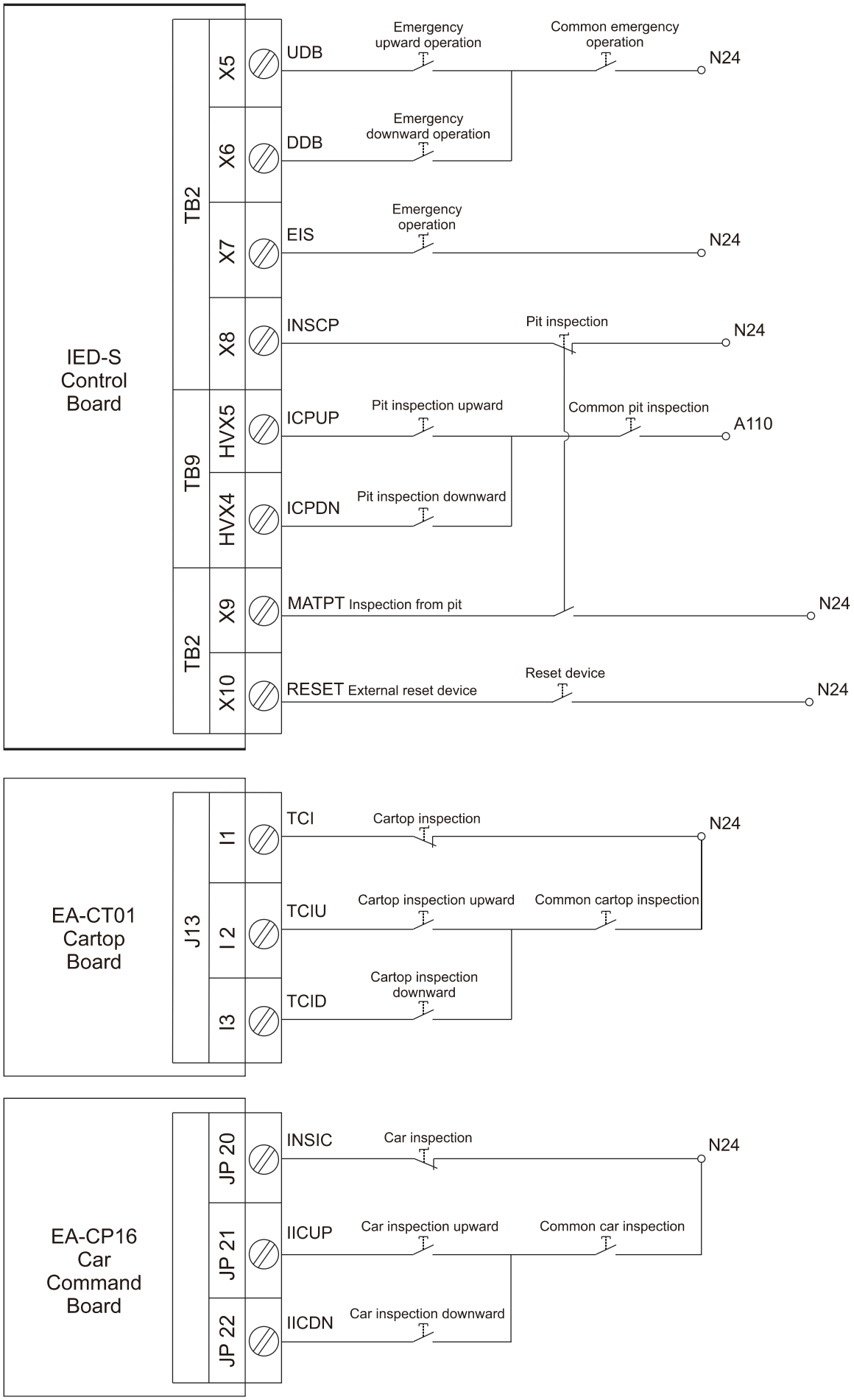
07 Brake Circuit



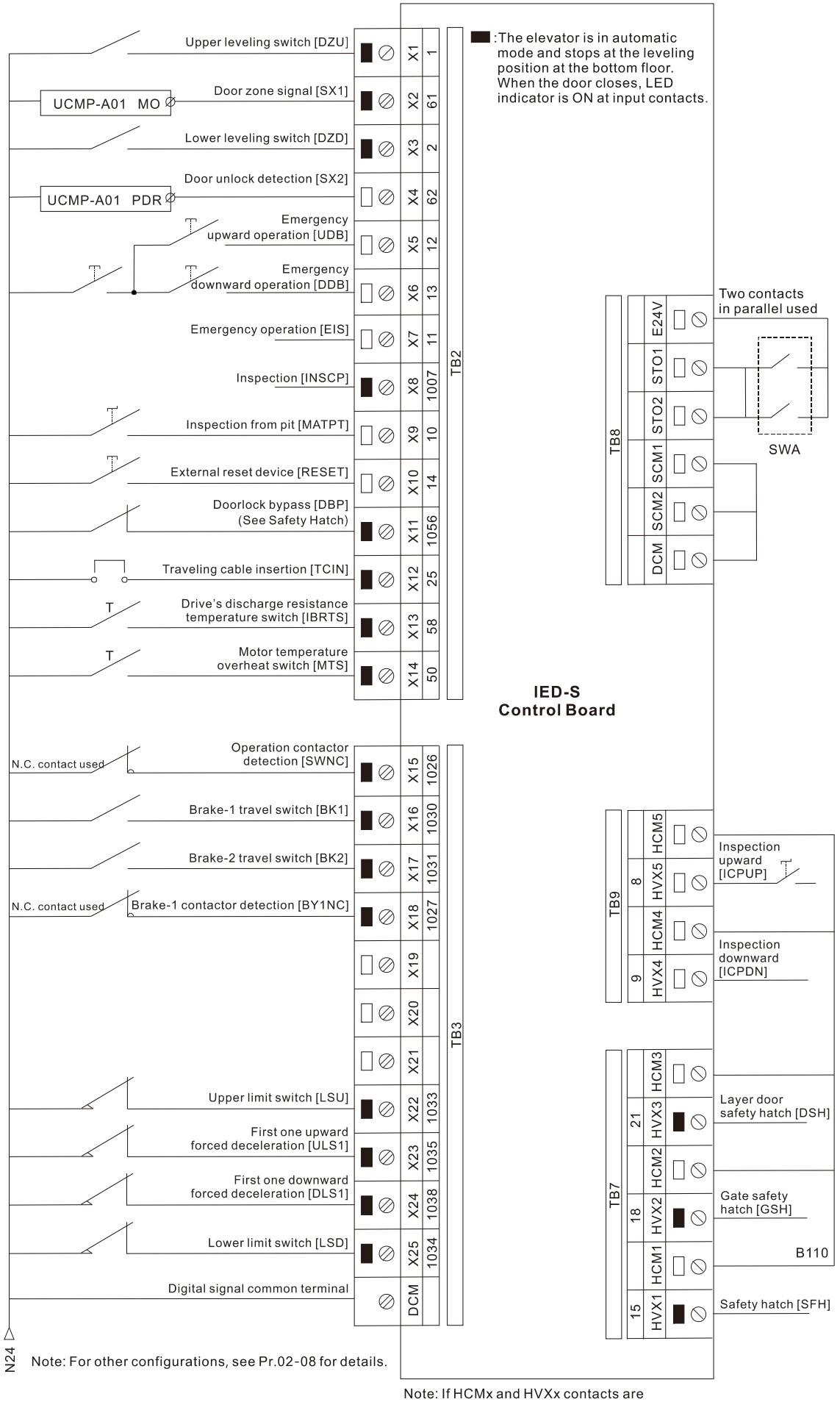
08 Inspection Circuit (Cartop Inspection Connected to IED-S Control Board)



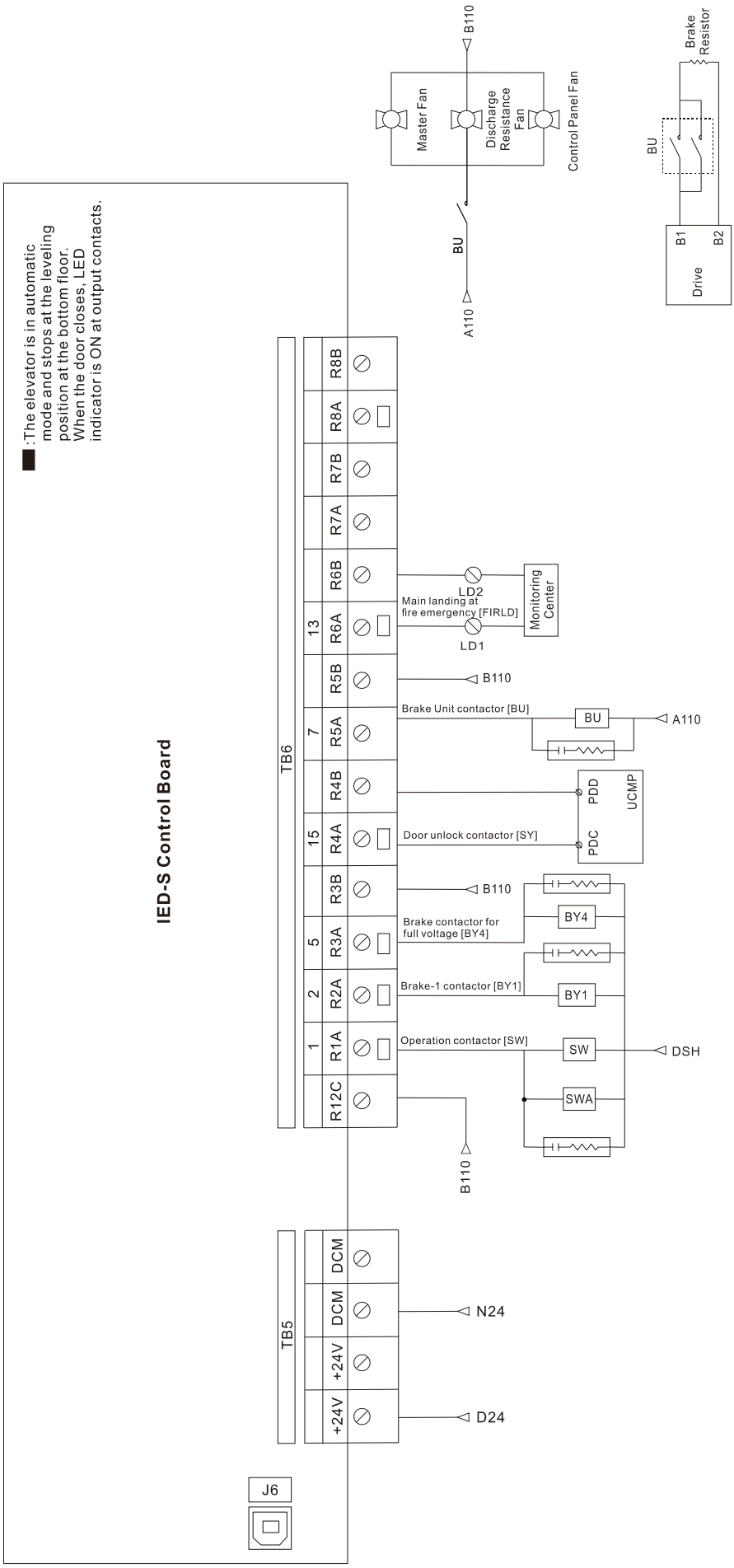
09 Inspection Circuit (Cartop Inspection Connected to Cartop Board) (without Using Traveling Cable)



10 Input Contacts of Main Control Board for the Control Panel

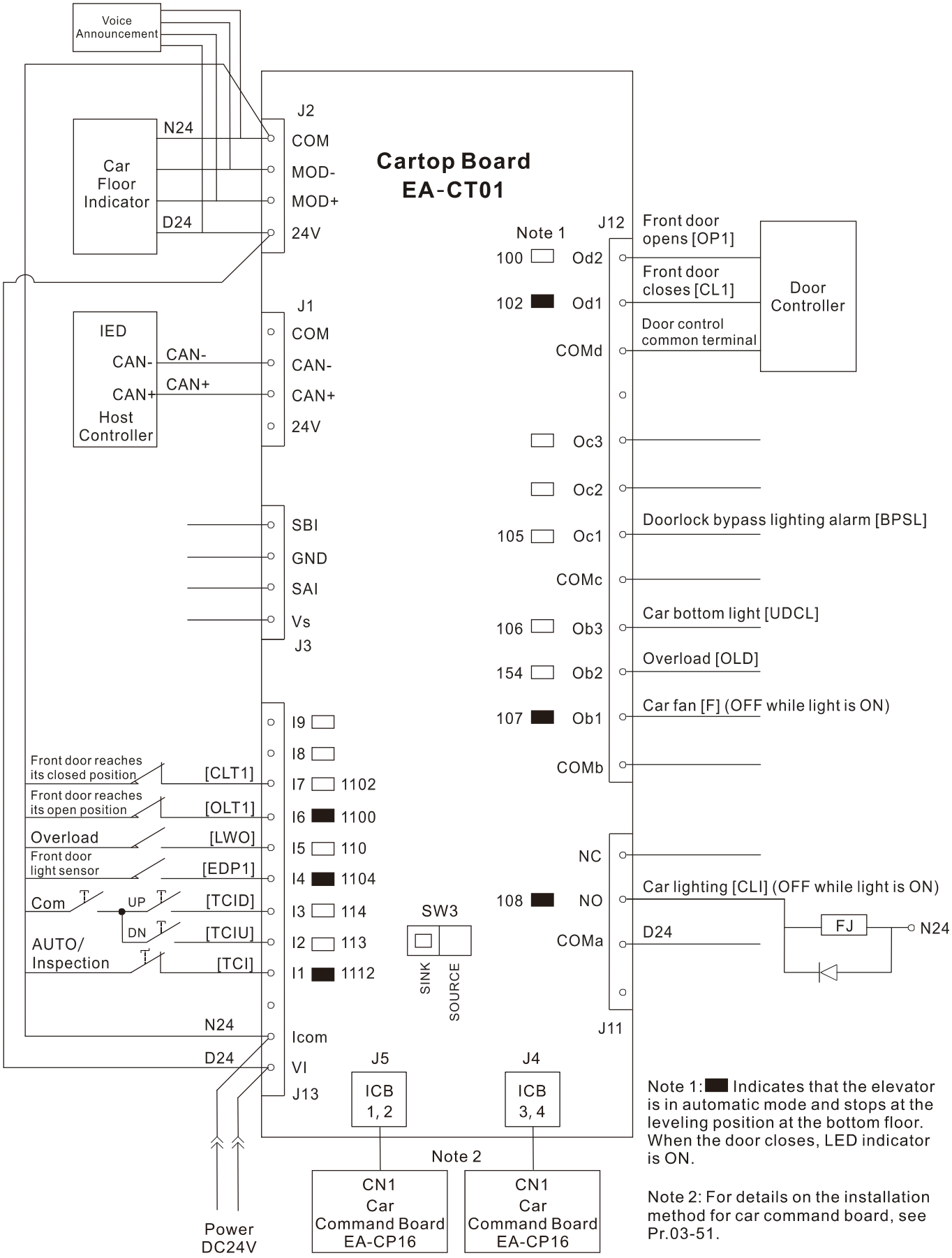


11 Output Contacts of Main Control Board for the Control Panel



Note: For other configurations, see Pr.02-08 for details.

12 Contacts of Cartop Board (OCB)

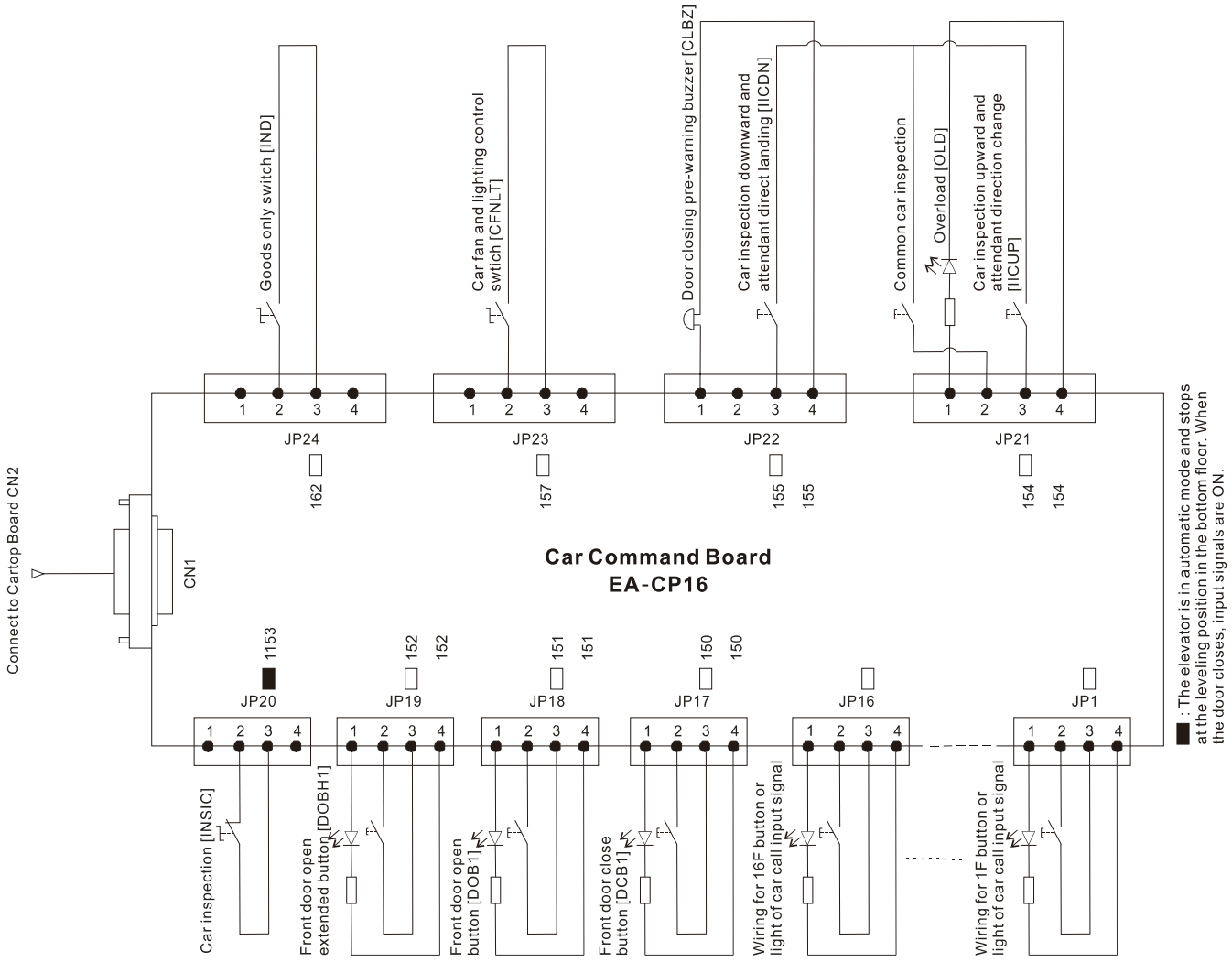


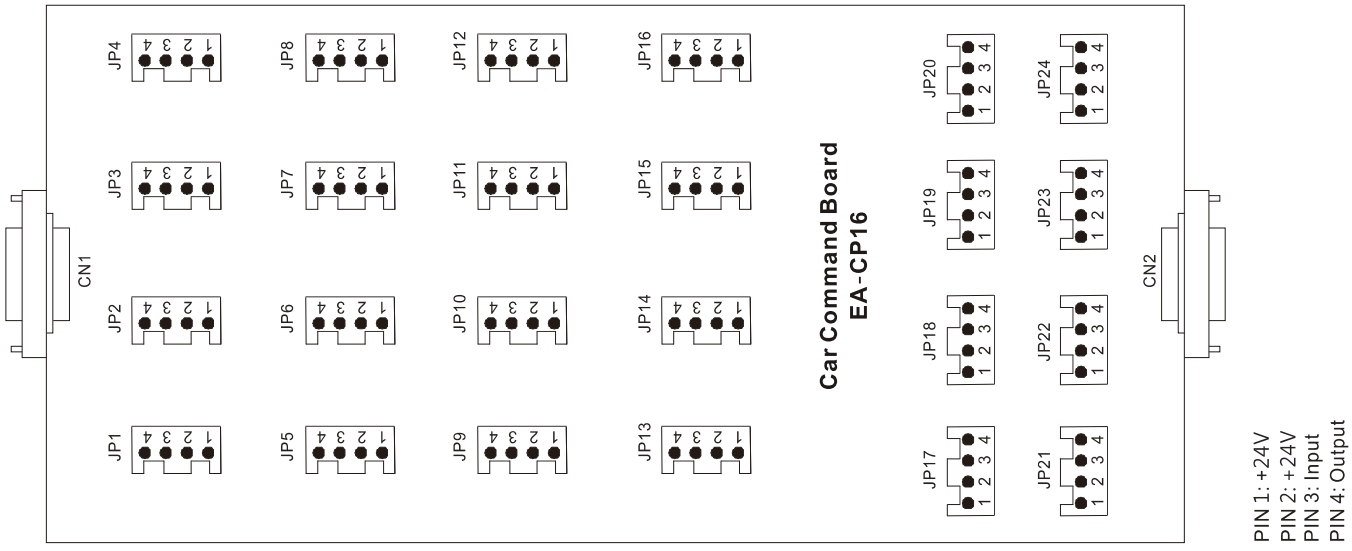
Note 1: ■ Indicates that the elevator is in automatic mode and stops at the leveling position at the bottom floor. When the door closes, LED indicator is ON.

Note 2: For details on the installation method for car command board, see Pr.03-51.

Note: For other configurations, see Pr.02-08 for details.

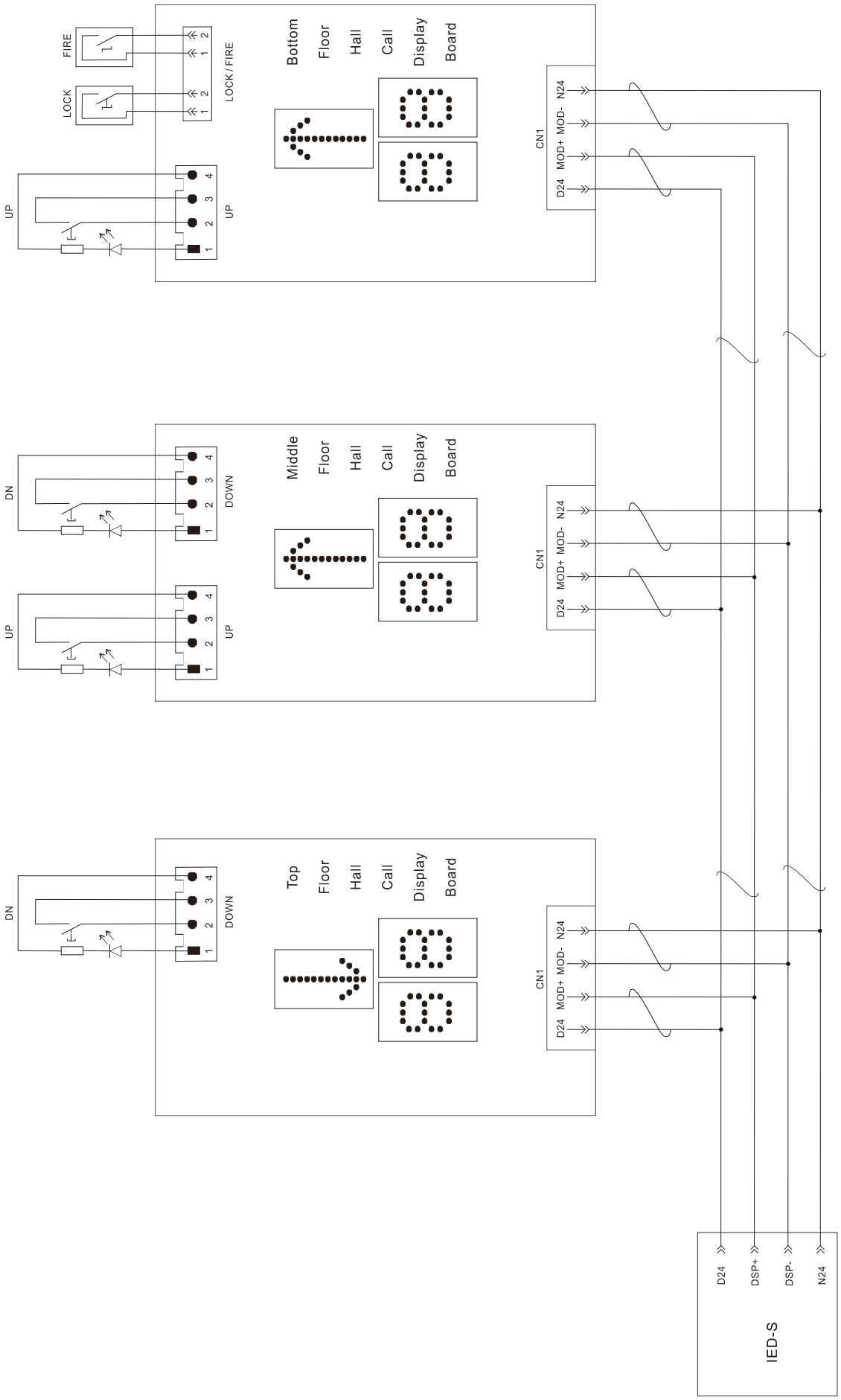
13 Maneuvering Box 1–16 Floor (ICB)





Note: For other configurations, see Pr.02-08 for details.

14-1 Hall Call System

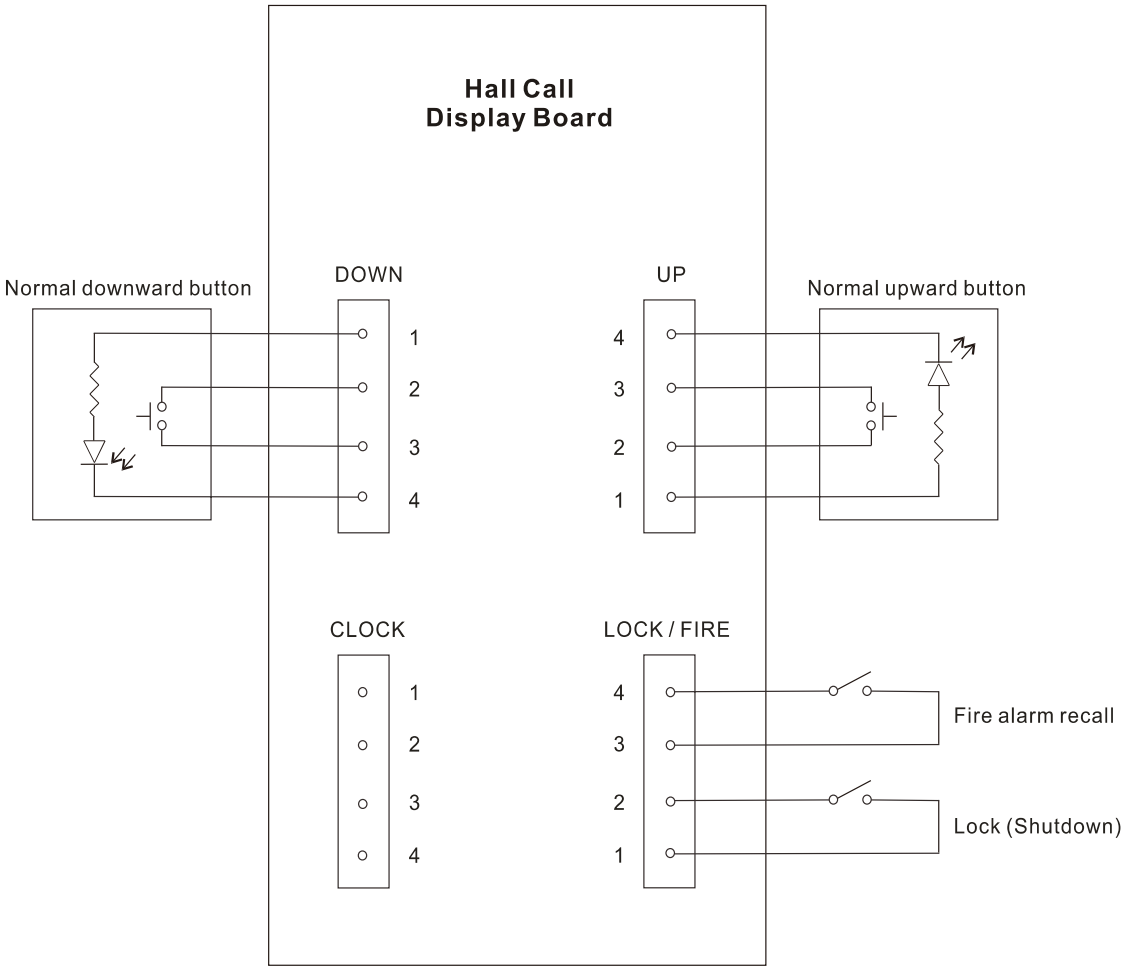


14-2 Hall Call Board Connected to **Normal Call**, **Elevator Lock (Shutdown)**, and **Fire Alarm Recall**

Hall call function settings:

1. Switch SW2 to SET to start the settings.
2. Press DOWN when the floor position displays 0. Press DOWN again to change the mode selection of the arrow position. Then, press UP to add 1 to the station number of floor position.
3. There are seven modes in total: Car (M), Front Door (F), Rear Door (B), Front Door Disability (F●), Rear Door Disability (B●), Front Door Directional Lantern & Chime (F●●), Rear Door Directional Lantern & Chime (B●●)
4. If the floor position indicator is not 0, press UP or DOWN to set the floor station number.
5. The floor station number is set according to the physical floor. For example, if the current floor is B1F to 10F, then set B1F to station number 1, 1F to station number 2, and so on.
6. If used as the floor display board for the car, set the mode to M.
7. If the current setting is 5F front door hall call, and you need to change it to 4F front door disability. In this case, you must return the floor station number to 0 first, then you can change the mode and set the floor station number.

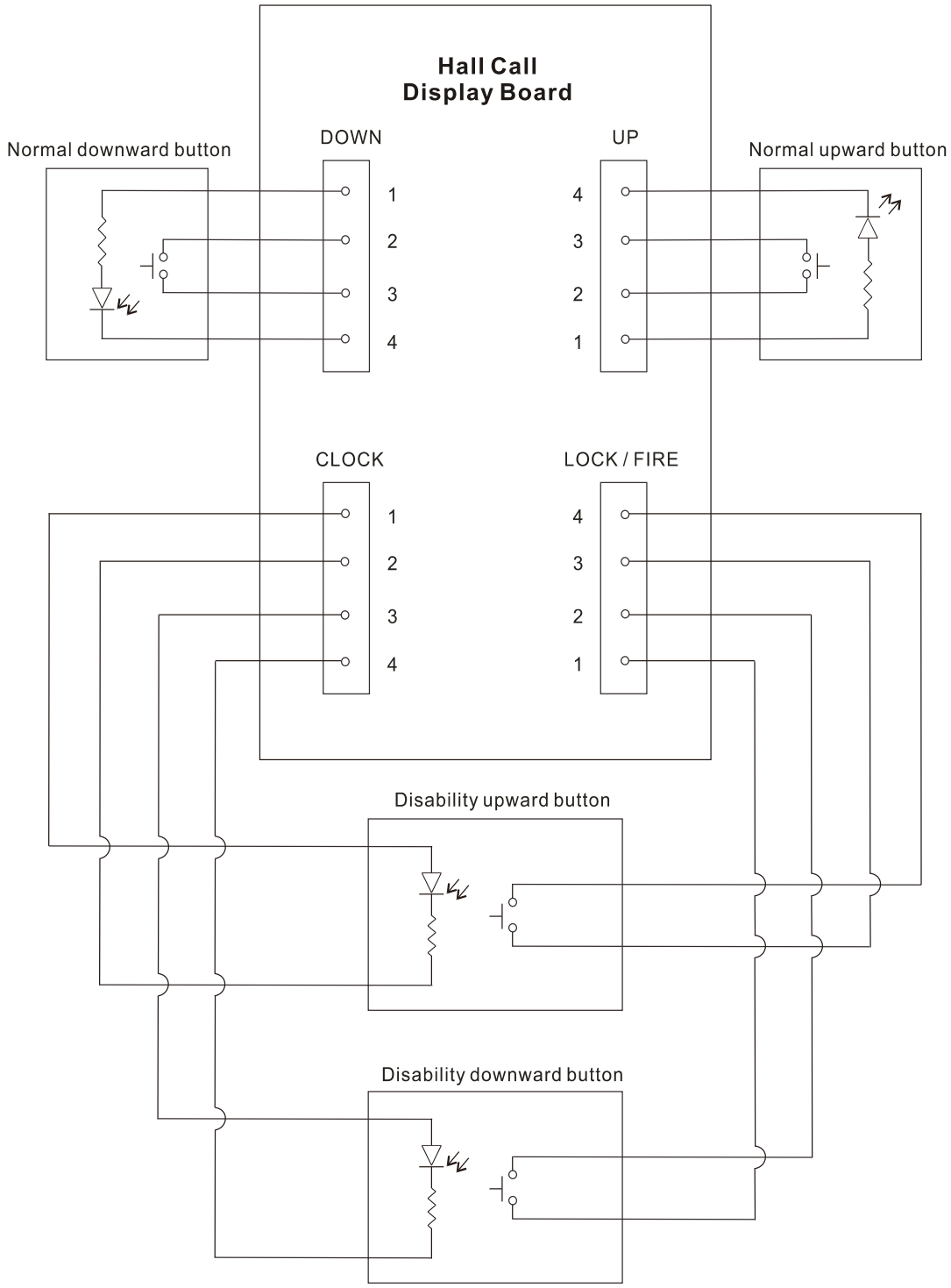
Station Number Setting F 1–64 Normal Front Door
B 1–64 Normal Rear Door



14-3 Hall Call Board Connected to **Normal Call** and **Disability Call**

Station Number Setting F● 1–64 Disability Front Door

B● 1–64 Disability Rear Door

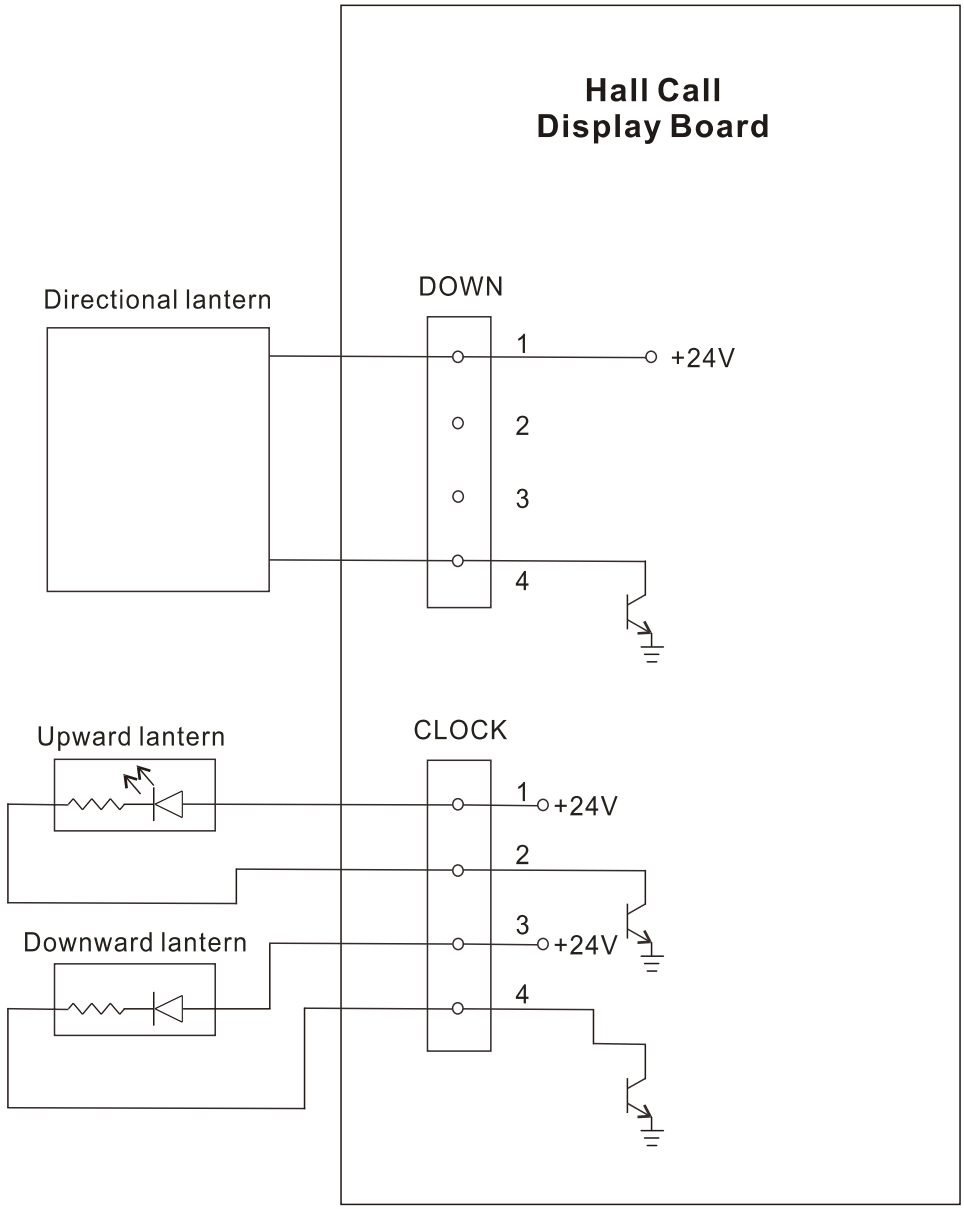


14-4 Hall Call Board Connected to **Directional Lantern** and **Directional Chime**

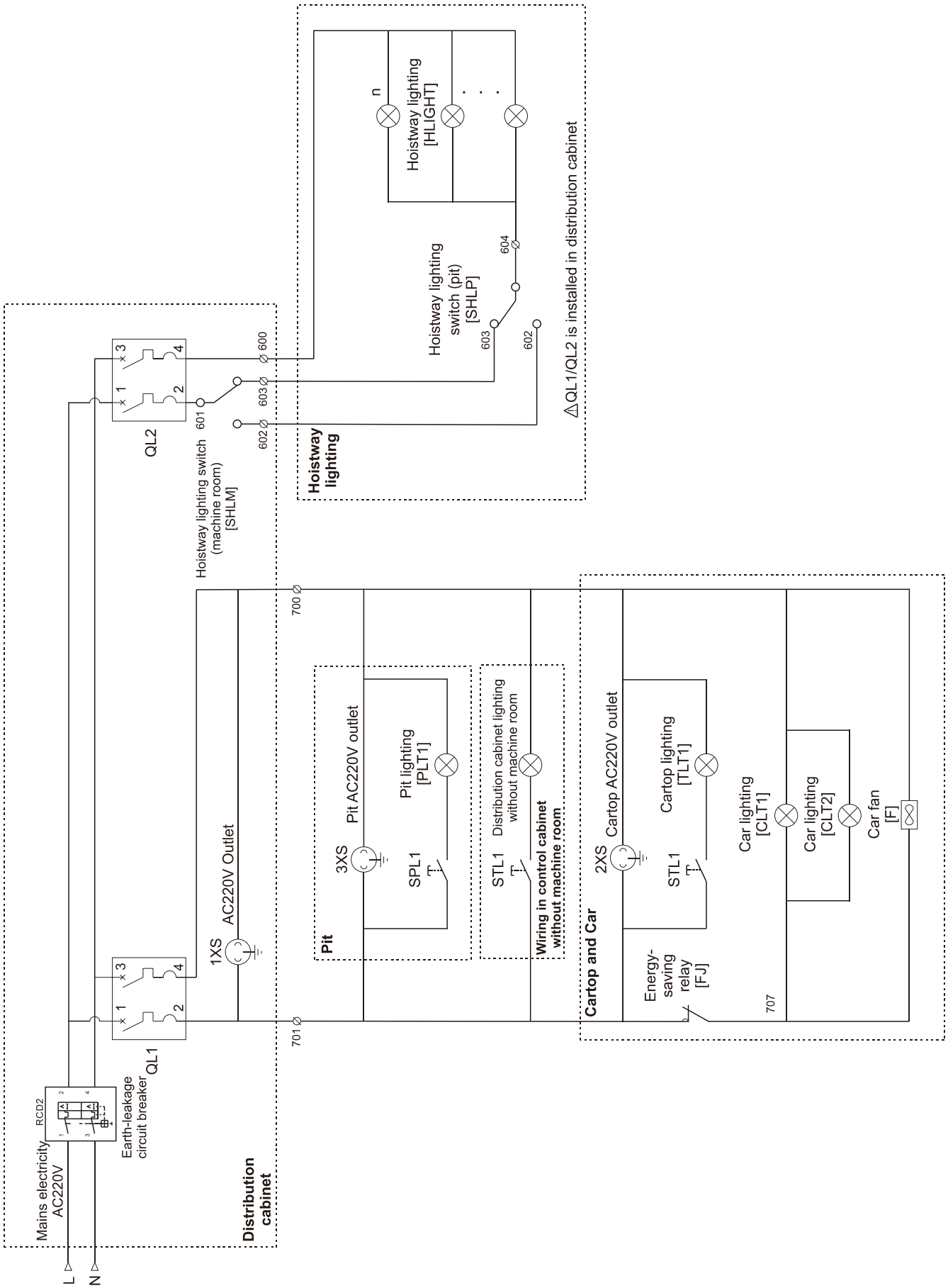
Station Number Setting F●● Front Door 1–64 Directional Lantern and Directional Chime

B●● Rear Door 1–64 Directional Lantern and Directional Chime

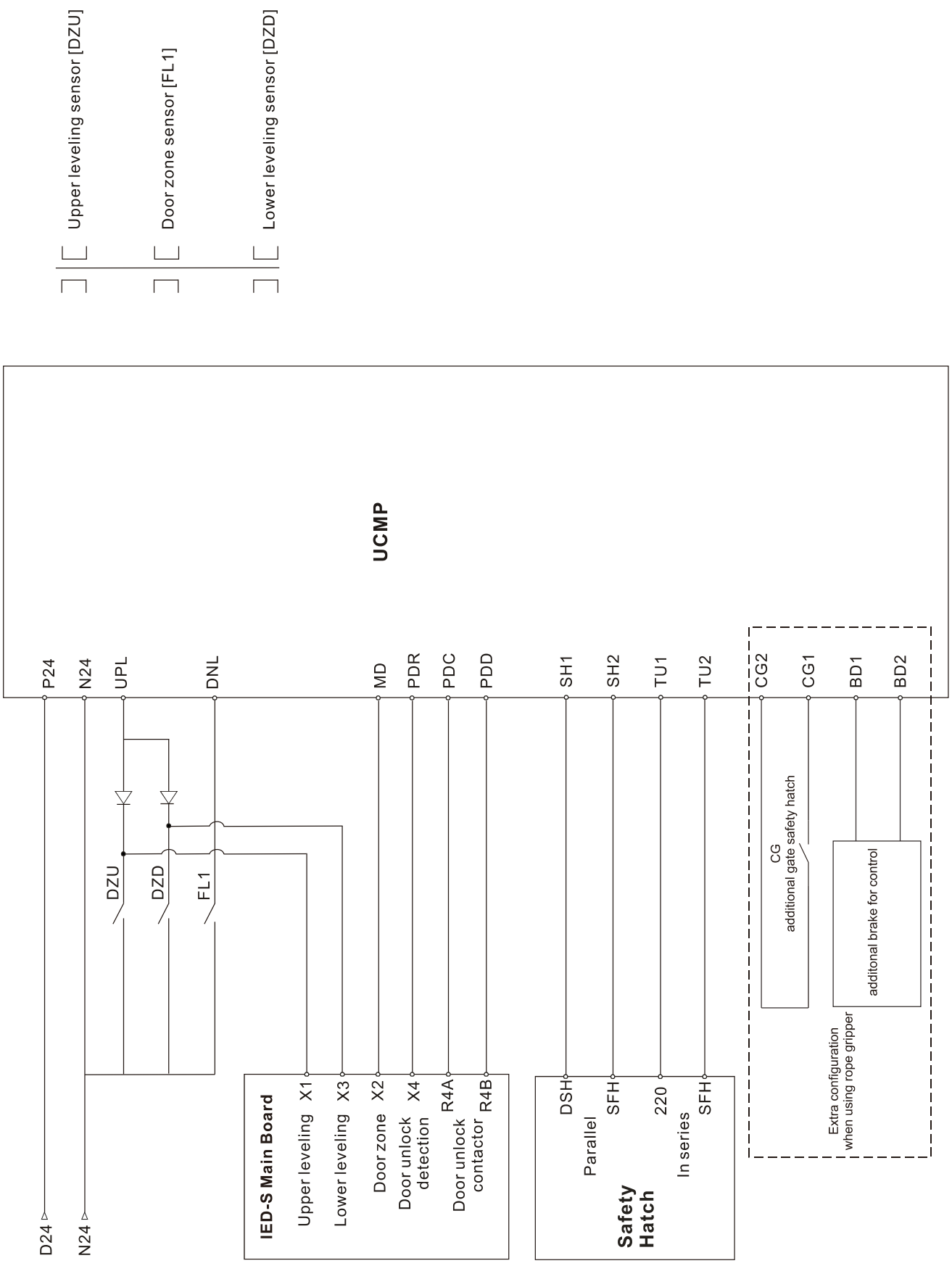
Note: The output load for the hall call board must be smaller than 250 mA. Otherwise, install an extra relay to control.



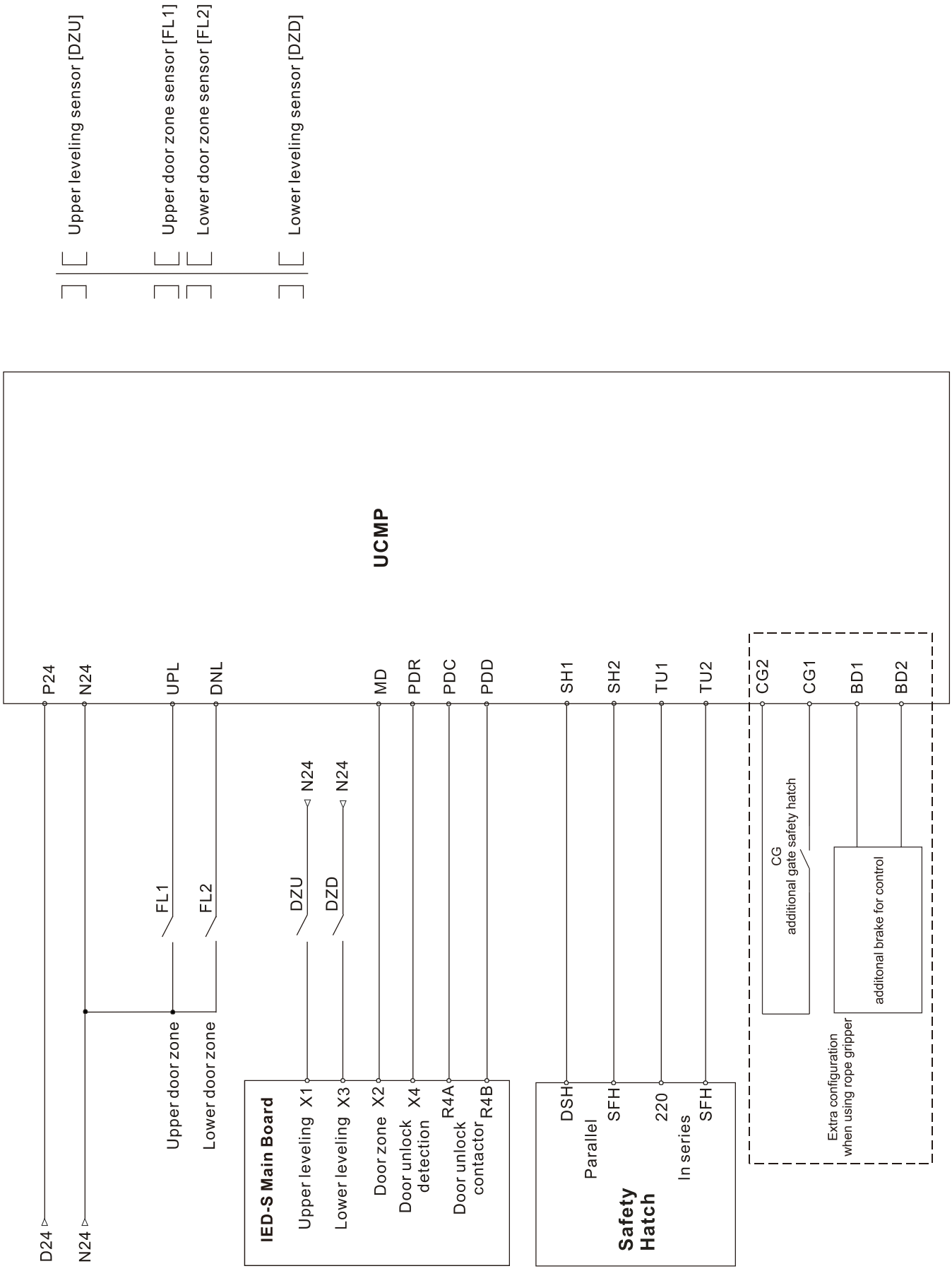
15 Lighting Circuit



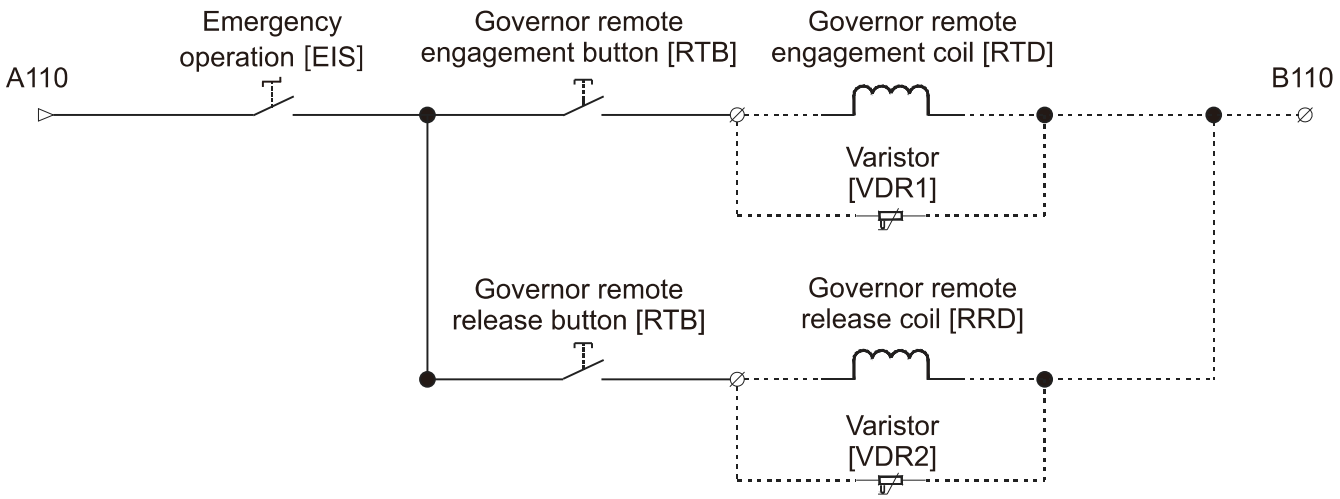
16 UCMP Board (Three Sensors: DZU, FL1, and DZD)



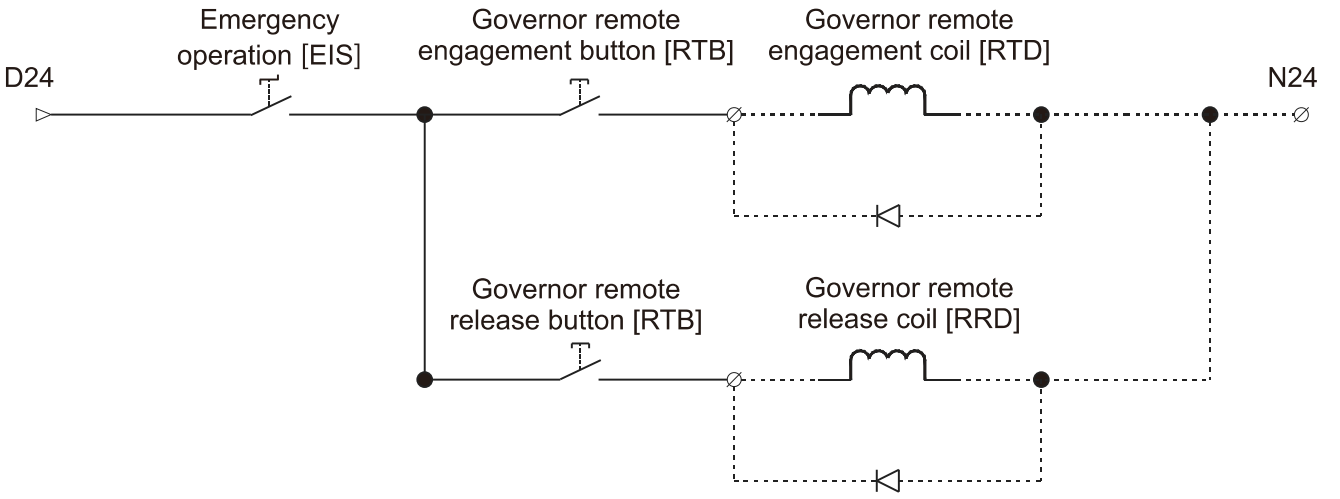
17 UCMP Board (Four Sensors: DZU, FL1, FL2, and DZD)



18 Governor Operation Circuit without Machine Room



Solution 1: Governor coil voltage is AC110V



Solution 2: Governor coil voltage is DC24V

19 Cable Table

1. Traveling Cable (for Cartop Inspection in Series)			
1	700	Car outlet, lighting, fan power	
2	701		
3	DP1	Door controller power	
4	DP2		
5	209	Safety Hatch	
6	213		
7	231	Cartop inspection switch	
8	210		
9	220	Gate safety hatch	
10	GSH		
11			
12	PE	Grounding wire	
13	D24	DC24V	
14	N24		
15	DZU	Upper leveling sensor	
16	DZD	Lower leveling sensor	
17	FL1	Upper door zone sensor	
18	CAN-	CAN bus communication between main control board of the control panel and cartop board (use shielded, twisted pair cable)	
19	CAN+		
20	+	Intercom	
21	-		
22	R		
23	L		

2. Fixed Cable (to Top Floor)		
1	206	Safety hatch, uppermost limit switch
2	207	
3	LSU	Upper limit switch
4	ULS1	First one upward forced deceleration
5	ULS2	Second one upward forced deceleration
6	N24	Negative terminal on DC24V

3. Fixed Cable (to Bottom Floor) (for Cartop Inspection in Series)		
1	207	Safety hatch, lowermost limit switch, buffer switch at car side, buffer switch at counterweight side
2	209	
3	213	Safety hatch, tensioner switch, pit emergency stop switch, pit entrance switch
4	216	
5	230	Safety hatch, pit inspection switch
6	231	
7	INSCP	Inspection from pit
8	ICPUP	Pit inspection upward
9	ICPDN	Pit inspection downward
10	LSD	Lower limit switch
11	DLS1	First one downward forced deceleration
12	DLS2	Second one downward forced deceleration
13	N24	Negative terminal on DC24V

4. Front Layer Door Safety Hatch Switch		
1	GSH	Front layer door safety hatch switch at first floor
2	223	Front layer door safety hatch switch at top floor

5. Rear Layer Door Safety Hatch Switch		
1	223	Rear layer door safety hatch switch at first floor
2	DSH	Rear layer door safety hatch switch at top floor

6. Hoistway Lighting Switch		
1	602	
2	603	

7. Hoistway Lighting		
1	600	
2	604	

8. Pit Lighting and Outlet		
1	700	
2	701	

9. Hall Call Board		
1	DSP+	RS-485 communication cable (use shielded, twisted pair cable)
2	DSP-	
3	D24	DC24V power cable
4	N24	

10. Cable between Cartop and Car		
1	221	Safety hatch, car emergency stop switch
2	223	
Car Display Board		
1	D24	DC24V power cable
2	N24	
3	MOD+	RS-485 communication cable (use shielded, twisted pair cable)
4	MOD-	
1	+	Intercom
2	-	
3	R	
4	L	
For D-type connector connection cable between cartop board and car command board.		

3-4 Code Reference Table

	Code	Description
1	HOP	Landing hall operation panel
2	HCB	Hall call (landing hall call) circuit board
3	COP	Car operation panel
4	ICB	Car command board
5	OCB	Cartop board
6	SW	Contactor between the drive and motor (operation contactor)
7	SWA	Relay that controls the Safe Torque Off (STO) of the drive
8	BR	Brake resistor
9	TR1	Transformer that changes from ACXXXV to AC110V, used for control
10	RCD1	Earth-leakage circuit breaker for power control
11	QM	Breaker for the main three-phase power, usually the NFB (No Fuse Breaker)
12	FU1	Breaker for the single-phase for control, usually the NFB (No Fuse Breaker)
13	DZU	Upper leveling sensor
14	DZD	Lower leveling sensor
15	FL1	Upper door zone sensor
16	FL2	Lower door zone sensor
17	FL1NC	Contact B of the safe relay for the upper door zone sensor (FL1)
18	FL2NC	Contact B of the safe relay for the lower door zone sensor (FL2)
19	INSCP	Inspection signal of the control panel
20	ICPUP	Upward inspection signal of the control panel
21	ICPDN	Downward inspection signal of the control panel
22	MATPT	Inspection from pit
23	EIS	Emergency operation
24	UDB	Emergency upward operation button
25	DDB	Emergency downward operation button
26	RESET	External reset device
27	SFH	Safety hatch high voltage
28	SFL	Safety hatch low voltage
29	SFNC	N. C. (Normally Closed) contact of safety (SF) hatch contactor
30	GSH	Gate safety hatch high voltage
31	GSL	Gate safety hatch low voltage
32	GSNC	N. C. (Normally Closed) contact of gate safety (GS) hatch contactor
33	DSH	Layer door safety hatch high voltage
34	DSL	Layer door safety hatch low voltage

	Code	Description
35	DSNC	N. C. (Normally Closed) contact of layer door safety (DS) hatch contactor
36	TCIN	Traveling cable insertion
37	SWNC	N.C. contact of operation contactor (SW)
38	BY1NC	N.C. contact of Brake-1 contactor (BY1)
39	BY2NC	N.C. contact of Brake-2 contactor (BY2)
40	BY3NC	N.C. contact of Brake-3 contactor (BY3)
41	BK1	Brake-1 travel switch
42	BK2	Brake-2 travel switch
43	BK3	Brake-3 travel switch
44	LSU	Upper limit switch
45	LSD	Lower limit switch
46	ULS1	First one upward forced deceleration
47	ULS2	Second one upward forced deceleration
48	ULS3	Third one upward forced deceleration
49	DLS1	First one downward forced deceleration
50	DLS2	Second one downward forced deceleration
51	DLS3	Third one downward forced deceleration
52	IUS	Inspection uppermost limit switch
53	IDS	Inspection lowermost limit switch
54	PARK	Elevator lock
55	FIRM	Main landing recall at fire emergency
56	FIRS	Secondary landing recall at fire emergency
57	FIRS1	Fireman class I
58	FIRS2	Fireman class II
59	FLOOD	Not auto-reset at flood
60	FLOODA	Auto-reset at flood
61	MTS	Motor temperature overheat
62	ERP	Seismic P-wave (minor earthquake)
63	ERS	Seismic S-wave (small earthquake)
64	ERH	Severe earthquake
65	EPS	Emergency Power Supply
66	GOV	Governor
67	DBP	Doorlock bypass
68	BUNC	N.C. contact of drive’s brake unit (BU) contactor
69	IBRTS	Drive’s discharge resistance temperature switch
70	UPK	Upward peak running
71	DPK	Downward peak running
72	SX1	Door zone signal

	Code	Description
73	SX2	Door unlock output feedback
74	FXNO	N.O. contact of MPSCC (Motor Phase Short Circuit Contactor) for PM
75	OLT1	Front door reaches its open position
76	OLT2	Rear door reaches its open position
77	CLT1	Front door reaches its closed position
78	CLT2	Rear door reaches its closed position
79	EDP1	Front door light sensor
80	EDP2	Rear door light sensor
81	SE1	Front door safety edge
82	SE2	Rear door safety edge
83	100KG	Light-duty switch (100 kg)
84	LWX	Full-load switch (85%)
85	LWO	Overload switch (100%)
86	150%	Forklift overload switch (150%)
87	TCI	Cartop inspection switch
88	TCIU	Cartop inspection upward
89	TCID	Cartop inspection downward
90	HFD	With front door
91	HBD	With rear door
92	DTS1	Front door motor temperature switch
93	DTS2	Rear door motor temperature switch
94	TOEX1	Front door over-torque
95	TOEX2	Rear door over-torque
96	DOBOC1	Cartop inspection front door open button
97	DOBOC2	Cartop inspection rear door open button
98	DCBOC1	Cartop inspection front door close button
99	DCBOC2	Cartop inspection rear door close button
100	DCB1	Door close button (front door)
101	DOB1	Door open button (front door)
102	DOBH1	Door open extended button (front door)
103	INSIC	Car inspection switch
104	IICUP	Car inspection upward and attendant direction change
105	IICDN	Car inspection downward and attendant direct landing
106	CARD	Card reader
107	CFNLT	Car fan and lighting control switch
108	ESS	Stop at each floor
109	FUP	Manual upward fine-tune button
110	FDN	Manual downward fine-tune button

	Code	Description
111	ISS	Independent operation switch
112	IND	Goods only switch
113	ATS	Attendant mode
114	VIP	VIP mode
115	CLIS	Car lighting switch
116	FS	Car fan switch
117	DCB2	Door close button (rear door)
118	DOB2	Door open button (rear door)
119	DOBH2	Door open extended button (rear door)
120	ERGO	Safety landing while severe earthquake
121	PK	Peak running at random floor
122	REPK	Remove peak running
123	PASSWORD	Execute password car call while LED lights
124	PASSSET	Execute password setting while LED lights
125	BY1	Brake-1 contactor
126	BY2	Brake-2 contactor
127	BY3	Brake-2 contactor
128	BY4	Brake contactor for full voltage
129	FX	Motor Phase Short Circuit Contactor (PM)
130	BU	Contactor of drive’s brake unit
131	MFN	Contactor of main fan
132	YUPS	UPS stops output
133	PRST	Earthquake reset
134	NOR	Normal running
135	ERR	Error output
136	FIRLD	Main landing at fire emergency
137	RG	Rope gripper
138	SY	Door unlock output
139	OP1	Front door opens
140	OP2	Rear door opens
141	CL1	Front door closes
142	CL2	Rear door closes
143	BZ	Buzzer
144	BPSL	Doorlock bypass lighting alarm
145	UDCL	Car bottom light
146	F	Car fan
147	CLI	Car lighting
148	LPT	Floor arrival clock
149	LPTU	Upward floor arrival clock

	Code	Description
150	LPTD	Downward floor arrival clock
151	FCL1	Front door forced close at low speed
152	FCL2	Rear door forced close at low speed
153	S2XX0	Voice announces the floor arrives
154	S2XX1	Voice announces the floor arrives
155	S2XX2	Voice announces the floor arrives
156	S2XX3	Voice announces the floor arrives
157	S2XX4	Voice announces the floor arrives
158	S2XX5	Voice announces the floor arrives
159	SPK	Voice announcement
160	SOP	Voice announces the elevator is opening the door
161	SCL	Voice announces the elevator is closing the door
162	SUP	Voice announces the elevator is moving upward
163	SDN	Voice announces the elevator is moving downward
164	SOLD	Voice announces the elevator is overloading
165	SSEV	Voice announces the elevator is in emergency medical use
166	SCON	Voice shutdown and is in control operation
167	SFIR	Voice is in fire alarm
168	SER	Voice is under earthquake
169	SFLOOD	Voice is at flood
170	SUPS	Voice is lack of power
171	SERR	Voice elevator is in failure
172	SPACE	Voice blank
173	DCBL1	Door close button lamp (front door)
174	DOBL1	Door open button lamp (front door)
175	DOBHL1	Door open extended button lamp (rear door)
176	FULL	Full-load output
177	OLD	Overload output
178	CLBZ	Door closing pre-warning buzzer
179	DCBL2	Door close button lamp (rear door)
180	DOBL2	Door open button lamp (rear door)
181	DOBHL2	Door open extended button lamp (rear door)

Chapter 4 Main Circuit Terminals

CAUTION

Main input power terminals

- ☑ Do NOT connect a three-phase model to single-phase power. R/L1, S/L2 and T/L3 have no phase-sequence requirement and can be connected in any sequence.
- ☑ You must install a NFB between the three-phase power input terminals and the main circuit terminals (R/L1, S/L2, T/L3). Add a magnetic contactor (MC) to the power input wiring to cut off power quickly and reduce malfunctions when the AC motor drive protection function activates. Both ends of the MC should have an R-C surge absorber.
- ☑ Tighten the screws in the main circuit terminal to prevent sparks caused by screws loosened due to vibration.
- ☑ Use voltage and current within the specifications in Chapter 08.
- ☑ When using a general ELB (Earth Leakage Breaker), select a current sensor with sensitivity of 200 mA or above and not less than 0.1 second operation time to avoid nuisance tripping. When choosing an ELB designed for the AC motor drive, choose a current sensor with sensitivity of 30 mA or above.
- ☑ Use shielded wire or conduit for the power wiring and ground the two ends of the shielding or conduit.
- ☑ Do NOT run and stop the AC motor drives by turning the power ON and OFF. Run and stop the AC motor drives by sending the RUN and STOP commands through the keypad or the control terminals FWD and REV. If you still need to run and stop the AC motor drives by turning the power ON and OFF, do so no more often than ONCE per hour.

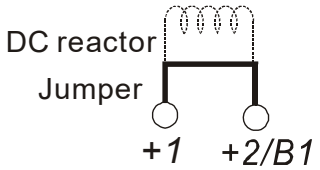
Output terminals of the main circuit

- ☑ When it is necessary to install a filter at the output side of the AC motor drive terminals U/T1, V/T2, W/T3, use an inductance filter. Do not use phase-compensation capacitors or L-C (Inductance-Capacitance) or R-C (Resistance-Capacitance) capacitors.
- ☑ Do NOT connect phase-compensation capacitors or surge absorbers at the output terminals of AC motor drives.
- ☑ Use well-insulated motors to prevent any electric leakage from the motors.

Use terminals [+1, +2] for connecting a DC reactor.

Use terminals [+1, +2/B1] for connecting a DC bus.

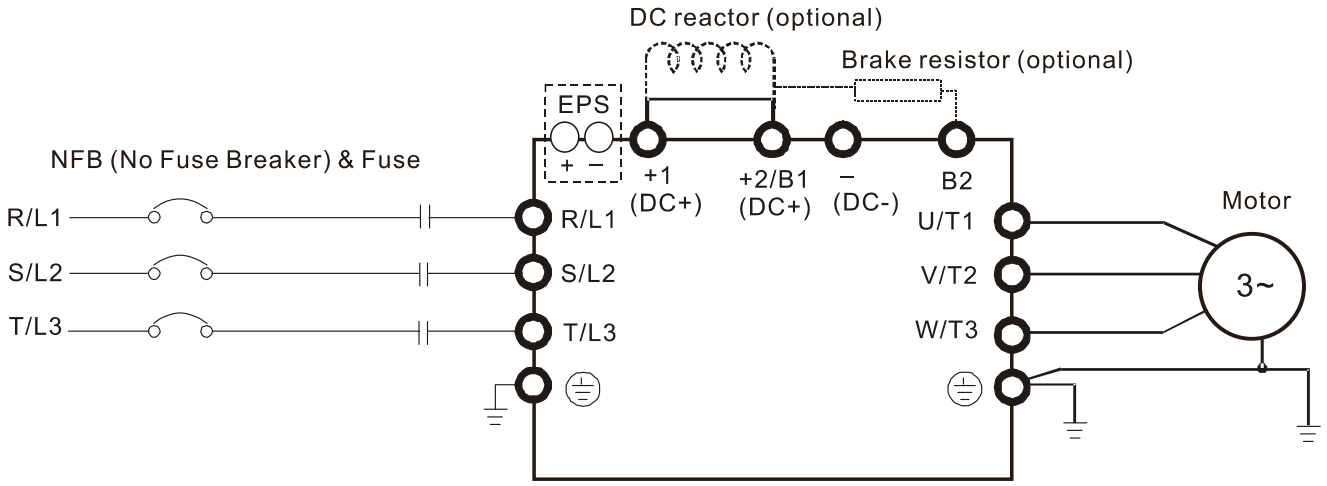
- ☑ Use these terminals to connect a DC reactor to improve the power factor and reduce harmonics. A jumper is connected to these terminals at the factory. Remove that jumper before connecting to a DC reactor.



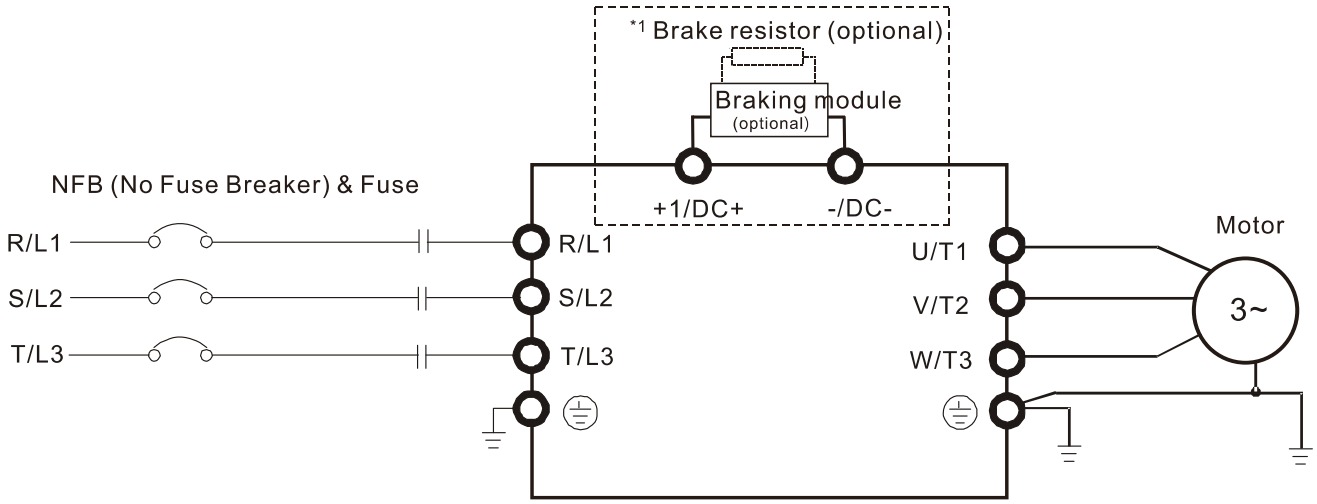
- ☑ Models above 22 kW do not have a built-in brake resistor. To improve resistance braking, connect an optional external brake resistor.
- ☑ When not in use, leave terminals +2/B1, (-) open.
- ☑ Short-circuiting [B2] or [-] to [+2/B1] damages the motor drive. Do NOT short-circuit those terminals.

4-1 Main Circuit Diagram

Frame C and D



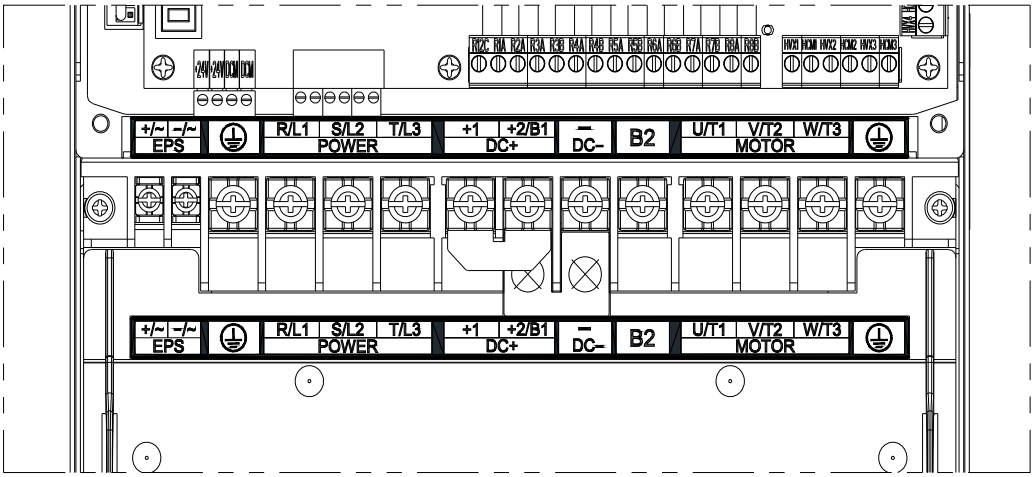
Frame E



Terminal Symbol	Description
EPS (+, -)	Emergency power or backup power connection terminal NOTE: EPS (Emergency Power Supply) input terminal supports only frames C & D.
R/L1, S/L2, T/L3	Commercial power input terminal
U/T1, V/T2, W/T3	AC motor drive output terminals for connection a three-phase induction motor.
+1, +2/B1	Connections for DC reactor to improve the power factor. Remove the jumper before installing a DC reactor. Frame E has a built-in DC reactor.
+2/B1, B2	Connections for brake resistor (optional).
⏚	Ground connection; comply with local regulations.

4-2 Main Circuit Terminal Specifications

Frame C



Frame C						
Model	Main circuit terminals: R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, +1, +2/B1, -, B2			Ground terminal: ⏚		
	Max. Wire Gauge	Min. Wire Gauge	Screw Size and Tightening Torque (±10%)	Max. Wire Gauge	Min. Wire Gauge	Screw Size and Tightening Torque (±10%)
IED022S21A	16 mm² [6 AWG]	10 mm² [8 AWG]	M5 30 kg-cm (26 lb-in.) (2.9 Nm)	16 mm² [6 AWG]	10 mm² [8 AWG]	M5 30 kg-cm (26 lb-in.) (2.9 Nm)
IED037S21A						
IED055S23A						
IED075S23A						
IED110S23A		16 mm² [6 AWG]			16 mm² [6 AWG]	
IED055S43A		4 mm² [12 AWG]			4 mm² [12 AWG]	
IED075S43A		6 mm² [10 AWG]			6 mm² [10 AWG]	
IED110S43A		10 mm² [8 AWG]			10 mm² [8 AWG]	
IED150S43A						
IED185S43A		16 mm² [6 AWG]			16 mm² [6 AWG]	

NOTE

1. Select copper wires with rated voltage of 600 V and temperature resistance of 75°C or 90°C for wiring.
2. For IED110S23A, use copper wires with rated voltage of 600 V and temperature resistance of 90°C or above.
3. For UL installation compliance, use copper wires when installing. The wire gauge is based on a temperature resistance of 75 °C, in accordance with UL requirements and recommendations. Do not reduce the wire gauge when using high-temperature resistant wires.
4. Use specified ring lug for terminal wiring. See Figure 1 and Figure 2 for ring lug specifications. For other types of wiring, use the wires that comply with local regulations.
5. After crimping the wire to the ring lug (must be UL and CSA approved R/C (YDPU2)), then install heat shrink tubing rated at a minimum of 600 V_{AC} insulation over the live part (see Figure 2).

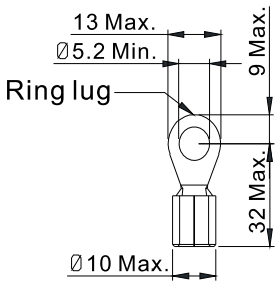


Figure 1

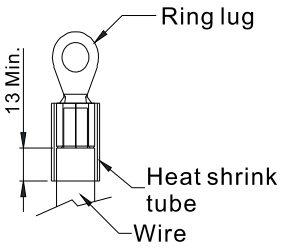
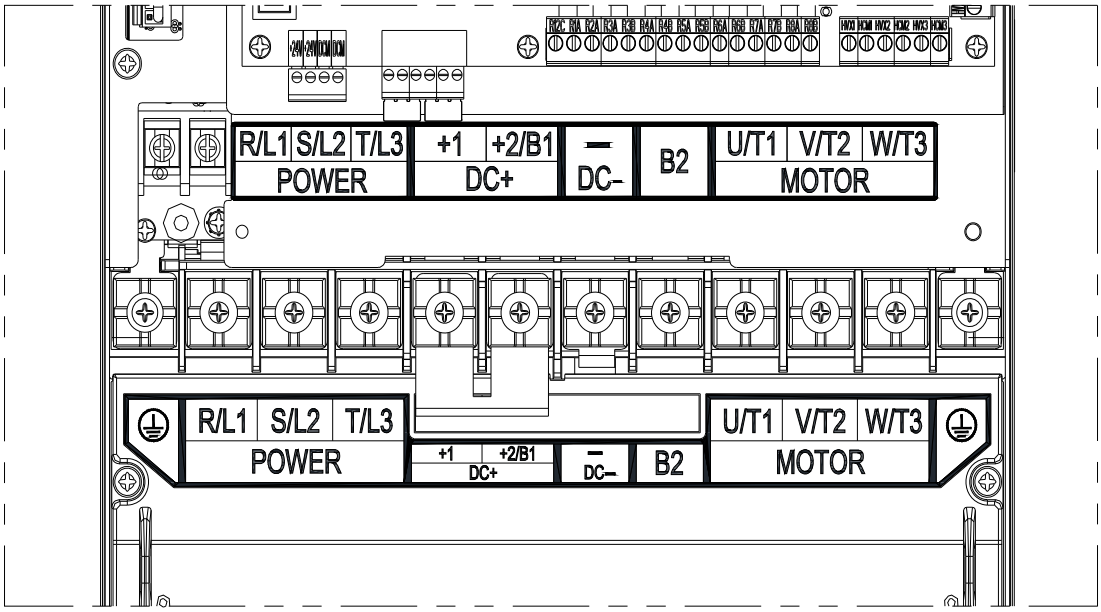


Figure 2

Frame D



Frame D						
Model	Main circuit terminals: R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, +1, +2/B1, -, B2			Ground terminal: ⏚		
	Max. Wire Gauge	Min. Wire Gauge	Screw Size and Tightening Torque (±10%)	Max. Wire Gauge	Min. Wire Gauge	Screw Size and Tightening Torque (±10%)
IED150S23A	36 mm² [2 AWG]	25 mm² [4 AWG]	M6 50 kg-cm (43.4 lb-in.) (4.9 Nm)	36 mm² [2 AWG]	16 mm² [6 AWG]	M6 50 kg-cm (43.4 lb-in.) (4.9 Nm)
IED185S23A		36 mm² [2 AWG]			16 mm² [6 AWG]	
IED220S23A						
IED220S43A		25 mm² [4 AWG]			16 mm² [6 AWG]	
IED300S43A						

NOTE

1. Select copper wires with rated voltage of 600 V and temperature resistance of 75°C or 90°C for wiring.
2. For IED220S23A, use copper wires with rated voltage of 600 V and temperature resistance of 90°C or above.
3. For UL installation compliance, use copper wires when installing. The wire gauge is based on a temperature resistance of 75 °C, in accordance with UL requirements and recommendations. Do not reduce the wire gauge when using high-temperature resistant wires.
4. Use specified ring lug for terminal wiring. See Figure 1 and Figure 2 for ring lug specifications. For other types of wiring, use the wires that comply with local regulations.
5. After crimping the wire to the ring lug (must be UL and CSA approved R/C (YDPU2)), then install heat shrink tubing rated at a minimum of 600 V_{AC} insulation over the live part (see Figure 2).

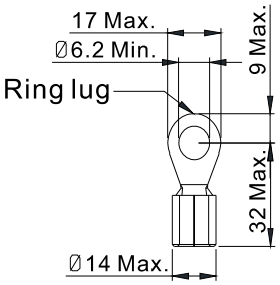


Figure 1

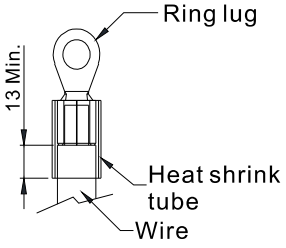
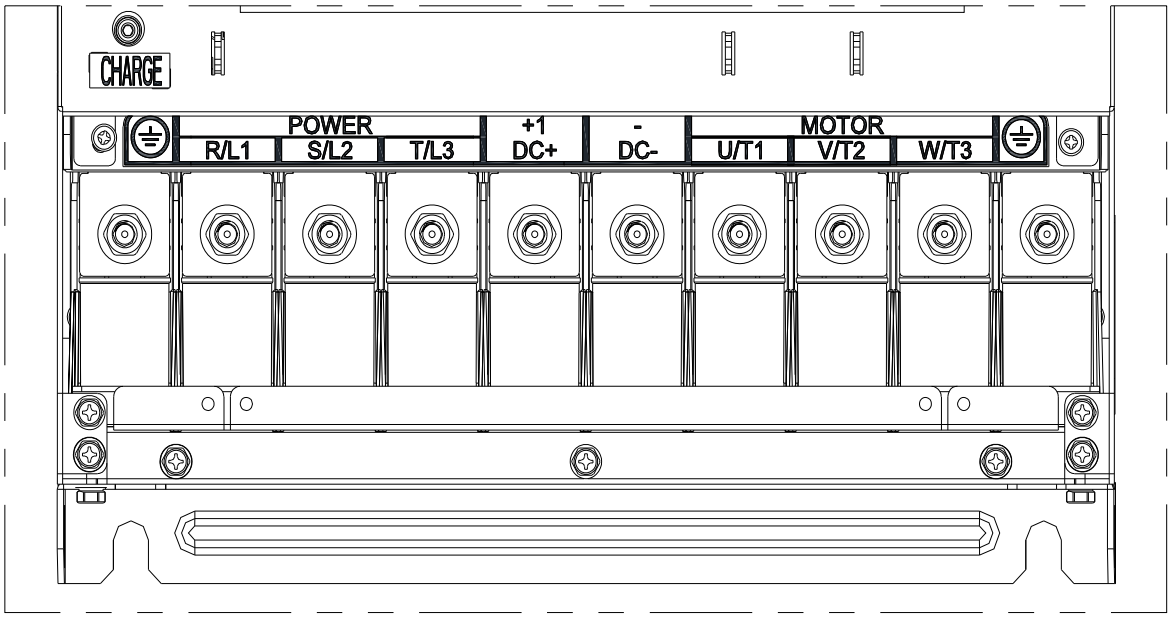


Figure 2

Frame E



Frame E						
Model	Main circuit terminals: R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, +1(DC+), -(DC-)			Ground terminal: ⏚		
	Max. Wire Gauge	Min. Wire Gauge	Screw Size and Tightening Torque (±10%)	Max. Wire Gauge	Min. Wire Gauge	Screw Size and Tightening Torque (±10%)
IED370S43A	150 mm² [300 MCM]	36 mm² [2 AWG]	M8 200 kg-cm (173 lb-in.) (19.6 Nm)	150 mm² [300 MCM]	25 mm² [4 AWG]	M8 200 kg-cm (173 lb-in.) (19.6 Nm)
IED450S43A		50 mm² [1/0 AWG]			25 mm² [4 AWG]	
IED550S43A		95 mm² [3/0 AWG]			50 mm² [1/0 AWG]	
IED750S43A		120 mm² [250 AWG]			95 mm² [3/0 AWG]	

NOTE

1. Select copper wires with rated voltage of 600 V and temperature resistance of 75°C or 90°C for wiring.
2. For UL installation compliance, use copper wires when installing. The wire gauge is based on a temperature resistance of 75 °C, in accordance with UL requirements and recommendations. Do not reduce the wire gauge when using high-temperature resistant wires.
3. Use specified ring lug for terminal wiring. See Figure 1 and Figure 2 for ring lug specifications. For other types of wiring, use the wires that comply with local regulations.
4. After crimping the wire to the ring lug (must be UL and CSA approved R/C (YDPU2)), then install heat shrink tubing rated at a minimum of 600 V_{AC} insulation over the live part (see Figure 2).

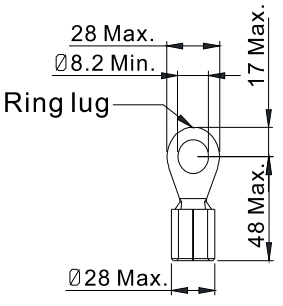


Figure 1

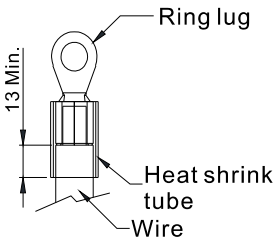
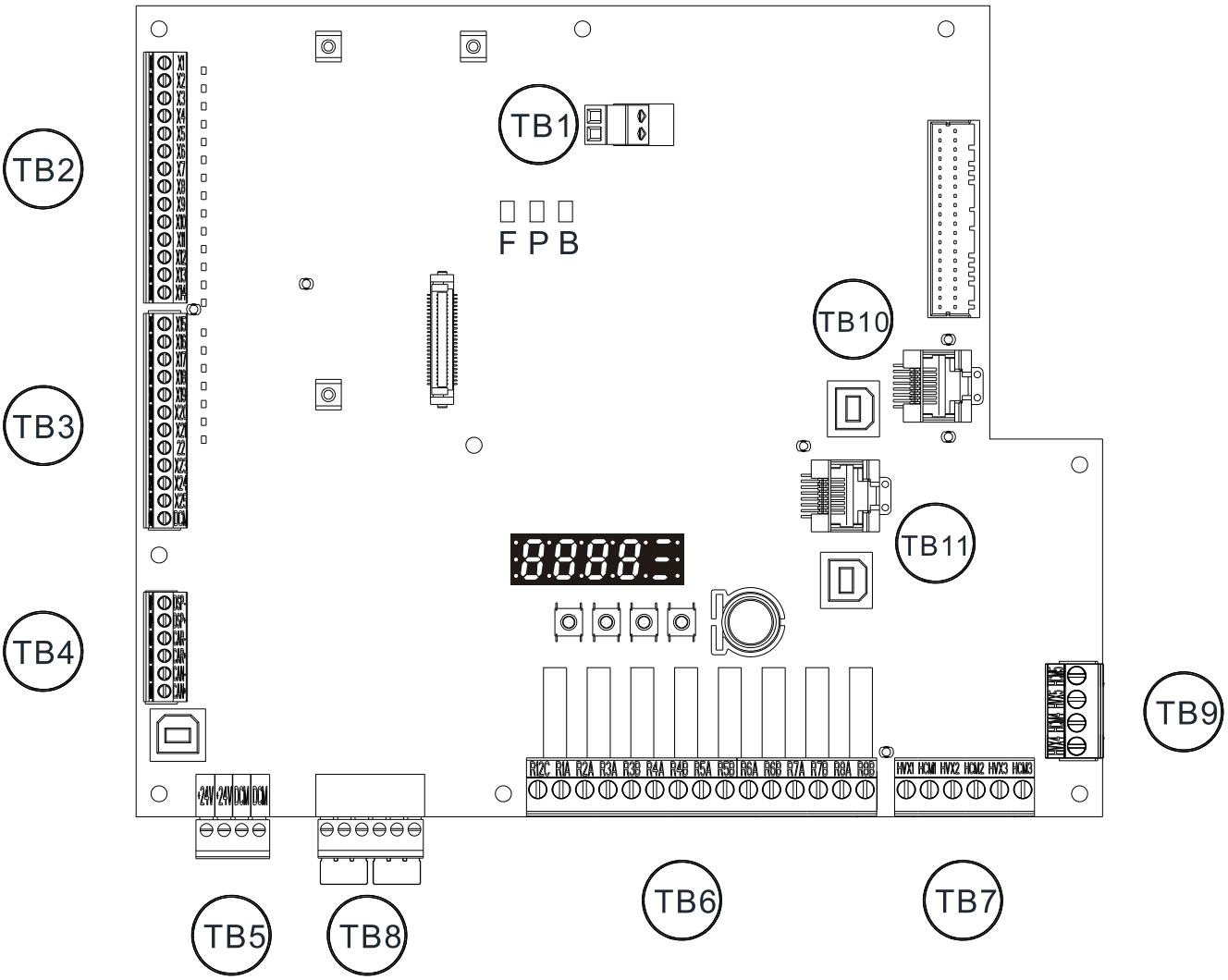


Figure 2

Chapter 5 Control Terminals

5-1 Control Terminal Specifications

5-1 Control Terminal Specifications



5-1-1 Control Circuit Terminals

Terminal Socket	Wire Gauge	Torque
TB1/TB2/TB3/ TB4/TB5/TB8	0.13–1.5 mm² [26–16 AWG]	2 kg-cm [1.74 lb-in.] (0.20 Nm)
TB6/TB7/TB9	0.13–2.5 mm² [26–14 AWG]	4.9 kg-cm [4.25 lb-in.] (0.50 Nm)

For UL installation compliance, use copper wires with rated voltage of 600 V and temperature resistance of 75°C or 90°C for wiring.

Wiring precautions:

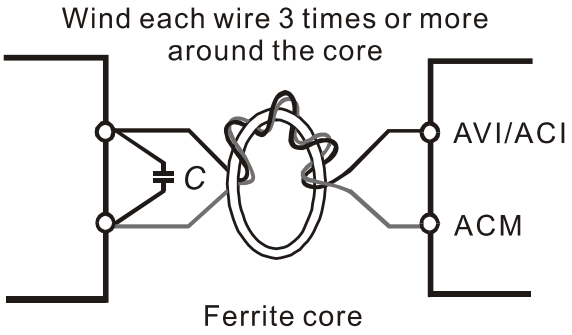
☑ Arrange the wires to go through the wiring holes and tighten them with a slotted screwdriver. The ideal length of wire reserved at the connection side is 5 mm. Use wires without terminal block and ensure the wires are perfectly arranged to go through the wiring holes.

☑ Slotted screwdriver specification: 3.5 mm width and 0.6 mm thickness

Analog Input Terminals (AI, ACM)

☑ Analog input signals are easily affected by external noise. Use shielded wiring and keep it as short as possible (less than 20 m) with proper grounding. If the noise is inductive, connecting the shield to the ACM terminal can reduce interference.

☑ Use twisted-pair wire for weak analog signals. If the analog input signals are affected by noise from the AC motor drive, connect a capacitor and a ferrite core as shown in the figure below.



Contact Input Terminals

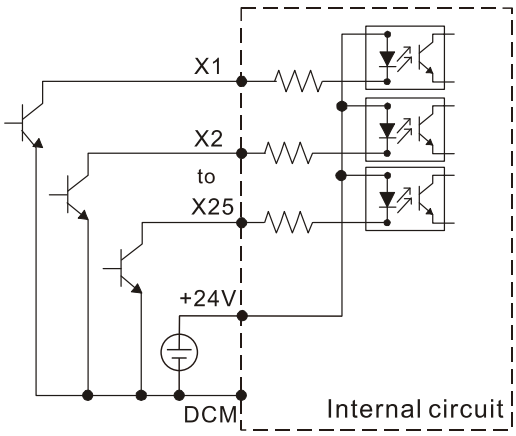
☑ When using contacts or switches to control the input terminals, use high quality components to prevent contact bounce.

Output Terminals

☑ Connect the digital outputs to the correct polarity.

☑ When connecting a relay to the digital outputs, connect a surge absorber across the coil and check the polarity.

5-1-2 Control Terminal Wiring Definition

Terminal Socket	Terminal	Default Setting	Description
TB2	X1	Upper leveling switch [DZU]	User-defined function Non-isolated photocoupler input Voltage > 19 V_{DC} when terminal is guaranteed to be activated (ON); Voltage < 19 V_{DC} when terminal is guaranteed to be deactivated (OFF).  External power DC24V connects to IED-S through TB5 terminal socket
	X2	Door zone signal [SX1]	
	X3	Lower leveling switch [DZD]	
	X4	Emergency upward operation [UDB]	
	X5	Emergency downward operation [DDB]	
	X6	Brake-1 contactor detection [BY1NC]	
	X7	Brake-1 contactor detection [BY2NC]	
	X8	Door unlock detection [SX2]	
	X9	Inspection [INSCP]	
	X10	Inspection upward [ICPUP]	
	X11	Inspection downward [ICPDN]	
	X12	Upper limit switch [LSU]	
	X13	Lower limit switch [LSD]	
	X14	First one upward forced deceleration [ULS1]	
TB3	X15	First one downward forced deceleration [DLS1]	
	X16	Second one upward forced deceleration [ULS2]	
	X17	Second one downward forced deceleration [DLS2]	
	X18	Brake-1 travel switch [BK]1	
	X19	Brake-2 travel switch [BK2]	
	X20	Doorlock bypass [DBP]	
	X21	Inspection from pit [MTAPT]	
	X22	Fireman class II [FIRS2]	
	X23	Traveling cable insertion [TCIN]	
	X24	Motor temperature overheat switch [MTS]	
	X25	Operation contactor detector [SWNC]	
	DCM	Digital signal common terminal	Common terminal for digital control signal (0 V)
TB4	DSP-	RS-485 communication port	Hall call communication
	DSP+		
	CAR-	CAN bus communication port	Group control communication
	CAR+		
	CAN-	CAN bus communication port	Car communication
	CAN+		

Terminal Socket	Terminal	Default Setting	Description
TB5	+24V	External power input +24 V_{DC}	24 V, 800 mA
	+24V		
	DCM	External power input 0 V	
	DCM		
TB8	STO (Safe Torque Off)		Power cut-off safety function EN954-1 and IEC/EN61508
TB1	AI	Analog voltage input port	Range: -10–10 V_{DC} User-defined function
	ACM	Analog control signal common terminal	Common terminal for analog control signal
TB6	R12C	Common terminal for R1A and R2A contactors	Multi-function relay output port: (1) User-defined function (2) Resistive load 5A / 4A 250 V_{AC} / 30 V_{DC} (3) Inductive load (COS 0.4) 3A / 2A 250 V_{AC} / 30 V_{DC}
	R1A	Operation contactor [SW]	
	R2A	Brake-1 contactor [BY1]	
	R3A	Brake-2 contactor [BY2]	
	R3B		
	R4A	Main landing at fire emergency [FIRLD]	
	R4B		
	R5A	Brake contactor for full voltage [BY4]	
	R5B		
	R6A	Master fan [MFN]	
	R6B		
	R7A	Rope gripper contactor [RG]	
	R7B		
	R8A	Door unlock contactor [SY]	
	R8B		
TB7	HVX1	Safety hatch [SFH]	User-defined function Isolated photocouper input Input impedance: 20kΩ Rated: 110 V_{AC} / 5.5 mA or 110 V_{DC} / 5.5 mA Voltage > 88 V_{DC} when DC is guaranteed to be activated (ON); Voltage < 50 V_{DC} when DC is guaranteed to be deactivated (OFF). Voltage > 88 V_{AC} when AC is guaranteed to be activated (ON); Voltage < 50 V_{AC} when AC is guaranteed to be deactivated (OFF).
	HVC1		
	HVX2	Gate safety hatch [GSH]	
	HVC2		
	HVX3	Layer door safety hatch [DSH]	
	HVC3		
TB9	HVX4	Emergency operation [EIS]	
	HVC4		
	HVX5	External reset device [RESET]	
	HVC5		

Terminal Socket	Terminal	Default Setting	Description
TB10	RJ45 USB	At the drive side	PIN 1, 2, 6, 7: Reserved PIN 3: SGND PIN 4: SG- PIN 5: SG+ PIN 8: EV
TB11	RJ45 USB	At IED-S (controller) side	PIN 1, 2, 6, 7: Reserved PIN 3: SGND PIN 4: SG- PIN 5: SG+ PIN 8: EV

5-1-3 LED Indicator

Name	Description
F	Fault indicator
P	Power indicator
B	Regenerative indicator

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Chapter 6 Optional Accessories

The optional accessories listed in this chapter are available upon request. Installing additional accessories to your drive can substantially improve the drive's performance. Select accessories according to your needs or contact your local distributor for suggestions.

6-1 Brake Resistors and Brake Units Used in AC Motor Drives

Recommended Model Selection

Voltage	Delta's Motor Drive Model	IM 10%ED *1			PM 30%*2		
		Min. Resistor Value*3 (Ω)	Suggested Resistor Value*4 (Ω)	Suggested Braking Power (kW)	Min. Resistor Value (Ω)	Suggested Resistor Value (Ω)	Suggested Braking Power (kW)
230V	IED022S21A	38.0	70.0	0.3	38.0	50.0	1.0
	IED037S21A	19.0	30.0	0.5	19.0	32.0	1.5
	IED055S23A	15.6	20.0	1.0	15.6	25.0	2.0
	IED075S23A	11.5	20.0	1.0	11.5	16.7	3.0
	IED110S23A	9.5	13.0	1.5	9.5	12.5	4.0
	IED150S23A	8.3	10.0	2.0	8.3	10.0	5.0
	IED185S23A	5.8	8.0	2.0	5.8	7.8	7.5
	IED220S23A	5.8	6.6	3.0	5.8	6.5	9.0
460V	IED055S43A	48.4	75.0	1.0	48.4	100.0	2.0
	IED075S43A	39.4	75.0	1.0	39.4	60.0	3.0
	IED110S43A	30.8	43.0	1.5	30.8	50.0	4.0
	IED150S43A	25.0	32.0	2.0	25	39.0	6.0
	IED185S43A	20.8	32.0	2.0	20.8	26.0	7.2
	IED220S43A	19.0	26.0	3.0	19.0	26.0	9.0
	IED300S43A	14.1	20.0	4.0	14.1	19.5	12.0
	IED370S43A	12.7	14.3	4.5	13.8	15.6	15.0
	IED450S43A	12.7	13.0	6.0	10.3	13.0	18.0
	IED550S43A	9.5	10.2	8.0	6.9	9.8	19.2
	IED750S43A	6.3	7.2	9.0	6.4	7.1	26.4

*1 The brake resistor should be able to endure 10 times the overload capacity.

*2 The brake resistor should be able to endure 3.3 times the overload capacity.

*3 If you choose other brake resistors instead of Delta's, calculate the maximum power and average power of the selected braking power to ensure that they meet the requirements. Maximum power: Vb^2/R; average power: Vb^2/R x ED%. (Vb stands for braking voltage; R stands for brake resistor value.)

*4 The calculation of the brake resistor value and braking power is based on Delta's brake resistor.

IM Elevator System (Using Delta's Brake Resistor)

Voltage	Applicable Delta's Motor Dive		125% Braking Torque / 10% ED*1							Max. Braking Torque		
	HP	Model	Braking Torque*2 (kg-m)	Brake Unit		Delta's Brake Resistor*3			Braking Current (A)*4	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
				VFDB	#	Part No.	#	Configuration				
230V	3	IED022S21A	1.5			BR300W070	1		5.4	38.0	10.0	3.8
	5	IED037S21A	2.5			BR500W030	1		12.7	19.0	20.0	7.6
	7.5	IED055S23A	3.7			BR1K0W020	1		19.0	15.6	24.4	9.3
	10	IED075S23A	5.1			BR1K0W020	1		19.0	11.5	33.0	12.5
	15	IED110S23A	7.5			BR1K5W013	1		29.2	9.5	40.0	15.2
	20	IED150S23A	10.2			BR1K0W020	2	2 parallel	38.0	8.3	46.0	17.5
	25	IED185S23A	12.2			BR1K0W016	2	2 parallel	47.5	5.8	66.0	25.1
	30	IED220S23A	14.9			BR1K5W3P3	2	2 in series	57.6	5.8	66.0	25.1
460V	7.5	IED055S43A	3.7			BR1K0W075	1		10.1	48.4	15.7	11.9
	10	IED075S43A	5.1			BR1K0W075	1		10.1	39.4	19.3	14.7
	15	IED110S43A	7.5			BR1K5W043	1		17.7	30.8	24.7	18.8
	20	IED150S43A	10.1			BR1K0W016	2	2 in series	23.8	25.0	30.4	23.1
	25	IED185S43A	12.5			BR1K0W016	2	2 in series	23.8	20.8	36.5	27.7
	30	IED220S43A	14.9			BR1K5W013	2	2 in series	29.2	19.0	40.0	30.4
	40	IED300S43A	20.3			BR1K0W020	4	2 in series 2 parallel	38.0	14.1	54.0	41.0
	50	IED370S43A	25.0	4045	1	BR1K5W043	3	3 parallel	53.0	12.7	60.0	45.6
	60	IED450S43A	30.4	4045	1	BR1K5W013	4	2 in series 2 parallel	58.5	12.7	60.0	45.6
	75	IED550S43A	37.2	4030	2	BR1K0W5P1	8	4 in series 2 parallel	74.5	9.5	80.0	60.8
	100	IED750S43A	50.7	4045	2	BR1K5W043	6	6 parallel	106.0	6.3	120.0	91.2

*1 Calculation of 125% braking torque: (kW)*125%*0.8; where 0.8 is the motor efficiency.
Since there is a resistor power consumption limit, the longest operation time for 10% ED is 10 seconds (ON: 10 seconds / OFF: 90 seconds).

*2 The calculation of the brake resistor is based on a four-pole motor (1800 rpm).

*3 To dissipate heat, mount a resistors of 400 W or lower to a frame to keep the surface temperature below 250°C (482°F). Fix a resistor of 1000 W or higher to a surface to keep the surface temperature below 600°C (1112°F). (If the resistor temperature is higher than 350°C, install extra cooling. If the resistor temperature is higher than the temperature limit, increase the size of the resistor.)

*4 The calculation of the braking current is based on Delta's brake resistor and default braking voltage ($220V_{AC}$: $380V_{DC}$; $440V_{AC}$: $760V_{DC}$).

PM Elevator System (Using Delta's Brake Resistor)

Voltage	Applicable Delta's Motor Dive		125% Braking Torque / 10% ED*1							Max. Braking Torque		
	HP	Model	Braking Torque*2 (kg-m)	Brake Unit		Delta's Brake Resistor*3			Braking Current (A)*4	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
				VFDB	#	Part No.	#	Configuration				
230V	3	IED022S21A	1.5			BR1K0W050	1		7.6	38.0	10.0	3.8
	5	IED037S21A	2.5			BR1K0W016	2	2 in series	11.9	19.0	20.0	7.6
	7.5	IED055S23A	3.7			BR1K0W050	2	2 parallel	15.2	15.6	24.4	9.3
	10	IED075S23A	5.1			BR1K0W050	3	3 parallel	22.8	11.5	33.0	12.5
	15	IED110S23A	7.5			BR1K0W050	4	4 parallel	30.4	9.5	40.0	15.2
	20	IED150S23A	10.2			BR1K0W050	5	5 parallel	38.0	8.3	46.0	17.5
	25	IED185S23A	12.2			BR1K5W039	5	5 parallel	48.7	5.8	66.0	25.1
	30	IED220S23A	14.9			BR1K5W039	6	6 parallel	58.5	5.8	66.0	25.1
460V	7.5	IED055S43A	3.7			BR1K0W050	2	2 in series	7.6	48.4	15.7	11.9
	10	IED075S43A	5.1			BR1K0W020	3	3 in series	12.7	39.4	19.3	14.7
	15	IED110S43A	7.5			BR1K0W050	4	2 in series 2 parallel	15.2	30.8	24.7	18.8
	20	IED150S43A	10.1			BR1K5W039	4	2 in series 2 parallel	19.5	25.0	30.4	23.1
	25	IED185S43A	12.5			BR1k2W039	6	2 in series 3 parallel	29.2	20.8	36.5	27.7
	30	IED220S43A	14.9			BR1K5W039	6	2 in series 3 parallel	29.2	19.0	40.0	30.4
	40	IED300S43A	20.3			BR1K5W039	8	2 in series 4 parallel	39.0	14.1	54.0	41.0
	50	IED370S43A	25.0	4045	1	BR1K5W039	10	2 in series 5 parallel	48.7	13.8	55.0	41.8
	60	IED450S43A	30.4	4030	2	BR1K5W039	12	2 in series 6 parallel	58.5	10.3	74.0	56.2
	75	IED550S43A	37.2	4045	2	BR1k2W039	16	2 in series 8 parallel	77.9	6.9	110.0	83.6
	100	IED750S43A	50.7	4110	1	BR1k2W039	22	2 in series 11 parallel	107.2	6.4	118.0	89.7

*1 Calculation of 125% braking torque: (kW)*125%*0.8; where 0.8 is the motor efficiency.
Since there is a resistor power consumption limit, the longest operation time for 30% ED is 30 seconds (ON: 30 seconds / OFF: 70 seconds).

*2 The calculation of the brake resistor is based on a four-pol
e motor (1800 rpm).

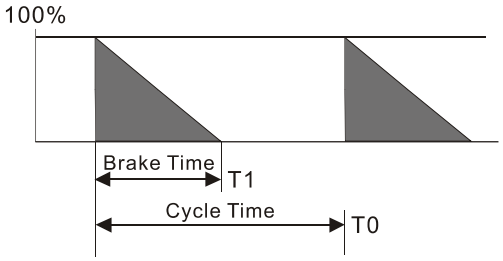
*3 To dissipate heat, mount a resistors of 400 W or lower to a frame to keep the surface temperature below 250°C (482°F). Fix a resistor of 1000 W or higher to a surface to keep the surface temperature below 600°C (1112°F). (If the resistor temperature is higher than 350°C, install extra cooling. If the resistor temperature is higher than the temperature limit, increase the size of the resistor.)

*4 The calculation of the braking current is based on Delta's brake resistor and default braking voltage ($220V_{AC}$: $380V_{DC}$; $440V_{AC}$: $760V_{DC}$).

NOTE

1. Select the resistance value, power and brake usage (ED %) according to Delta rules.

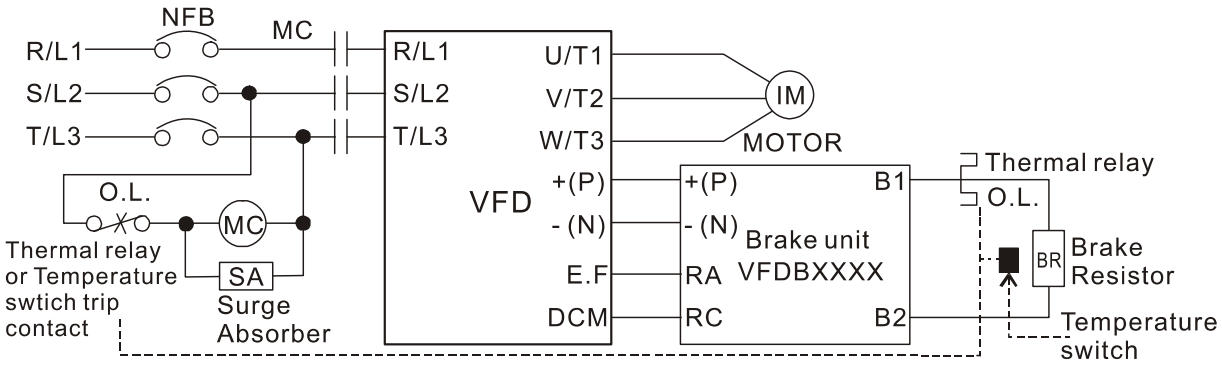
   Definition for Brake Usage ED%



ED% = T1 / T0 x 100(%)

Explanation:
Brake usage ED (%) is the amount of time needed for the brake unit and brake resistor to dissipate heat generated by braking. When the brake resistor heats up, the resistance increases with temperature, and braking torque decreases accordingly.

For safety, install a thermal overload relay between the brake unit and the brake resistor in conjunction with the magnetic contactor (MC) at the drive mains input for additional protection. The thermal overload relay protects the brake resistor from overheat damage due to frequent or continuous braking. Under such circumstances, turn off the power to prevent damage to the brake resistor and the drive. NOTE: Never use it to disconnect the brake resistor.



- When the drive is equipped with a DC reactor, read the user manual for the correct wiring for the brake unit input circuit +(P).
- DO NOT connect the input circuit -(N) to the neutral point of the power system.

2. Any damage to the drive or other equipment caused by using brake resistors and brake units that are not provided by Delta voids the warranty.

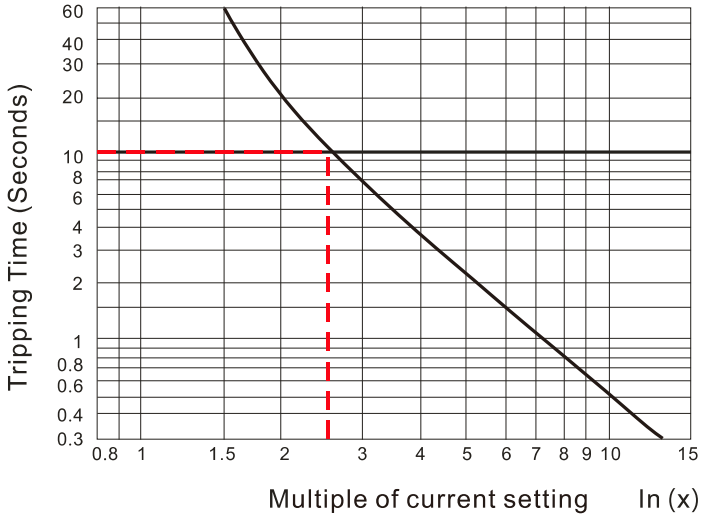
3. Consider environmental safety factors when installing the brake resistors. If you use the minimum resistance value, consult your local dealers for the power calculation.

4. When using more than two brake units, the equivalent resistor value of parallel brake unit cannot be less than the value in the column “Min. Resistor Value (Ω)”. Read the wiring information in the brake unit instruction sheet thoroughly prior to operation. Visit the following links to get the instruction sheets for the wiring in the brake unit:
   - VFDB2015 / 2022 / 4030 / 4045 / 5055 Braking Modules Instruction Sheet
     http://www.deltaww.com/filecenter/Products/download/06/060101/Option/DELTA_IA-MDS_VFDB_I_EN_20070719.pdf
   - VFDB4110 / 4160 / 4185 Braking Modules Instruction Sheet
     http://www.deltaww.com/filecenter/Products/download/06/060101/Option/DELTA_IA-MDS_VFDB4110-4160-4185_I_EN_20101011.pdf

- VFDB6055 / 6110 / 6160 / 6200 Braking Modules Instruction Sheet
  http://www.deltaww.com/filecenter/Products/download/06/060101/Option/DELTA_IA-MDS_VFDB6055-6110-6160-6200_I_TSE_20121030.pdf

5. The selection tables are for normal use. If the AC motor drive requires frequent braking, increase the Watts by two to three times.

6. Thermal Overload Relay (TOR):
   Thermal overload relay selection is based on its overload capacity. A standard braking capacity of the IED-S is 30%ED (Tripping time = 10s). As shown in the graph below, a 460V, 110 kw IED-S requires the thermal relay to take 260% overload capacity for 10 seconds (hot starting) and the braking current is 126 A. In this case, select a thermal overload relay rated at 50 A. The specification of each thermal relay may vary among different manufacturers. Carefully read the specification before using it.



6-2 Non-fuse Circuit Breaker

Comply with the UL standard: Per UL 508, paragraph 45.8.4, part a. The rated current of a breaker shall be two to four times the maximum rated input current of the AC motor drive.

Single-phase / Three-phase	
Model	Breaker Rated Input Recommended Current (A)
IED022S21A*	50
IED037S21A*	75
IED055S23A	50
IED075S23A	60
IED110S23A	100
IED150S23A	125
IED185S23A	150
IED220S23A	175

Three-phase	
Model	Breaker Rated Input Recommended Current (A)
IED055S43A	35
IED075S43A	40
IED110S43A	50
IED150S43A	60
IED185S43A	75
IED220S43A	100
IED300S43A	125
IED370S43A	150
IED450S43A	200
IED550S43A	250
IED750S43A	350

*IED022S21A and IED037S21A are single-phase models.

6-3 Fuse Specification Chart

☑ Fuse specifications lower than the table below are allowed.

☑ For installation in the United States, branch circuit protection must be provided in accordance with the National Electrical Code (NEC) and any applicable local codes. Use UL classified fuses to fulfill this requirement.

☑ For installation in Canada, branch circuit protection must be provided in accordance with Canadian Electrical Code and any applicable provincial codes. Use UL classified fuses to fulfill this requirement.

Model	Input Current I (A)	Line Fuse	
		I (A)	Bussmann P/N
IED022S21A	26	60	JJN-60
IED037S21A	37	90	JJN-90
IED055S23A	23	60	JJN-60
IED075S23A	30	80	JJN-80
IED110S23A	47	125	JJN-125
IED150S23A	56	150	JJN-150
IED185S23A	73	175	JJN-175
IED220S23A	90	225	JJN-225
IED055S43A	14	40	JJS-40
IED075S43A	17	45	JJS-45
IED110S43A	24	60	JJS-60
IED150S43A	30	80	JJS-80
IED185S43A	37	90	JJS-90
IED220S43A	47	110	JJS-110
IED300S43A	58	150	JJS-150
IED370S43A	80	200	JJS-200
IED450S43A	100	250	JJS-250
IED550S43A	128	300	JJS-300
IED750S43A	165	400	JJS-400

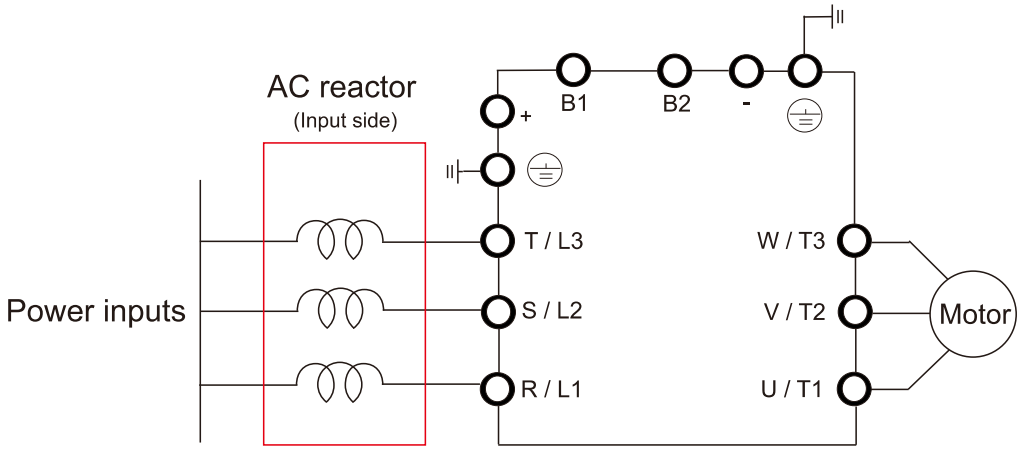
6-4 AC / DC Reactor

AC Input Reactor

Installing an AC reactor on the input side of an AC motor drive can increase line impedance, improve the power factor, reduce input current, increase system capacity, and reduce interference generated from the motor drive. It also reduces momentary voltage surges or abnormal current spikes. For example, when the main power capacity is higher than 500 kVA, or when using a switching capacitor bank, momentary peak voltage and current spikes may damage the AC motor drive's internal circuit. An AC reactor on the input side of the AC motor drive protects it by suppressing surges.

Installation

Install an AC input reactor in series between the main power and the three input phases R S T, as shown in the figure below:



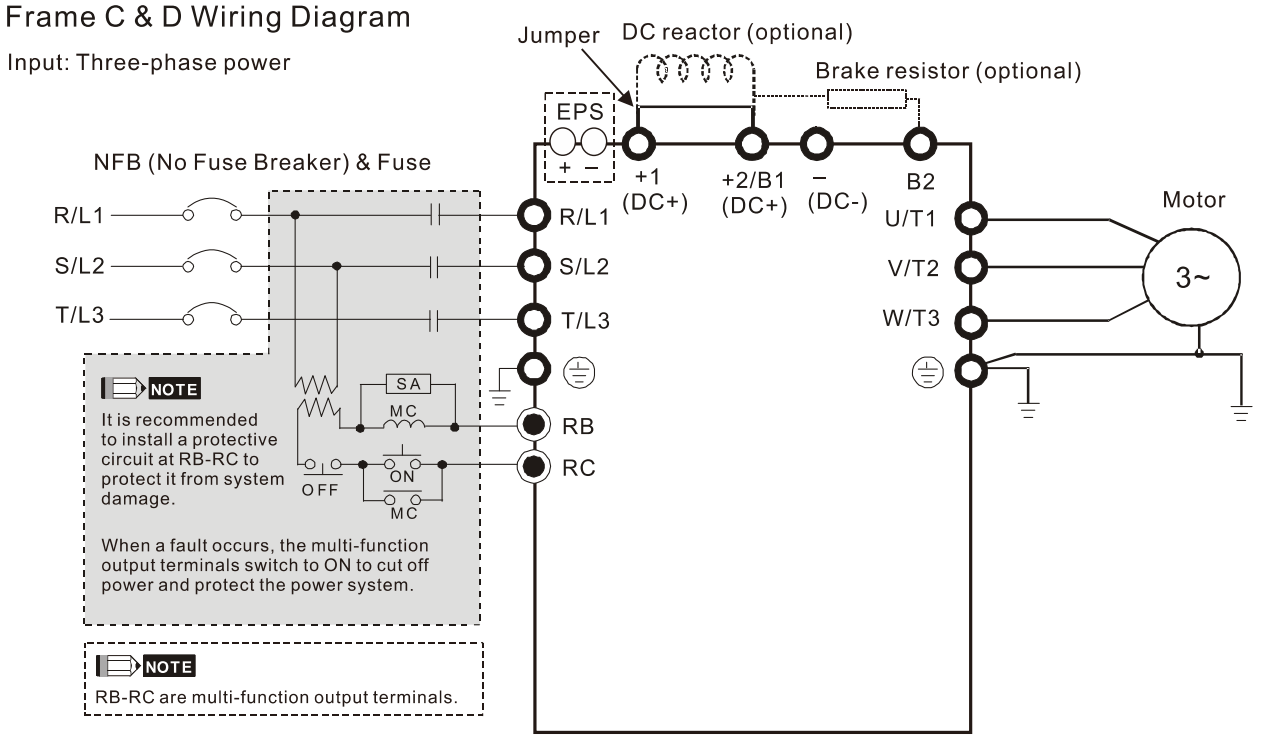
Connecting an AC Input Reactor

DC Reactor

A DC reactor can also increase line impedance, improve the power factor, reduce input current, increase system power, and reduce interference generated from the motor drive. A DC reactor stabilizes the DC bus voltage. Compared with an AC input reactor, a DC reactor is in smaller size, lower price, and lower voltage drop (lower power dissipation).

Installation

Install a DC reactor between terminals +1(DC+) and +2/B1(DC+). Remove the DC reactor jumper, as shown in the figure below, before installing a DC reactor.



Installing a DC Reactor

THD (Total Harmonic Distortion)

The table below shows the THDi specification when using Delta's drives (three-phase power models) to work with AC/DC reactors.

Motor Drive Spec.	Models without AC/DC Reactors	Models without Built-in DC Reactors			Models with Built-in DC Reactors	
Reactors in Series Spec.		3% Input AC Reactor	5% Input AC Reactor	4% DC Reactor	3% Input AC Reactor	5% Input AC Reactor
5th	73.3%	38.5%	30.8%	25.5%	27.01%	25.5%
7th	52.74%	15.3%	9.4%	18.6%	9.54%	8.75%
11th	7.28%	7.1%	6.13%	7.14%	4.5%	4.2%
13th	0.4%	3.75%	3.15%	0.48%	0.22%	0.17%
THDi	91%	43.6%	34.33%	38.2%	30.5%	28.4%
Note	THDi may vary due to different installation conditions and environment (wires, motors).					

THDi Specification

Note: For three-phase power models, Delta provides 4% DC reactors and 3% AC reactors. Refer to the following sections to select your applicable reactors.

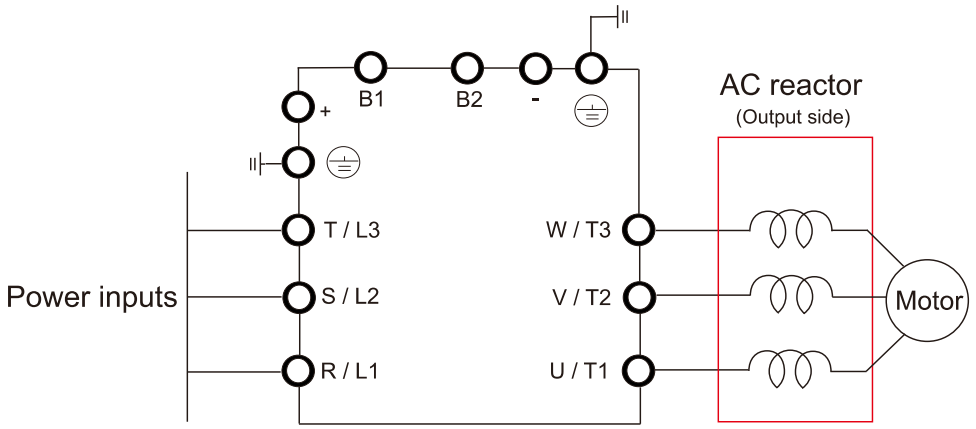
AC Output Reactor

When using drives in long wiring output application, ground fault (GFF), over-current (OC) and motor over-voltage (OV) often occur. GFF and OC cause errors due to the drive's self-protective mechanism; over-voltage damages motor insulation.

The excessive length of the output wires makes the grounded stray capacitance too large, increase the three-phase output common mode current, and the reflected wave of the long wires makes the motor dv / dt and the motor terminal voltage too high. Thus, installing a reactor on the drive's output side can increases the high-frequency impedance to reduce the dv / dt and terminal voltage to protect the motor.

Installation

Install an AC output reactor in series between the three output phases U V W and the motor, as shown in the figure below:



Connecting an AC Output Reactor

Applicable Reactors (General)

200V–230V / 50–60 Hz (Single-phase power)

Model	Rated Current (Arms)	Saturation Current (Arms)	AC Input Reactors (mH)	AC Input Reactors (Delta Part#)	AC Output Reactors (mH)	AC Output Reactors (Delta Part #)
IED022S21A	12	24	1.172	DR025D0117	2.02	DR012L0202
IED037S21A	17	34	0.574	DR049DP574	1.17	DR018L0117

200V–230V / 50–60 Hz (Three-phase power)

Model	Rated Current (Arms)	Saturation Current (Arms)	3% AC Input / Output Reactors (mH)	3% AC Input / Output Reactors (Delta Part #)	4% DC Reactors (mH)	4% DC Reactors (Delta Part #)
IED055S23A	24	48	0.507	DR025AP507 DR025LP507	1.17	DR025D0117
IED075S23A	30	60	0.32	DR033AP320 DR033LP320	0.851	DR033DP851
IED110S23A	45	90	0.215	DR049AP215 DR049LP215	0.574	DR049DP574
IED150S23A	58	116	0.162	DR065AP162 DR065LP162	0.432	DR065DP432

Model	Rated Current (Arms)	Saturation Current (Arms)	3% AC Input / Output Reactors (mH)	3% AC Input / Output Reactors (Delta Part #)	4% DC Reactors (mH)	4% DC Reactors (Delta Part #)
IED185S23A	77	154	0.141	DR090AP141 DR090LP141	0.325	DR090DP325
IED220S23A	87	174	0.141	DR090AP141 DR090LP141	0.325	DR090DP325

380V–460V / 50–60 Hz (Three-phase power)

Model	Rated Current (Arms)	Saturation Current (Arms)	3% AC Input / Output Reactors (mH)	3% AC Input / Output Reactors (Delta Part #)	4% DC Reactors (mH)	4% DC Reactors (Delta Part #)
IED055S43A	13	26	2.02	DR012A0202 DR012L0202	4.67	DR012D0467
IED075S43A	17	34	1.17	DR018A0117 DR018L0117	3.11	DR018D0311
IED110S43A	23	46	0.881	DR024AP881 DR024LP881	2.33	DR024D0233
IED150S43A	30	60	0.66	DR032AP660 DR032LP660	1.75	DR032D0175
IED185S43A	38	76	0.639	DR038AP639 DR038LP639	1.47	DR038D0147
IED220S43A	45	90	0.541	DR045AP541 DR045LP541	1.24	DR045D0124
IED300S43A	58	116	0.405	DR060AP405 DR060LP405	0.935	DR060DP935
IED370S43A	80	160	0.267	DR091AP267 DR091LP267	NA*	NA*
IED450S43A	100	200	0.221	DR110AP221 DR110LP221	NA*	NA*
IED550S43A	128	256	0.162	DR150AP162 DR150LP162	NA*	NA*
IED750S43A	165	330	0.135	DR180AP135 DR180LP135	NA*	NA*

Note: NA* stands for built-in accessory.

Applicable Reactors (Compliance with EN12015)

200V–230V / 50–60 Hz (Three-phase power)

Model	Rated Current (Arms)	Saturation Current (Arms)	5% AC Input Reactors (mH)	3% AC Input Reactors (Delta Part #)	DC Reactors (Delta Part #)
IED055S23A	24	48	0.898	-	-
IED075S23A	30	60	0.719	-	-
IED110S23A	45	90	0.479	-	-
IED150S23A	58	116	0.372	-	-
IED185S23A	77	154	0.280	-	-
IED220S23A	87	174	0.248	-	-

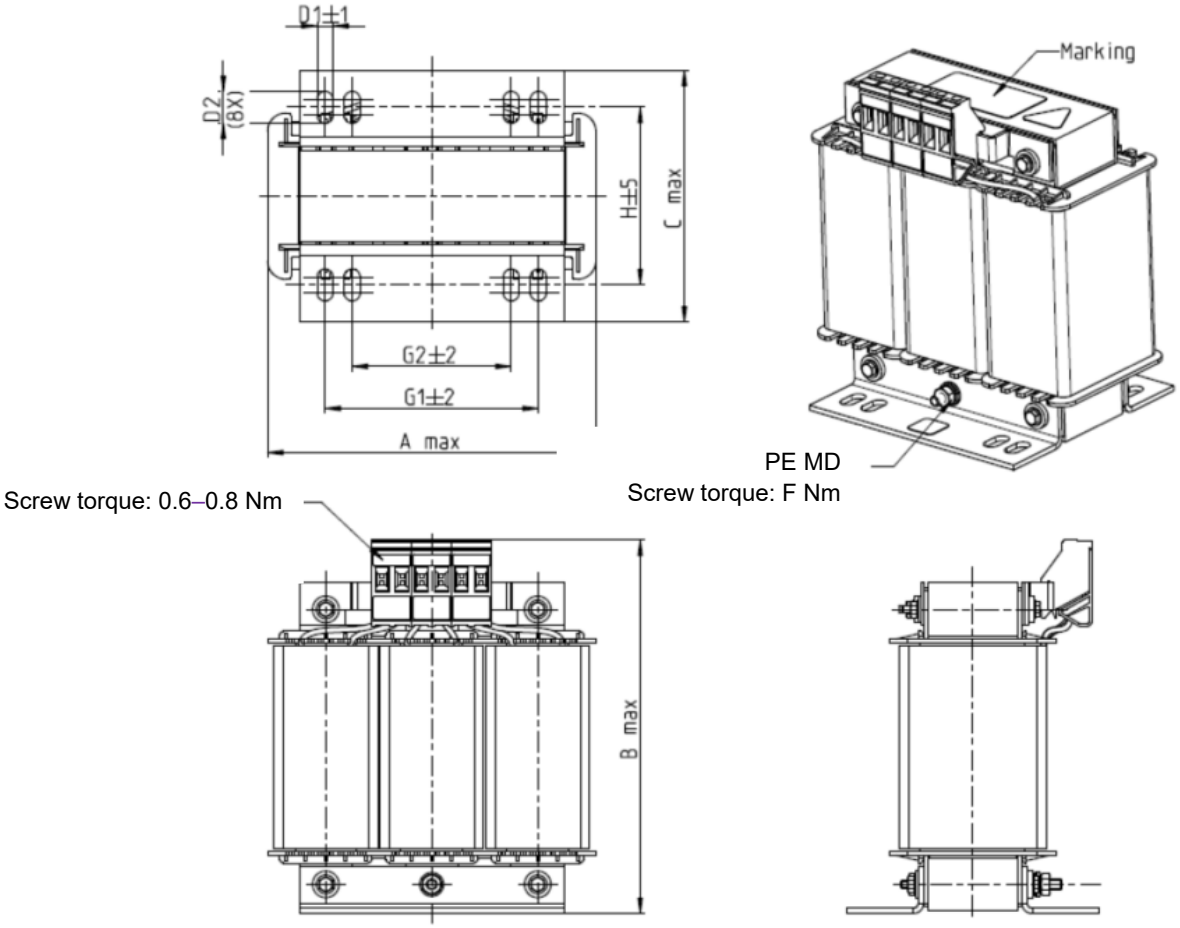
380V–460V / 50–60 Hz (Three-phase power)

Model	Rated Current (Arms)	Saturation Current (Arms)	5% AC Input Reactors (mH)	3% AC Input Reactors (Delta Part #)	DC Reactors (Delta Part #)
IED055S43A	13	26	3.316	-	-
IED075S43A	17	34	2.536	-	-
IED110S43A	23	46	1.875	-	-
IED150S43A	30	60	1.437	-	-
IED185S43A	38	76	1.135	-	-
IED220S43A	45	90	0.958	-	-
IED300S43A	58	116	0.743	-	-
IED370S43A	80	160	-	DR091AP267	NA*
IED450S43A	100	200	-	DR110AP221	NA*
IED550S43A	128	256	-	DR150AP162	NA*
IED750S43A	165	330	-	DR180AP135	NA*

NA* stands for built-in accessory.

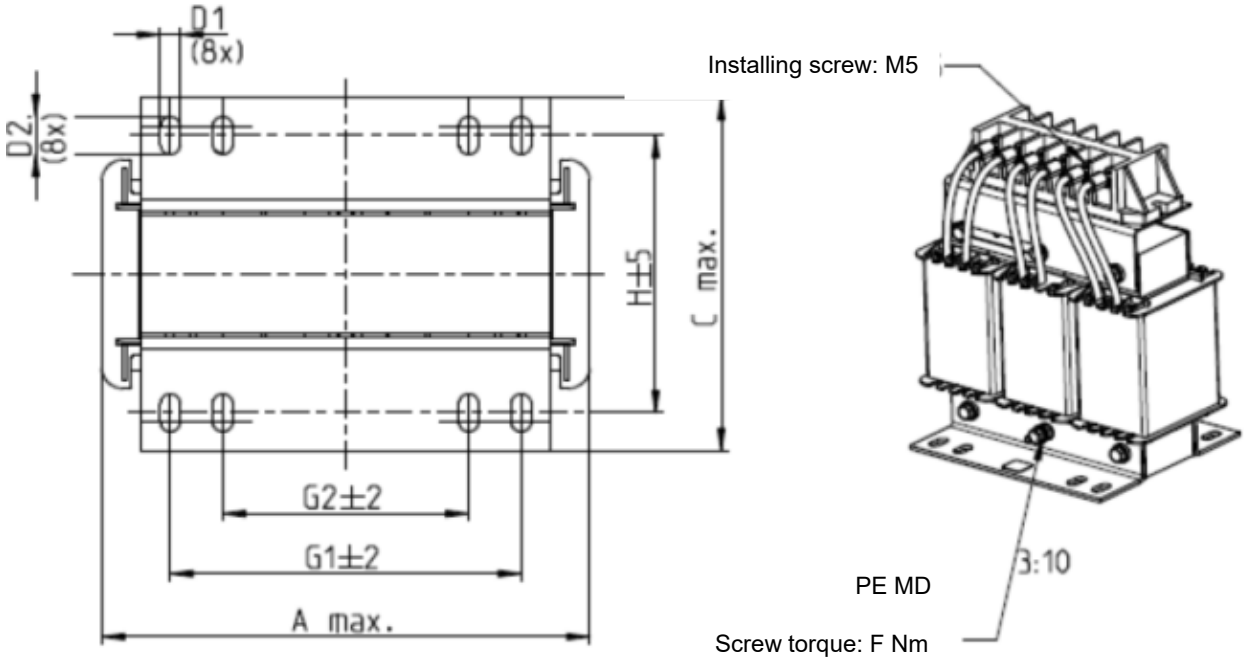
Reactor Dimensions

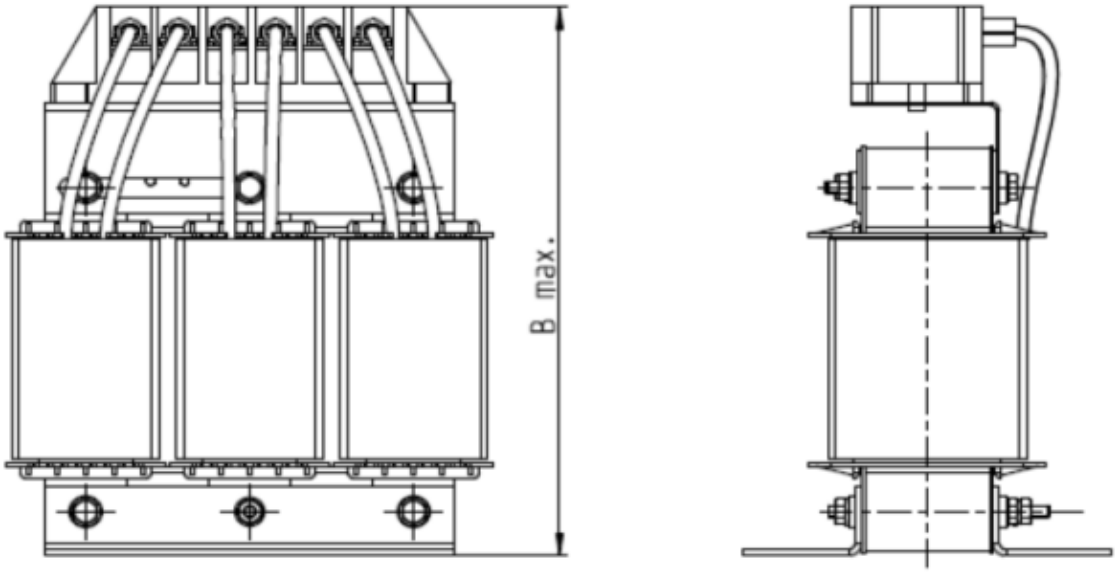
AC input reactor dimension and specifications:



Unit: mm

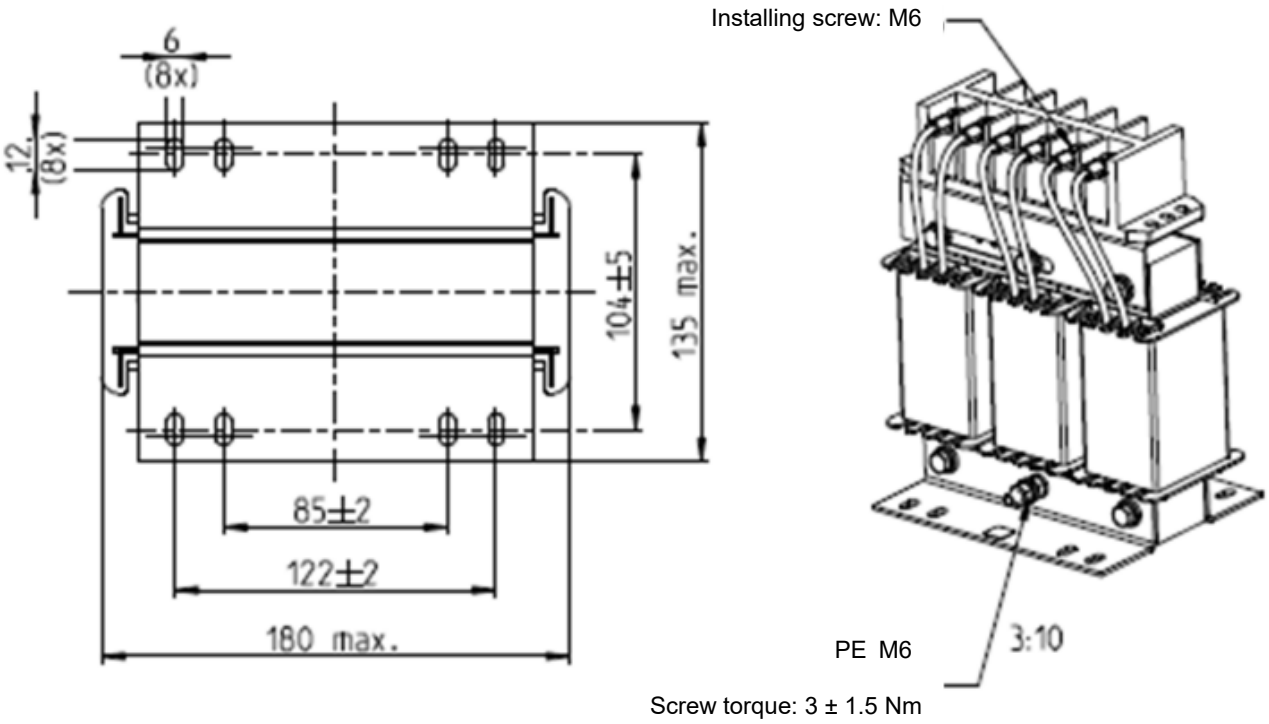
Input Reactors Delta Part #	A	B	C	D1*D2	E	G1	G2	PE D
DR005A0254	100	115	65	6*9	45	60	40	M4
DR008A0159	100	115	65	6*9	45	60	40	M4
DR011A0115	130	135	95	6*12	60	80.5	60	M4
DR017AP746	130	135	100	6*12	65	80.5	60	M4

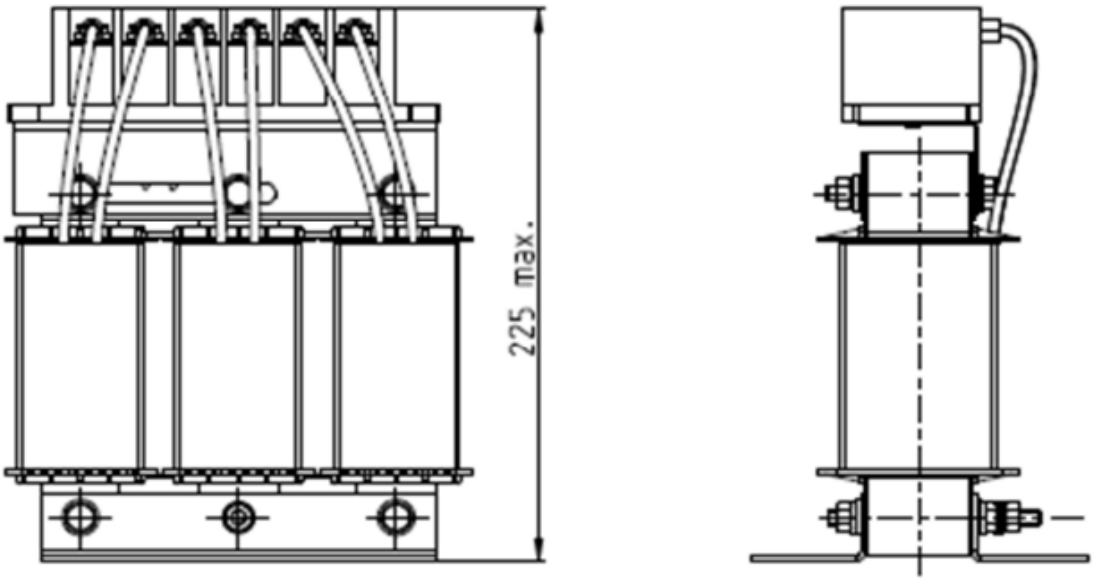




Unit: mm

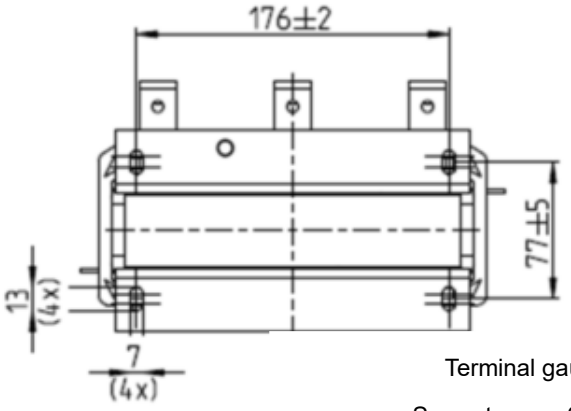
Input Reactors Delta Part #	A	B	C	D1*D2	H	G1	G2	PE D
DR025AP215	130	195	100	6*12	65	80.5	60	M4
DR033AP163	130	195	100	6*12	65	80.5	60	M4
DR049AP163	160	200	125	6*12	90	107	75	M4

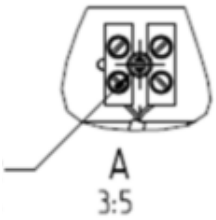


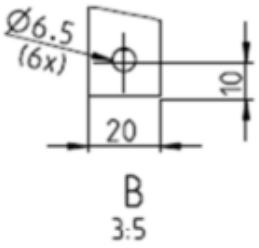


Unit: mm

Input Reactors Delta Part #	
DR065AP162	See above.

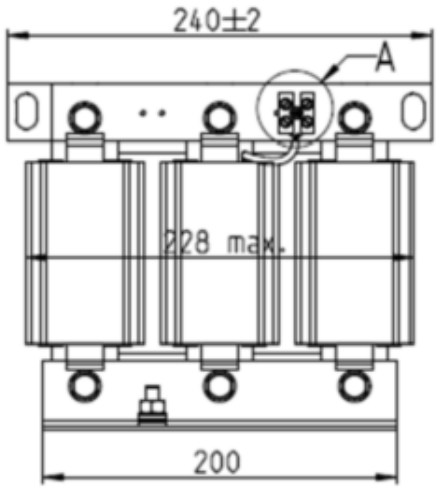


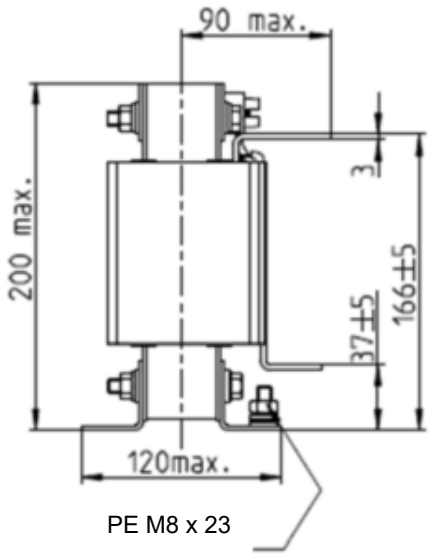




Terminal gauge: 4 mm^2

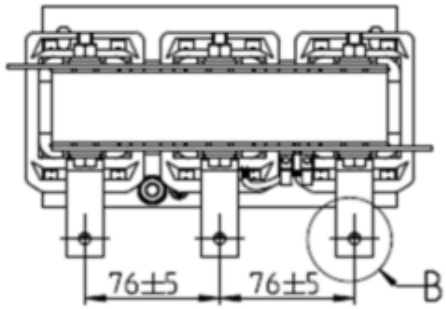
Screw torque: 0.8–1.0 Nm





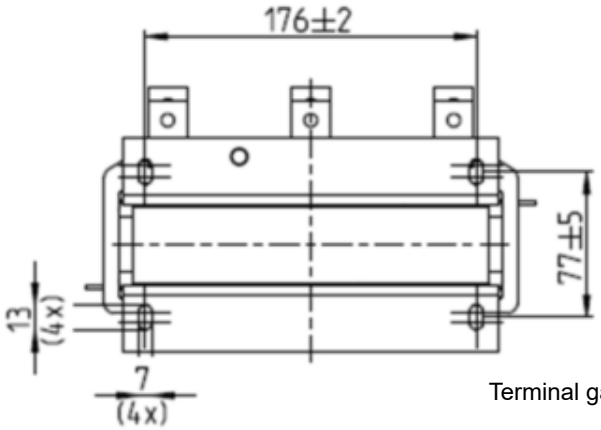
PE M8 x 23

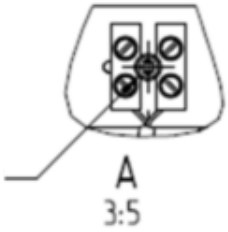
Screw torque: 6 ± 0.3 Nm

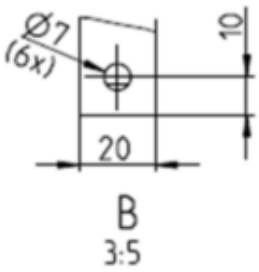


Unit: mm

Input Reactors Delta Part #	
DR075AP170	See above.

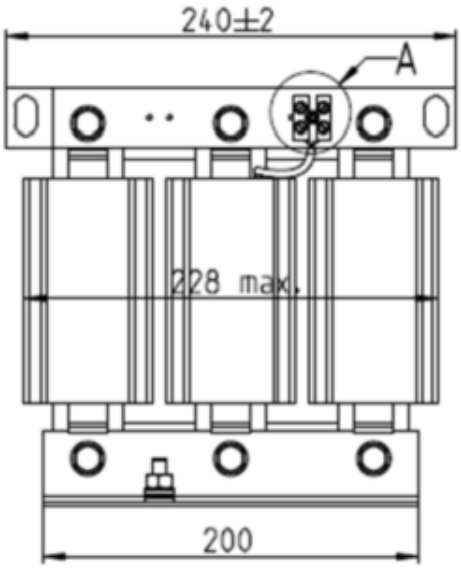


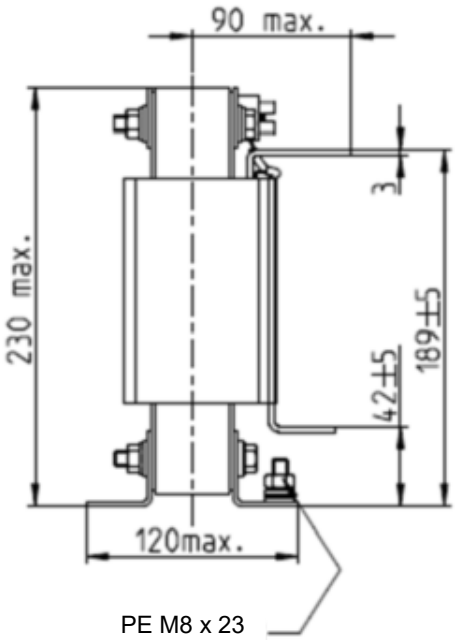




Terminal gauge: 4 mm^2

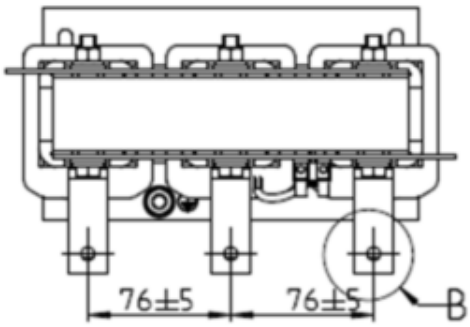
Screw torque: 0.8–1.0 Nm





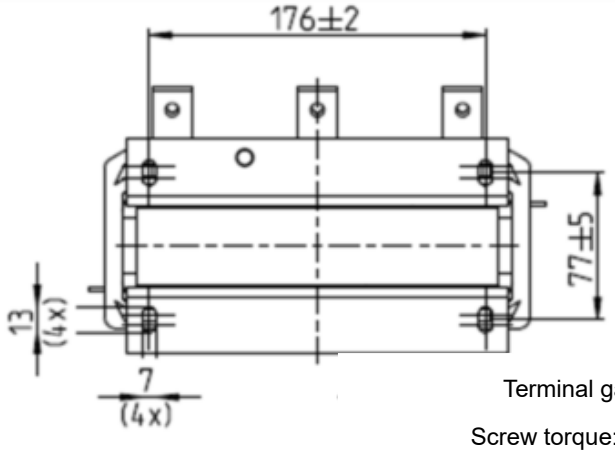
PE M8 x 23

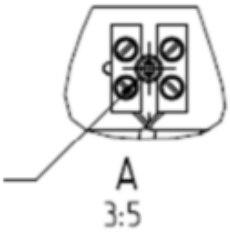
Screw torque: 6 ± 0.3 Nm

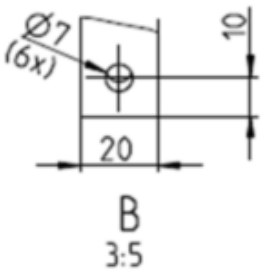


Unit: mm

Input Reactors Delta Part #	
DR090AP141	See above.

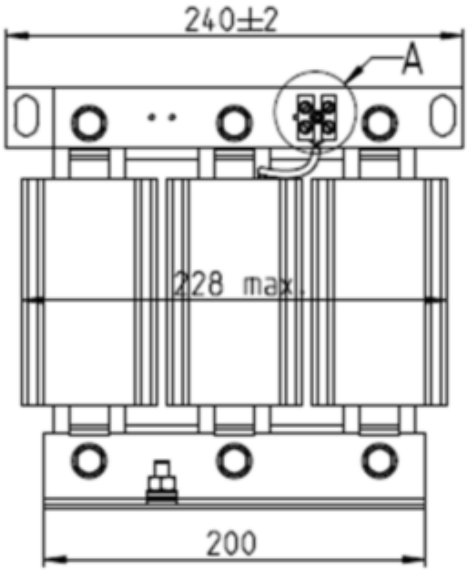


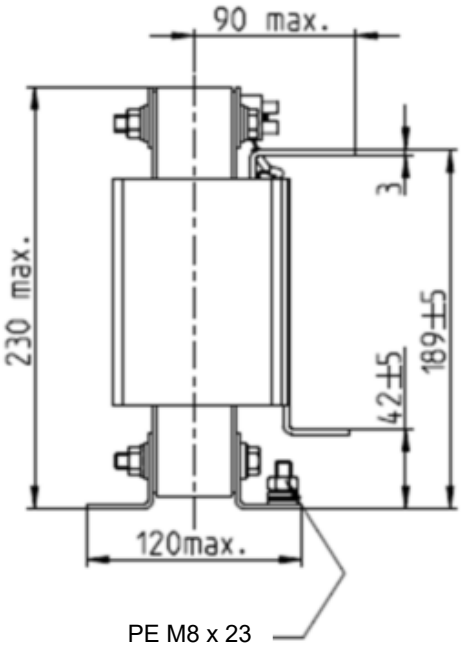




Terminal gauge: 4 mm^2

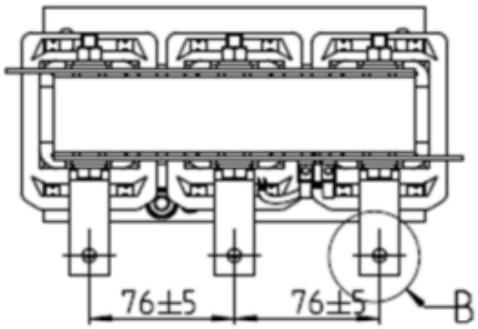
Screw torque: 0.8–1.0 Nm





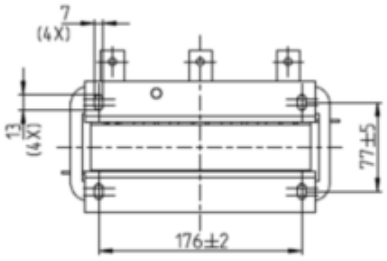
PE M8 x 23

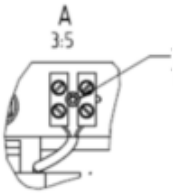
Screw torque: 6 ± 0.3 Nm



Unit: mm

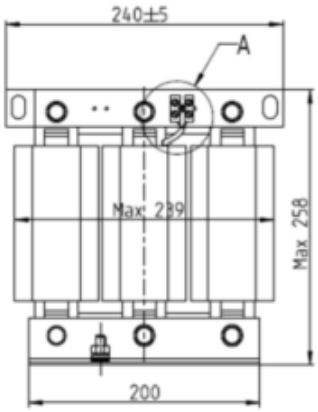
Input Reactors Delta Part #	
DR105AP106	See above.

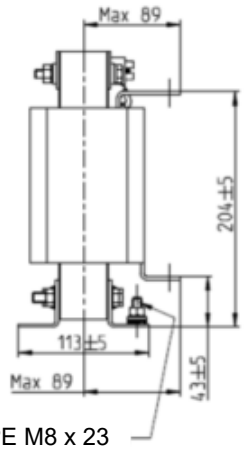




Terminal gauge: 4 mm^2

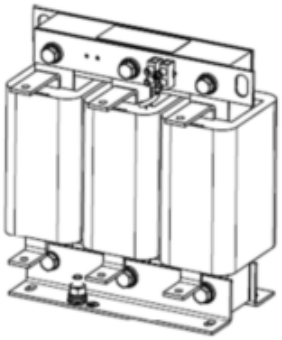
Screw torque: 0.6–0.8 Nm

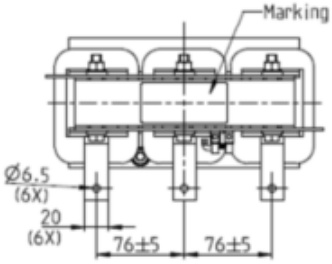




PE M8 x 23

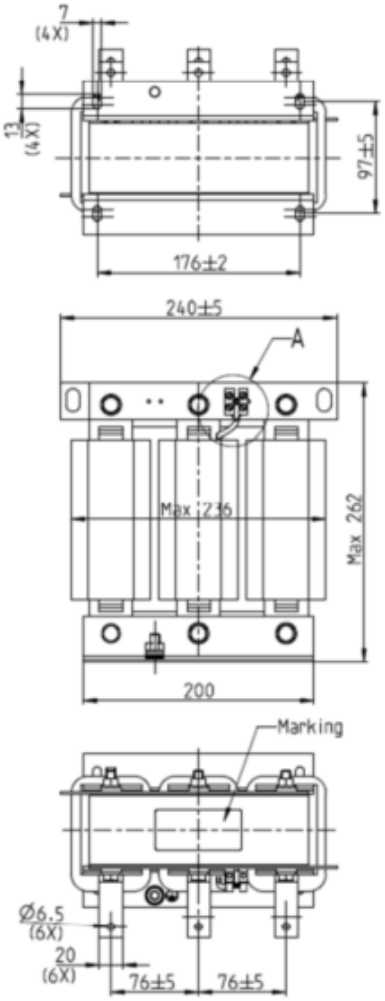
Screw torque: 6 ± 0.3 Nm

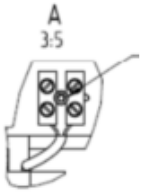




Unit: mm

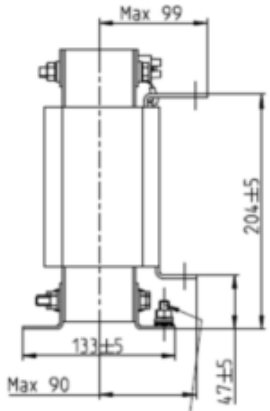
Input Reactors Delta Part #	
DR146AP087	See above.





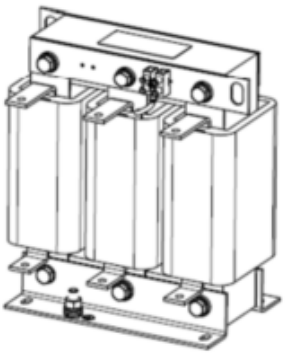
Terminal gauge: 4 mm^2

Screw torque: 0.6–0.8 Nm



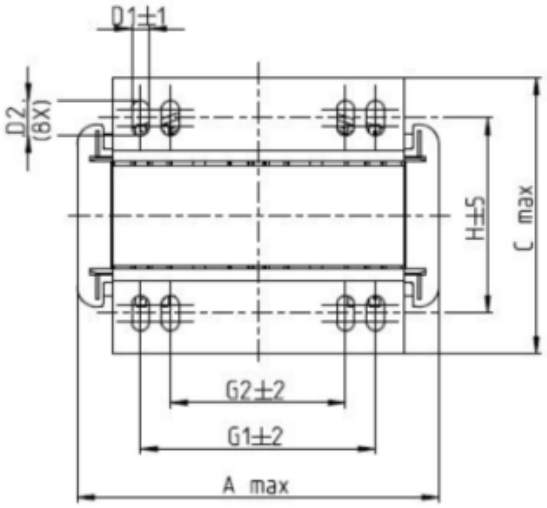
PE M8 x 23

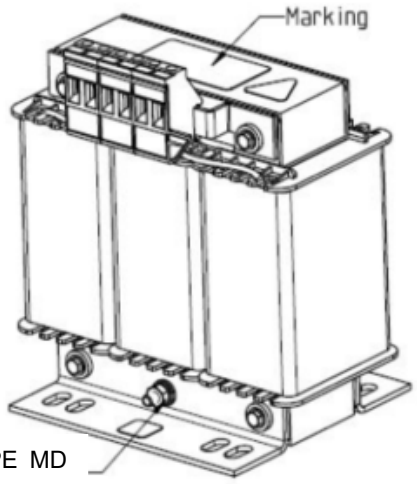
Screw torque: 6 ± 0.3 Nm



Unit: mm

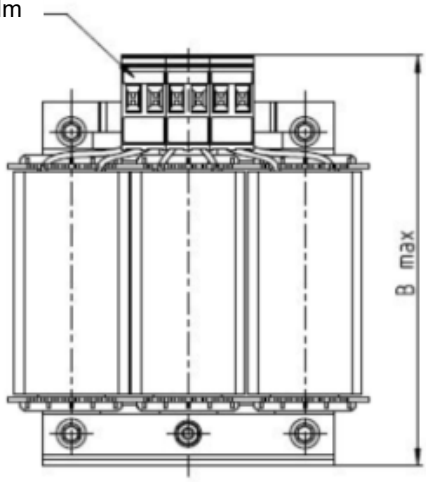
Input Reactors Delta Part #	
DR180AP070	See above.

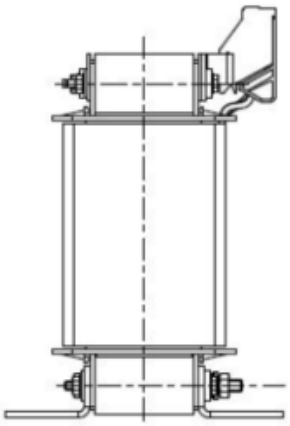




Screw torque: 0.6–0.8 Nm

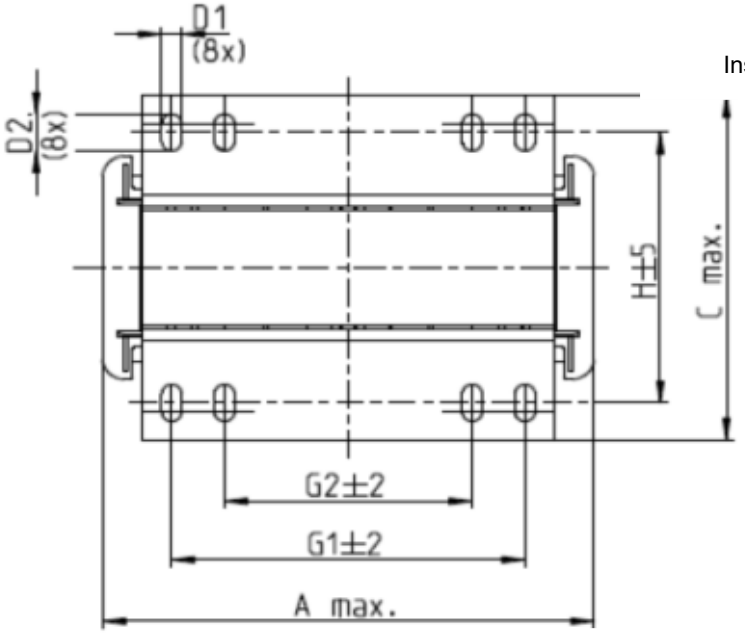
Screw torque: F Nm

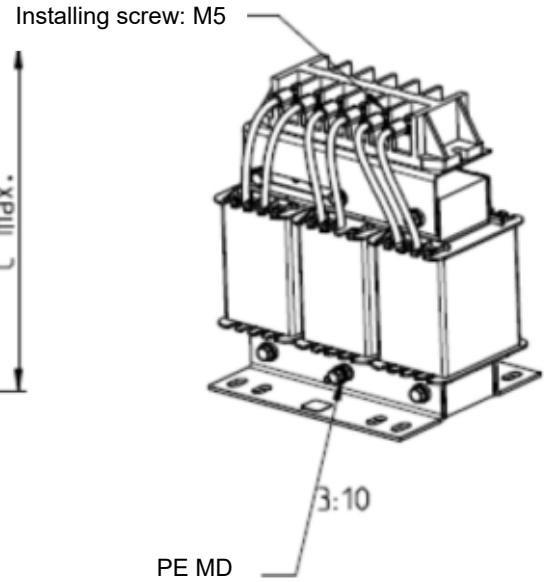




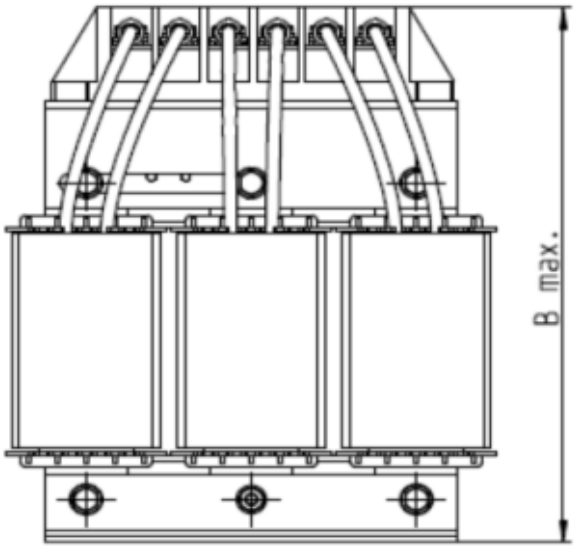
Unit: mm

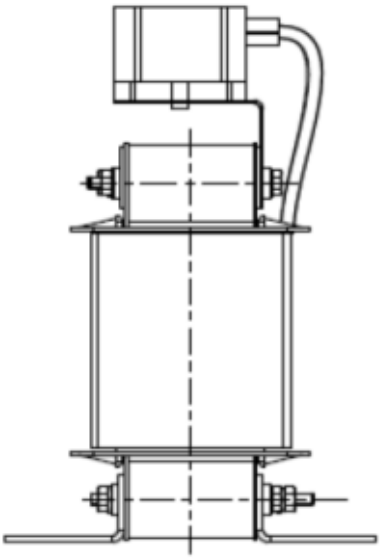
Input Reactors Delta Part #	A	B	C	D1*D2	H	G1	G2	PE D
DR003A0810	100	125	65	6*9	43	60	40	M4
DR004A0607	100	125	65	6*9	43	60	40	M4
DR006A0405	130	15	95	6*12	60	80.5	60	M4
DR009A0270	160	160	105	6*12	75	107	75	M4
DR010A0231	160	160	115	6*12	90	107	75	M4
DR012A0202	160	160	115	6*12	90	107	75	M4
DR018A0117	160	160	115	6*12	90	107	75	M4





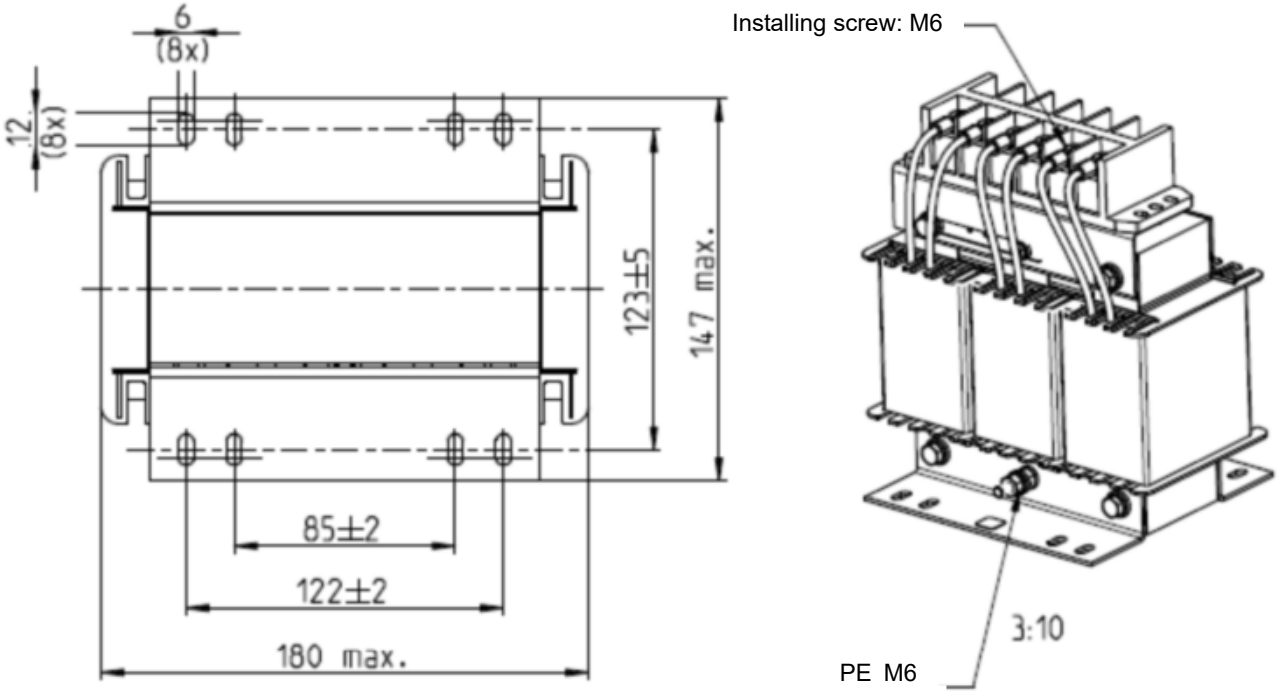
Screw torque: F Nm



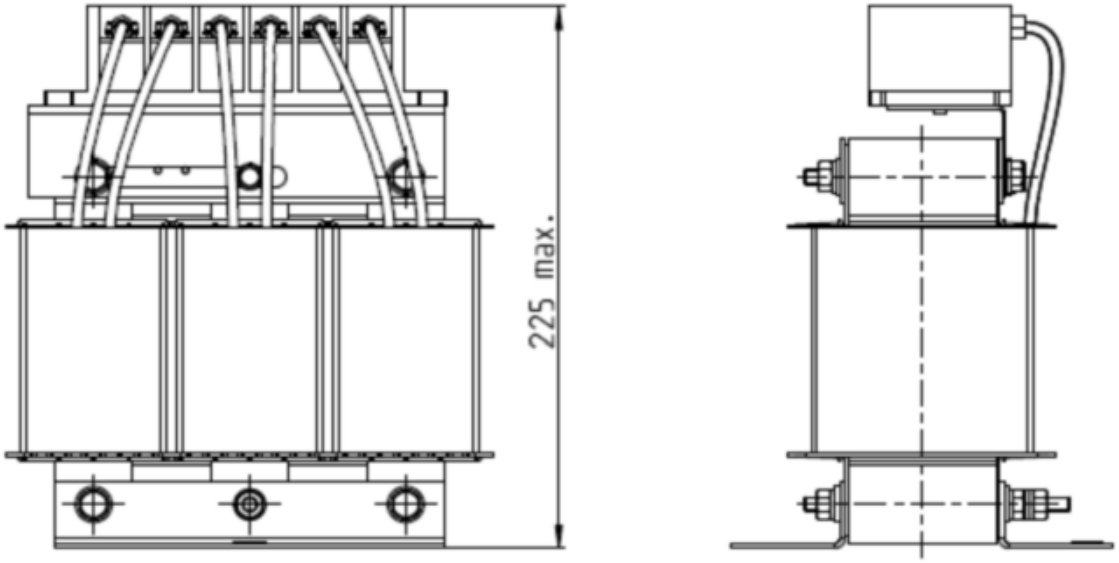


Unit: mm

Input Reactors Delta Part #	A	B	C	D1*D2	H	G1	G2	PE D
DR024AP881	160	175	115	6*12	90	107	75	M4
DR032AP660	195	200	145	6*12	115	122	85	M6
DR038AP639	190	200	145	6*12	115	122	85	M6
DR045AP541	190	200	145	6*12	115	122	85	M6

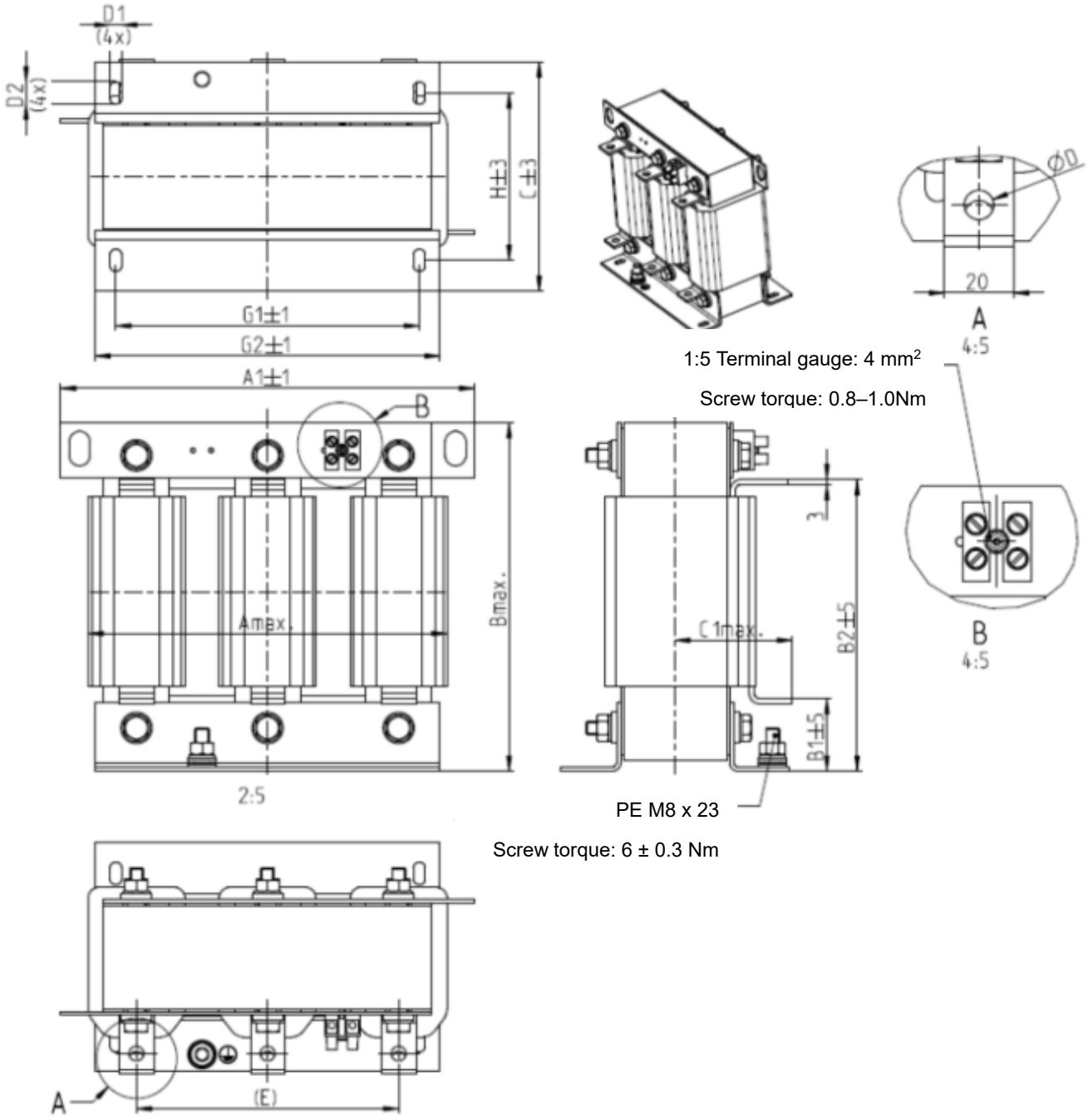


Screw torque: 3 ± 1.5 Nm



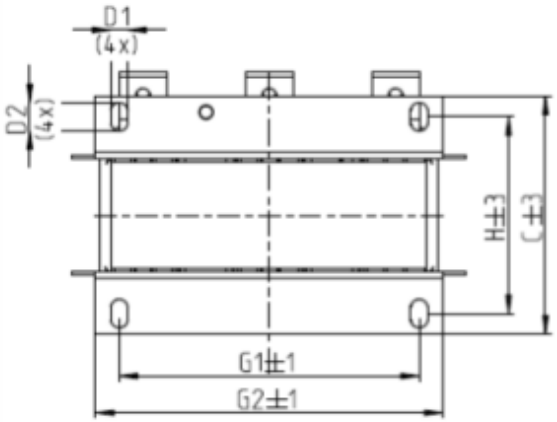
Unit: mm

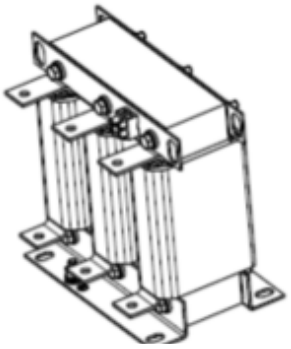
Input Reactors Delta Part #	
DR060AP405	See above.

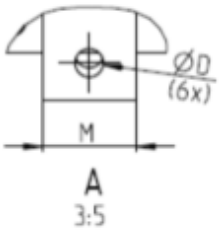


Unit: mm

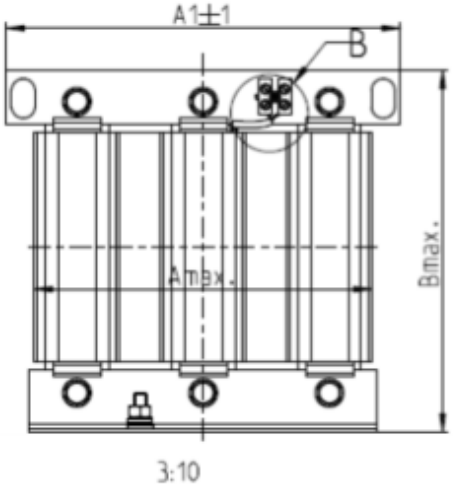
Input Reactors Delta Part #	A	A1	B	B1	B2	C	D	D1*D2	E	C1	G1	G2	H
DR073AP334	228	240	215	40	170	133	8.5	7*13	152	75	176	200	97
DR091AP267	228	240	245	40	195	133	8.8	7*13	152	90	176	200	97
DR110AP221	228	240	245	40	195	138	8.5	7*13	152	75	176	200	102

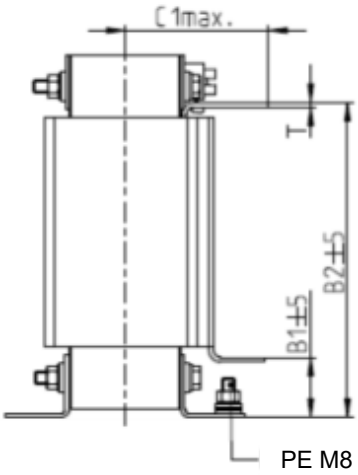


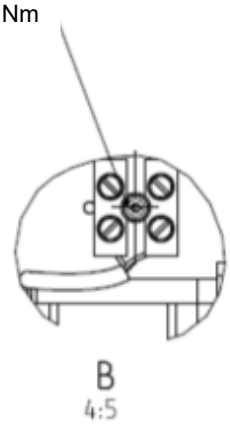




1:5 Terminal gauge: 4 mm^2
Screw torque: 0.8–1.0 Nm

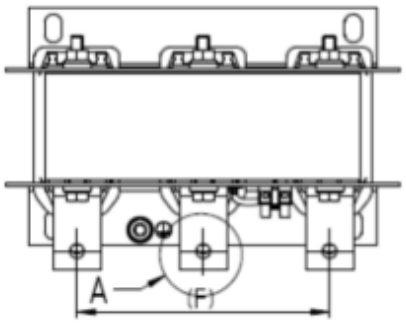






PE M8 x 23

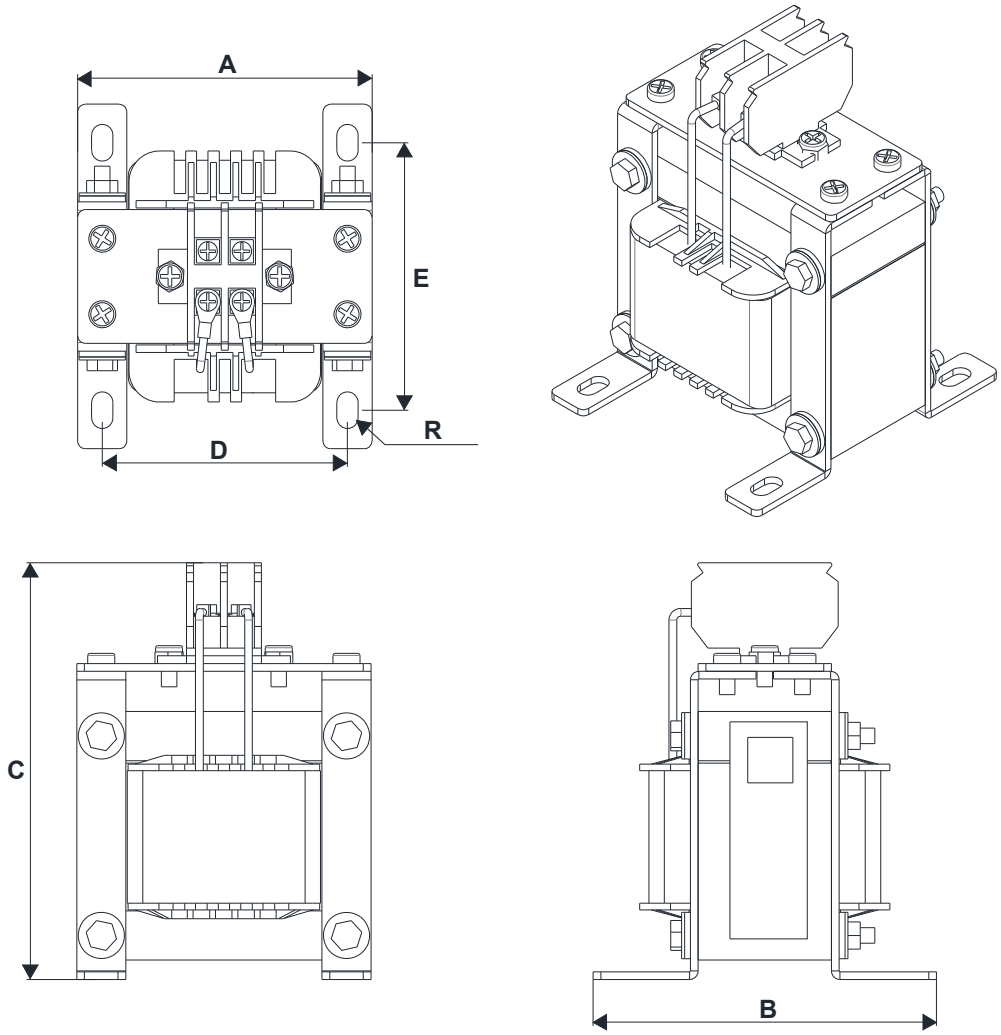
Screw torque: 6 ± 0.3 Nm



Unit: mm

Input Reactors Delta Part #	A	A1	B	B1	B2	C	C1	D	D1*D2	F	G1	G2	H	M*T
DR150AP162	240	250	245	40	200	151	105	9	11*18	160	190	220	125	20*3
DR180AP135	240	250	245	40	200	151	105	9	11*18	160	190	220	125	20*3
DR220AP110	264	270	275	50	230	151	105	9	10*18	176	200	230	106	30*3
DR260AP098	264	270	285	50	240	151	105	9	10*18	176	200	230	106	30*3
DR310AP078	300	300	345	55	295	153	105	9	10*18	200	224	260	113	30*3
DR370AP066	300	300	345	55	295	158	120	9	10*18	200	224	260	118	50*4

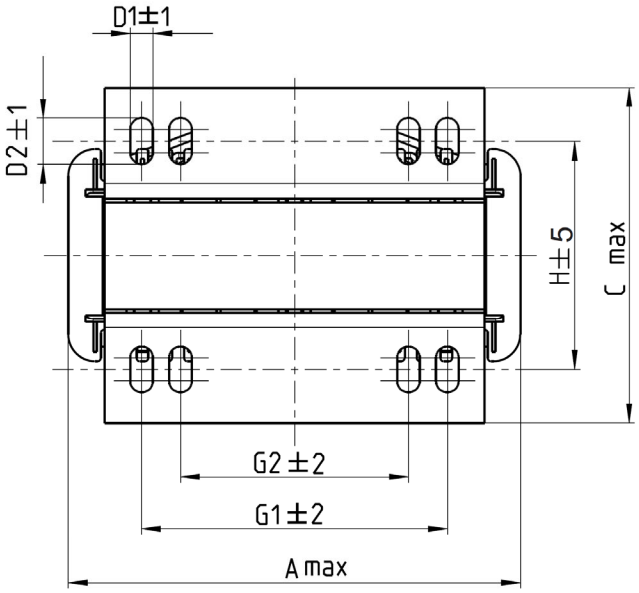
DC reactor dimension and specifications:

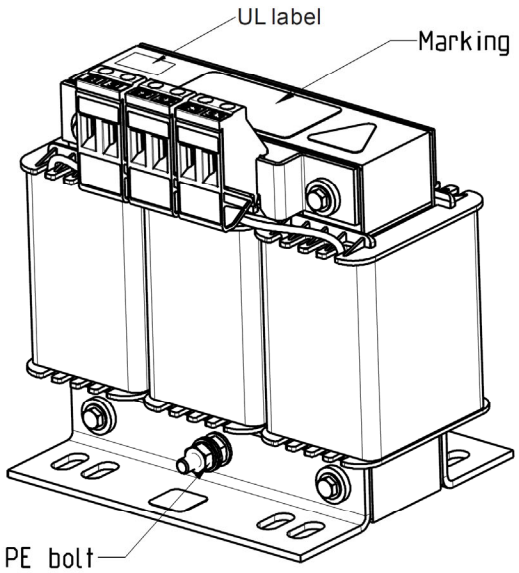


Unit: mm

DC Reactors Delta Part #	A	B	C	D	E	R
DR005D0585	79	78	112	64±2	56±2	9.5*5.5
DR008D0366	79	78	112	64±2	56±2	9.5*5.5
DR011D0266	79	92	112	64±2	69.5±2	9.5*5.5
DR017D0172	79	112	112	64±2	89.5±2	9.5*5.5
DR025D0117	99	105	128	79±2	82.5±2	9.5*5.5
DR033DP851	117	110	156	95±2	87±2	10*6.5
DR049DP574	117	120	157	95±2	97±2	10*6.5
DR065DP432	117	140	157	95±2	116.5±2	10*6.5
DR075DP391	136	135	178	111±2	112±2	10*6.5
DR090DP325	136	135	179	111±2	112±2	10*6.5
DR003D1870	79	78	112	64±2	56±2	9.5*5.5
DR004D1403	79	92	112	64±2	69.5±2	9.5*5.5
DR006D0935	79	92	112	64±2	69.5±2	9.5*5.5
DR009D0623	79	112	112	64±2	89.5±2	9.5*5.5
DR010D0534	99	93	128	79±2	70±2	9.5*5.5
DR012D0467	99	105	128	79±2	82.5±2	9.5*5.5
DR018D0311	117	110	144	95±2	87±2	10*6.5
DR024D0233	117	120	144	95±2	97±2	10*6.5
DR032D0175	117	140	157	95±2	116.5±2	10*6.5
DR038D0147	136	135	172	111±2	112±2	10*6.5
DR045D0124	136	135	173	111±2	112±2	10*6.5
DR060DP935	136	150	173	111±2	127±2	10*6.5

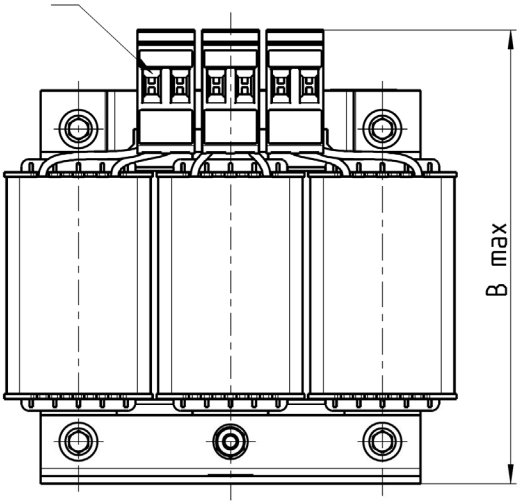
AC output reactor dimension and specifications:

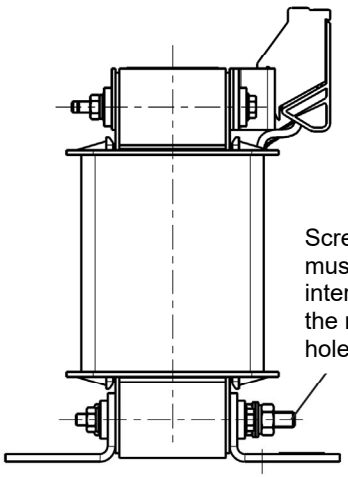




Screw torque: 0.6–0.8 Nm

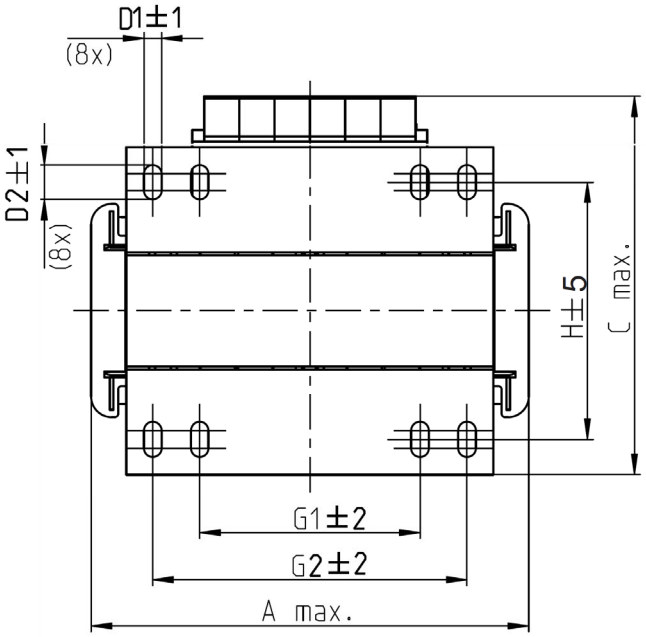
Screw torque: 1.0–1.2 Nm

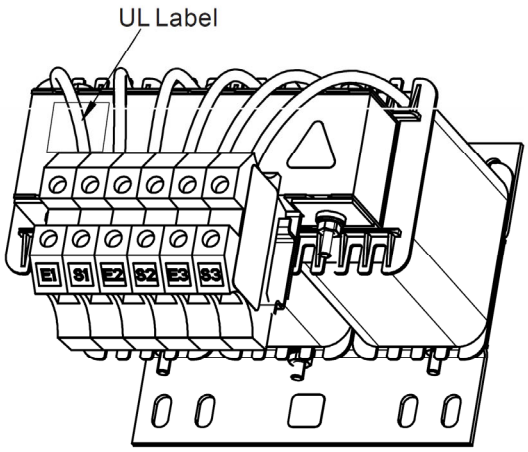




Unit: mm

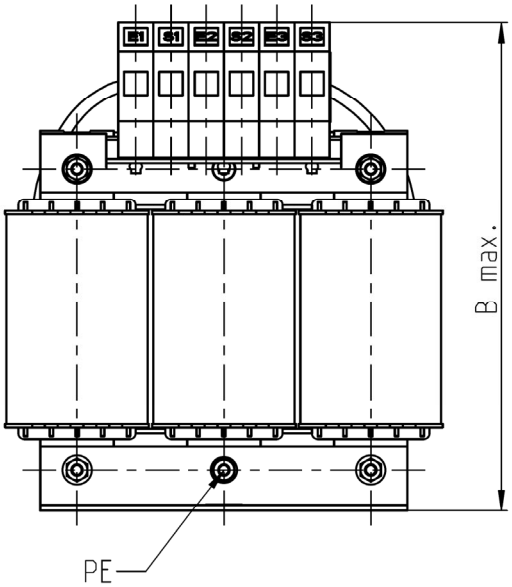
Output Reactors Delta Part #	A	B	C	D1*D2	E	G1	G2	PE D
DR005L0254	96	110	70	6*9	42	60	40	M4
DR008L0159	120	135	96	6*12	60	80.5	60	M4
DR011L0115	120	135	96	6*12	60	80.5	60	M4
DR017LP746	120	135	105	6*12	65	80.5	60	M4
DR025LP507	150	160	120	6*12	88	107	75	M4
DR033LP320	150	160	120	6*12	88	107	75	M4

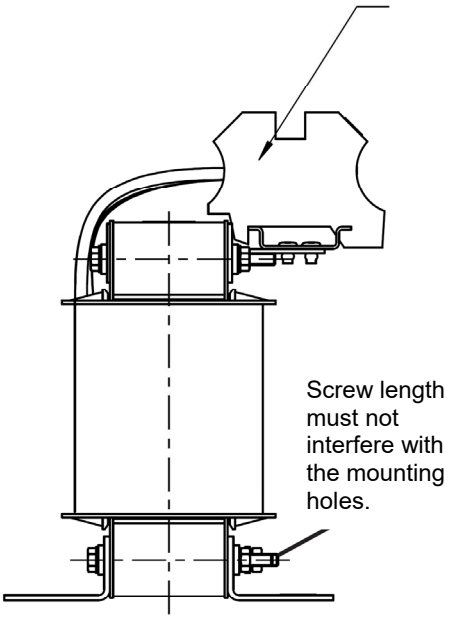




Terminal gauge: 16 mm^2

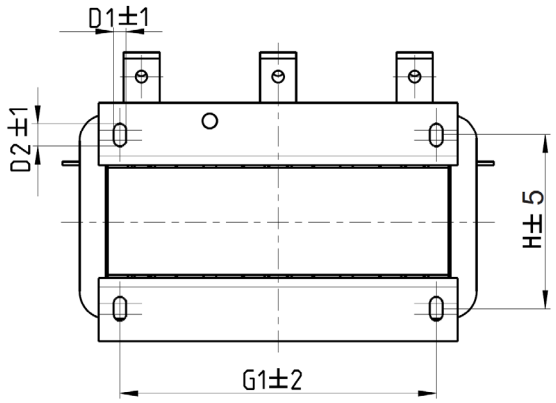
Screw torque: 1.2–1.4 Nm

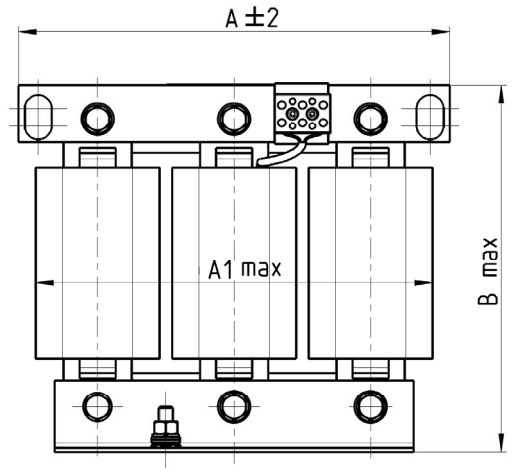


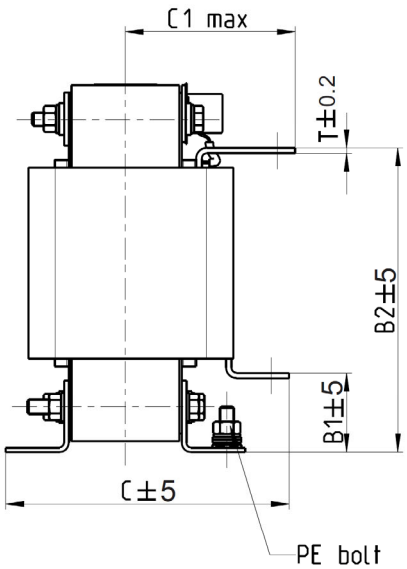


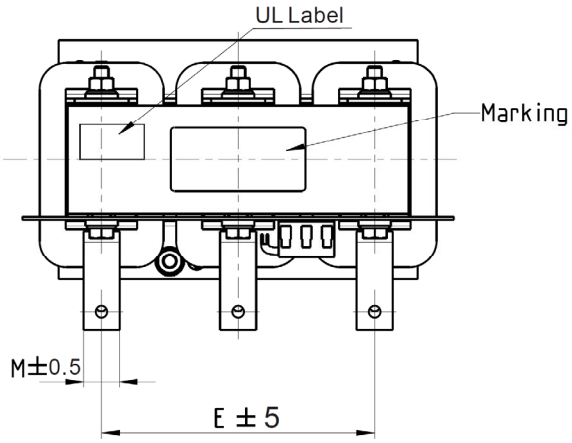
Unit: mm

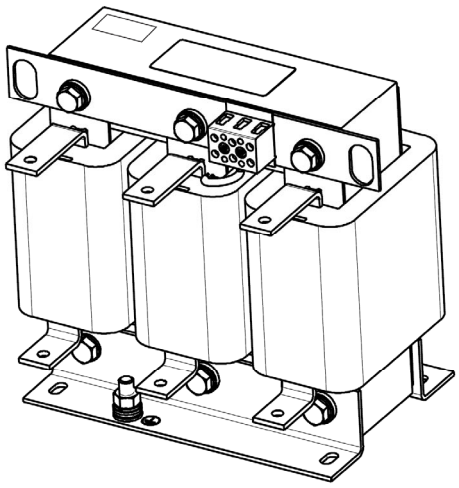
Output Reactors Delta Part #	A	B	C	D1*D2	H	G	G1	Q	M	PE D
DR049LP215	180	205	175	6*12	115	85	122	16	1.2-1.4	M4
DR065LP162	180	215	185	6*12	115	85	122	35	2.5-3.0	M4





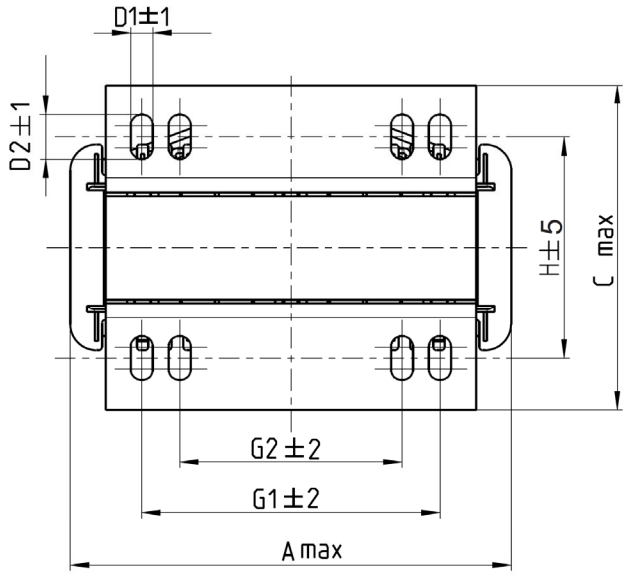


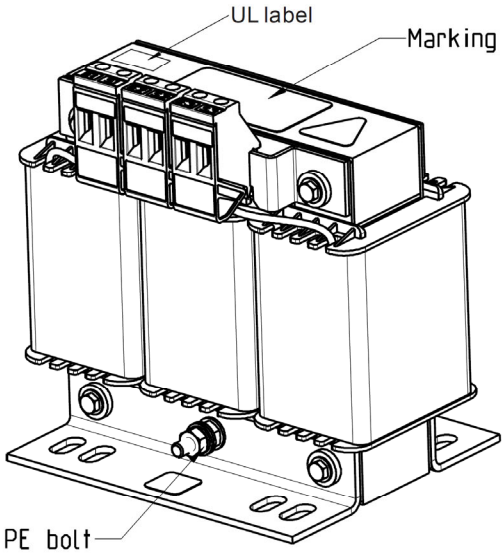




Unit: mm

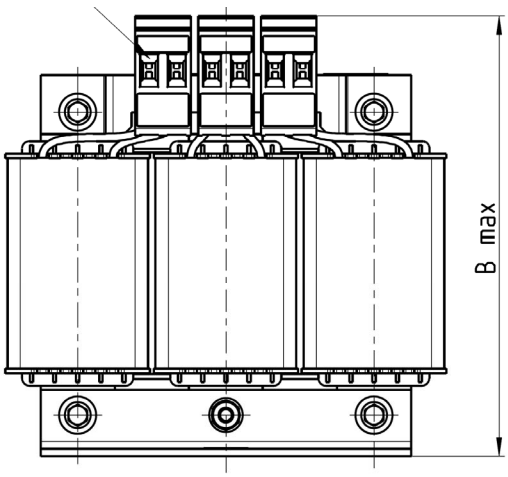
Output Reactors Delta Part #	A	A1	B	B1	B2	C	C1	D1*D2	E	G1	H	M*T
DR075LP170	240	228	215	44	170	151	100	7*13	152	176	85	20*3
DR090LP141	240	228	215	44	170	151	100	7*13	152	176	85	20*3
DR105LP106	240	228	215	44	170	165	110	7*13	152	176	97	20*3
DR146LP087	240	228	240	45	202	165	110	7*13	152	176	97	30*3
DR180LP070	250	240	250	46	205	175	110	11*18	160	190	124	30*5

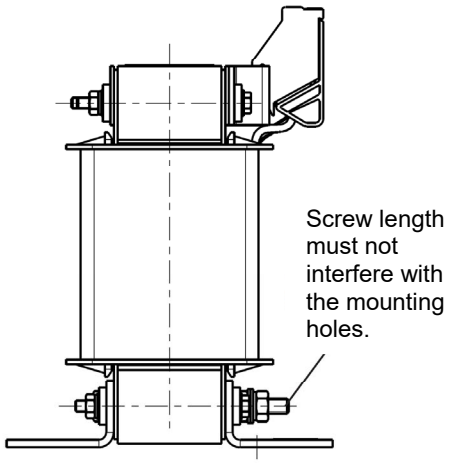




Screw torque: 1.0–1.2 Nm

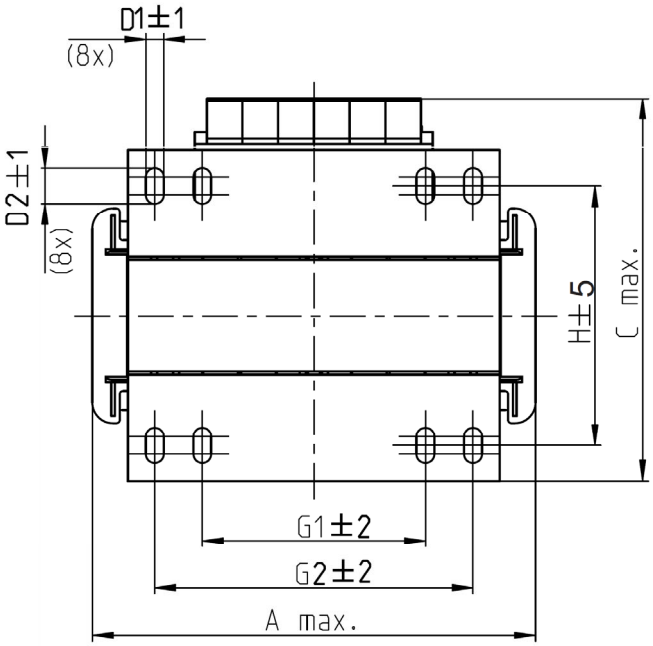
Screw torque: 0.6–0.8 Nm

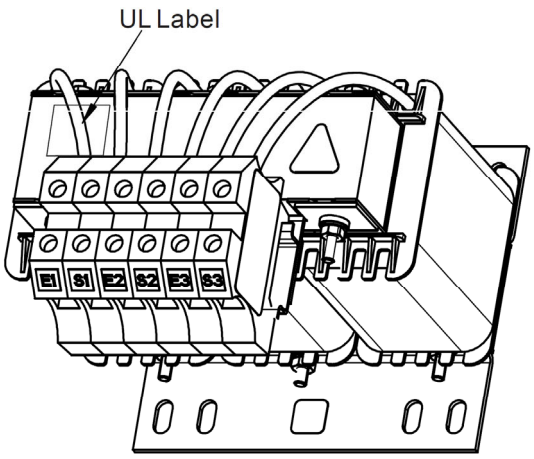




Unit: mm

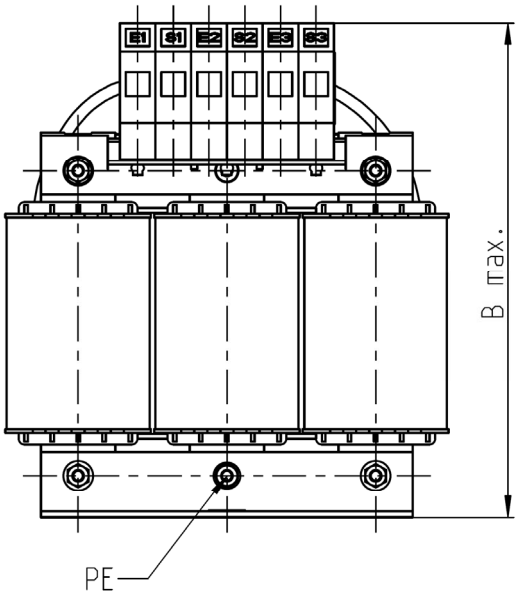
Output Reactors Delta Part #	A	B	C	D1*D2	H	G1	G2	PE D
DR003L0810	96	115	65	6*9	42	60	40	M4
DR004L0607	120	135	95	6*12	60	80.5	60	M4
DR006L0405	120	135	95	6*12	60	80.5	60	M4
DR009L0270	150	160	100	6*12	74	107	75	M4
DR010L0231	150	160	115	6*12	88	107	75	M4
DR012L0202	150	160	115	6*12	88	107	75	M4
DR018L0117	150	160	115	6*12	88	107	75	M4
DR024LP881	150	160	115	6*12	88	107	75	M4
DR032LP660	180	190	145	6*12	114	122	85	M6

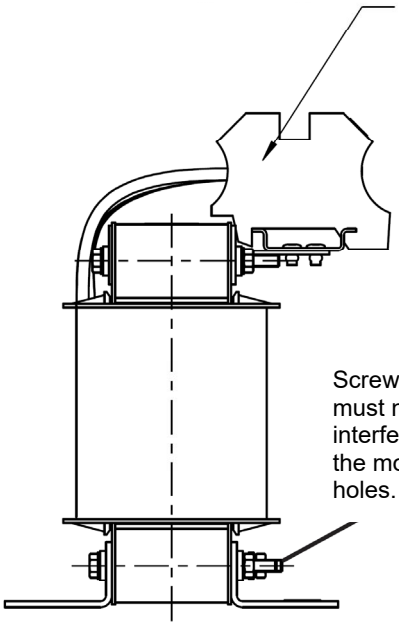




Terminal gauge: 16 mm^2

Screw torque: 1.2–1.4 Nm

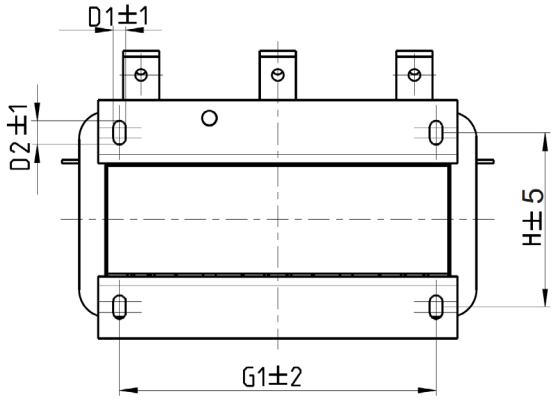


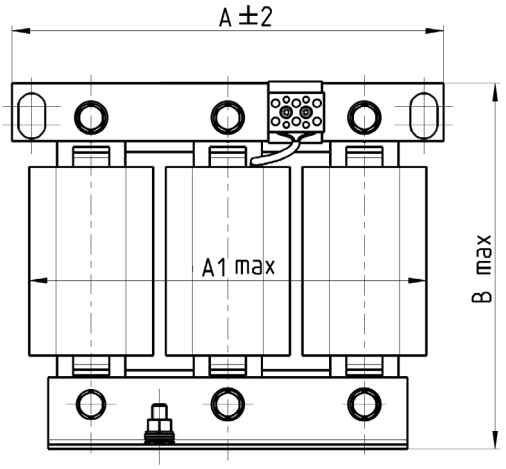


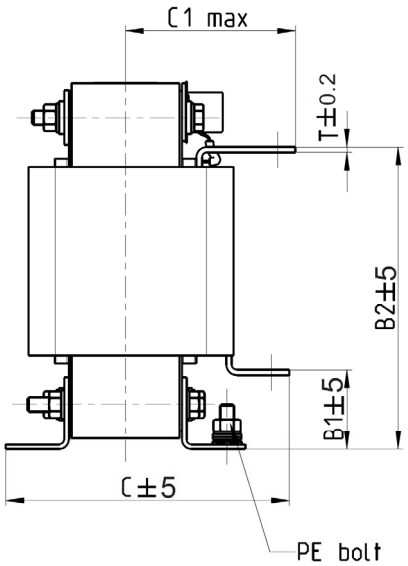
Screw length must not interfere with the mounting holes.

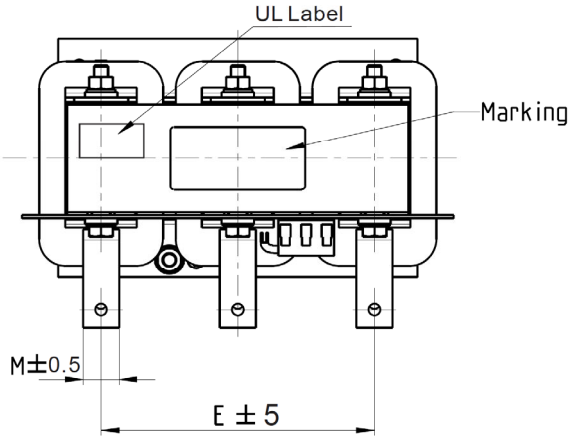
Unit: mm

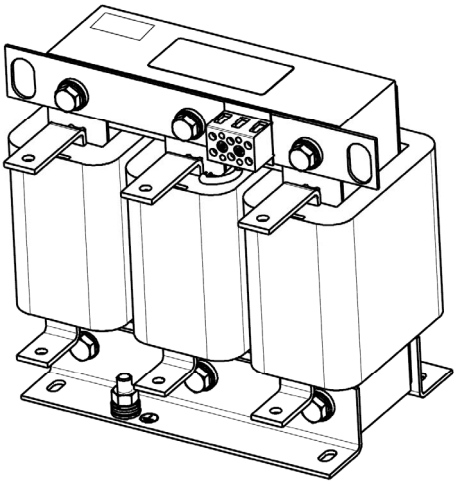
Output Reactors Delta Part #	A	B	C	D1*D2	H	G1	G2	PE D
DR038LP639	180	205	170	6*12	115	85	122	M4
DR045LP541	235	245	155	7*13	85	/	176	M6





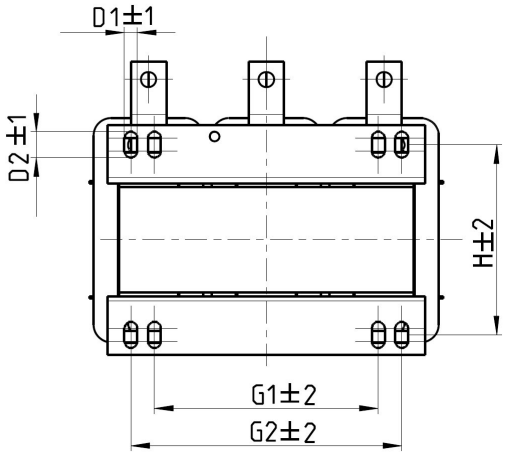


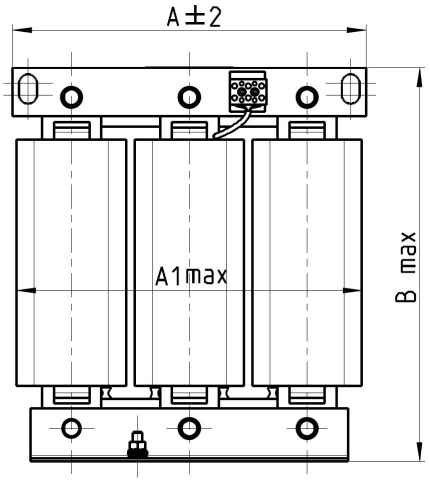


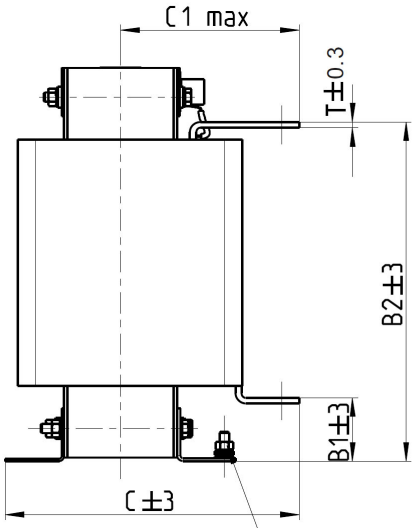


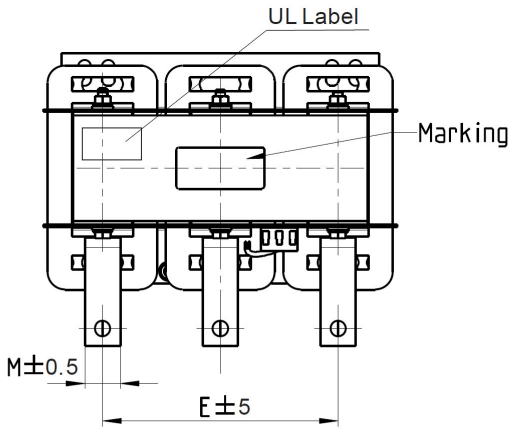
Unit: mm

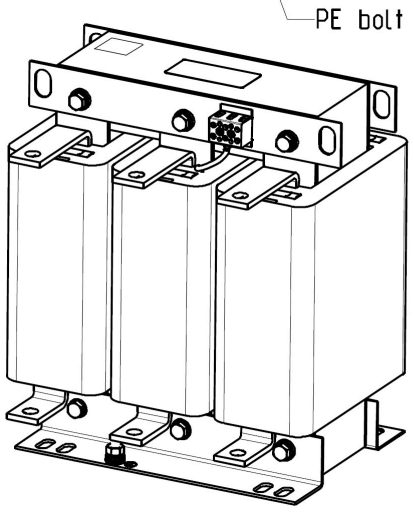
Output Reactors Delta Part #	A	A1	B	B1	B2	C	C1	D1*D2	E	G1	H	M*T
DR060LP405	240	228	215	44	170	163	110	7*13	152	176	97	20*3
DR073LP334	250	235	235	44	186	174	115	11*18	160	190	124	20*3
DR091LP267	250	240	235	44	186	174	115	11*18	160	190	124	20*3
DR110LP221	270	260	245	50	192	175	115	10*18	176	200	106	20*3











Unit: mm

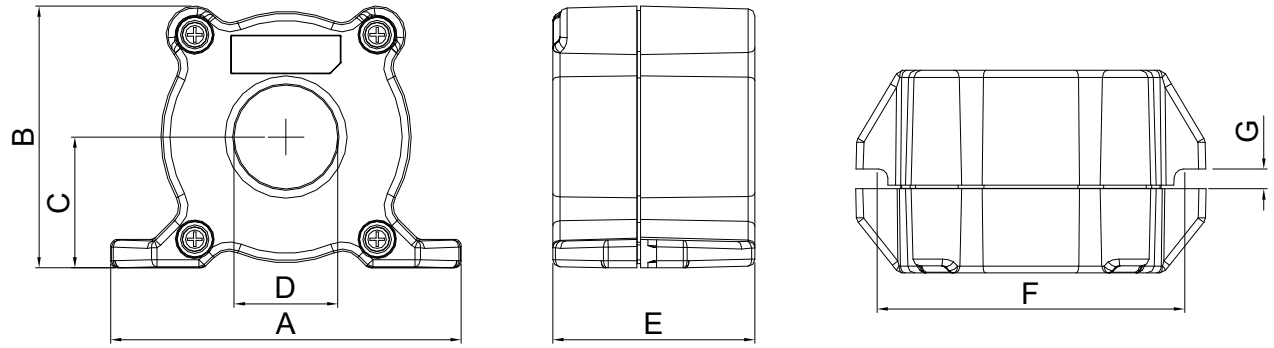
Output Reactors Delta Part #	A	A1	B	B1	B2	C	C1	D1*D2	E	G1	G2	H	M*T
DR150LP162	270	264	265	51	208	192	125	10*18	176	200	/	118	30*3
DR180LP135	300	295	310	55	246	195	125	11*22	200	230	190	142	30*3

6-5 Zero Phase Reactor

You can also suppress interference by installing a zero phase reactor at the main input or the motor output of the drive, depending on the location of the interference. Due to the large current passed through the main input/motor output side, pay attention to core saturation issue. Delta provides two types of zero phase reactors to solve interference problems.

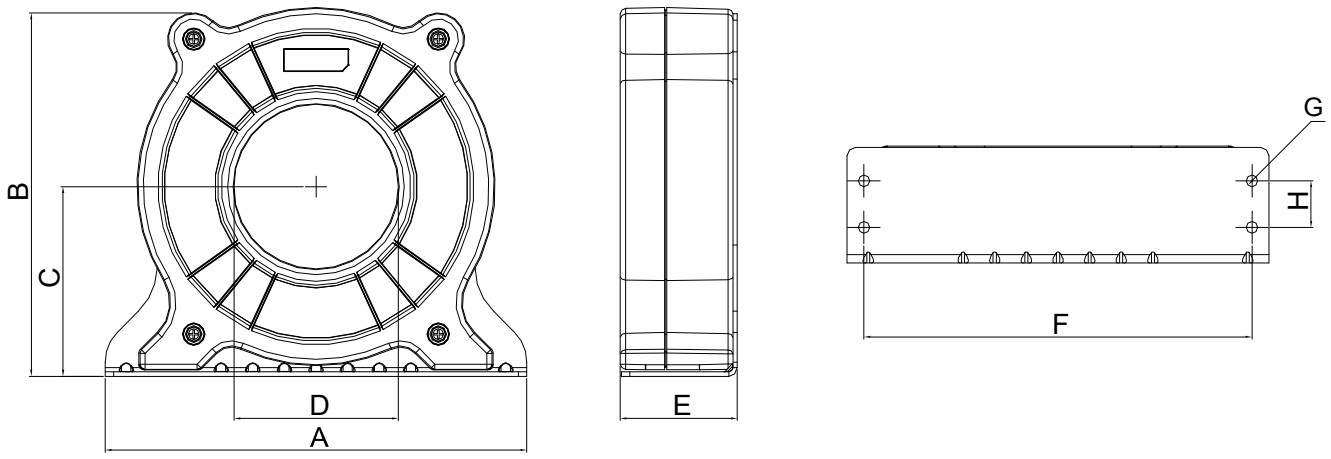
A. Casing with mechanical fixed part

The ideal material for withstanding large current loaded for the zero phase reactor at the main input/motor output is composite core. Core has strong saturation, and its strong resistance are many times of simple metal magnetic materials. Thus it can be used for high frequencies and you can get higher impedance by increasing the number of turns.



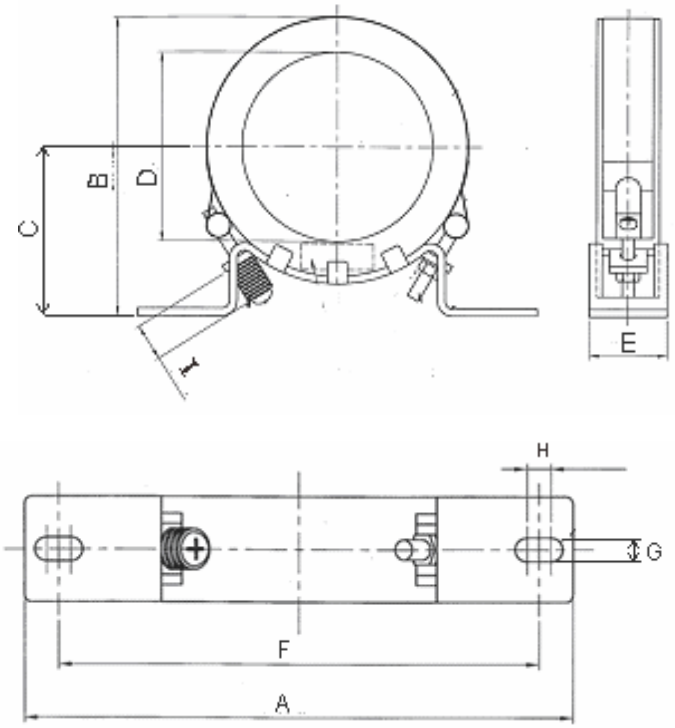
Unit: mm [inch]

Model	A	B	C	D	E	F	G(Ø)	Torque
RF008X00A	98 [3.858]	73 [2.874]	36.5 [1.437]	29 [1.142]	56.5 [2.224]	86 [3.386]	5.5 [0.217]	8–10 kgf/cm
RF004X00A	110 [4.331]	87.5 [3.445]	43.5 [1.713]	36 [1.417]	53 [2.087]	96 [3.780]	5.5 [0.217]	8–10 kgf/cm



Unit: mm [inch]

Model	A	B	C	D	E	F	G(Ø)	H	Torque
RF002X00A	200 [7.874]	172.5 [6.791]	90 [3.543]	78 [3.071]	55.5 [2.185]	184 [7.244]	5.5 [0.217]	22 [0.866]	40–45 kgf/cm

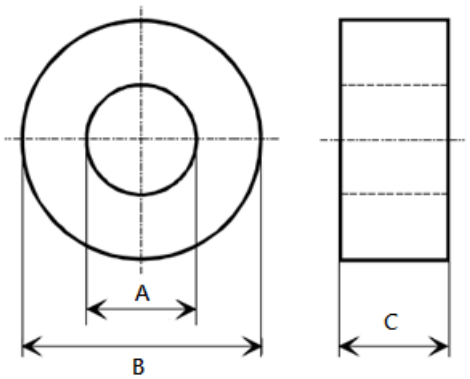


Unit: mm [inch]

Model	A	B	C	D	E	F	G(Ø)	H	I
RF300X00A	241 [9.488]	217 [8.543]	114 [4.488]	155 [6.102]	42 [1.654]	220 [8.661]	6.5 [0.256]	7.0 [0.276]	20 [0.787]
								Torque: 40–45 kgf/cm	

B. Casing without mechanical fixed part

Adopts nanocrystalline core developed by VAC®, and has high initial magnetic permeability, high saturation induction density, low iron loss and perfect temperature characteristic. If the zero phase reactor does not need to be fixed mechanically, use this solution.



Unit: mm

Model	A	B	C	Function
RF008X00N	44.5	21	19.5	Motor wire
RF004X00N	55	35.5	24.5	Motor wire
RF410X00N	109	68	32	Motor wire
RF300X00N	165	125	30	Motor wire
RF026X00N	17.3	11.2	7.5	Signal line
RF020X00N	27.3	17.5	12.3	Signal line

Reactor Model No. (See Note)	Recommended Wire Gauge		Wiring Method	#	Applicable Motor Drives	
RF008X00A RF008X00N	≤ 8 AWG	≤ 8.37 mm^2	Diagram A Diagram B	1	IED022S21A	IED037S21A
RF004X00A RF004X00N	≤ 4 AWG	≤ 21.15 mm^2	Diagram A Diagram B	1	IED055S23A IED110S23A IED075S43A IED150S43A	IED075S23A IED055S43A IED110S43A IED185S43A
RF002X00A RF410X00N	≤ 2 AWG	≤ 33.62 mm^2	Diagram A Diagram B	1	IED150S23A IED220S23A IED300S43A	IED185S23A IED220S43A
RF300X00A RF300X00N	≤ 300 MCM	≤ 152 mm^2	Diagram A Diagram B	1	IED370S43A IED550S43A	IED450S43A IED750S43A

Note: 600 V insulated cable wire

Installation

During installation, pass the cable through at least one zero phase reactor. Use a suitable cable type (insulation class and wire section) so that the cable passes easily through the zero phase reactor. Do not pass the grounding cable through the zero phase reactor; only pass the motor wire through the zero phase reactor. With longer motor cables the zero-phase reactor can effectively reduce interference at the motor output. Install the zero-phase reactor as close to the output of the drive as possible. Diagram A shows the installation diagram for a single turn zero phase reactor. If the wire diameter allows several turns, Diagram B shows the installation of a multi-turn zero phase reactor. The more turns, the better the noise suppression effect.

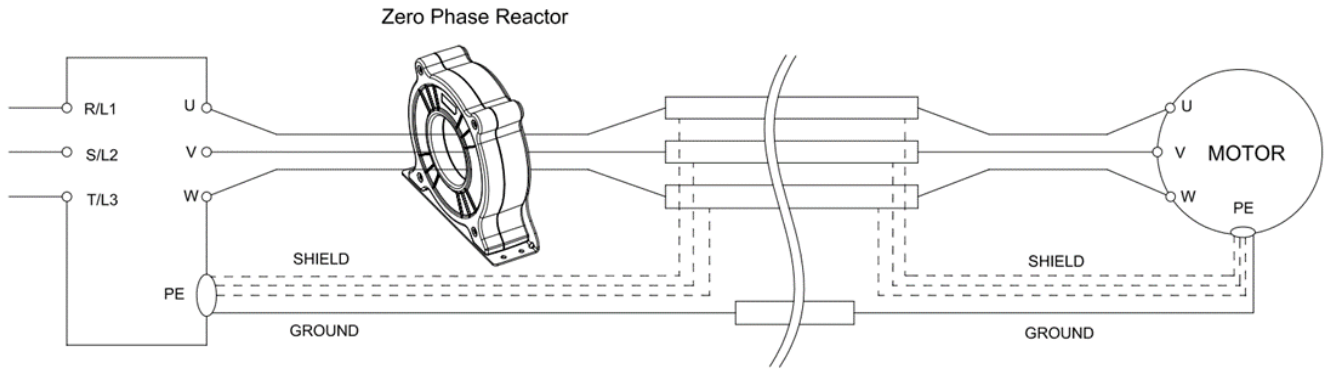


Diagram A. Single turn wiring diagram for shielding wire with a zero phase reactor

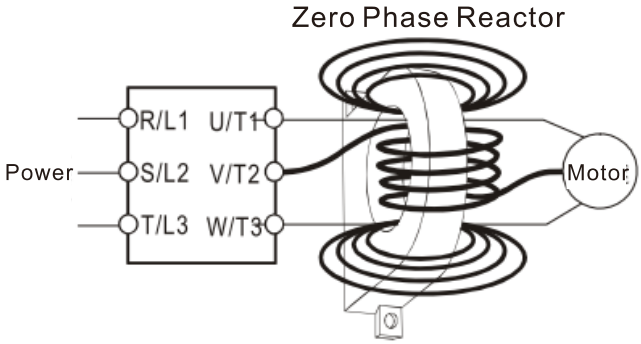


Diagram B. Multi-turn zero phase reactor

Installation Precaution

Install the zero phase reactor at the drive's output terminal (U/T1, V/T2, W/T3). After the zero phase reactor is installed, it reduces the electromagnetic radiation and load stress emitted by the wiring of the frequency converter. The number of zero phase reactors required for the drive depends on the wiring length and the drive voltage.

The normal operating temperature of the zero phase reactor should be lower than 85°C (176°F). However, when the zero phase reactor is saturated, its temperature may exceed 85°C (176°F). In this case, increase the number of zero phase reactors to avoid saturation. The following are reasons that might cause saturation of the zero phase reactors: the drive wiring is too long; the drive has several sets of loads; the wiring is in parallel; or the drive uses high capacitance wiring. If the temperature of the zero phase reactor exceeds 85°C (176°F) during the operation of the drive, increase the number of zero phase reactors.

Recommended maximum wire gauge when installing zero phase reactor:

Zero Phase Reactor Model No.	Max. Wire Gauge or LUG width	Max. Wire Gauge AWG (1 C*3)		Max. Wire Gauge AWG (4 C*1)	
		75 C	90 C	75 C	90 C
RF008X00A	13MM	3 AWG	1 AWG	3 AWG	1 AWG
RF004X00A	16MM	1 AWG	2/0 AWG	1 AWG	1/0 AWG
RF002X00A	36MM	600 MCM	600 MCM	1 AWG	1/0 AWG
RF300X00A	73MM	650 MCM	650 MCM	300 MCM	300 MCM
RF008X00N	11MM	9 AWG	4 AWG	6 AWG	6 AWG
RF004X00N	16MM	1 AWG	2/0 AWG	1 AWG	1/0 AWG
RF410X00N	36MM	600 MCM	600 MCM	1 AWG	1/0 AWG
RF300X00N	57MM	600 MCM	600 MCM	300 MCM	300 MCM

6-6 EMC Filter

The table below shows external EMC filter models for each IED-S series motor drive. Choose corresponding zero phase reactors and applicable shielding cables according to the required noise emission and electromagnetic interference rating for the best configuration and anti-interference performance. If radiation emission (RE) is not a concern on site and you only need conducted emission (CE) to reach EN55011 Class A, you do not need to install a zero phase reactor on the input side to reach the EMC standard.

220V Models

IED-S			EMC Filter Model No.	Zero Phrase Reactor	Carrier Frequency	EN12015	
Frame	Motor Drive Model No.	Rated input Current (A)		Input Side (R/S/T)		Conducted Emission Output Shielded Cable Length 50m	Radiation Emission
C	IED022S21A	24	B84142A0042R122	RF008X00A or RF008X00N	Carrier frequency by default	CLASS A	CLASS A
	IED037S21A	34	B84142A0042R122	RF008X00A or RF008X00N		CLASSA	CLASSA
	IED055S23A	23	EMF056A23A	RF004X00A or RF004X00N		CLASS A	CLASS A
	IED075S23A	30	EMF056A23A	RF004X00A or RF004X00N		CLASS A	CLASS A
	IED110S23A	47	EMF056A23A	RF004X00A or RF004X00N		CLASS A	CLASS A
D	IED150S23A	56	B84143D0150R127	RF002X00A or RF410X00N		CLASS A	CLASS A
	IED185S23A	73	B84143D0150R127	RF002X00A or RF410X00N		CLASS A	CLASS A
	IED220S23A	90	B84143D0150R127	RF002X00A or RF410X00N		CLASS A	CLASS A

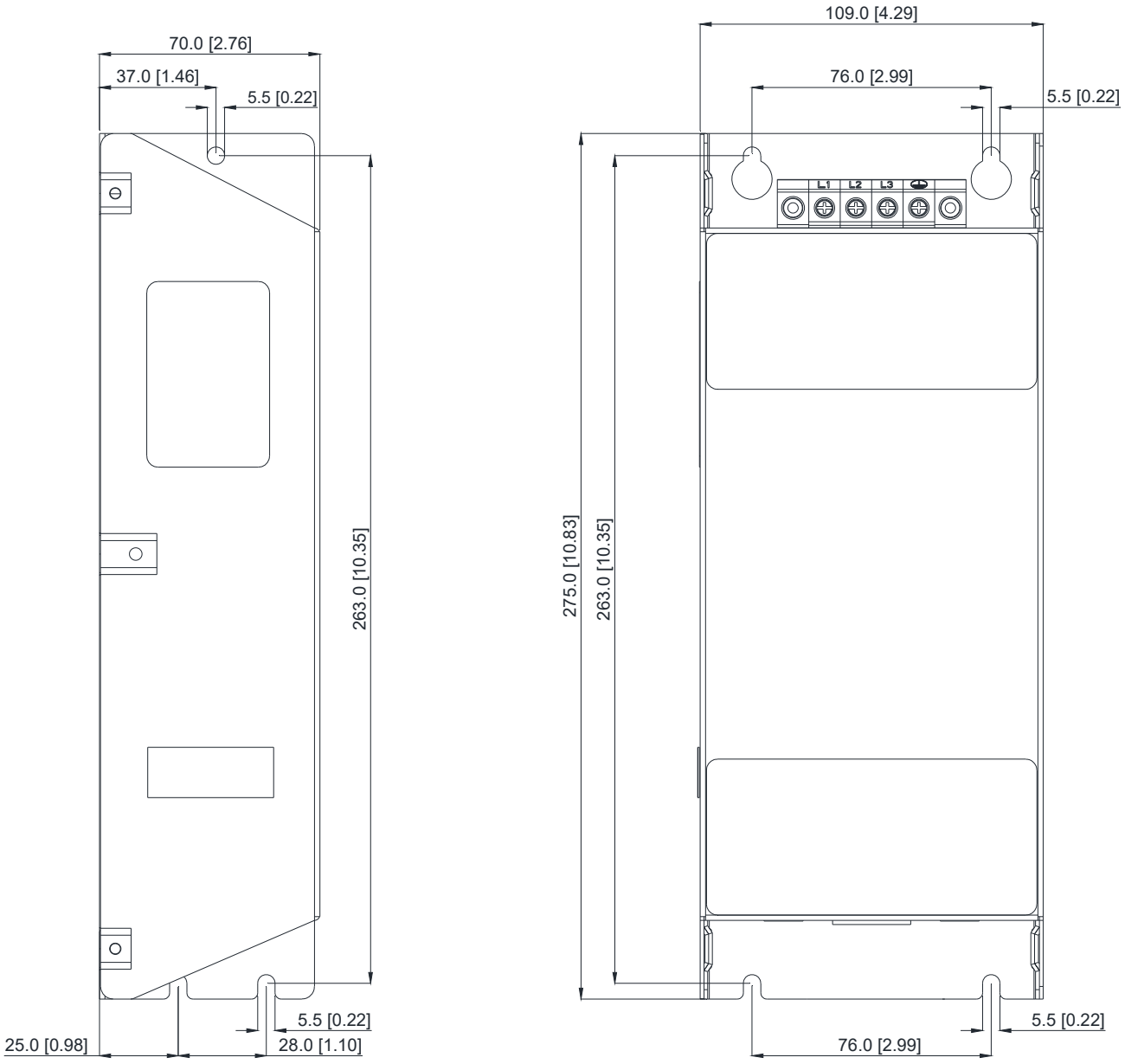
460V Models

IED-S			EMC Filter Model No.	Zero Phrase Reactor	Carrier Frequency	EN12015	
Frame	Motor Drive Model No.	Rated input Current (A)		Input Side (R/S/T)		Conducted Emission Output Shielded Cable Length 50m	Radiation Emission
C	IED055S43A	14	EMF033A43A	RF004X00A or RF004X00N	Carrier frequency by default	CLASSA	CLASS A
	IED075S43A	17	EMF033A43A	RF004X00A or RF004X00N		CLASS A	CLASS A
	IED110S43A	24	EMF033A43A	RF004X00A or RF004X00N		CLASS A	CLASS A
	IED150S43A	30	B84143D0075R127	RF004X00A or RF004X00N		CLASS A	CLASS A
	IED185S43A	37	B84143D0075R127	RF004X00A or RF004X00N		CLASS A	CLASS A
D	IED220S43A	47	B84143D0090R127	RF002X00A or RF410X00N		CLASS A	CLASS A
	IED300S43A	58	B84143D0090R127	RF002X00A or RF410X00N		CLASS A	CLASS A
E	IED370S43A	80	B84143D0200R127	RF300X00A or RF300X00N		CLASS A	CLASS A
	IED450S43A	100	B84143D0200R127	RF300X00A or RF300X00N		CLASS A	CLASS A
	IED550S43A	128	B84143D0200R127	RF300X00A or RF300X00N		CLASS A	CLASS A
	IED750S43A	165	B84143D0200R127	RF300X00A or RF300X00N		CLASS A	CLASS A

EMC Filter Dimension

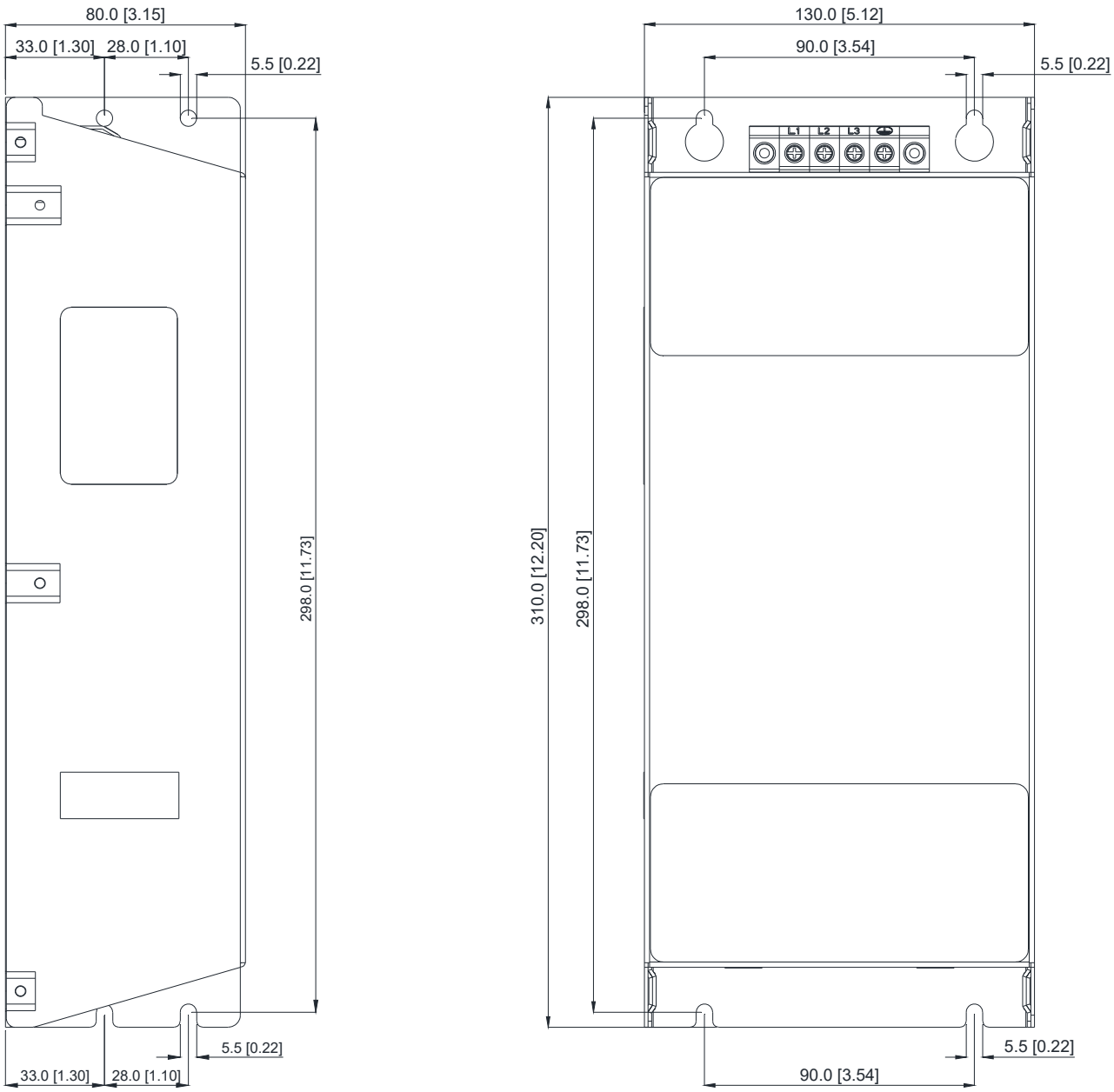
EMC Filter Model No.: EMF018A43A

Unit: mm [inch]



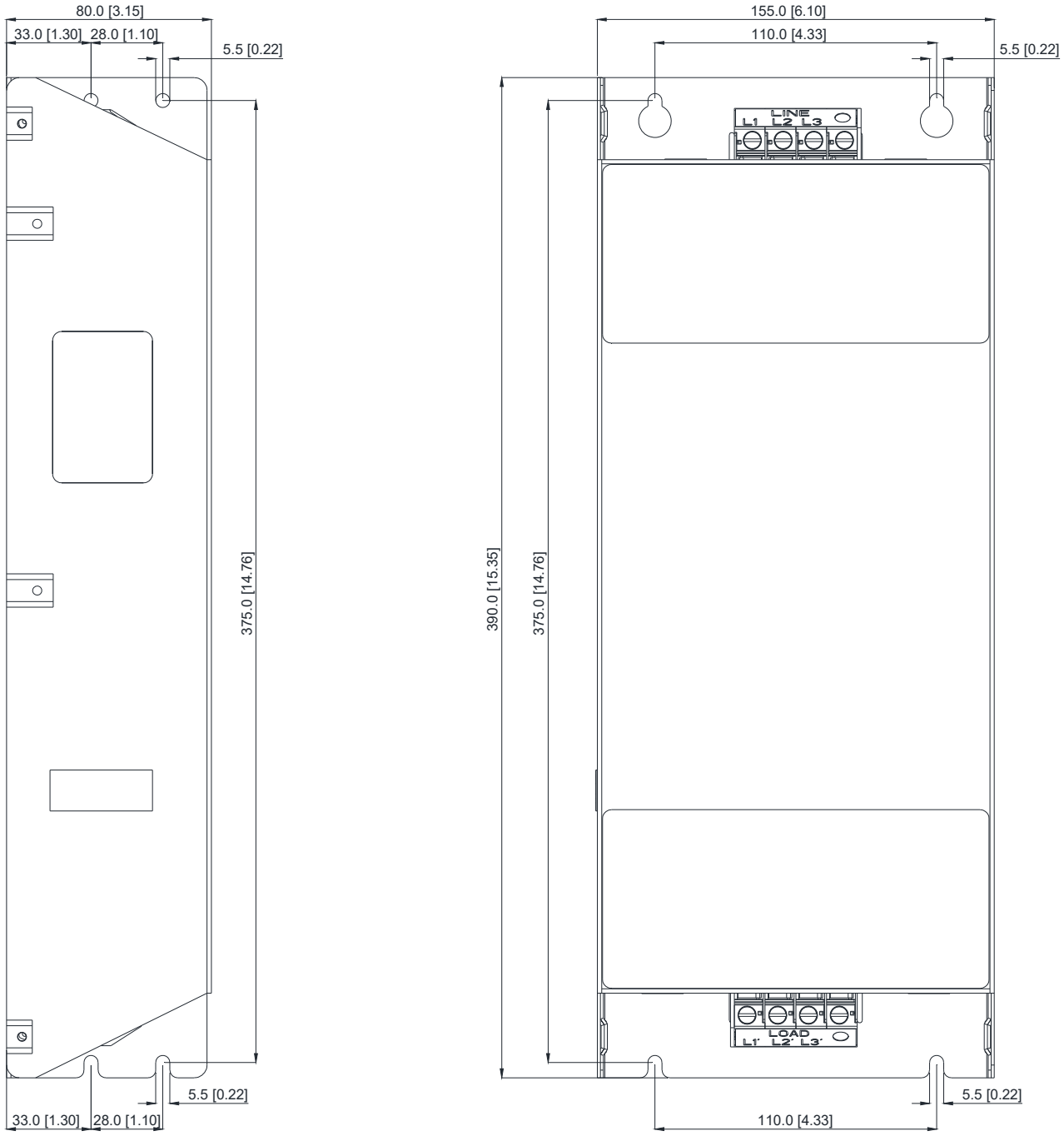
EMC Filter Model No.: EMF035A23A, EMF033A43A

Unit: mm [inch]



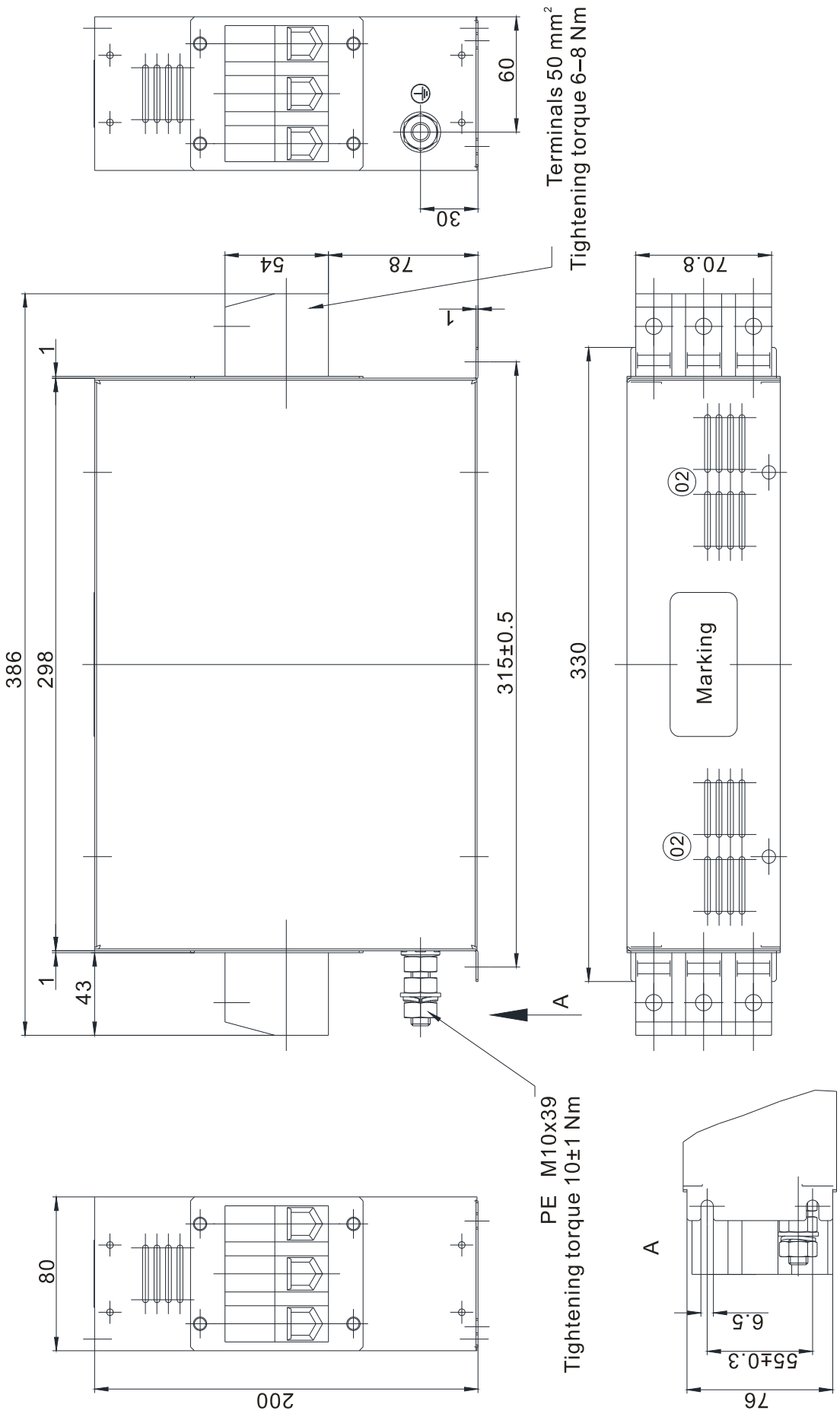
EMC Filter Model No.: EMF056A23A

Unit: mm [inch]



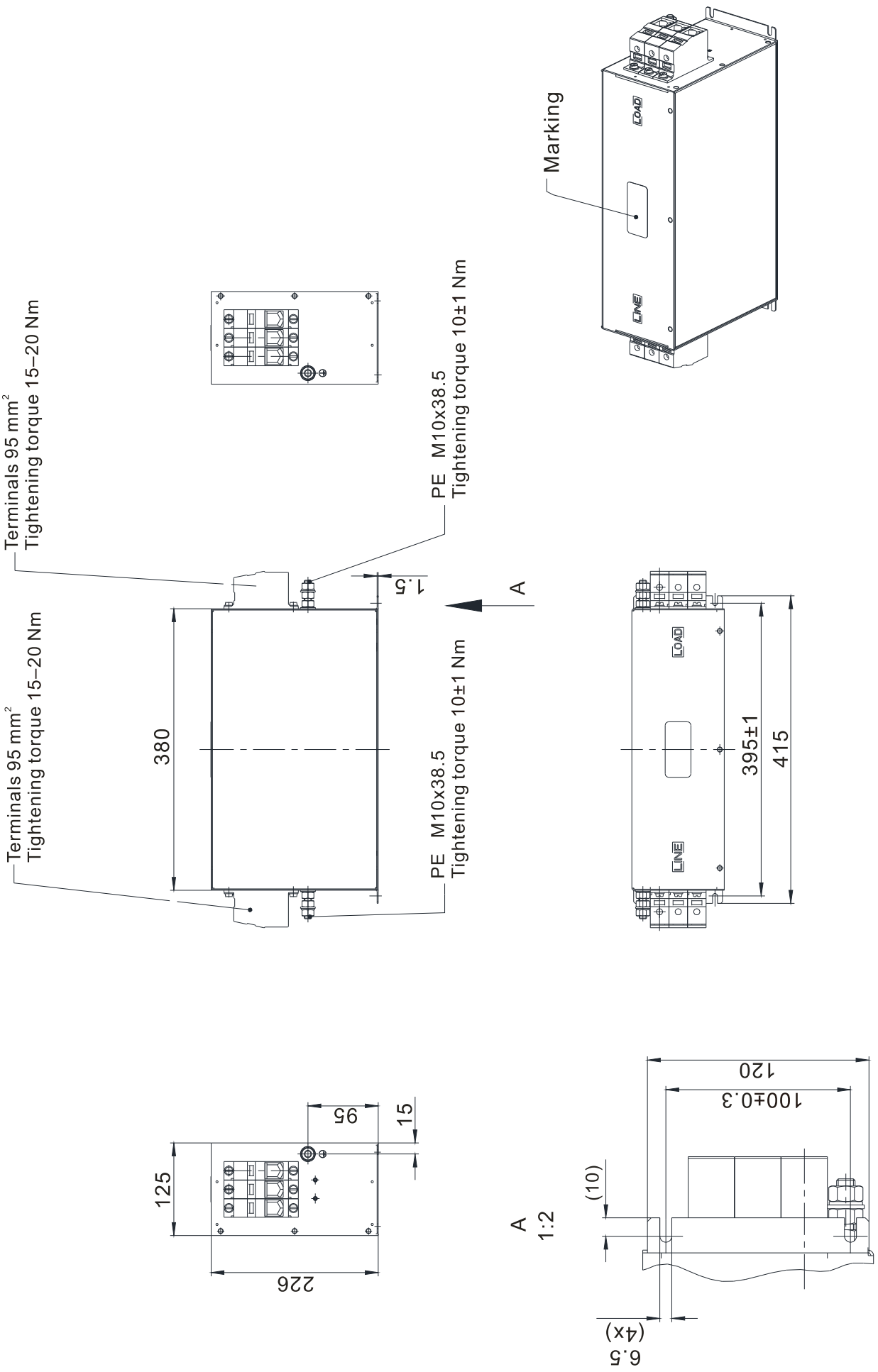
EMC Filter Model No.: B84143D0075R127, B84143D0090R127

Unit: mm [inch]



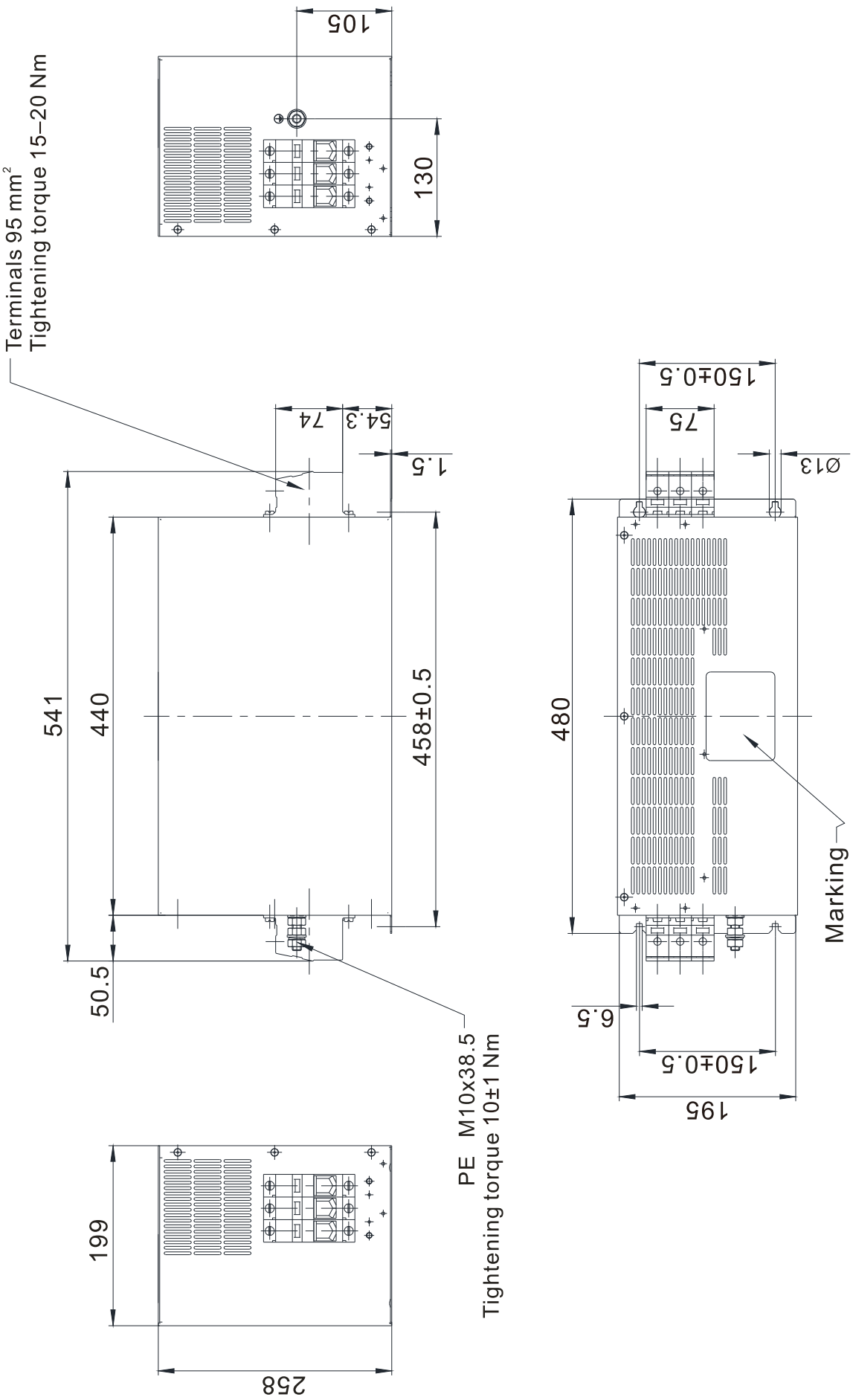
EMC Filter Model No.: B84143D0150R127

Unit: mm [inch]



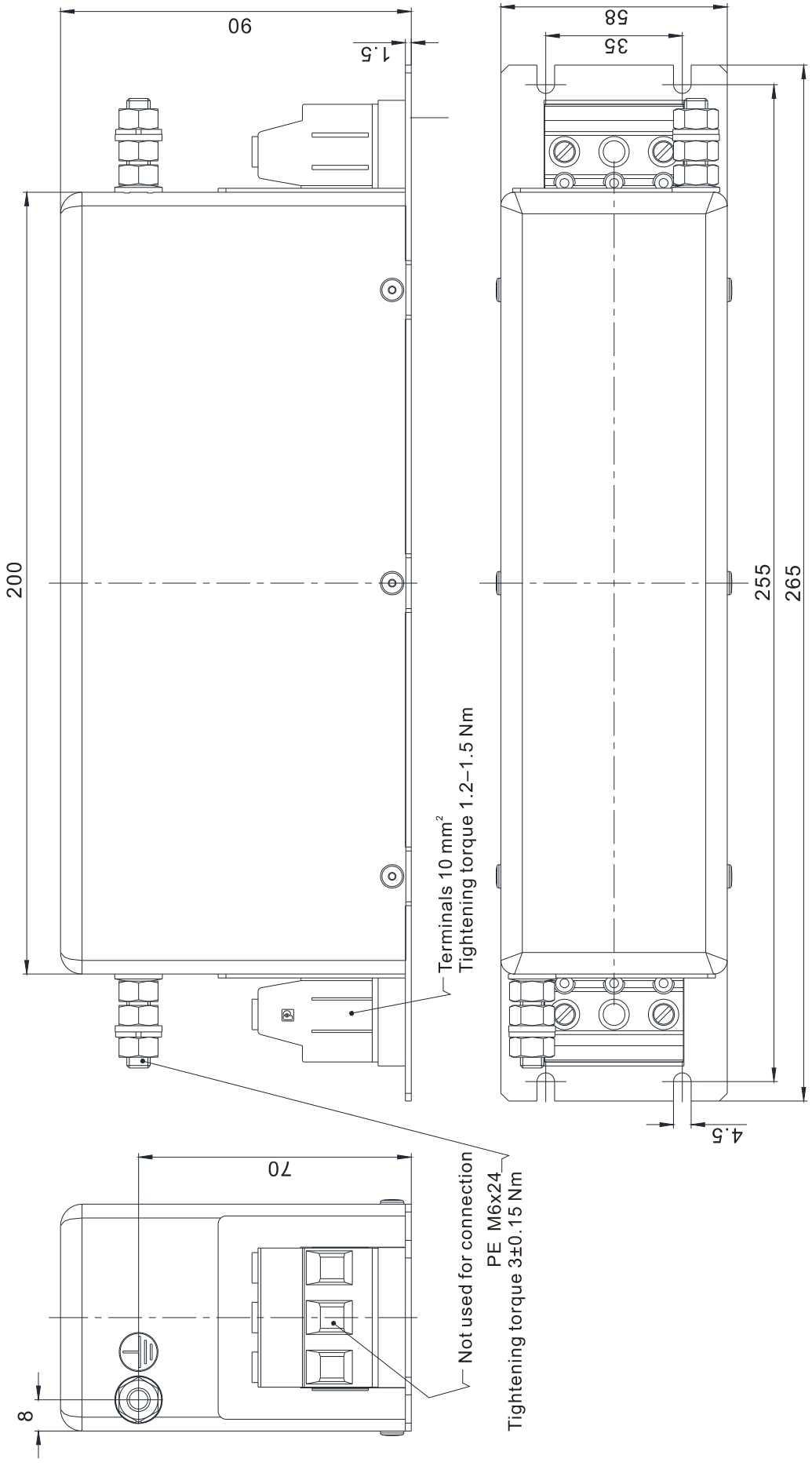
EMC Filter Model No.: B84143D0200R127

Unit: mm [inch]



EMC Filter Model No.: B84142A0042R122

Unit: mm [inch]



EMC Filter Installation

All electrical equipment in operation, including AC motor drives, generates high-frequency and low-frequency noise that interfere with peripheral equipment by radiation or conduction. By correctly installing an EMC filter, you can eliminate much of the interference. Use DELTA EMC filters for the best interference elimination.

The following standards are met when the AC motor drive and EMC filter are installed and wired according to the user manual:

1. EN61000-6-4
2. EN61800-3: 1996
3. EN55011: (1991) Class A Group 1 (1st Environment, restricted distribution)
4. European Standards: EN12015 & EN12016

General precaution

To ensure the best anti-interference performance for EMC filter, observe the following precautions in addition to the installation and wiring in the user manual:

☑ Install the EMC filter and AC motor drive on the same metal plate. Install the AC motor drive on the EMC filter footprint or install the EMC filter as close as possible to the AC motor drive.

☑ Use the shortest wire possible. Ground the metal plate. Fix the EMC filter cover and AC motor drive or grounding to the metal plate and make the contact area as large as possible.

Choose suitable motor cable and precautions

Improper installation and choice of motor cable affect the performance of EMC filters. Be sure to observe the following precautions when selecting motor cable.

☑ Use shielded cable (double shielding is best). Ground the shielding on both ends of the motor cable with the minimum length and maximum contact area.

☑ Remove any paint on the metal saddle for good ground contact with the plate and shielding (see Figure 1).

☑ The connections between the motor's shielded cable and metal plate must be correct. Use a U-shape metal saddle to fix both ends of the motor cable. See Figure 2 for correct connections.

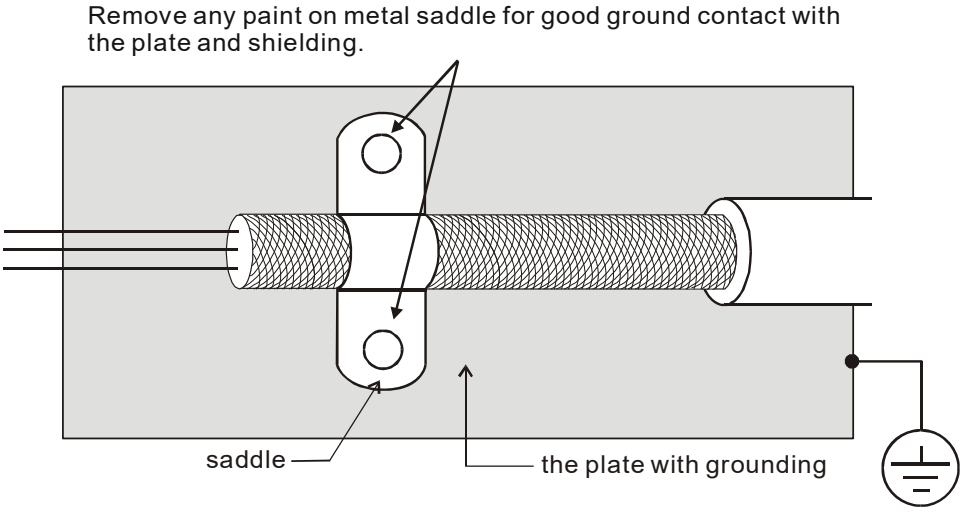


Figure 1

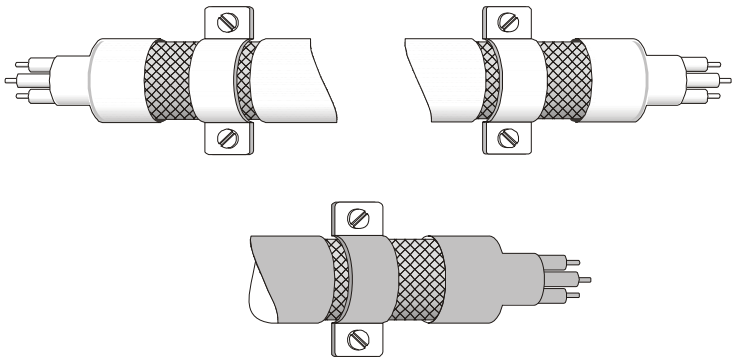


Figure 2

The motor cable length

1. Required cable length when the motor drive is at full load.

   a. Non-shielded cable: For 5.5 kW (7.5 HP) and below models, the maximum cable length is 100 m (328 ft). For 7.5 kW (10 HP) and above models, the maximum cable length is 200 m (656 ft)
   b. Shielded cable: For 5.5 kW (7.5 HP) and below models, the maximum cable length is 50 m (165 ft). For 7.5 kW (10 HP) models, the maximum cable length is 100 m (328 ft).
   c. To be compatible with the European Standards EN12015 & EN12016, follow one of the following in addition to the precautions on page 6-18:
      - Use shielded cables
      - The motor cable must be shorter than 2 m (6 ft).

   If the cable length is longer than the recommended lengths above, install an output reactor.

NOTE

- If the cable length is too long, the stray capacitance between cables increases and may cause leakage current. In this case, It activates the over-current protection, increases leakage current, or may affect the current display. The worst case is that it may damage the AC motor drive.
- If more than one motor is connected to the AC motor drive, the total wiring length is the sum of the wiring length from AC motor drive to each motor.
- For the 460V series AC motor drive, when you install an overload thermal relay between the drive and the motor to protect the motor from overheating, the connecting cable must be shorter than 50 m; however, an overload thermal relay malfunction may still occur. To prevent the malfunction, install an output reactor (optional) to the drive or lower the carrier frequency setting (Pr.00-12).

2. Consequence of the surge voltages on the motor

When a motor is driven by a PWM-type AC motor drive, the motor terminals experience surge voltages due to component conversion of AC motor drive and cable capacitance. When the motor cable is very long (especially for the 460V series), surge voltages may damage the insulation. To prevent this, follow these rules:

a. Use a motor with enhanced insulation (refer to the tables below).
b. Reduce the cable length between the AC motor drive and motor to suggested values.
c. Connect an output reactor (optional) to the output terminals of the AC motor drive.

For 7.5 kW (10 HP) and higher models:

Insulation level of motor	1000 V	1300 V	1600 V
460 V_{AC} input voltage	20 m (66 ft)	100 m (328 ft)	400 m (1312 ft)
230 V_{AC} input voltage	400 m (1312 ft)	400 m (1312 ft)	400 m (1312 ft)

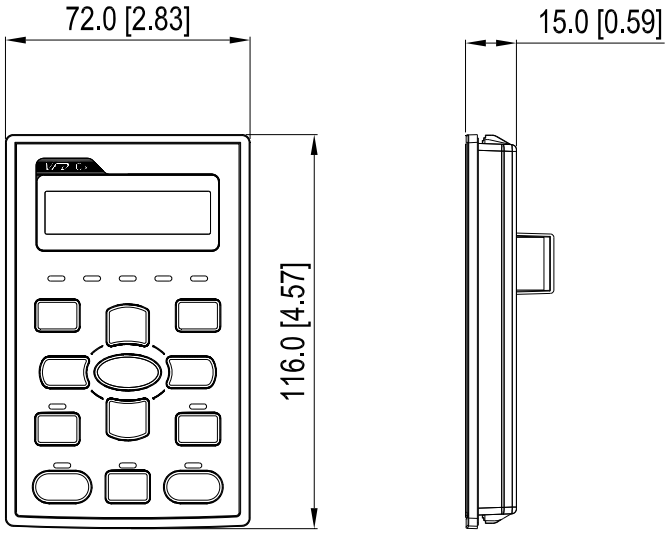
For 5.5 kW (7.5 HP) and lower models:

Insulation level of motor	1000 V	1300 V	1600 V
460 V_{AC} input voltage	20 m (66 ft)	50 m (165 ft)	50 m (165 ft)
230 V_{AC} input voltage	100 m (328 ft)	100 m (328 ft)	100 m (328 ft)

6-7 Digital Keypad

Dimension

Unit: mm [inch]



RJ45 Extension Cables for the Digital Keypad

Part No.	Description
CBC-K3FT	3 feet RJ45 extension lead (approximately 0.9 m)
CBC-K5FT	5 feet RJ45 extension lead (approximately 1.5 m)
CBC-K7FT	7 feet RJ45 extension lead (approximately 2.1 m)
CBC-K10FT	10 feet RJ45 extension lead (approximately 3 m)
CBC-K16FT	16 feet RJ45 extension lead (approximately 4.9 m)

Note: If communication cables are required, use non-shielded, 24 AWG, four-twisted pair, 100 ohms communication cables.

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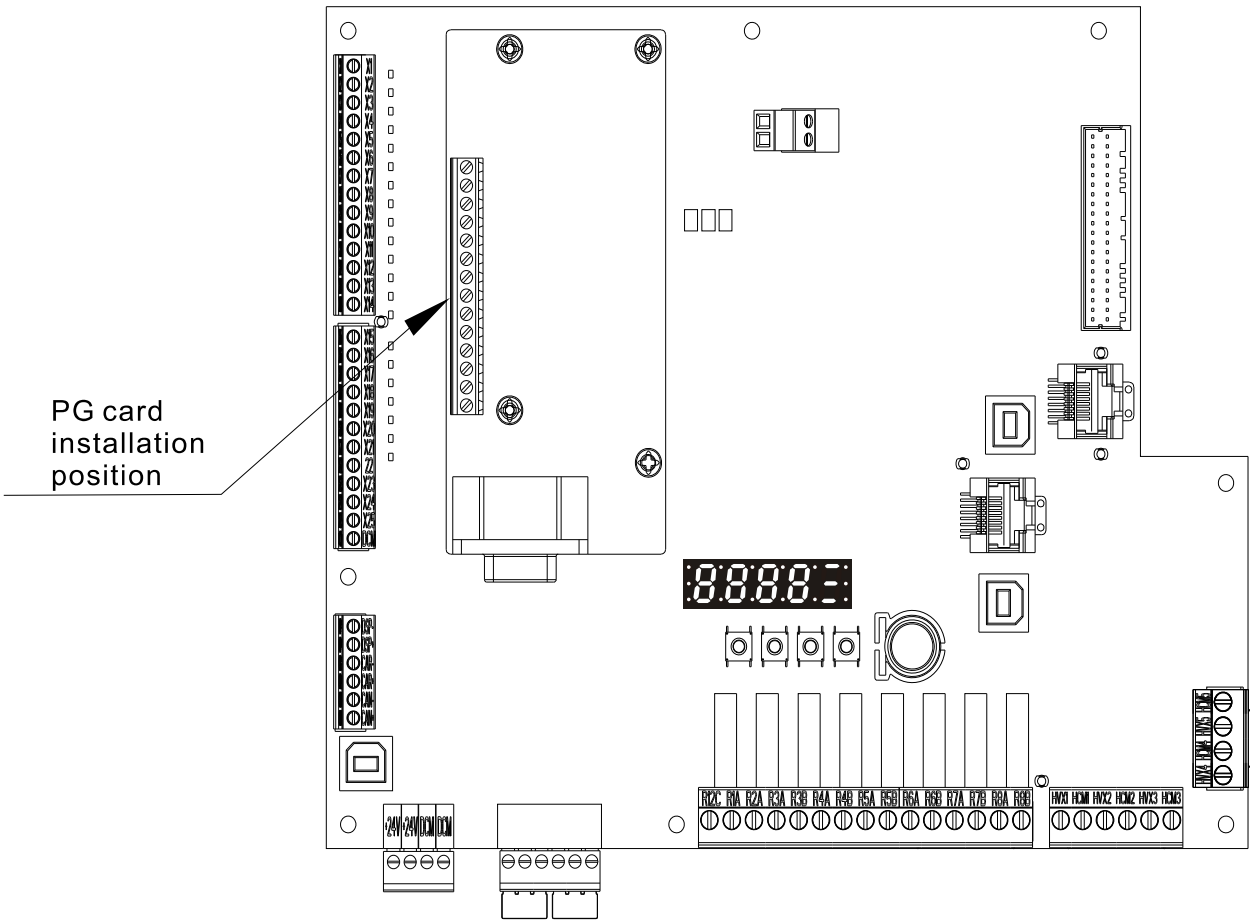
Chapter 7 Option Cards

Select the applicable option cards for your drive or contact your local distributor for suggestions. Note that the option cards do not support hot swapping. Turn off the drive power before installing or removing the option cards.

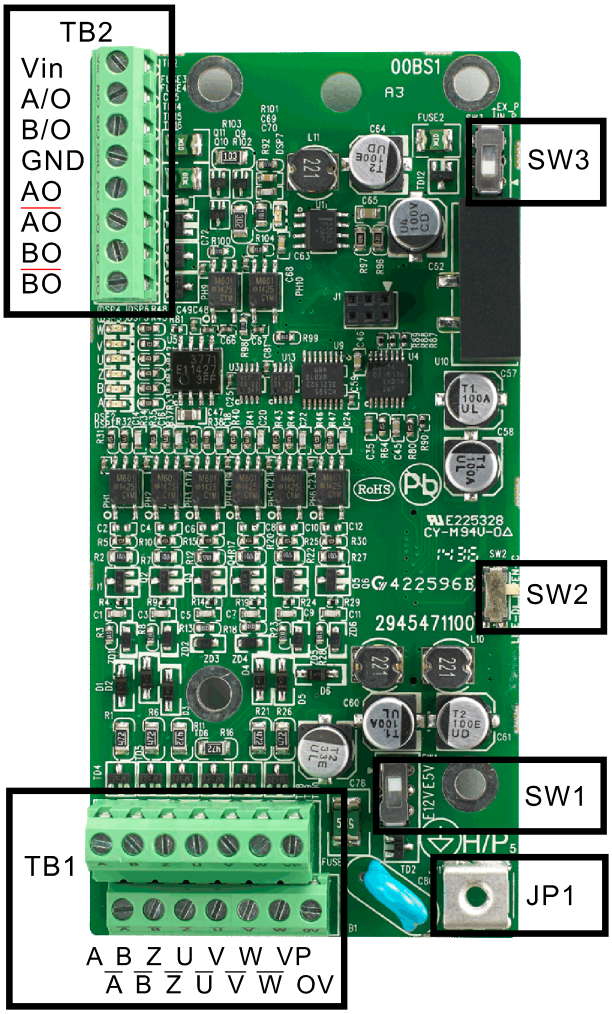


Terminal Specifications of PG Card

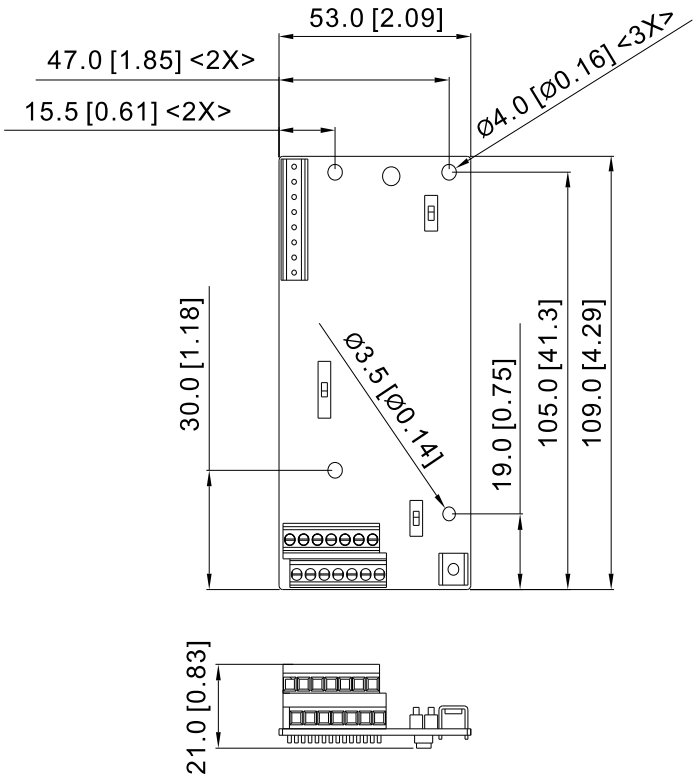
PG Card	Wire Gauge	Torque
EMED-PGABD-1, EMED-PGABD-2	0.05–1.31 mm^2 [30–16 AWG]	1.6 kg-cm [1.4 lb-in.]
EMED-PGHSD-1, EMED-PGHSD-3		
EMED-PGHSD-2, EMED-PGHSD-4		

7-1 EMED-PGABD-1*, EMED-PGABD-2

Applicable encoder: A/B/Z & U/V/W Absolute Encoders



Dimension Unit: mm [inch]



* EMED-PGABD-1 has been phased out in the first quarter of year 2021, and is pin-to-pin replaced by EMED-PGABD-2 after EOL.

Wire Gauge	Torque
30–16 AWG	1.6 kg-cm [1.4 lb-in.]

The following table lists the terminal specifications.

Terminal		Descriptions
TB2	Vin	Voltage input, to adjust the amplitude of output voltage at terminal A/O and terminal B/O. It also provides a 5 V voltage to support line driver's signal. Vin voltage range: 8–24 V, Max: 24 V.
	A/O, B/O	Output signal for the push-pull voltage frequency division. Default: Output amplitude is about +24 V. Use SW3 to disable the internal default power. Required input power through Vin-GND port (i.e. output voltage's amplitude) Vin voltage range: 8–24 V, Max: 24 V. Push-Pull Voltage Output Max. output frequency: 100 kHz Supports frequency division output, the frequency division range: 1–31.
	GND	Common ground terminal connecting to the host controller and the motor drive.
	AO, /AO, BO, /BO	Output signal for the line driver frequency division.

		Line Driver RS422 Max. output frequency: 150 kHz Supports frequency division output, the frequency division range: 1–31.
TB1	VP	Power output for encoder NOTE *Use SW1 to set output voltage amplitude* Voltage: +5 ± 0.5 V or +12 ± 1 V Current: 200 mA max.
	0V	Common power terminal for encoder
	A, $\overline{A}$, B, $\overline{B}$, Z, $\overline{Z}$	Incremental-type encoder signal input terminal Types of input signal: line driver, voltage, push-pull, open collector NOTE *Different input signals need different wiring methods. See the user manual for wiring diagrams.* Max. input frequency: 150 kHz
	U, $\overline{U}$, V, $\overline{V}$, W, $\overline{W}$	Absolute-type encoder signal input terminal Types of input signal: line driver, voltage, push-pull, open collector NOTE *Different input signals need different wiring methods. See the user manual for wiring diagrams.* Max. input frequency: 150 kHz
JP1	⏚	Ground Terminal Connect the motor drive power supply to ground. Supports PG shielding.
SW1		Switch between power for the encoder (5 V / 12 V).
SW2		Offline Detection Switch. Switch to the Line-D side to enable offline detection for the Line-D input signal. Switch to OPEN-C side to disable offline detection function for the OPEN-C input signal.
SW3		Power supply switch for frequency division. Switch to INP side to provide 24 V power for internal use. Switch to EXP side to provide 24 V power for external use (client).

Applicable encoders:

1. Open collector output encoder application: Use one pull-up resistor for each set of input current 5–15 mA. Refer to the table below for resistor specifications. If open collector input voltage uses 5V or 12V external power, see the PG wiring Figure 2 below.

5 V	Suggested pull-up resistor: above 150–520ohm, 1/2 W
12 V	Suggested pull-up resistor: above 600–2Kohm, 1/2 W

EMED-PGABD-x Open Collector Encoder

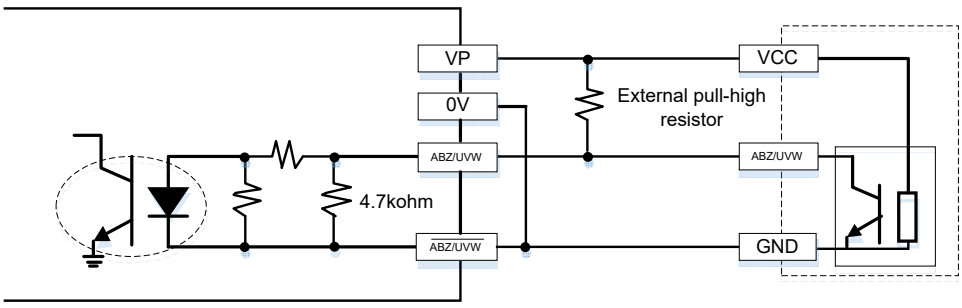


Figure 1

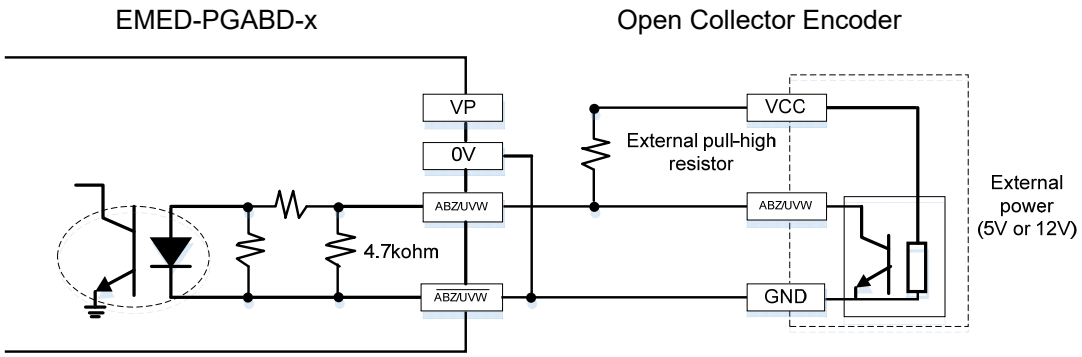


Figure 2

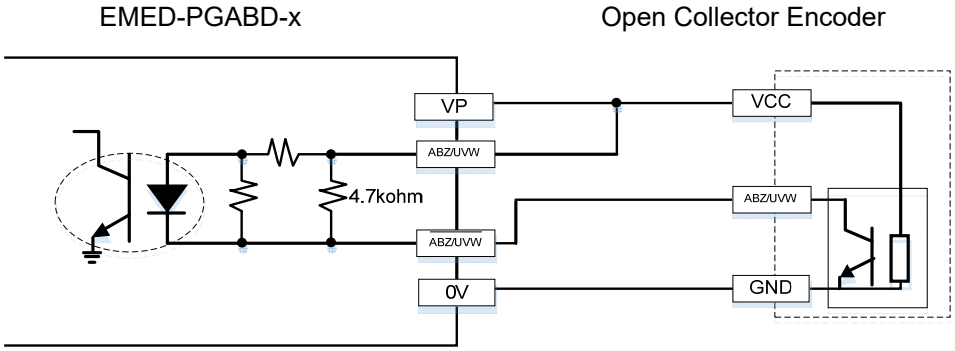


Figure 3

2. Voltage output encoder application: Each set of input current is 5–15 mA. If input voltage uses 5V or 12V external power, see the PG wiring Figure 5 below.

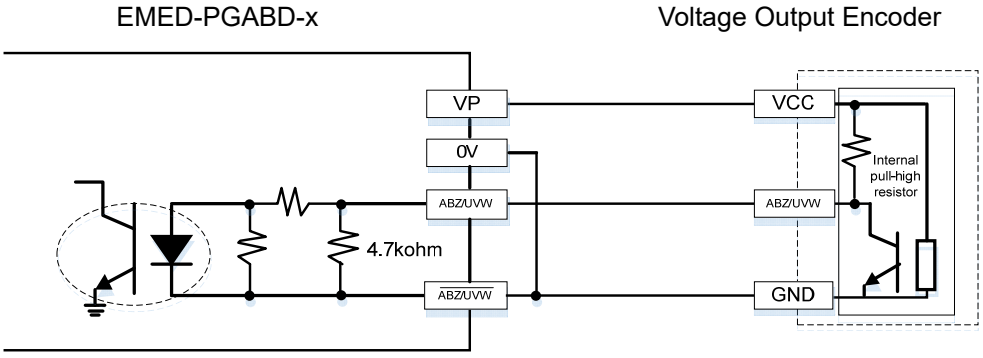


Figure 4

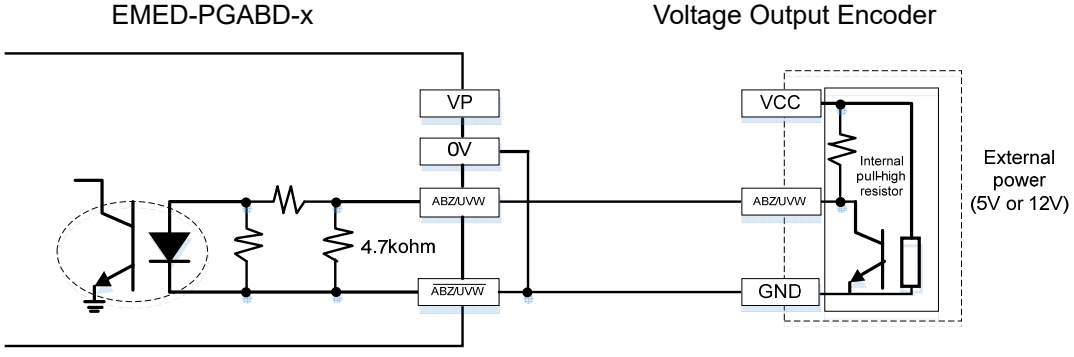


Figure 5

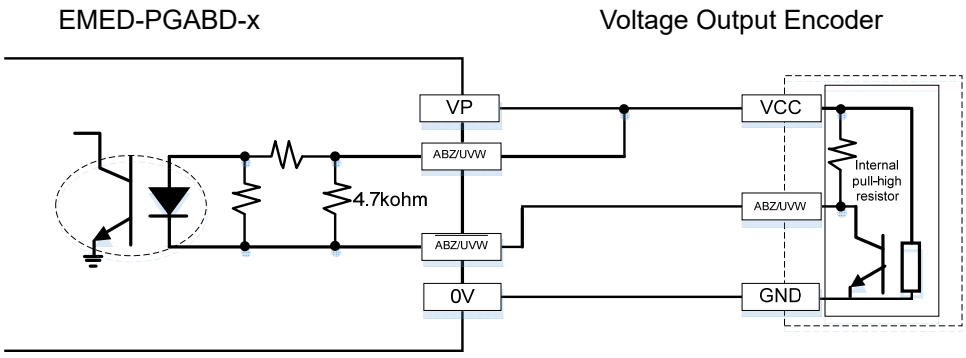


Figure 6

3. Push-pull output encoder application: Each set of input current is 5–15 mA. If input voltage uses 5V or 12V external power, see the PG wiring Figure 8 below.

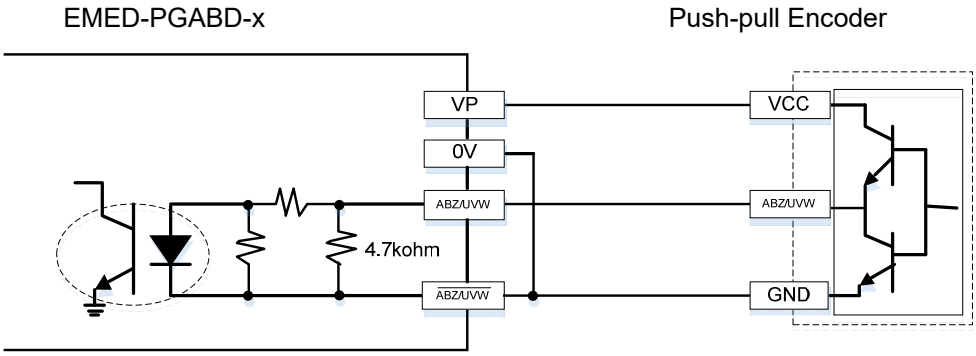


Figure 7

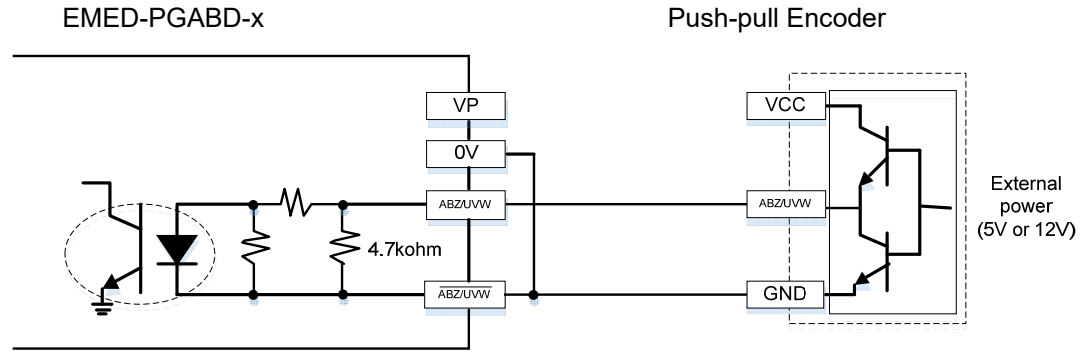


Figure 8

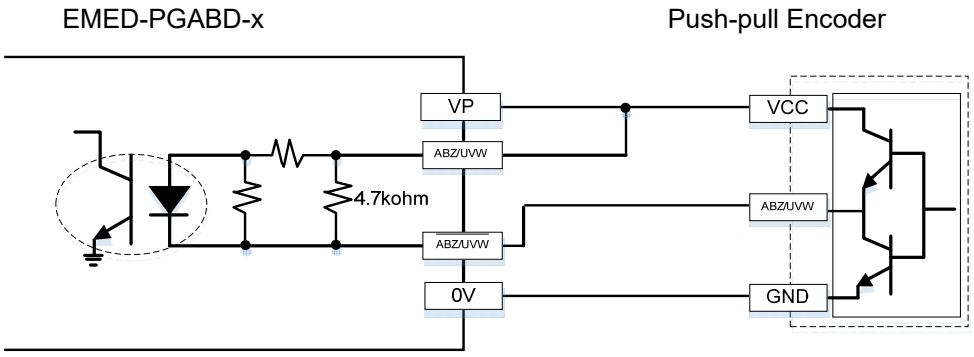


Figure 9

4. Line driver output encoder application: Each set of input current is 5–15 mA. If input voltage uses 5V or 12V external power, see the PG wiring Figure 11 below.

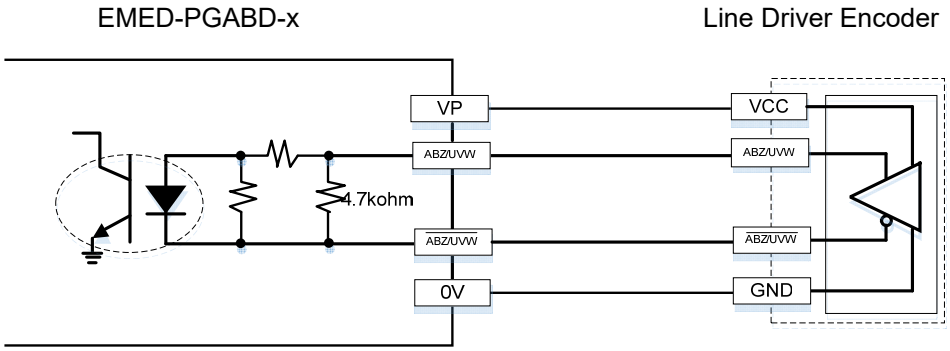


Figure 10

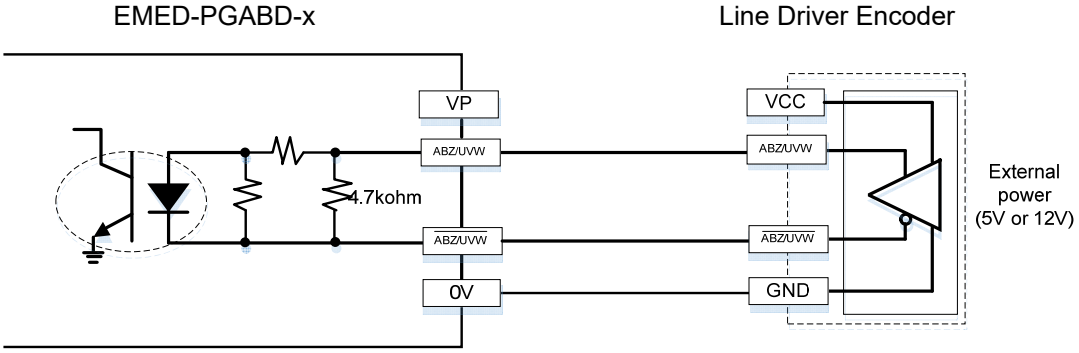
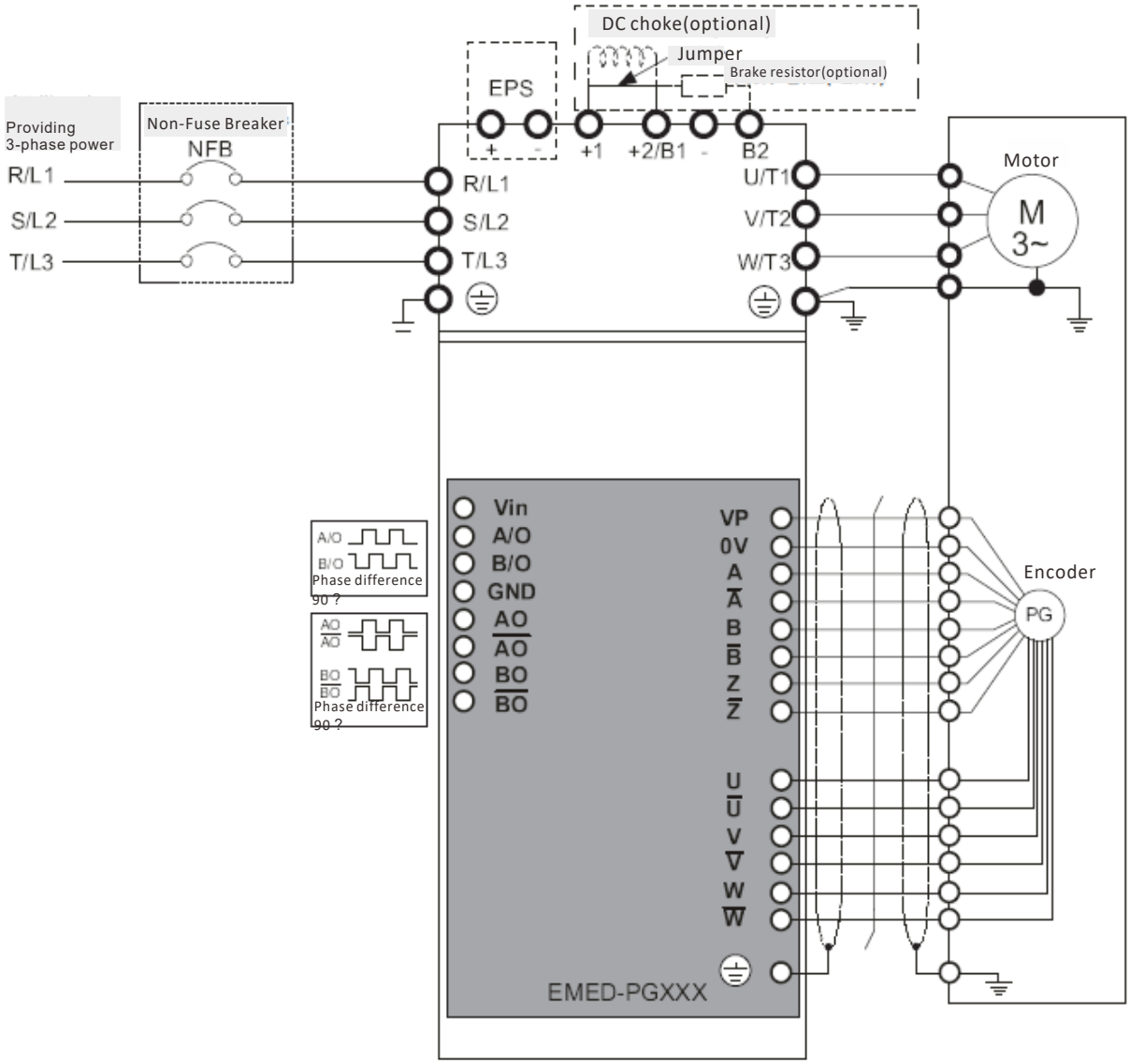


Figure 11

NOTE

- Verify that the SW1 is set to the correct output voltage before powering ON.
- Keep the motor drive wiring away from any high voltage lines to avoid interference.
- When using push-pull output and voltage output, short-circuit $\overline{A}$, $\overline{B}$, $\overline{Z}$ to 0V.
- When using open collector output, short-circuit A, B, Z to VP.

Wiring Diagram



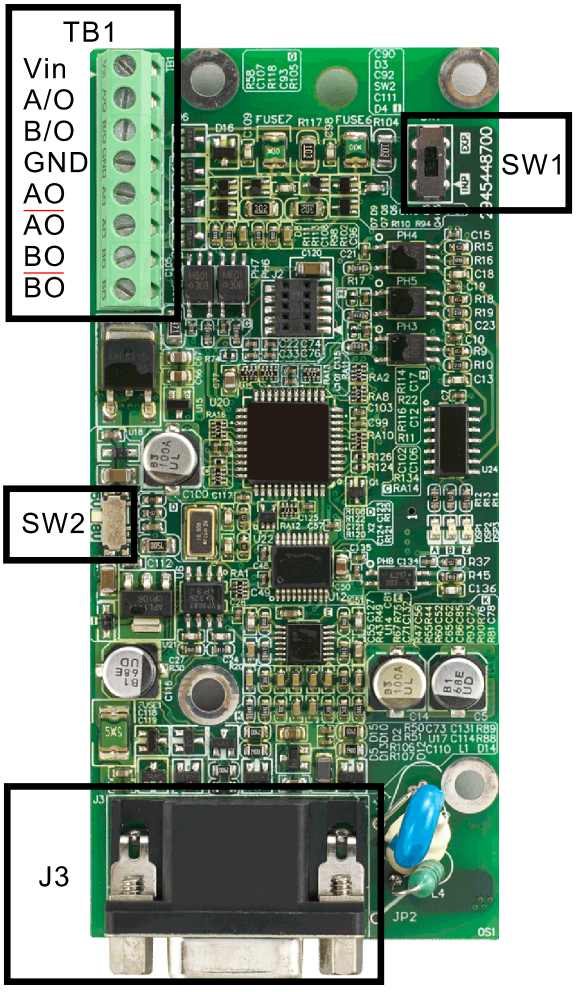
7-2 EMED-PGHSD-1*, EMED-PGHSD-3

Applicable encoder:

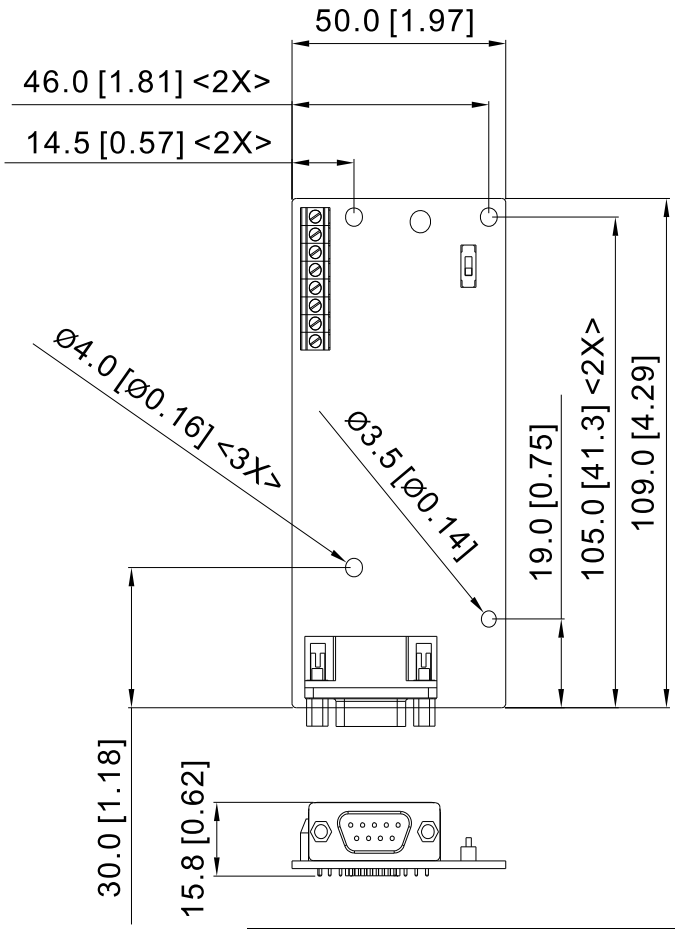
SIN/COS: Heidenhain ERN1387

EnDat2.1/01: Heidenhain ECN413, ECN1313

SICK HIPERFACE: SRS50/60



Dimension Unit: mm [inch]



Wire Gauge	Torque
30–16 AWG	1.6 kg-cm [1.4 lb-in.]

* EMED-PGHSD-1 has been phased out in the first quarter of year 2021, and is pin-to-pin replaced by EMED-PGHSD-3 after EOL.

※ Supports Heidenhain ERN1387, EnDat2.1, HIPERFACE.

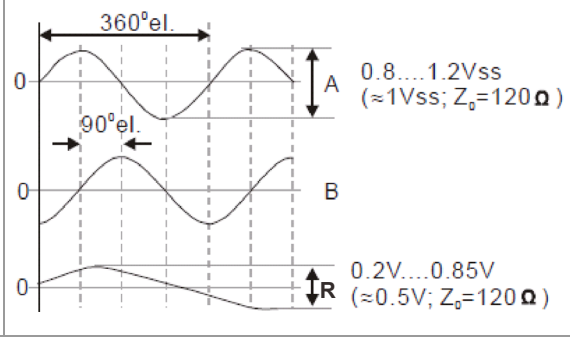
Terminals		Descriptions
TB1	Vin	Voltage input: (to adjust the output voltage amplitude of the push-pull pulse) Max. input voltage: 24 V_{DC} Max. input current: 30 mA
	A/O, B/O	Push-pull pulse output signal Max. output frequency: 50 kHz
	GND	Common power input/signal output terminal
	AO, /AO, BO, /BO	Output signal for the line driver frequency division. Line driver RS422 Max. input frequency: 100 kHz

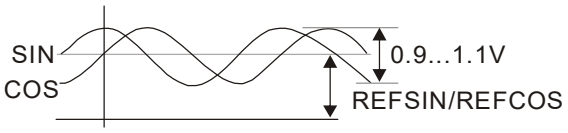
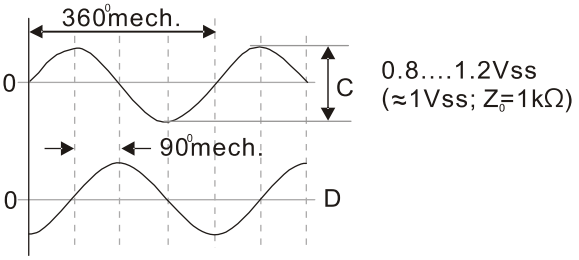
J3 (D-SUB female connector)	Encoder signal input terminal
SW1	Frequency division output power terminal selection INP: Power supplied by PG card EXP: Power from an external source
SW2	Encoder's voltage output terminal (Up) NOTE *Modify the terminal output voltage by switching the direction of the SW2 DIP switch on the PG card.* 5 V: 5 V_{DC} 8 V: 8 V_{DC}

EMED-PGHSD-1 (Terminal J3) pin definitions depend on the encoder type

Terminal#	Heidenhain ERN1387	Heidenhain ECN1313	HIPERFACE®
1	B-	B-	REFSIN
2	-	-	-
3	R+	DATA	DATA+
4	R-	/DATA	DATA-
5	A+	A+	+COS
6	A-	A-	REFCOS
7	0V	0V	GND
8	B+	B+	+SIN
9	Up	Up	Up
10	C-	-	-
11	C+	-	-
12	D+	-	-
13	D-	-	-
14	-	/CLOCK	-
15	-	CLOCK	-

The following table lists the terminal functions.

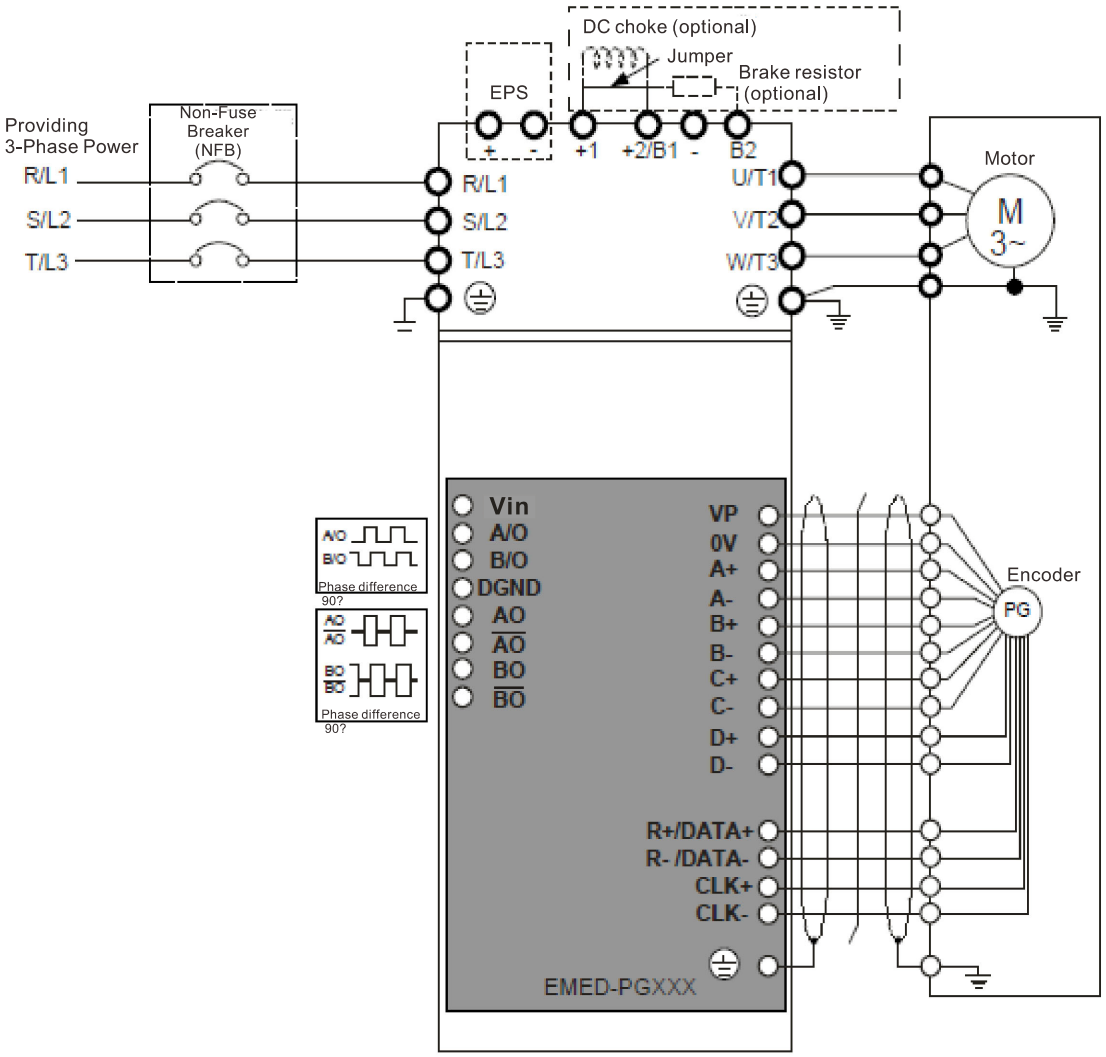
Terminals		Descriptions	Specifications
J3	Up (VP)	The output voltage for the encoder. Use the SW2 DIP switch to change the output voltage to +5 V or +8 V.	Voltage: +5.1 V_{DC} ± 0.3 V; +8.4 V_{DC} ± 1.5 V Current: 200 mA max.
	0 V	Encoder common power terminal	Reference level for the encoder's power
	A+, A-, B+, B-, R+, R-	Encoder sine wave differential signal input (incremental signal)	Input frequency: 40 kHz max. 

	+SIN, +COS, REFSIN, REFCOS	Encoder sine wave differential signal input (incremental signal)	Input frequency: 20 kHz max. 
	C+, C-, D+, D-	Encoder sine wave differential signal input (absolute signal)	
	DATA+ (DATA), DATA- (/DATA)	RS-485 communication interface	Terminal resistance is about 130 Ω
	CLOCK, /CLOCK	CLOCK differential output for ENDAT.	Line Driver RS422 level output

NOTE

- Verify that the SW2 switch is set to the correct output voltage before powering on.
- Keep the motor drive wiring away from any high voltage lines to avoid interference.

Wiring Diagram



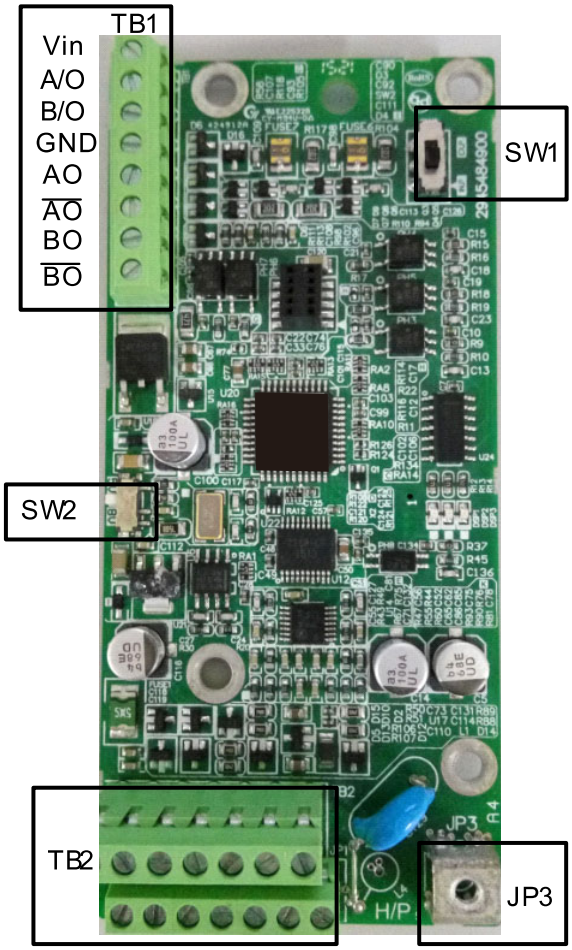
7-3 EMED-PGHSD-2*, EMED-PGHSD-4

Applicable encoder:

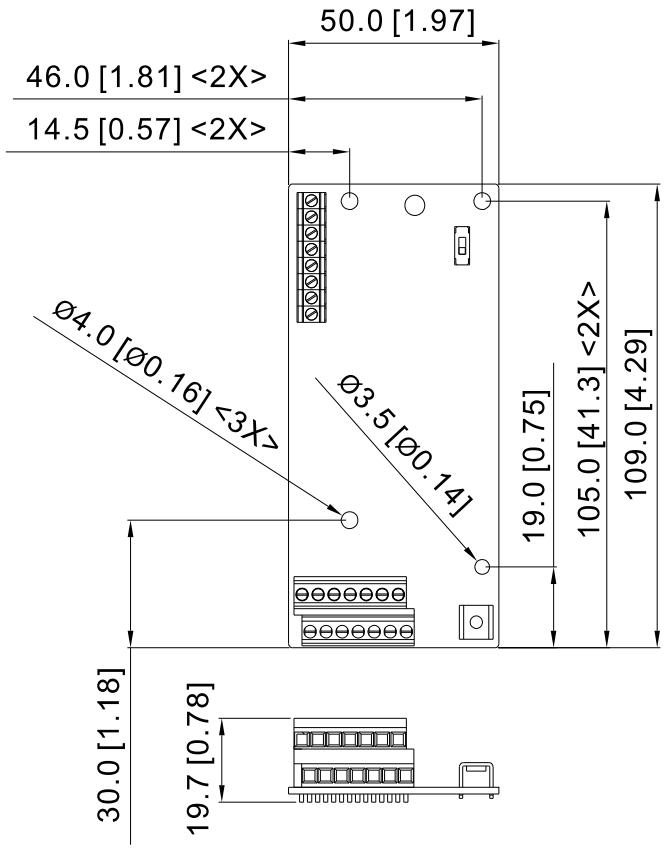
SIN/COS: Heidenhain ERN1387

EnDat2.1/01: Heidenhain ECN413, ECN1313

SICK HIPERFACE: SRS50/60



Dimension Unit: mm [inch]



Wire Gauge	Torque
30–16 AWG	1.6 kg-cm [1.4 lb-in.]

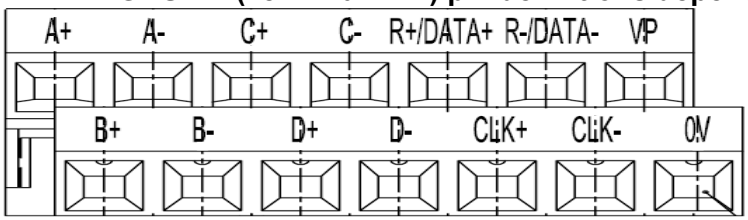
* EMED-PGHSD-2 has been phased out in the first quarter of year 2021, and is pin-to pin replaced by EMED-PGHSD-4 after EOL.

※ Supports Heidenhain ERN1387, EnDat2.1, HIPERFACE

Terminals		Descriptions
TB1	Vin	Voltage input: (to adjust the output voltage amplitude of the push-pull pulse) Max. input voltage: 24 V_{DC} Max. input current: 30 mA
	A/O, B/O	Push-pull pulse output signal Max. output frequency: 50 kHz
	GND	Common power input/signal output terminal
	AO, /AO, BO, /BO	Output signal for the line driver frequency division Line driver RS422 Max. input frequency: 100 kHz
TB2		Encoder signal input terminal
JP3	⏚	Ground Terminal

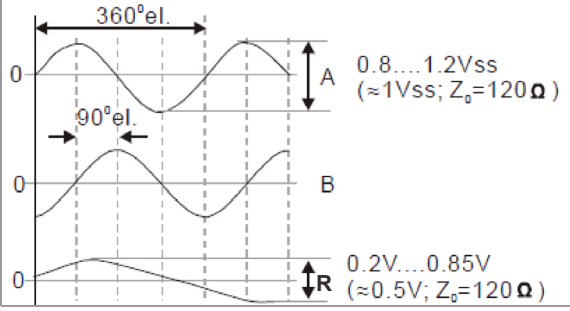
		Connect the motor drive power supply to ground. Supports PG shielding.
SW1		Frequency division output power terminal selection INP: Power supplied by PG card EXP: Power from an external source
SW2		Encoder's voltage output terminal (Up) NOTE *Modify the terminal output voltage by switching the direction of the SW2 DIP switch on the PG card.* 5 V: 5 V_{DC} 8 V: 8 V_{DC}

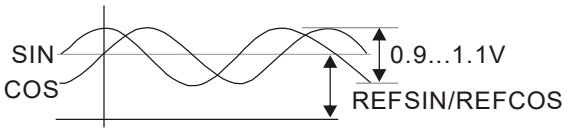
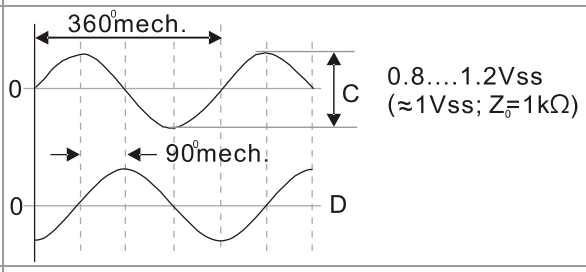
EMED-PGHSD-2 (Terminal TB2) pin definitions depend on the encoder type



Terminals	Heidenhain ERN1387		Heidenhain ECN1313	HIPERFACE®
A+	A+		A+	+COS
A-	A-		A-	REFCOS
C+	C+	Must set Pr.13-25=1	-	-
C-	C-		-	-
R+/DATA+	R+		DATA	DATA+
R-/DATA-	R-		/DATA	DATA-
VP	Up		Up	Up
B+	B+		B+	+SIN
B-	B-		B-	REFSIN
D+	D+		-	-
D-	D-		-	-
CLK+	-		CLOCK	-
CLK-	-		/CLOCK	-
0V	0V		0V	GND

The following table lists the terminal functions

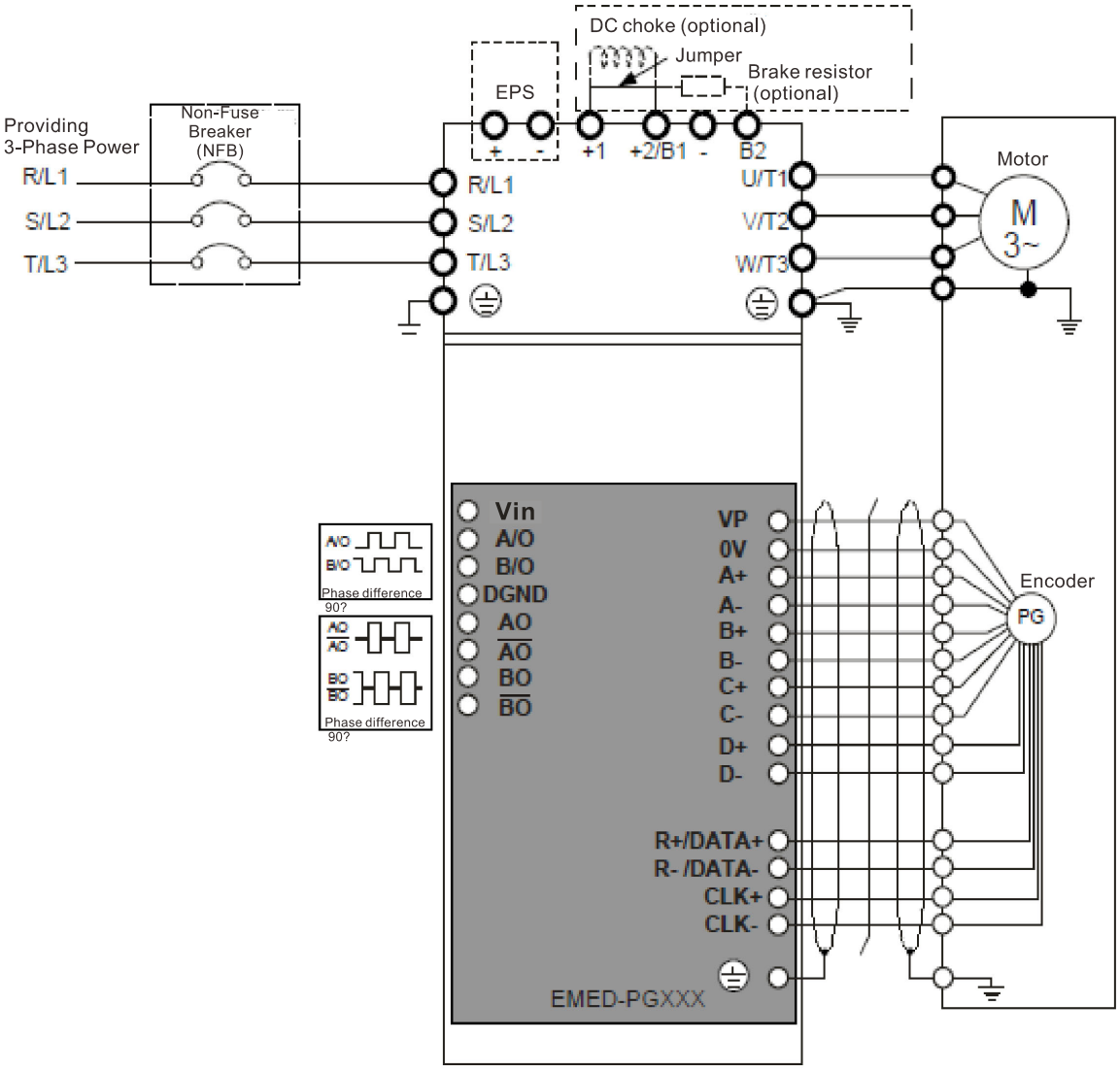
Terminals		Descriptions	Specifications
TB2	Up (VP)	The output voltage for the encoder. Use the SW2 DIP switch to change the output voltage to +5 V or +8 V.	Voltage: +5.1 V_{DC} ± 0.3 V; +8.4 V_{DC} ± 1.5 V Current: 200 mA max.
	0V	Encoder common power terminal	Reference level for the encoder's power
	A+, A-, B+, B-, R+, R-	Encoder sine wave differential signal input (incremental signal)	Input frequency: 40 kHz max 

	+SIN, +COS, REFSIN, REFCOS	Encoder sine wave differential signal input (incremental signal)	Input frequency: 20 kHz max 
	C+, C-, D+, D-	Encoder sine wave differential signal input (absolute signal)	
	DATA+(DATA), DATA-(/DATA)	RS-485 communication interface	Terminal resistance is about 130 Ω.
	CLOCK, /CLOCK	CLOCK differential output for ENDAT	Line driver RS422 level output

NOTE

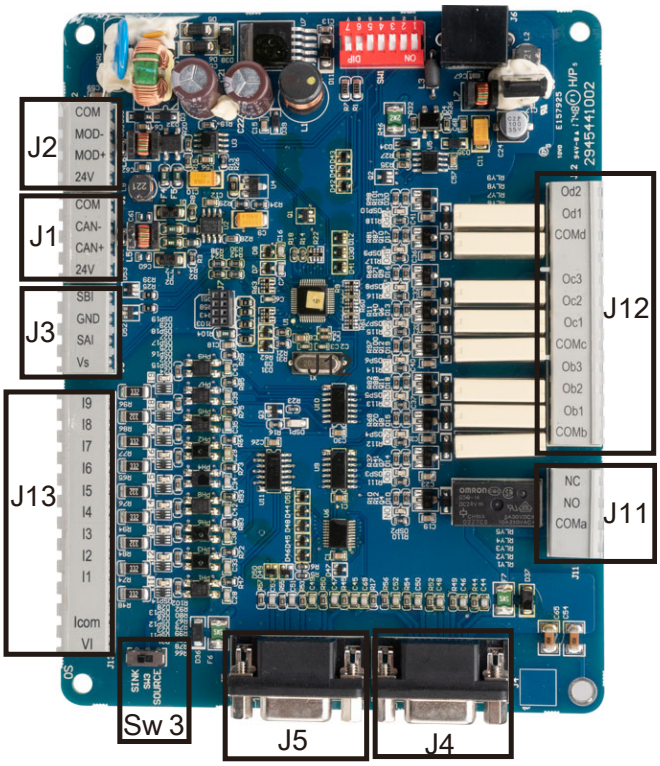
- Verify that the SW2 switch is set to the correct output voltage before powering on.
- Keep the motor drive wiring away from any high voltage lines to avoid interference.

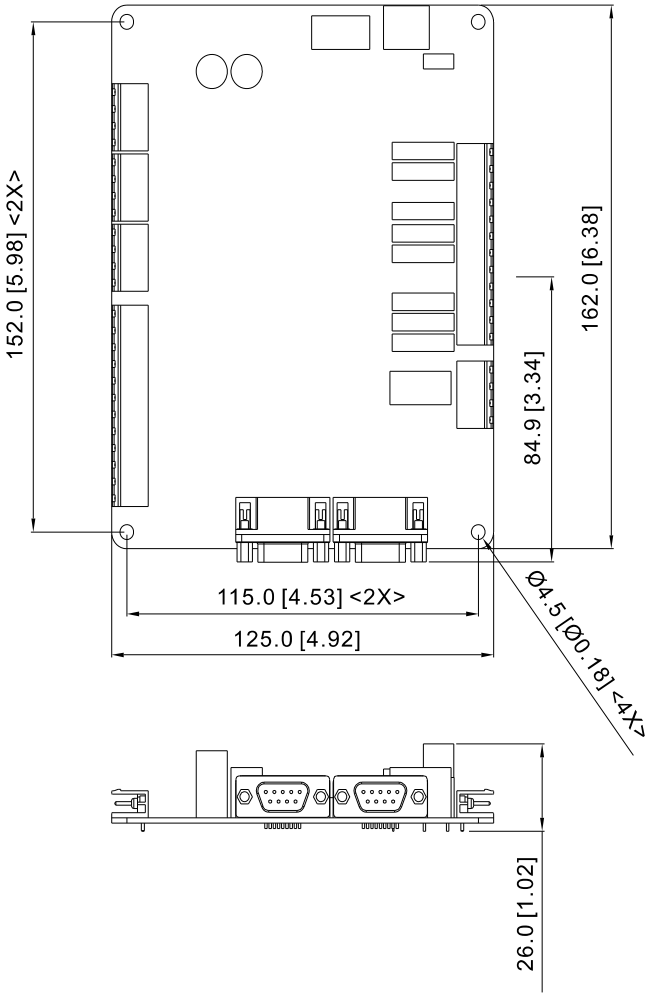
Wiring Diagram



7-4 EA-CT01 Cartop Board

Dimension Unit: mm [inch]



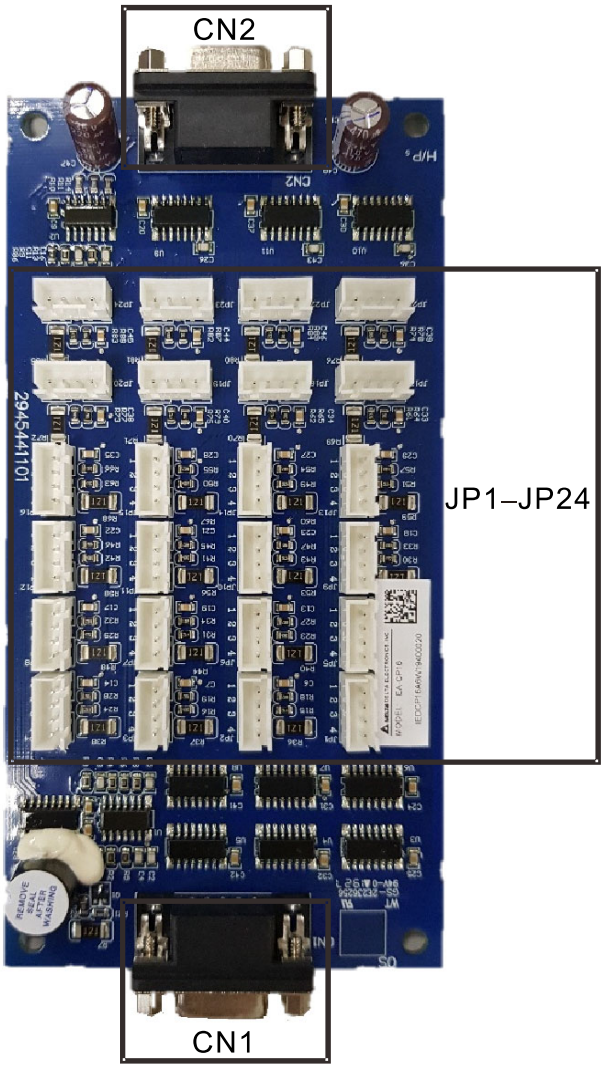


The following table lists the terminal specifications.

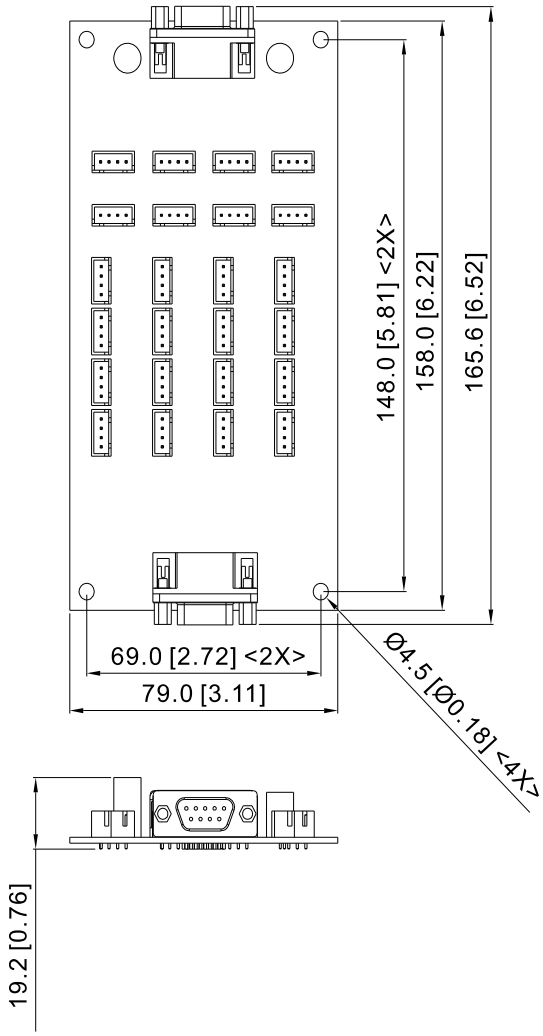
Terminals		Descriptions	Specifications
J1	COM	Common terminal	24 V, 800 mA
	CAN-	CAN communication	
	CAN+		
	24V	External power input +24V_{DC}	24 V, 800 mA
J2	COM	Common terminal	24 V, 800 mA
	MOD+	Modbus communication	
	MOD-		
	24V	External power input +24V_{DC}	24 V, 800 mA
J3	SBI	Weighing signal input	
	GND		
	SAI		
	Vs		
J4 (D-SUB female connector)		Command board communication	
J5 (D-SUB female connector)			
J11	NC	Fan / lighting output	Multi-function relay output port: (1) User-defined function
	NO		

Terminals		Descriptions	Specifications
	COMa		(2) Resistive load
J12	Od2	Front door open	3 A (N.O.) / 2 A (N.C.) 250 V_{AC} / 30 V_{DC}
	Od1	Front door closing	(3) Inductive load (COS 0.4)
	COMd	Common terminal for Od	1.0 A (N.O.) / 0.6 A (N.C.) 250 V_{AC} / 30 V_{DC}
	-	-	
	Oc3	Buzzer	
	Oc2	Doorlock bypass lighting alarm	
	Oc1	Car bottom light	
	COMc	Common terminal for Oc	
	Ob3	Overload	
	Ob2	Floor arrival clock	
	Ob1	Car fan	
	COMb	Common terminal for Ob	
J13	I9	Front door safety edge	User-defined function Non-isolated photocoupler input Voltage > 19 V_{DC} when terminal is guaranteed to be activated (ON); Voltage < 19 V_{DC} when terminal is guaranteed to be deactivated (OFF).
	I8	Full-load switch	
	I7	Front door light sensor	
	I6	Front door motor temperature switch	
	I5	Overload switch	
	I4	Front door reaches its open position	
	I3	Cartop inspection downward	
	I2	Cartop inspection upward	
	I1	Cartop inspection switch	
	-	-	
	Icom	Common terminal for multi-function input terminals	
	VI	External power input +24V_{DC}	
SW1		Multi-function input terminal SINK / SOURCE switch	

7-5 EA-CP16 Car Command Board



Dimension Unit: mm [inch]



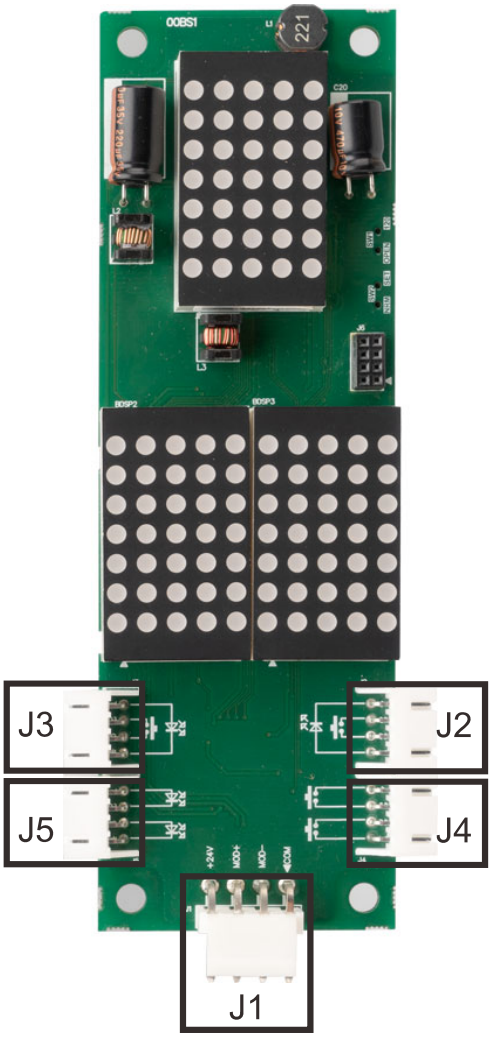
The following table lists the terminal specifications.

Terminals		Descriptions	Specifications
JP1–JP24	1–16	Floor button input / display output	
	17	Door open button input / display output	
	18	Door closing button input / display output	
	19	Door open extended button input / display output	
	20	Direct landing input / display output	
	21	Attendant input	
	22	Direction change input	
	23	Independent operation input	
	24	Fireman input	
CN1 (D-SUB female connector)		Cartop board communication	
CN2 (D-SUB female connector)		Extended command board communication	

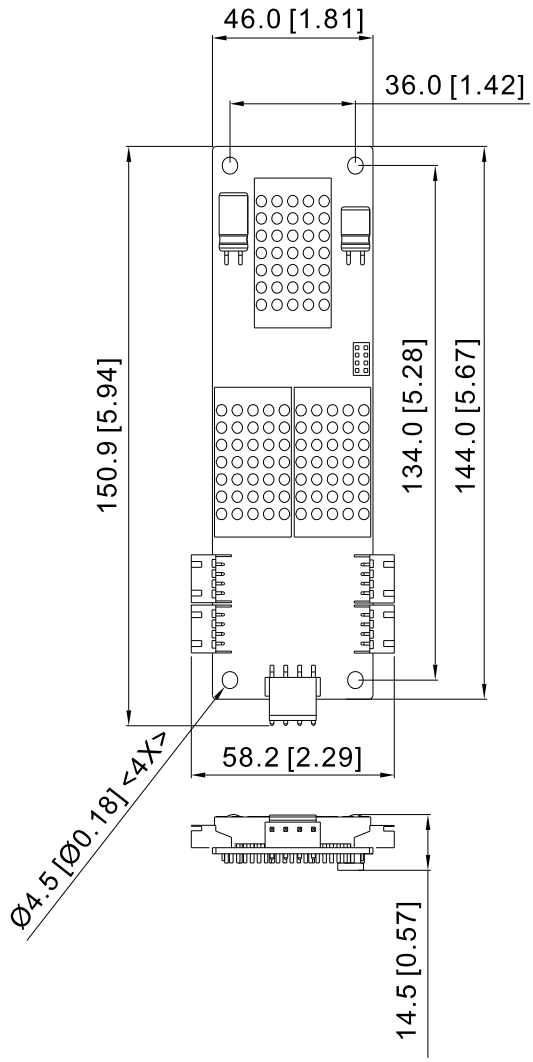
7-6 Hall Call / Car Display Board

EA-FM02MVN02

Vertical Matrix Floor Display Board



Dimension Unit: mm [inch]

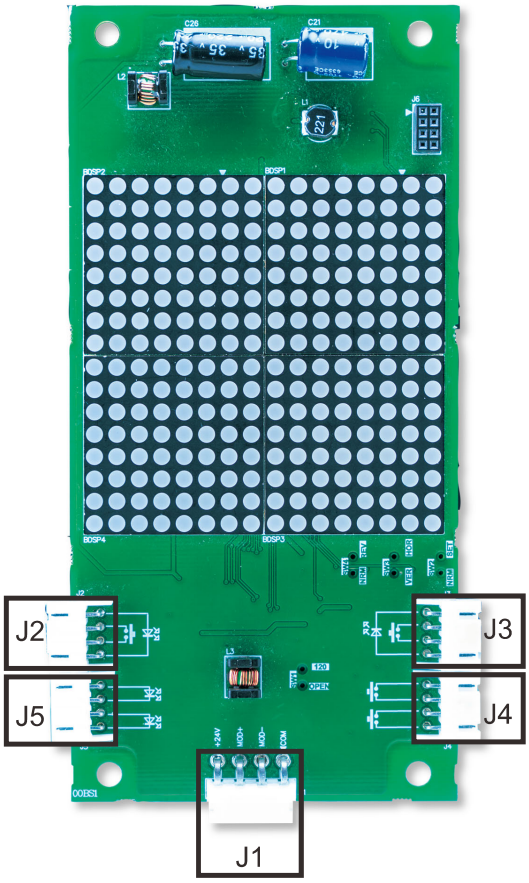


The following table lists the terminal specifications.

Terminals		Descriptions	Specifications
J1	+24V	External power input +24V_{DC}	24 V, 800 mA
	MOD+	Modbus communication	
	MOD-		
	COM	Common terminal	24 V, 800 mA
J2 (Upward call button interface)	1, 4	Button lamp output signal control	
	2, 3	Input switching value wiring pin	
J3 (Downward call button interface)	1, 4	Button lamp output signal control	
	2, 3	Input switching value wiring pin	
J4 (Elevator lock, fire emergency)	1, 2	Elevator lock input switching value wiring pin	
	3, 4	Fire emergency input switching value wiring pin	
J5	1, 2	Output signal control	
	3, 4	Output signal control	

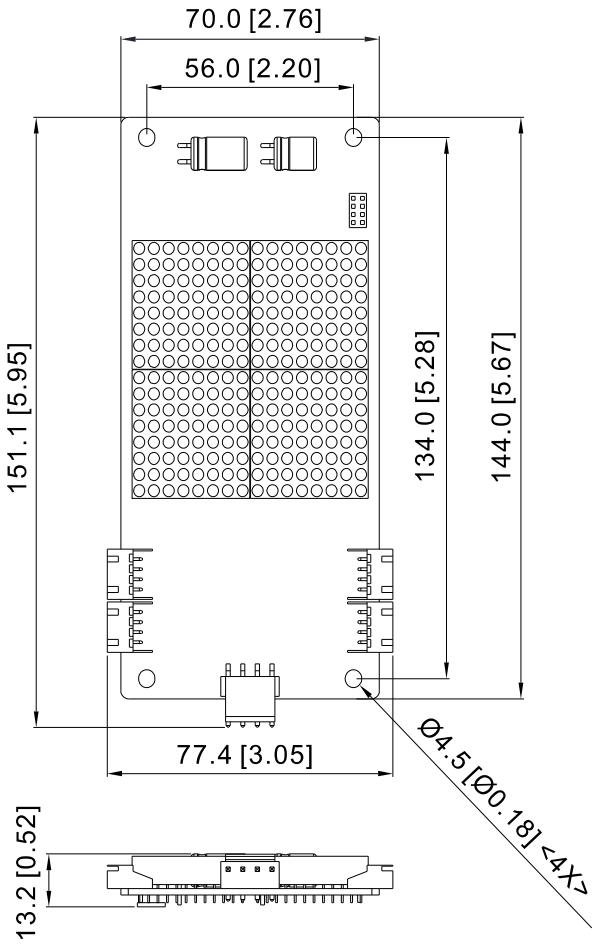
EA-FM02MBT01

Vertial / Horizontal Matrix Floor Display Board



Dimension

Unit: mm [inch]



The following table lists the terminal specifications.

Terminals		Descriptions	Specifications
J1	+24V	External power input +24V$_{DC}$	24 V, 800 mA
	MOD+	Modbus communication	
	MOD-		
	COM	Common terminal	24 V, 800 mA
J2 (Downward call button interface)	1, 4	Button lamp output signal control	
	2, 3	Input switching value wiring pin	
J3 (Upward call button interface)	1, 4	Button lamp output signal control	
	2, 3	Input switching value wiring pin	
J4 (Elevator lock, fire emergency)	1, 2	Elevator lock input switching value wiring pin	
	3, 4	Fire emergency switching value wiring pin	
J5	1, 2	Output signal control	
	3, 4	Output signal control	

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Chapter 8 Specifications

8-1 230V Series

Frame Size		C			D		
Model IED-_ _ _S21/23A		055	075	110	150	185	220
Applicable Motor Output (kW)		5.5	7.5	11	15	18.5	22
Applicable Motor Output (HP)		7.5	10	15	20	25	30
Output Rating	Rated Output Capacity (kVA)	9.5	12.5	19	25	29	34
	Rated Output Current (A)	24	30	45	58	77	87
	Maximum Output Voltage (V)	Proportional to input voltage					
	Output Frequency Range (Hz)	0.00–400.00					
	Carrier Frequency Range (kHz)	2–15					
	Rated Output Maximum Carrier Frequency (kHz)	10			8		
Input Rating	Input Current (A)	23	30	47	56	73	90
	Rated Voltage (V)	200–240 / Three-phase					
	Rated Frequency (Hz)	50/60					
	Allowed Voltage Tolerance (V)	±10% (180–264)					
	Allowed Frequency Tolerance (Hz)	±5% (47–63)					
Cooling Method		Fan cooling					
Weight (kg)		8	10	10	13	13	13

NOTE: For single-phase models, see **Appendix A Single-phase Applications**.

8-2 460V Series

Frame Size		C					D		E			
Model IED-_ _ _S43A		055	075	110	150	185	220	300	370	450	550	750
Applicable Motor Output (kW)		5.5	7.5	11	15	18.5	22	30	37	45	55	75
Applicable Motor Output (HP)		7.5	10	15	20	25	30	40	50	60	75	100
Output Rating	Rated Output Capacity (kVA)	10.4	13.5	18.3	24	30.3	36	46.2	63.7	80	96.4	116.3
	Rated Output Current (A)	13	17	23	30	38	45	58	80	100	128	165
	Maximum Output Voltage (V)	Proportional to input voltage										
	Output Frequency Range (Hz)	0.00–400.00										
	Carrier Frequency Range (kHz)	2–15						2–9			2–6	
	Rated Output Maximum Carrier Frequency (kHz)	10			8			6				
Input Rating	Input Current (A)	14	17	24	30	37	47	58	80	100	128	165
	Rated Voltage (V)	380–480 / Three-phase										
	Rated Frequency (Hz)	50 / 60										
	Allowed Voltage Tolerance (V)	±10% (342–528)										
	Allowed Frequency Tolerance (Hz)	±5% (47–63)										
Cooling Method		Fan cooling										
Weight (kg)		8	10	10	10	10	13	14.5	36	36	50	50

NOTE: Input/output current rating in the table above varies with the actual input reactor, transformer, wiring connections and power supply impedance.

8-3 General Specifications

Control Characteristics	Control Method	FOC+PG, FOC+PM
	Starting Torque	150% at 0 Hz
	Speed Control Range	1: 1000
	Speed Control Accuracy	± 0.02%
	Speed Response Ability	30 Hz
	Max. Output Frequency	0.00–400.00 Hz
	Frequency Setting Resolution	Digital command: 0.01 Hz; 0.01 m/s
	Torque Limit	200% of the torque current is the maximum
	Acceleration / Deceleration	0.10–1.50 m/s^2
	Brake Torque	About 125% while ED is 30% (use optional brake resistor) NOTE: ED is “Executive Duty”
Protection Characteristics	Motor Protection	Electronic thermal relay protection
	Over-current Protection	250% of the drive’s rated current
	Ground Leakage Current Protection	More than 50% of the drive’s rated current
	Overload Capacity	Endures 60 seconds for 150% of the rated output current; Endures 10 seconds for 180% of the rated output current
	Voltage Protection	Over-voltage level: [230V Model] V_{DC} > 400V [460V Model] V_{DC} > 800V Low-voltage level: [230V Model] V_{DC} < 200V [460V Model] V_{DC} < 400V
	Over-voltage Protection for Input Power	Varistor (MOV)
	Overheating Protection	Built-in temperature sensor
Environment	Protection Level	IP00
	Operating Temperature	-10–40°C, up to 50°C with derating for the operating temperature
	Storage Temperature	-20–60°C
	Humidity	Below 90% RH (non-frosting)
	Vibration	1.0 G when smaller than 20 Hz; 0.6 G when between 20–60 Hz
	Cooling System	Fan cooling
	Installation Altitude	Below 1,000 m (free from dust, corrosive gases and liquids)
Certifications		CE UL CERTIFIED

8-4 Operation, Storage and Transportation Environments

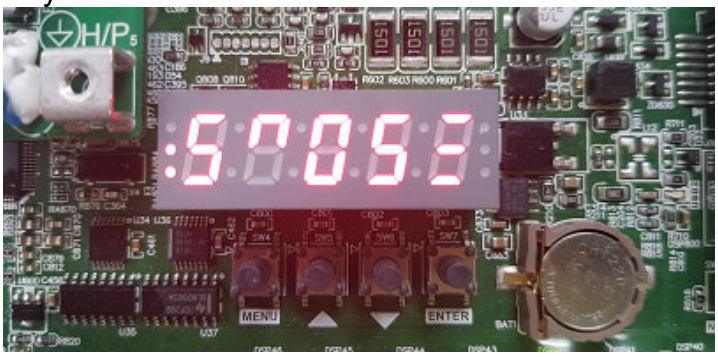
<table>
<tr><td colspan="6">DO NOT expose the drive to a poor environment, such as one with dust, direct sunlight, corrosive or inflammable gases, oil, humidity, liquids or excessive vibration. The salt in the air must be less than 0.01 mg/cm^2 every year.</td></tr>
<tr><td rowspan="9">Environment</td><td>Installation Location</td><td colspan="4">IEC60364-1/IEC60664-1 pollution degree 2. Indoor use only.</td></tr>
<tr><td rowspan="4">Surrounding Temperature</td><td rowspan="3">Operation</td><td colspan="3">-10–40°C, up to 50°C with derating for the operating temperature</td></tr>
<tr><td rowspan="2">40–50°C with Derating</td><td>5.5–30 kW: for every 1°C increase in temperature, decrease the drive’s rated current by 2.5%</td></tr>
<tr><td>37–75 kW: for every 1°C increase in temperature, decrease the drive’s rated current by 2.0%</td></tr>
<tr><td>Storage / Transportation</td><td colspan="3">-20–60°C</td></tr>
<tr><td colspan="4">Non-condensing, non-freezing</td></tr>
<tr><td rowspan="3">Rated Humidity</td><td>Operation</td><td colspan="3">Max. 90%</td></tr>
<tr><td>Storage / Transportation</td><td colspan="3">Max. 90%</td></tr>
<tr><td colspan="4">Non-condensing, non-freezing</td></tr>
<tr><td>Altitude</td><td>Operation</td><td colspan="3">If the drive is installed at an altitude of 0–1000 m, follow normal operation restrictions. For altitudes of 1000–3000 m, decrease the drive’s rated current by 1% or lower the temperature by 0.5°C for every 100 m increase in altitude. The maximum altitude for corner grounding is 3000 m. If installing at an altitude higher than 3000 m is required, contact Delta for more information.</td></tr>
<tr><td>Power System</td><td colspan="4">TN system *1*2</td></tr>
<tr><td rowspan="2">Package Drop</td><td>Storage</td><td colspan="4" rowspan="2">ISTA procedure 1A (according to weight) IEC60068-2-31</td></tr>
<tr><td>Transportation</td></tr>
<tr><td>Vibration</td><td colspan="5">● 1.0 mm, peak-to-peak value range from 2–13.2 Hz
● 0.7–1.0 G, range from 13.2–55 Hz
Compliance with IEC 60068-2-6</td></tr>
<tr><td>Impact</td><td colspan="5">Compliance with IEC/EN 60068-2-27</td></tr>
<tr><td>Protection Level</td><td colspan="5">IP00</td></tr>
<tr><td>EMC Level</td><td colspan="5">IEC 61800-3 and IEC 61000-4</td></tr>
</table>

*1: TN system: The neutral point of the power system connects directly to the ground. The exposed metal components connect to the ground through the protective grounding conductor.
*2: Single-phase models use a single-phase three-wire power system.

Chapter 9 Digital Keypad

9-1 Description of Keyboard Panel

Keyboard Panel



Keypad Functions

Key	Description
MENU	**Mode key** Long press to return to previous page
ENTER	**Enter key** **Parameter setting** Read or modify parameter settings **Fault reset** Long press this key to reset when fault occurs on the drive
	**Up and Down keys** These buttons have two functions: 1. Press the Up or Down key to select items in a menu and languages. 2. Press the Up or Down key to increase or decrease the selected value.

LED Function Description

LED	Description
	**Upper limit status display** ● LSU: Upper limit switch ● ULS1: The first one upward forced deceleration ● ULS2: The second one upward forced deceleration
	**Lower limit status display** ● LSD: Lower limit switch ● DLS1: The first one downward forced deceleration ● DLS2: The second one downward forced deceleration
	**Floor display for the drive** Drive's current floor (one digit)
	**Running direction display**  → Up  → Down
	**Floor display for IED-S** IED-S' current floor (two digits)

	**Leveling display**  DZU Upper leveling SX1 Door zone DZD Lower leveling

Description of the Displayed Functions

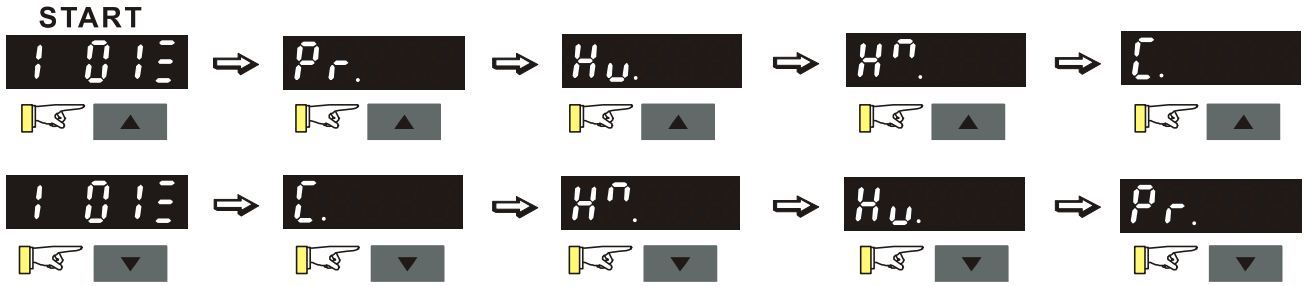
Displayed Function	Description
	Displays the parameter settings
	Displays downward call from the hall call
	Displays upward call from the hall call
	Displays call from the car call

Description of the Displayed Warning and Fault Codes

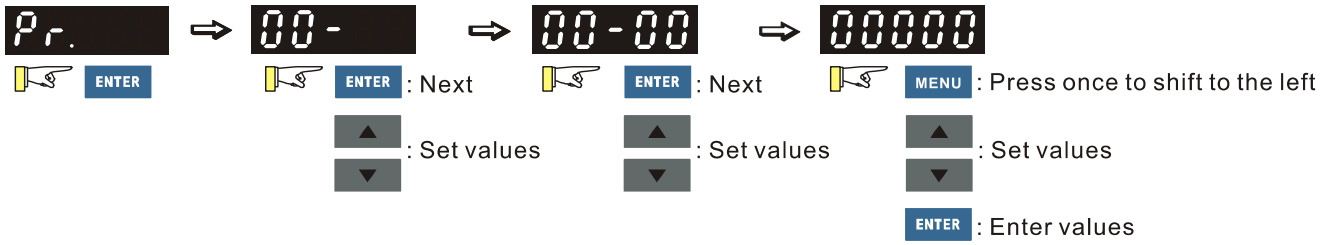
Displayed Function	Description
	Drive's warning codes, ranging from 1001 to 1100
	Drive's fault codes, ranging from E001 to E100
	IED-S' warning codes, ranging from 1101 to 1255
	IED-S' fault codes, ranging from F101 to F255

Keypad Operation Process

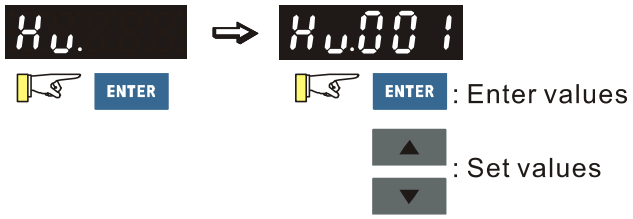
Mode Setting



Parameter Setting

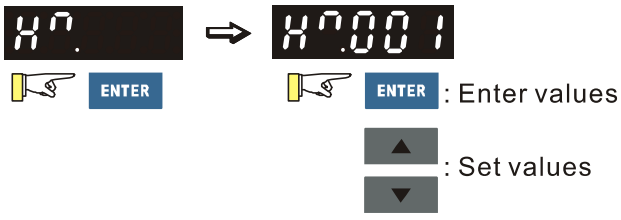


Downward call from the hall call



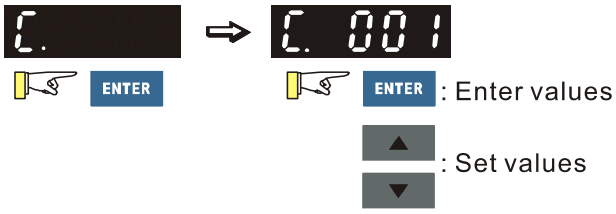
Return

Upward call from the hall call



Reset

Call from the car call



9-2 Description of the Digital Keypad KPC-CC01

KPC-CC01

Communication Interface

RJ45 (socket), RS-485 interface

Installation method

- ☑ Place the keypad flat on the surface of the control box. The front cover is waterproof.
- ☑ Use a model MKC-KPPK for wall mounting or embedded mounting. Its protection level is IP66.
- ☑ The maximum RJ45 extension cable is 5 m (16 ft).
- ☑ This keypad can also be used on Delta's motor drives C2000, CH2000, CP2000 and IED-S.

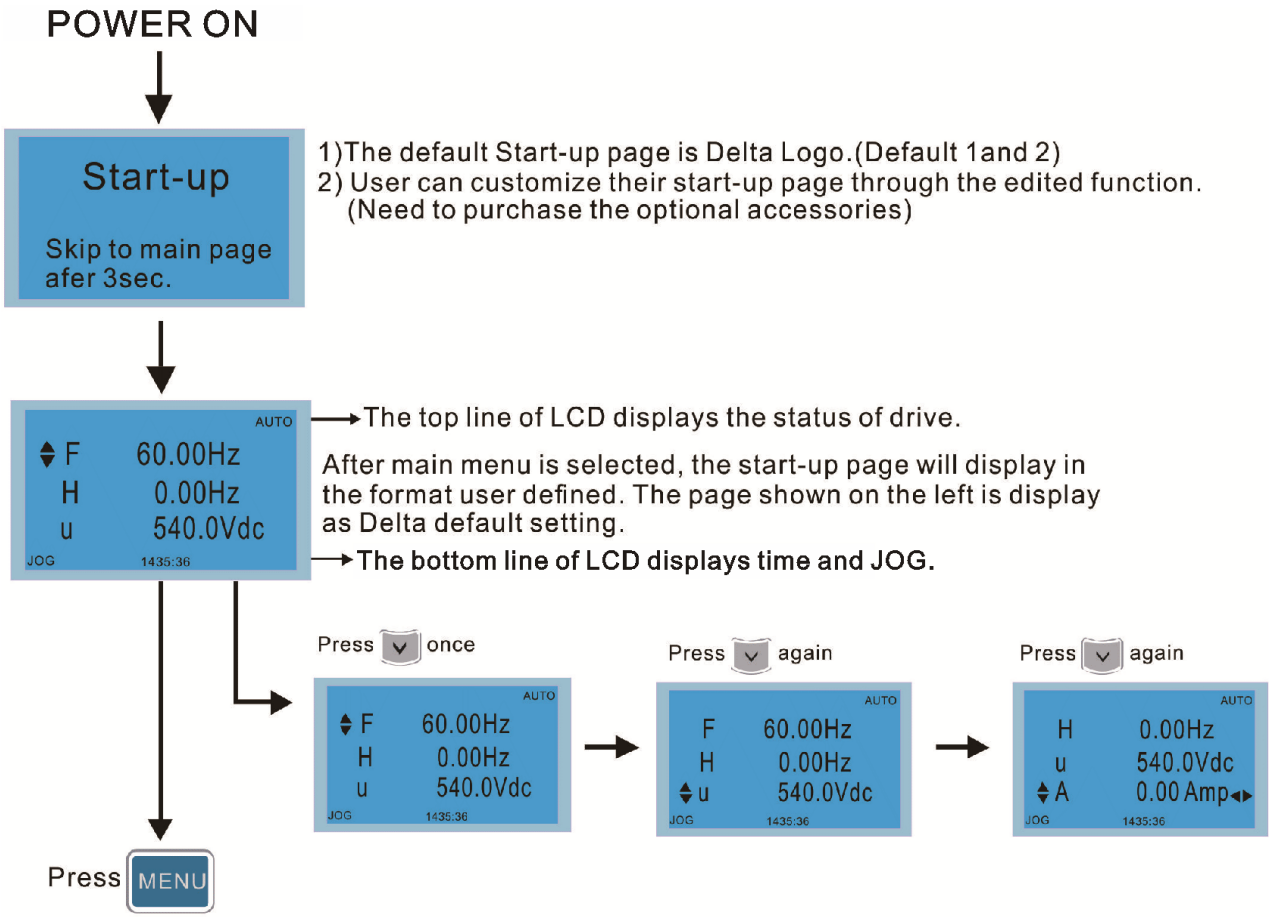
Keypad Functions

Key	Description
RUN	Start Key ☑ This button is valid only when the keypad is the source of the command. ☑ This button causes the motor drive to run according to its settings. See "LED Function Descriptions" for LED status. ☑ Pressing the RUN button repeatedly is allowed while the motor drive is stopping.
STOP RESET	Stop Key ☑ The STOP key has the highest priority in command. ☑ Press the STOP key to stop the drive under any conditions. ☑ Press the RESET key to reset the drive when faults occur. If the RESET key does not respond, go to MENU "Fault Records" to check the most recent fault.
FWD REV	Operation Direction Key ☑ The FWD/REV key controls the operation direction but does NOT activate the drive. FWD: forward, REV: reverse. ☑ The drive operates in the direction as shown by the LED.
ENTER	ENTER Key Press the ENTER key to go to the next menu level. If you are at the last level, then press ENTER to execute the command.
ESC	ESC Key Press the ESC key to return to the previous page, or return to the last category in the sub-menu.
MENU	MENU Key Press the MENU key to return to the main menu. Menu items: 1. Parameter Setup 5. Copy PLC 9. Time Setup 13. PLC Link 2. Copy Parameter 6. Fault Record 10. Language Setup 3. Keypad Locked 7. Quick Start 11. Start-up 4. PLC Function 8. Display Setup 12. Main Page IED-S does not support menu item 4 and 5 (PLC functions) and menu item 7 (Quick Start).
^ < > v	Direction: Left/Right/Up/Down cursor keys ☑ In the numeric value setting mode, press Left and Right to move the cursor; press Up and Down to change the selected value. ☑ In the menu/text selection mode, use the Up and Down cursor keys to select an item.

LED Function Descriptions

LED	Description
	Steady ON: Drive operation indicator, including DC brake, zero speed, standby, restart after fault and speed tracking. Blinking: Drive is decelerating to stop or in Base Block status. Steady OFF: Drive does not execute the operation command.
	Steady ON: Drive stop indicator. Blinking: Drive is in standby status. Steady OFF: Drive does not execute the STOP command.
	Operation Direction LED 1. Green light steady ON: Drive is running forward. 2. Red light steady ON: Drive is running in reverse. 3. Blinking: Drive is changing direction.

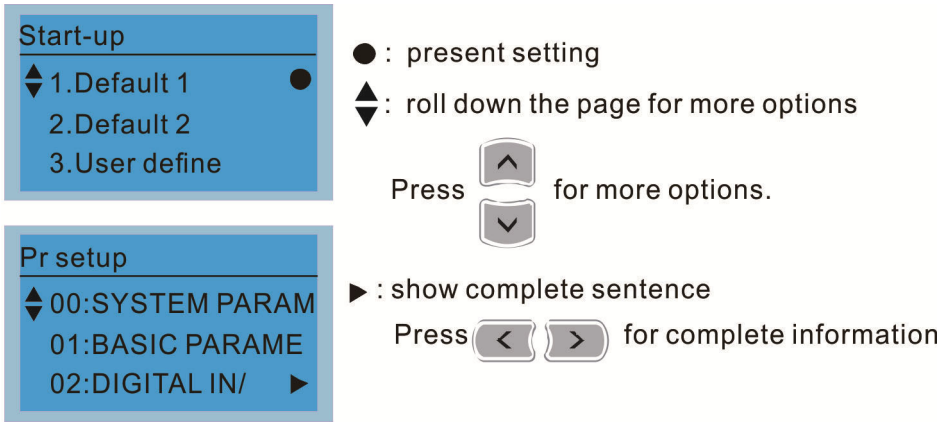
9-3 Digital Keypad KPC-CC01 Functions



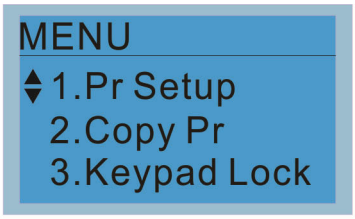
NOTE

1. Start-up page can only display pictures, no flash.
2. IED-S does not support menu item 4 and 5 (PLC functions) and menu item 7 (Quick Start).

Display Icon



Display Item

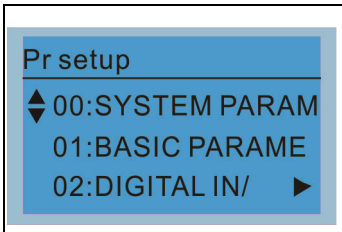


MENU
1.Parameter Setup
2.Copy Parameter
3.Keypad Locked
4.PLC Function

5. Copy PLC
6. Fault Record
7. Quick Start
8. Display Setup
9. Time Setup
10. Language Setup
11. Start-up
12. Main page
13. PC Link

Item 1~4 are the common items for KPC-CC01 &KPC-CE01

1. Parameter Setup

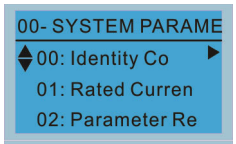


Press ENTER to select.

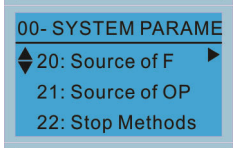
Press ^ v to select a parameter group.

Once a parameter group is selected, press ENTER to go into that group.

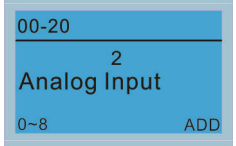
For example: Set the master frequency command source.



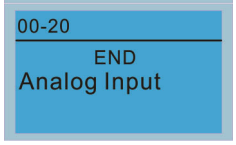
Display the Group 00 Motor Drive Parameter.
Use Up and Down to select parameter 20: Auto Frequency Command.



Press ENTER to display the parameter's setting menu.

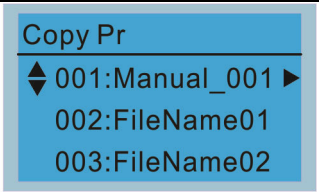


Use Up and Down to choose a setting. For example, choose 2 Analogue Input, and then press ENTER.



After you press ENTER, the screen displays "END", indicating that the new parameter value is set.

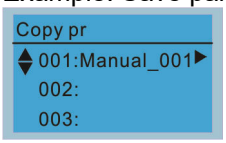
2. Copy Parameter



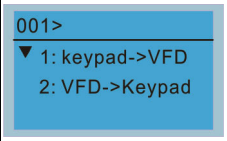
Press ENTER to go to 001–004: content storage

Four groups of parameters are available to copy.
The steps are shown in the example below.

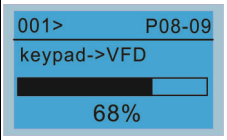
Example: Save parameters in the motor drive.



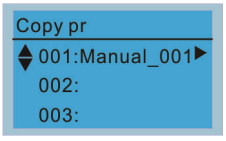
1. Go to Copy Parameter.
2. Select the parameter group to copy, and then press ENTER.



1. Select 1: keypad->VFD.
2. Press ENTER to go to the "Save in the motor drive" screen.

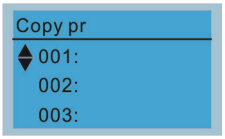


Copy parameters until it is done.

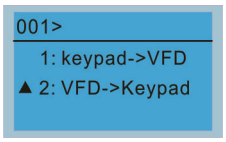


Once copying parameters is done, the keypad automatically returns to this screen.

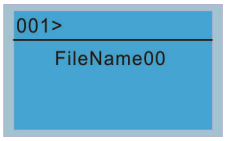
Example: Save parameters in the keypad.



1. Go to Copy Parameter.
2. Select the parameter group to copy, and then press ENTER.



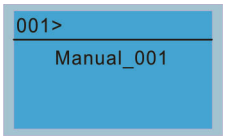
1. Select 2: VFD->Keypad.
2. Press ENTER to go to the “Save in the keypad drive” screen.



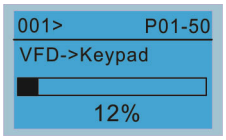
Press Up or Down to select a symbol.
Press Left or Right to move the cursor to select a filename.

String & Symbol Table:

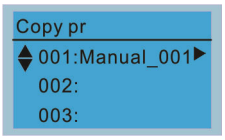
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _ ` a b c d f g h i j k l m n o p q r s t u v w x y z { | } ~



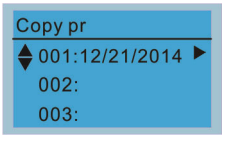
After you confirm the filename, press ENTER.



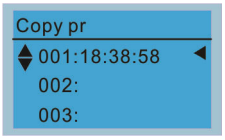
Copy parameters until it is done.



After copying parameters, the keypad automatically returns to this screen.

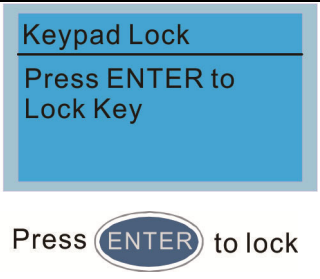


Press Right to see the date the parameters were copied.



Press Right again to see the time the parameters were copied.

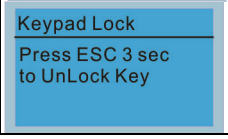
3. Keypad Locked



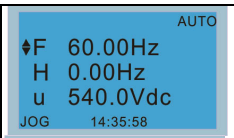
Lock the Keypad

Use this function to lock the keypad. The main screen does not display “keypad locked” when the keypad is locked; however it displays the message “Press ESC 3 sec to unlock key” when any key is pressed.

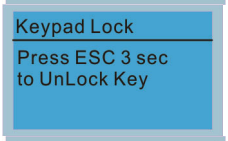
When the keypad is locked, the main screen does not display the locked status.



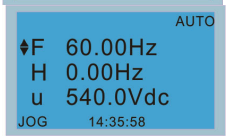
Press any key on the keypad; a message displays as shown on the left.



If you do not press ESC, the keypad automatically returns to this screen.



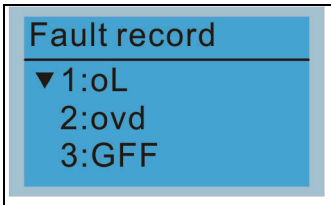
The keypad is still locked. When you press any key, the screen shows the message on the left.



Press ESC for 3 seconds to unlock the keypad and the keypad returns to this screen. All keys on the keypad are functional.

Once the keypad is unlocked, turning the power off and then back on does not lock the keypad.

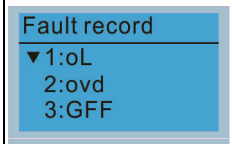
4. Fault Record



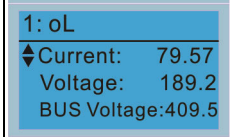
Press ENTER to select.

KPC-CE01 does not support this function.

Able to store 6 fault codes (Keypad V1.02 and previous versions)
Able to store 30 fault codes (Keypad V1.20 and later versions)
The most recent fault record shows as the first record. Choose a fault record to see details such as date, time, frequency, current, voltage, and DC bus voltage.



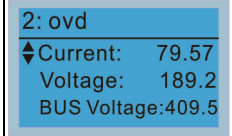
Press Up or Down to select a fault record.
After selecting a fault code, press ENTER to see that fault record's details.



Press Up or Down to see the fault record's details such as date, time, frequency, current, voltage, and DC bus voltage.

Press ESC to return to the Fault Record screen.

Press Up or Down to select the next fault record.
After selecting a fault record, press ENTER to see that fault record's details.



Press Up or Down to see the fault record's details such as date, time, frequency, current, voltage, and DC bus voltage.

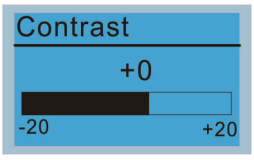
NOTE

The drive fault actions are recorded and saved to the KPC-CC01. When you remove the KPC-CC01 and connect it to another drive, the previous fault records are not deleted. The new fault records of the new drive continue to be added to the KPC-CC01.

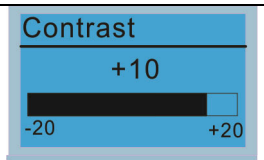
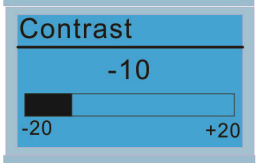
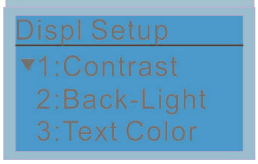
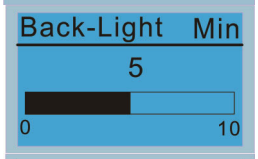
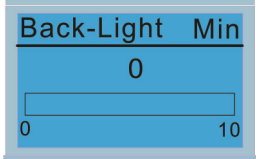
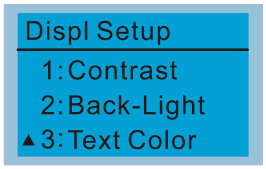
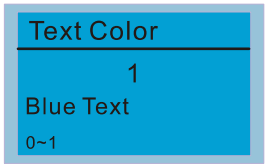
5. Display Setup

Press ENTER to display the

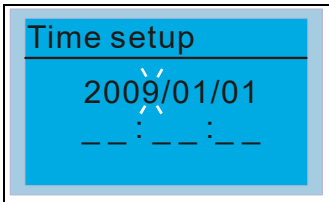
1. Contrast



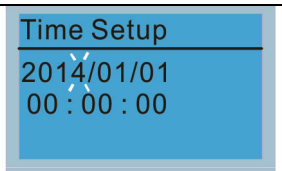
Press Up or Down to adjust the setting value.

Display Setup screen.		For example, increase the contrast to +10.
		After you set the value, press ENTER to see the screen display after increasing the contrast.
		Then press ENTER and decrease the contrast to -10.
		Press ENTER to see the screen display after adjusting the contrast to -10.
	2. Back-Light	
		Press ENTER to go to Back-Light time setting screen.
		Press Up or Down to adjust the setting value.
		When the setting value is 0 Min, the backlight stays on.
		When the setting value is 10 Min, the backlight turns off in 10 minutes.
	3. Text Color	
		Press ENTER to go to the Text Color setting screen.
		The default value is White Text.
		Press Up or Down to adjust the setting value, and then press ENTER.
		The setting value changes to Blue Text.

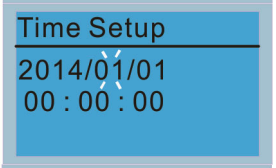
6. Time Setup



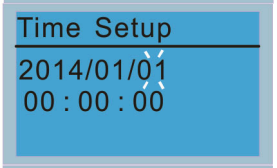
Press Left or Right to select Year, Month, Day, Hour, and Minute or Second to change.



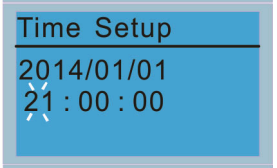
Press Up or Down to set the Year.



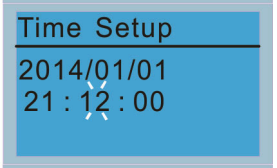
Press Up or Down to set the Month.



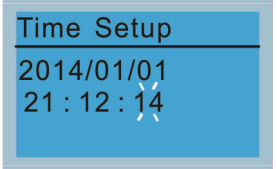
Press Up or Down to set the Day.



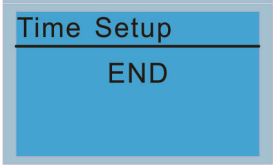
Press Up or Down to set the Hour.



Press Up or Down to set the Minute.



Press Up or Down to set the Seconds.



Press ENTER to confirm the new date and time setting.

NOTE

Limitation: The charging process for the keypad super capacitor finishes in about 6 minutes. When you remove the digital keypad from the drive, the drive stores the time setting for seven days. After seven days, you must reset the time.

7. Language Setup

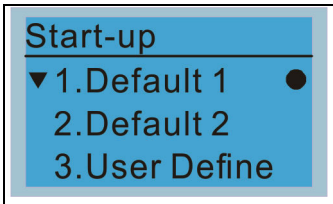
Press Up or Down to select the language, and then press ENTER.

The Language setting option is displayed in the language of your choice.
Language setting options:

1. English
2. 繁體中文
3. 简体中文

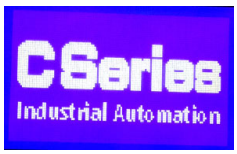
NOTE: IED-S only supports these three languages currently.

8. Start-up



1. Default 1 DELTA LOGO

2. Default 2 DELTA Text

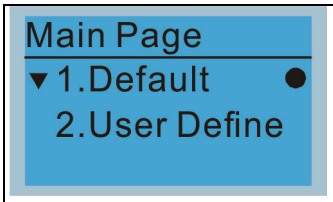


3. User-defined: an optional accessory is required (TPEditor & USB/RS-485 Communication Interface-IFD6530) to design your own start-up page. If the editor accessory is not installed, the User Define option displays a blank screen.

USB/RS-485 Communication Interface-IFD6530
See Optional Accessories for more details.

TPEditor
Go to Delta's website to download the TPEditor V1.30.6 or later versions.
http://www.delta.com.tw/ch/product/em/download/download_main.asp?act=3&pid=1&cid=1&tpid=3

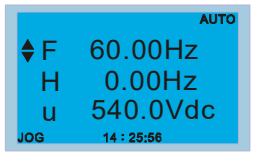
9. Main Page



You can choose the Default picture or the User-defined picture.

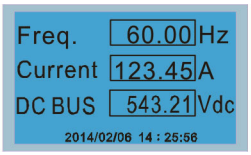
Press ENTER to select.

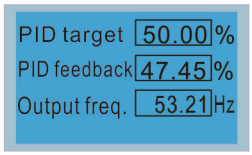
1. Default page



F 600.00 Hz >>> H >>> A >>> U (options rotate)

2. User-defined: an optional accessory is required (TPEditor & USB/RS-485 Communication Interface-IFD6530) to design your own start-up page. If the editor accessory is not installed, the User Define option displays a blank screen.

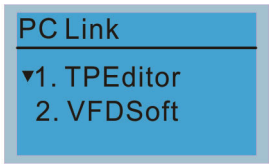




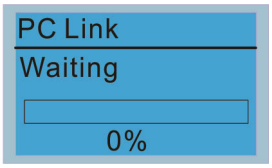
USB/RS-485 Communication Interface-IFD6530
See Optional Accessories for more details.

TPEditor
Go to Delta's website to download the TPEditor V1.30.6 or later versions.
http://www.delta.com.tw/ch/product/em/download/download_main.asp?act=3&pid=1&cid=1&tpid=3

10. PC Link

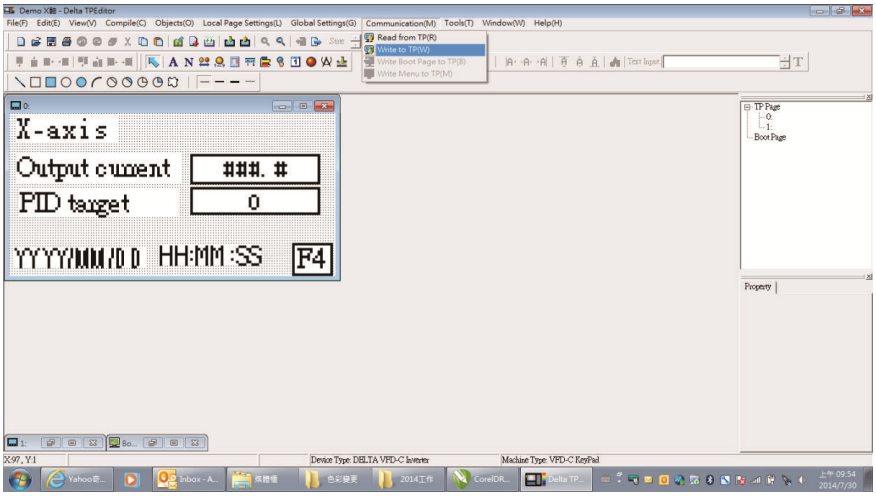


1. TPEditor: This function allows you to connect the keypad to a computer, and then download and edit user-defined pages.

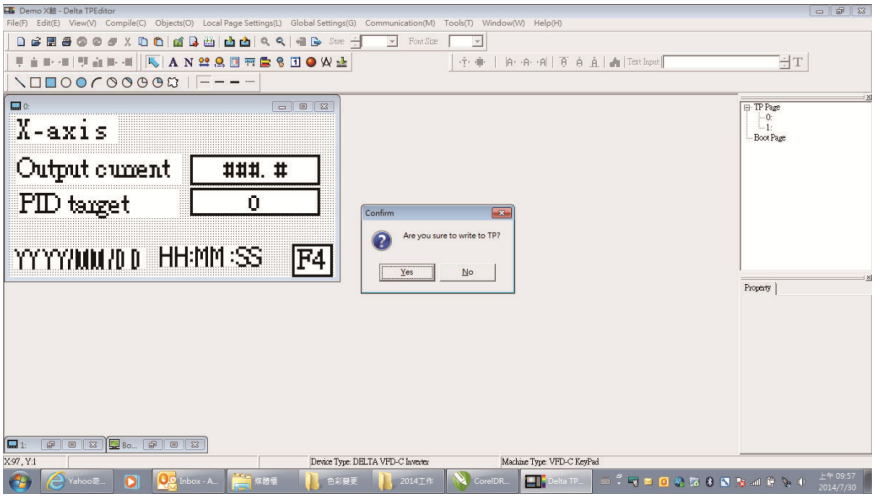


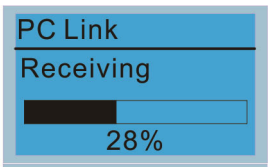
Press ENTER to go to the PC Link Waiting to connect to PC screen.

In TPEditor, from the **Communication** menu, choose **Write to TP**.

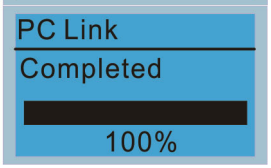


In the **Confirm** message box, click **YES**.





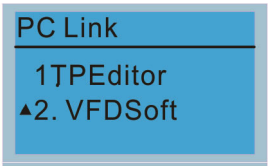
The software starts downloading screens to the KPC-CC01.



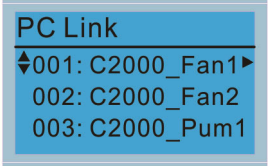
Download completed.

2. VFDSoft: This function links to the software VFDSoft, and then you can upload data that you copied one or more parameter (1–4) from the drive to the KPC-CC01.

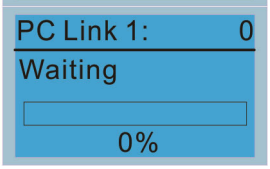
Connect KPC-CCO1 to your computer.



Choose 2. VFDSoft

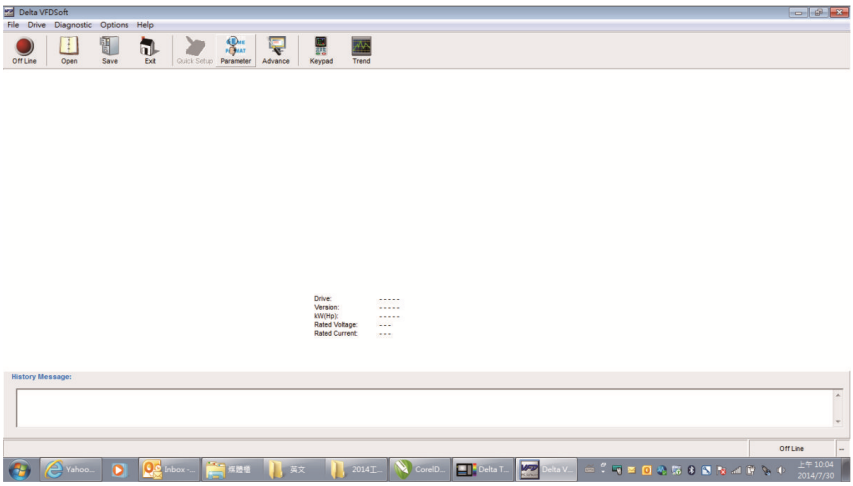


Press Up or Down to select a parameter group to upload to VFDSoft.

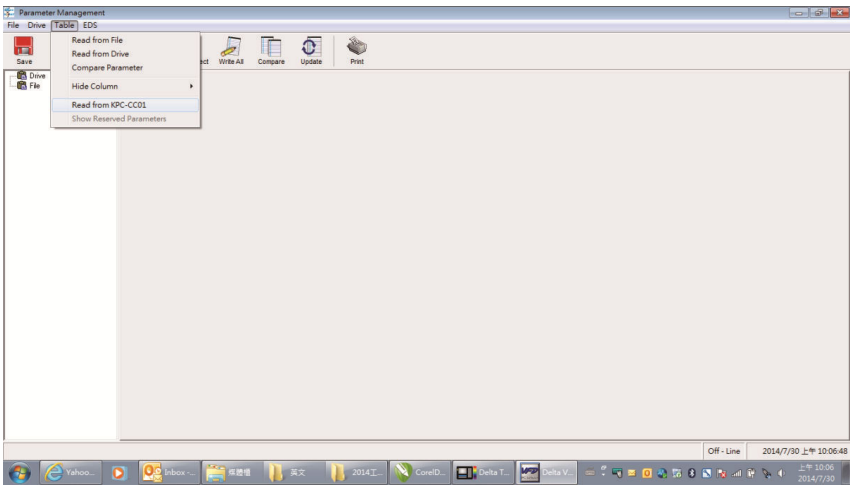


Press ENTER to display the PC Link Waiting to connect to PC screen.

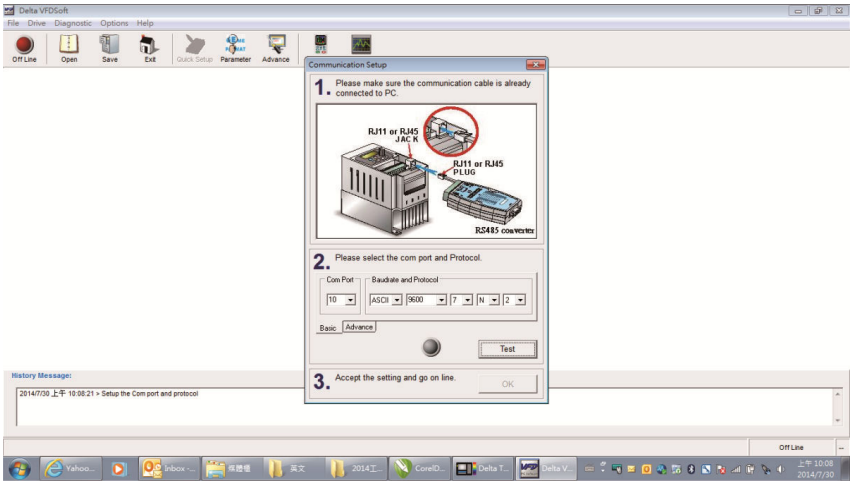
On your computer, open VFDSoft, and click **Parameter** on the toolbar.

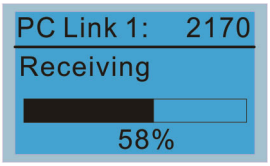


In the Parameter Management, from the **Table** menu, click **Read from KPC-CC01**.

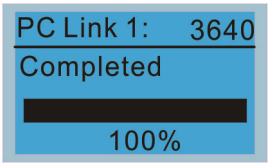


Choose the correct communication port, and then click **OK**.





Start to upload parameters to VFDSoft.

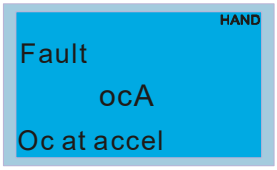


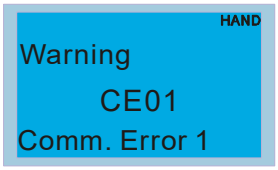
Uploading parameter is completed.

Before using the user-defined Start-up screen and user-defined Main screen, you must preset the Start-up screen and the Main screen as user-defined. If you do not download the user-defined screens to the KPC-CC01, the Start-up screen and the Main screen are blank.

Other Displays

When a fault or warning occurs, the menu displays the following screens.



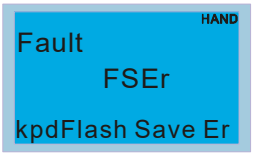
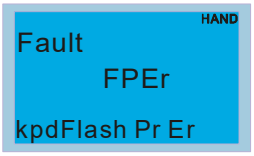
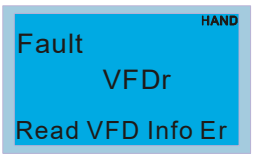
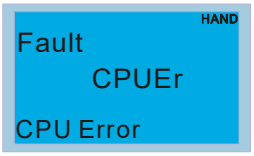


1. Press ENTER to RESET. If there is no response, contact your local distributor for instructions to return the equipment to the factory. To view the DC bus fault voltage value, output current and output voltage, press MENU and then choose Fault Record for details (see the descriptions in the above #4 Fault Record).
2. Press ENTER again. If the screen returns to Main page, the fault is cleared.

When a fault or warning code occurs, the screen backlight blinks until the fault or warning is cleared.

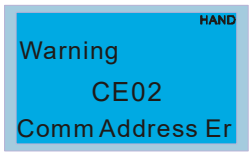
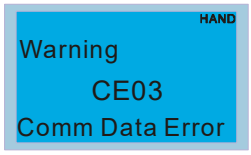
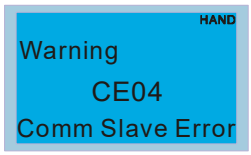
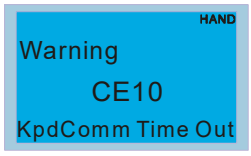
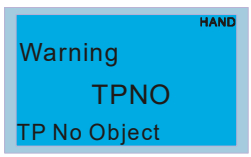
9-4 Digital Keypad KPC-CC01 Fault and Warning Codes and Descriptions

Fault Codes

LCM Display *	Description	Corrective Actions
	Keypad flash memory read error	Error in the keypad's flash memory. 1. Press RESET to clear the errors. 2. Check for any problem on Flash IC. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your authorized local dealer for assistance.
	Keypad flash memory save error	Error in the keypad's flash memory. 1. Press RESET to clear the errors. 2. Check for any problem on Flash IC. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your authorized local dealer for assistance.
	Keypad flash memory parameter error	Error in the default parameters. It might be caused by a firmware update. 1. Press RESET to clear the errors. 2. Check for any problem on Flash IC. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your local authorized dealer for assistance.
	Keypad error when reading AC motor drive data	Keypad cannot read any data sent from the VFD. 1. Verify that the keypad is properly connected to the motor drive by a communication cable such as RJ45. 2. Press RESET to clear the errors. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your local authorized dealer for assistance.
	Keypad CPU error	A serious error in the keypad's CPU. 1. Check for any problem on CPU clock. 2. Check for any problem on Flash IC. 3. Check for any problem on RTC IC. 4. Verify that the communication quality of the RS-485 cable is good. 5. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your local authorized dealer for assistance.

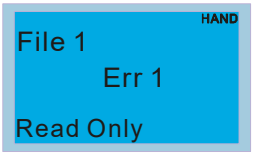
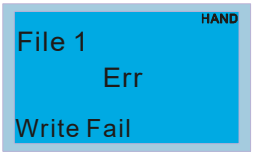
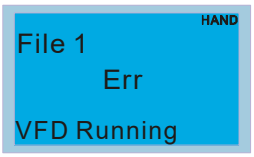
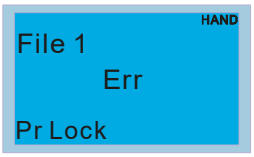
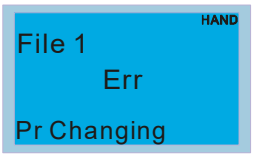
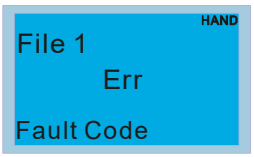
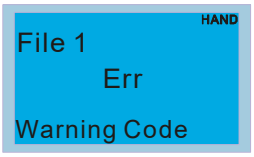
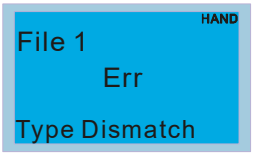
*The content in this section only applies to the KPC-CC01 keypad V1.01 and later versions.

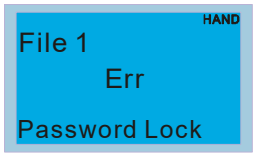
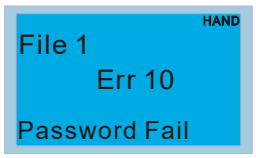
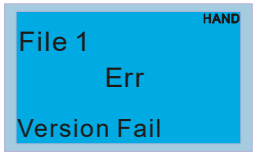
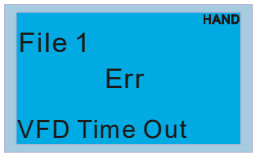
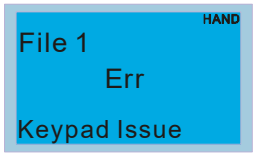
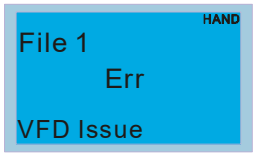
Warning Codes

LCM Display *	Description	Corrective Actions
	Modbus function code error	Motor drive does not accept the communication command sent from the keypad. 1. Verify that the keypad is properly connected to the motor drive by a communication cable such as RJ45. 2. Press RESET to clear the errors. If none of the above solutions works, contact your local authorized dealer for assistance.
	Modbus data address error	Motor drive does not accept the keypad's communication address. 1. Verify that the keypad is properly connected to the motor drive by a communication cable such as RJ45. 2. Press RESET to clear the errors. If none of the above solutions works, contact your local authorized dealer for assistance.
	Modbus data value error	Motor drive does not accept the communication data sent from the keypad. 1. Verify that the keypad is properly connected to the motor drive by a communication cable such as RJ45. 2. Press RESET to clear the errors. If none of the above solution works, contact your local authorized dealer for assistance.
	Modbus slave drive error	Motor drive cannot process the communication command sent from the keypad. 1. Verify that the keypad is properly connected to the motor drive by a communication cable such as RJ45. 2. Press RESET to clear the errors. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your local authorized dealer for assistance.
	Modbus transmission time-out	Motor drive does not respond to the communication command sent from the keypad. 1. Verify that the keypad is properly connected to the motor drive by a communication cable such as RJ45. 2. Press RESET to clear the errors. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your local authorized dealer for assistance.
	Object not supported by TPEditor	Keypad's TPEditor uses an unsupported object. 1. Verify that the TPEditor is not using an unsupported object or setting. Delete unsupported objects and unsupported settings. 2. Re-edit the object in the TPEditor, and then download it to the keypad. If none of the above solutions works, contact your local authorized dealer for assistance.

*The content in this section only applies to the KPC-CC01 keypad V1.01 and later versions.

File Copy Setting Fault Description

LCM Display *	Description	Corrective Actions
	Parameter and file are read-only	The parameter/file is read-only and cannot be written to. 1. Verify the specification in the user manual. If this solution does not work, contact your local authorized dealer for assistance.
	Fail to write parameter and file	An error occurred while writing to a parameter/file. 1. Check for any problem on Flash IC. 2. Shut down the system, wait for ten minutes, and then restart the system. If this solution does not work, contact your local authorized dealer for assistance.
	AC motor drive is in operating status	A setting cannot be changed while the motor drive is in operation. 1. Verify that the drive is not in operation. If this solution does not work, contact your local authorized dealer for assistance.
	AC motor drive parameter is locked	A setting cannot be changed because a parameter is locked. 1. Check if the parameter is locked. If it is locked, unlock it and try to set the parameter again. If this solution does not work, contact your local authorized dealer for assistance.
	AC motor drive parameter is changing	A setting cannot be changed because a parameter is being modified. 1. Check if the parameter is being modified. If it is not being modified, try to change that parameter again. If this solution does not work, contact your local authorized dealer for assistance.
	Fault code is not cleared	A setting cannot be changed because an error has occurred in the motor drive. 1. Check if an error occurred in the motor dive. If there is no error, try to change the setting again. If this solution does not work, contact your local authorized dealer for assistance.
	Warning code is not cleared	A setting cannot be changed because of a warning message given to the motor drive. 1. Check if there is a warning message given to the motor drive. If this solution does not work, contact your local authorized dealer for assistance.
	File type mismatch	Data to be copied are not the correct type, so the setting cannot be changed. 1. Check if the products' serial numbers to be copied are in the same category. If they are in the same category, try to copy the setting again. If this solution does not work, contact your authorized dealer for assistance.

LCM Display *	Description	Corrective Actions
	File is locked with password	A setting cannot be changed because some data are locked. 1. Check if the data are unlocked or able to be unlocked. If the data are unlocked, try to change the setting again. 2. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your authorized dealer for assistance.
	File password mismatch	A setting cannot be changed because the password is incorrect. 1. Check if the password is correct. If the password is correct, try to change the setting again. 2. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your authorized dealer for assistance.
	File version mismatch	A setting cannot be changed because the version of the data is incorrect. 1. Check if the version of the data matches the motor drive. If it matches, try to change the setting again. If this solution does not work, contact your authorized dealer for assistance.
	AC motor drive copy function time-out	A setting cannot be changed because the data copying time-out expired. 1. Try copying the data again. 2. Check if copying data is authorized. If it is authorized, try to copy the data again. 3. Shut down the system, wait for ten minutes, and then restart the system. If none of the above solutions works, contact your authorized dealer for assistance.
	Other keypad error	This setting cannot be changed due to other keypad issues (Reserved functions). Contact your authorized dealer for assistance.
	Other AC motor drive error	This setting cannot be changed due to other motor drive issues (Reserved functions). Contact your authorized dealer for assistance.

*The content in this section only applies to the KPC-CC01 keypad V1.01 and later versions.

Chapter 10 Auto-tuning Process

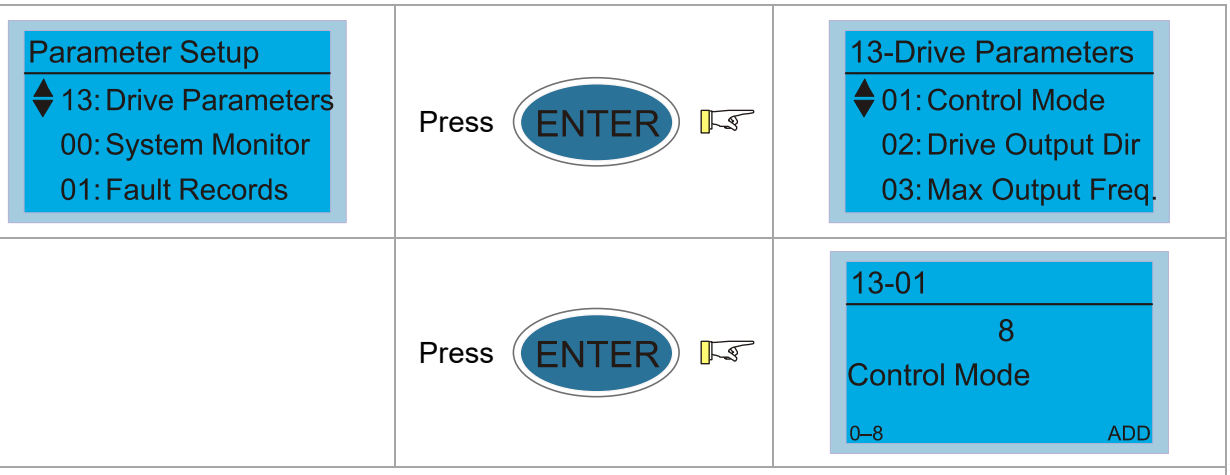
10-1 Tuning in Easy Steps

1. Motor parameters:
    - Pr.13-01 Control Mode
    - Pr.13-03 Elevator Rated Frequency
    - Pr.13-04 Motor Rated Frequency
    - Pr.13-05 Motor Rated Voltage
    - Pr.13-06 Motor Rated Current
    - Pr.13-07 Motor Rated Power
    - Pr.13-08 Motor Rated Speed
    - Pr.13-09 Number of Motor Poles
    - Pr.13-22 Selection of Encoder
    - Pr.13-23 Encoder Pulse
    - Pr.13-24 Encoder Input Type Setting
2. Input / Output Parameters:
    - Pr.06-xx Contacts of Main Control Board
    - Pr.07-xx Contacts of Cartop Board
3. Motor Parameter Auto-tuning
    - Pr.13-21 Motor Auto-tuning (IM, PM)
    - Pr.13-21 Auto-measures the magnetic pole angle (PM)
4. Mechanical Inertia:
    - Pr.13-26 Suspension Ratio
    - Pr.13-27 Gear Ratio
    - Pr.13-28 Main Sheave Diameter
    - Pr.13-29 Elevator Rated Speed
    - Pr.13-60 Maximum Current during Acceleration
    - Pr.13-30 Mechanical Inertia Ratio
5. Tuning in Manual Mode:
    - Pr.02-06 Forced Door Opening/Closing Test
    - Pr.03-51 ICB (Car Command Board) Function Setting
6. Tuning in Automatic Mode:
    - Pr.03-01 Highest Physical Floor
    - Pr.03-02 Lowest Physical Floor
    - Pr.04-03 Hoistway Auto-tuning Speed
    - Pr.03-24 Constant Running Protection Time
    - Pr.03-00 Hoistway Auto-tuning
    - Pr.03-60–Pr.03-67 Manual Braking Force Test
7. Group Control:
    - Pr.03-03 Group Control Station Number
    - Pr.03-04 Group Control Enabled

10-2 Motor Parameter

If you do not do the wiring or do not wire according to the manual instructions, some fault codes may occur, but it does not affect the tuning process.

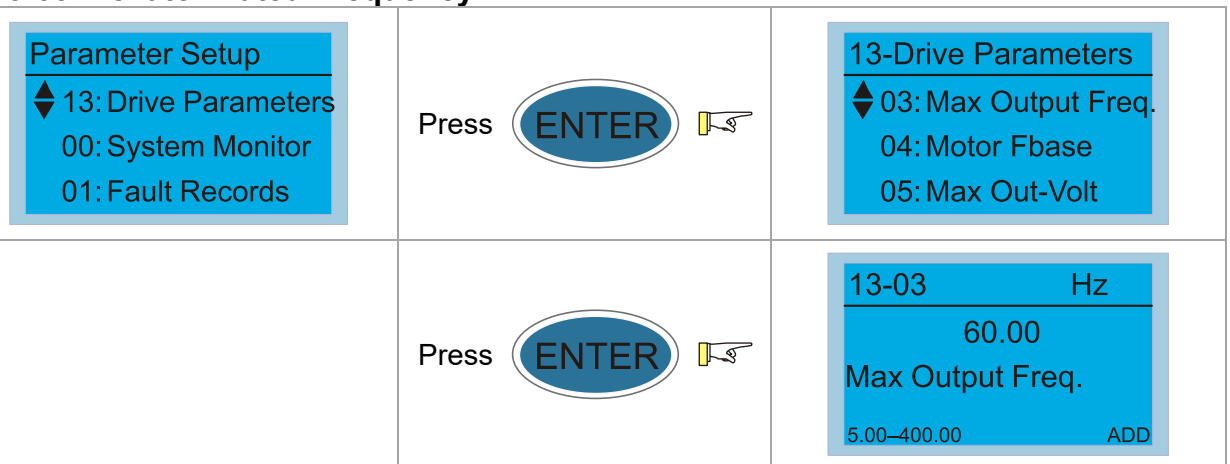
10-2-1 Pr.13-01 Control Mode



📖 3: FOC vector control + Encoder (FOCPG) (IM; Induction Motor)

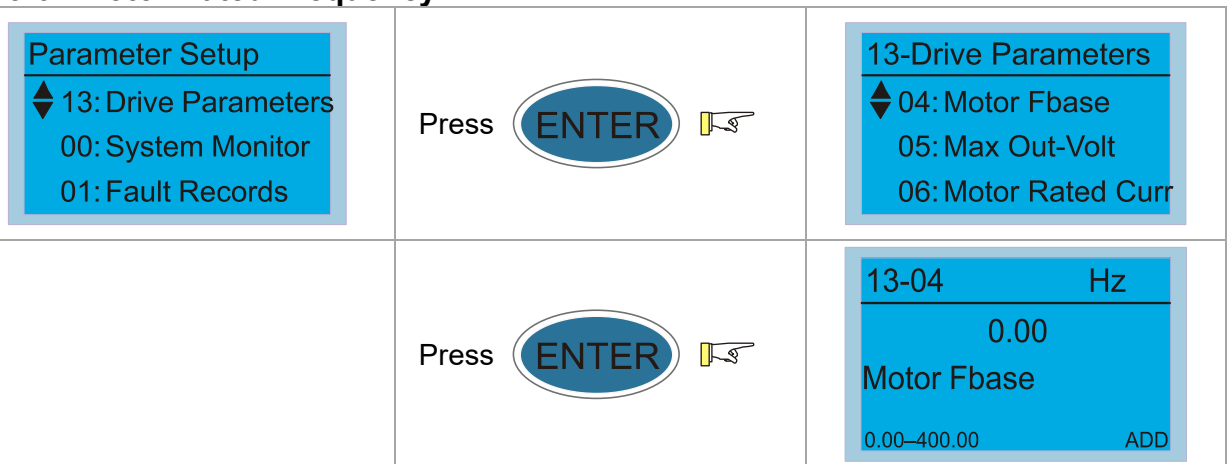
📖 8: FOC Permanent Motor control (FOCPM) (PM; Permanent Motor)

10-2-2 Pr.13-03 Elevator Rated Frequency



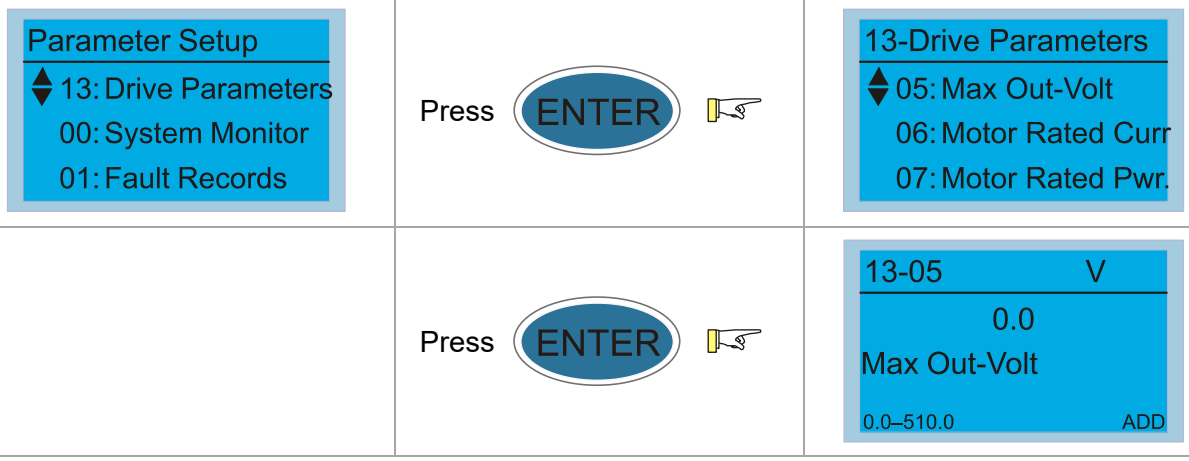
📖 Sets this value according to the motor nameplate. In general, set this value equal to motor's rated frequency.

10-2-3 Pr.13-04 Motor Rated Frequency



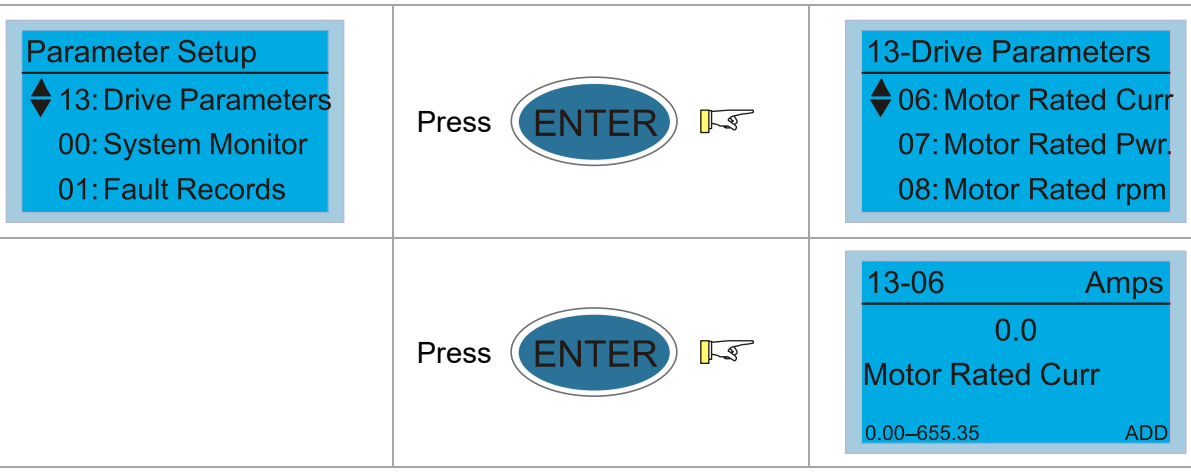
📖 Sets this value according to the motor nameplate. If the motor is 60 Hz, set this parameter to 60. If the motor is 50 Hz, set it to 50.

10-2-4 Pr.13-05 Motor Rated Voltage



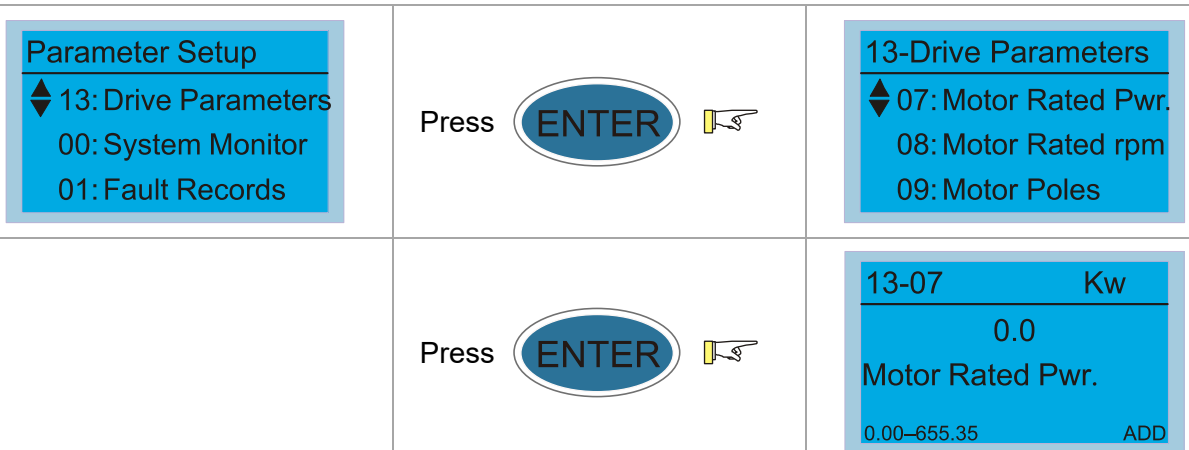
Sets this value according to the motor nameplate. If the motor is 220V, set this parameter to 220.0. If the motor is 200V, set this parameter to 200.0.

10-2-5 Pr.13-06 Motor Rated Current



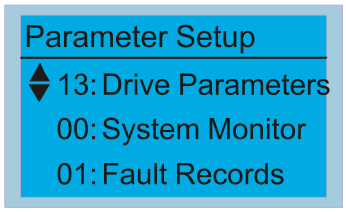
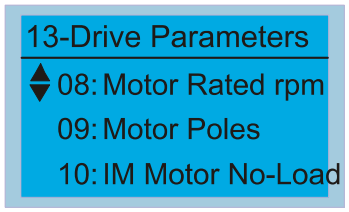
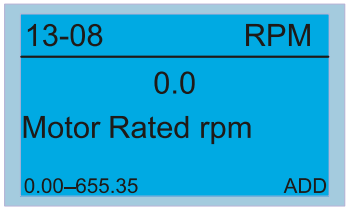
Sets this value according to the motor nameplate.

10-2-6 Pr.13-07 Motor Rated Power



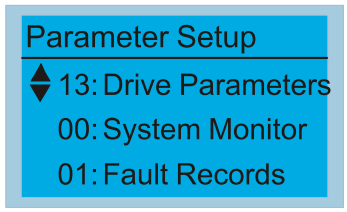
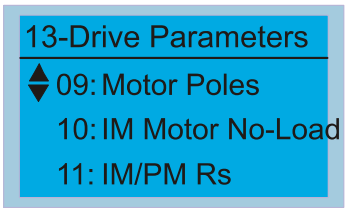
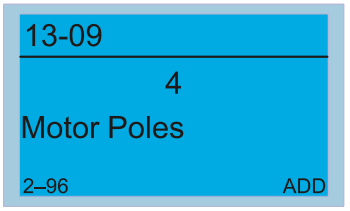
Sets this value according to the motor nameplate.

10-2-7 Pr.13-08 Motor Rated Speed

	Press ENTER	
	Press ENTER	

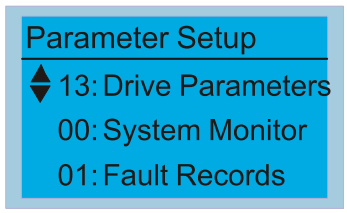
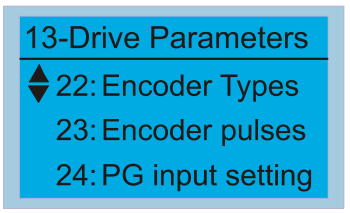
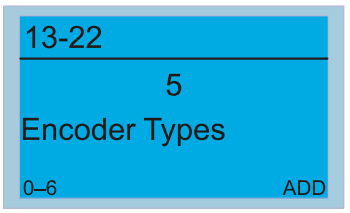
- 🕮 Sets this value according to the motor nameplate.
- 🕮 Speed (RPM) = (120 × Frequency) ÷ Number of Motor Poles

10-2-8 Pr.13-09 Number of Motor Poles

	Press ENTER	
	Press ENTER	

- 🕮 Sets this value according to the motor nameplate.
- 🕮 Sets the number of motor poles (must be an even number).

10-2-9 Pr.13-22 Selection of Encoder

	Press ENTER	
	Press ENTER	

🕮 When you set Pr.13-24 to 3, 4 or 5, you can set Pr.13-22 only to 0, 1 or 2, and you cannot use 3, 4, 5 and 6.

🕮 When you set Pr.13-22 to 3, the encoder has one sine and one cosine signal for each revolution. The signal must be: 0.75–1.2 Vpp for the amplitude with phase angle 90°±5 elec. (E.g. ERN 1185 ERN 1387)

🕮 When you set Pr.13-22 to 4 or 6, wait for two seconds after applying the power before executing the RUN command.

🕮 When you set Pr.13-22 to 5, you must set Pr.13-16 to 360.

🕮 Detection of the magnetic pole:

(1) 1 or 5: The drive outputs a short circuit to detect the position of the magnetic pole. At this moment, the motor generates a little noise.

(2) 2: The drive detects the position of the magnetic pole with the UVW encoder signal.

(3) 3: The drive detects the position of the magnetic pole with the sine encoder signal.

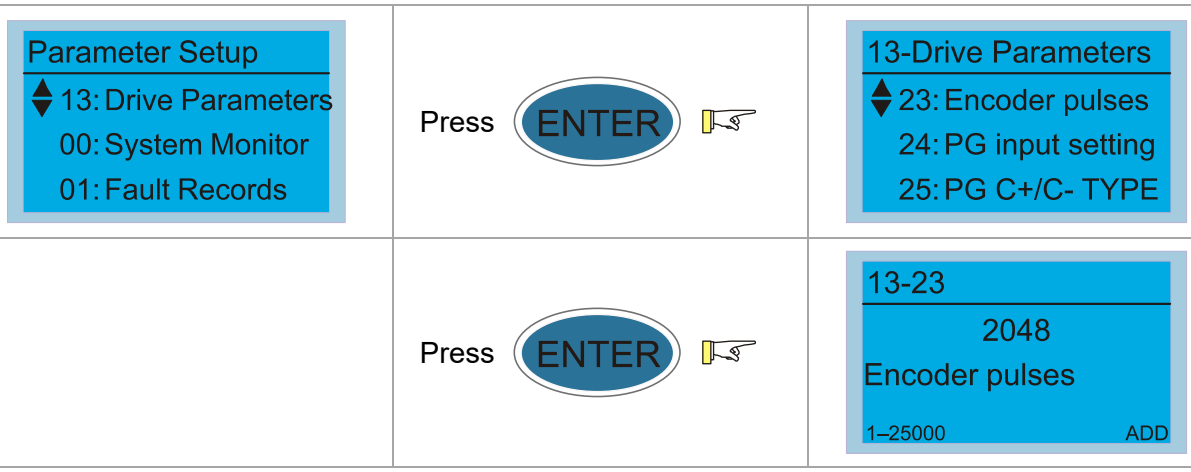
(4) 4 or 6: The drive detects the position of the magnetic pole with the communication encoder signal.

🕮 The table below shows the correspondence among encoder, PG card and auto-tuning

PG Signal Type Setting	PG Signal Type	Applicable PG Card x=1, 2,…	Pr.13-21=1	Pr.13-21=3
Pr.13-22=1	A, B, Z	EMED-PGAB/ABD-x	N/A	N/A
Pr.13-22=2	A, B, Z + U, V, W	EMED-PGABD-x	Rolling test*1	Rolling test*1
Pr.13-22=3	SIN/COS + Sinusoidal (e.g. ERN1185, ERN1387)	EMED-PGHSD-x	Rolling test*1	Pr.13-17 Bit9=0 Rolling test*1 Pr.13-17 Bit9=1 Static test*1
Pr.13-22=4	SIN/COS + Endat 2.1 (e.g.ECN1313, ECN413)	EMED-PGHSD-x	Dynamic test*1	Static test*1
Pr.13-22=5	SIN/COS	EMED-PGHSD-x	N/A	N/A
Pr.13-22=6	SIN/COS + Hiperface (e.g. SRS50/60)	EMED-PGHSD-x	Dynamic test*1	Static test*1

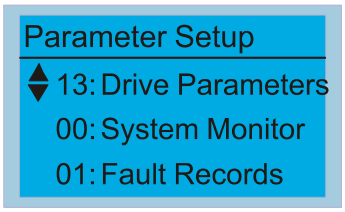
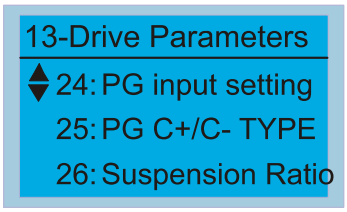
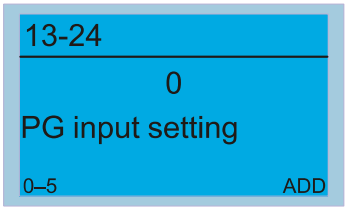
*1 Static: Brake engaged, no motor running. Dynamic: Brake released, motor rotates less than one revolution. Rolling: Brake released, motor rotates more than one revolution.

10-2-10 Pr.13-23 Encoder Pulse



🕮 Sets the Pulses per Revolution (PPR) for the encoder.

10-2-11 Pr.13-24 Encoder Input Type Setting

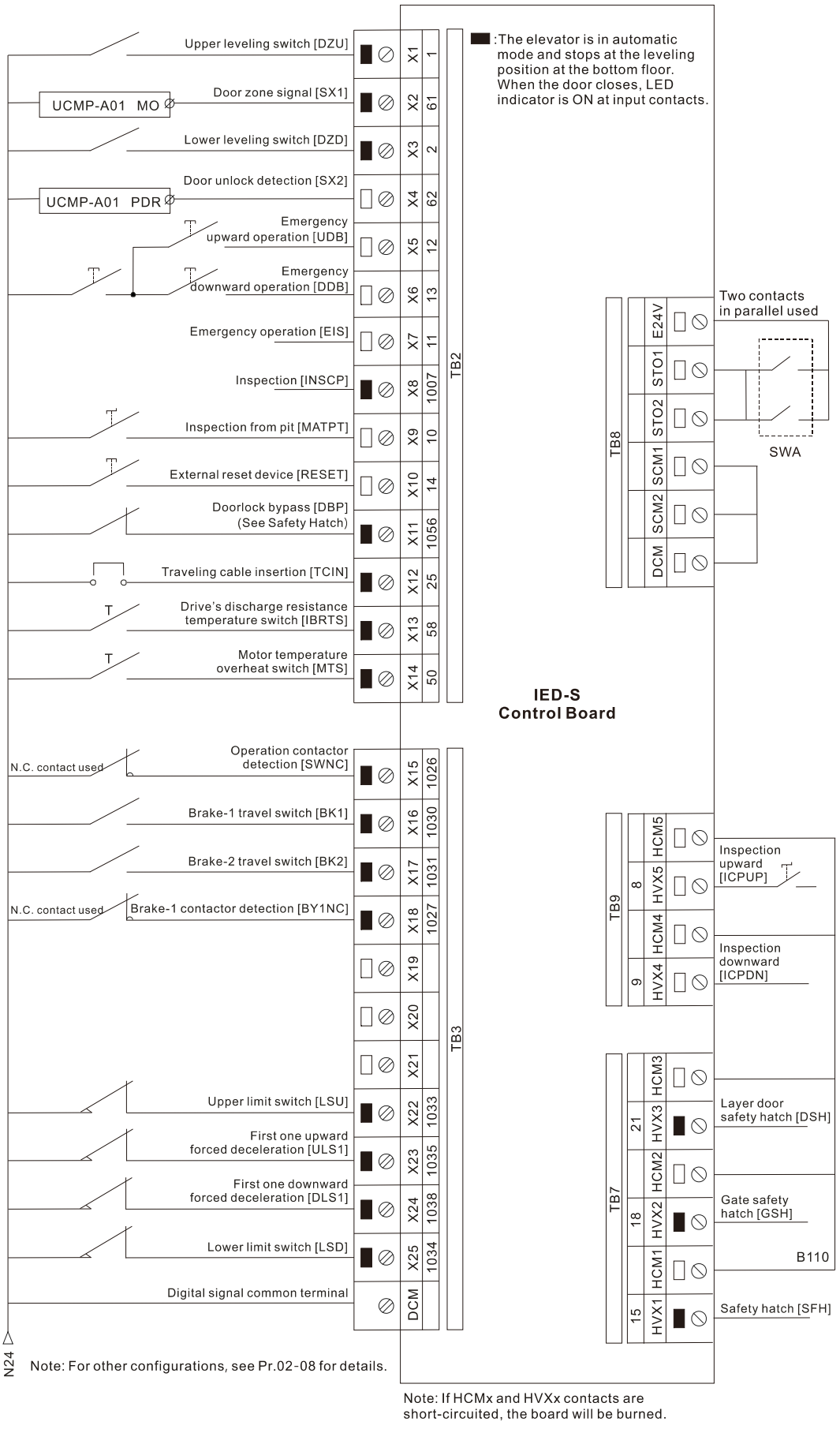
	Press 	
	Press 	

- Normally set Pr.13-24 to 1 first, and then change to 2 if fault code E042 occurs.
- When you set Pr.13-22 to 3, 4, 5 or 6, you can set Pr.13-24 only to 0, 1 or 2, and you cannot use 3, 4 and 5.
- You must enter the correct pulse type for stable control.

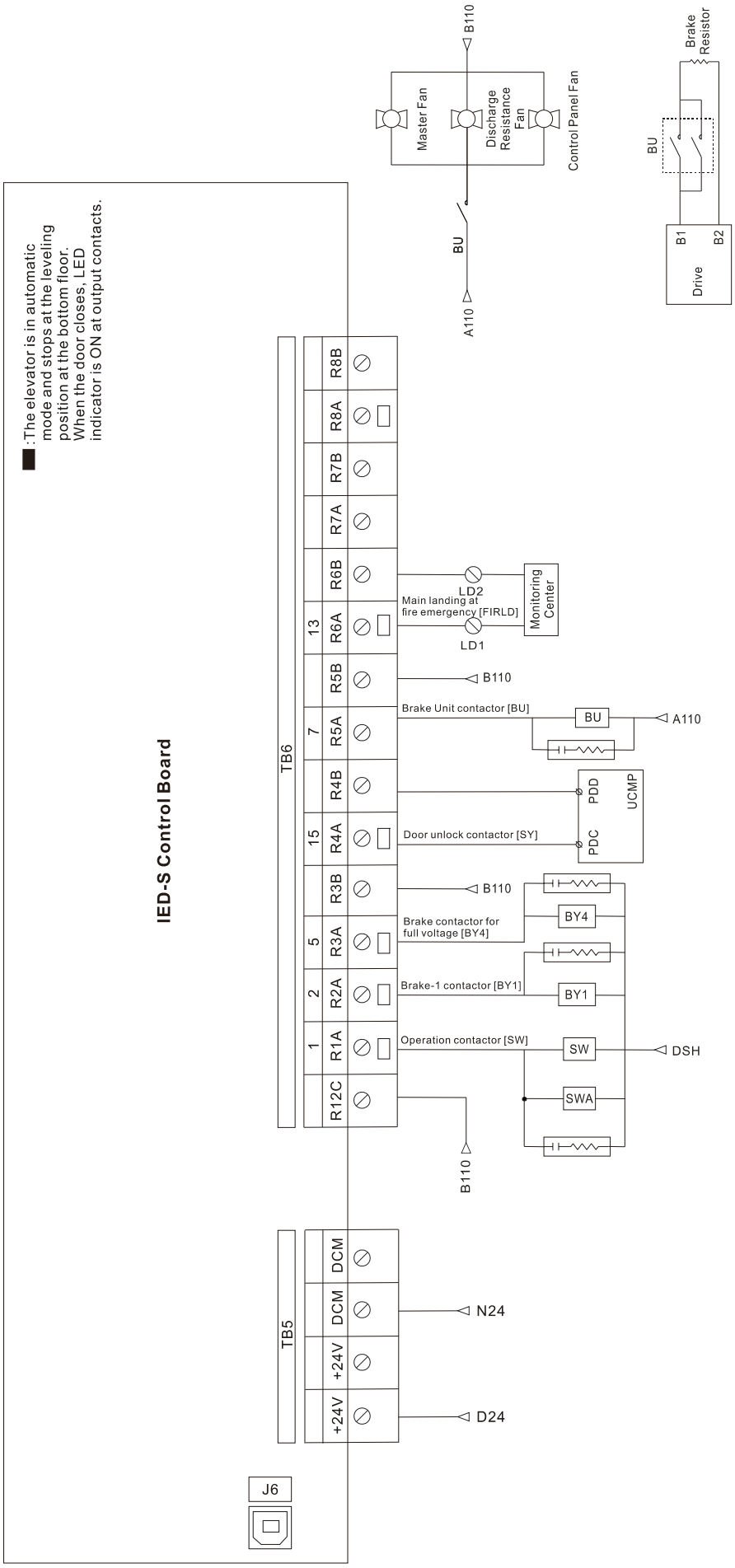
10-3 Input / Output Parameter

For the wiring of input/output contacts, see Section 10-3-1 to 10-3-3

10-3-1 Default Settings for Input Contacts of IED-S Main Control Board

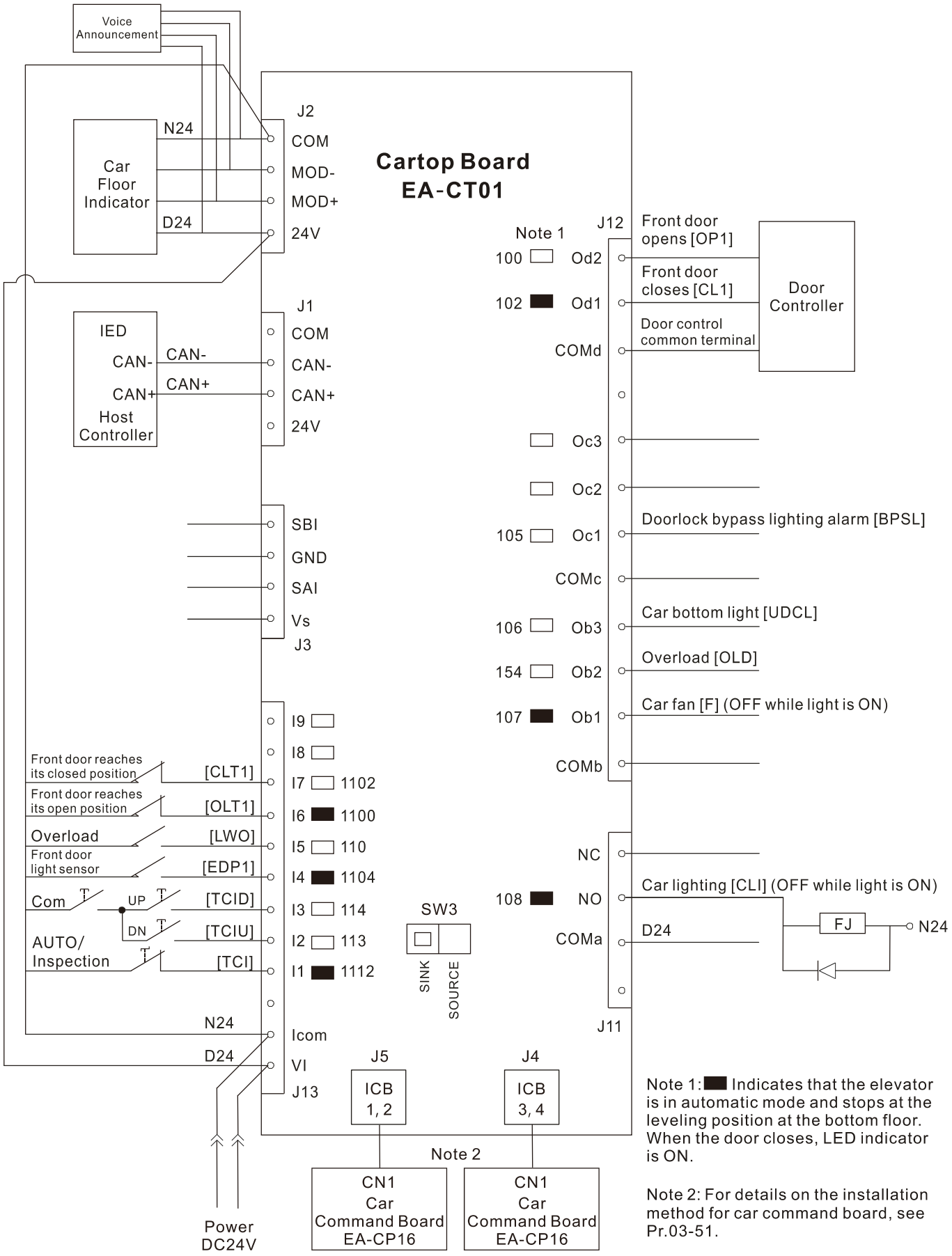


10-3-2 Default Settings for Output Contacts of IED-S Main Control Board



Note: For other configurations, see Pr.02-08 for details.

10-3-3 Default Settings for Contacts of IED-S Cartop Board



Note 1: ■ Indicates that the elevator is in automatic mode and stops at the leveling position at the bottom floor. When the door closes, LED indicator is ON.

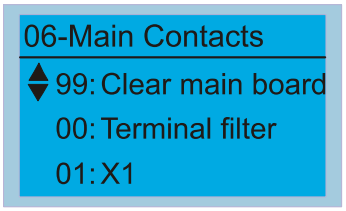
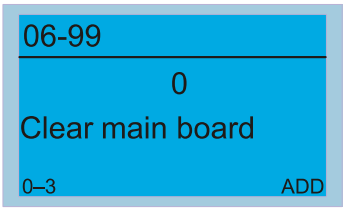
Note 2: For details on the installation method for car command board, see Pr.03-51.

Note: For other configurations, see Pr.02-08 for details.

10-3-4 Contacts of IED-S Main Control Board

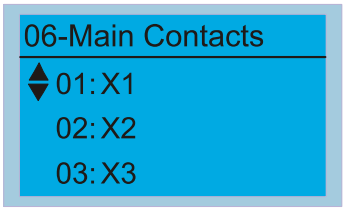
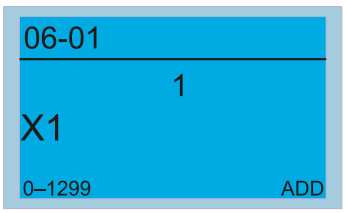
Pr.06-99 Clear Contacts of Main Control Board

Due to the uniqueness of MI contacts, you can set Pr.06-99 to clear all default values of MI/MO contacts if the wiring of contacts for the main control board on-site is different from those shown in Section 10-3-1 and 10-3-2.

	Press ENTER	
	Press ENTER	

📖 Setting values:
0: No Function
1: Set all MI contacts of the main control board to 0
2: Set all MO contacts of the main control board to 0
3: Set all values in Parameter Group 06 to 0

Pr.06-XX Contacts of Main Control Board

	Press ENTER	
	Press ENTER	

📖 You must set X1 = 1 (Upper Leveling Switch; DZU) and X3 = 2 (Lower Leveling Switch; DZD). For other contacts, you can set them differently according to your needs.

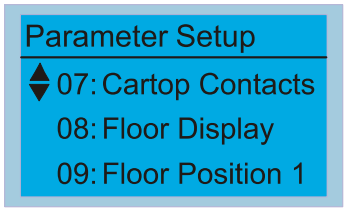
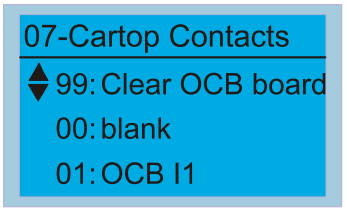
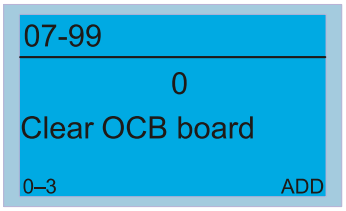
📖 Setting the setting value to thousands digit changes the contact from N.O. to N.C. or vice versa.
For example, if you set DZU (Upper Leveling Switch) to 1, the contact is N.O. (Normally Open); if you set DZU (Upper Leveling Switch) to 1001, the contact becomes N.C. (Normally Closed).

📖 The function of MI contacts is unique, that is, you cannot enter the same value into different parameters simultaneously (even across Parameter Group 06 and 07).

10-3-5 Contacts of IED-S Cartop Board

Pr.07-99 Clear Contacts of Cartop Board

Due to the uniqueness of MI contacts, you can set Pr.07-99 to clear all default values of MI/MO contacts if the wiring of contacts for the main control board on-site is different from those shown in Section 10-3-1 and 10-3-2.

	Press ENTER	
	Press ENTER	

📖 Setting values:

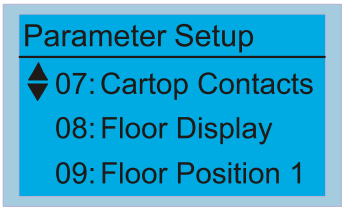
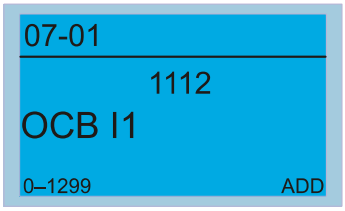
0: No function

1: Set all MI contacts of the cartop board to 0

2: Set all MO contacts of the cartop board to 0

3: Set all values in Parameter Group 07 to 0

Pr.07-XX Contacts of Cartop Board

	Press ENTER	
	Press ENTER	

📖 Setting the setting value to thousands digit changes the contact from N.O. to N.C. or vice versa.

For example, if you set DZU (Upper Leveling Sensor) to 1, the contact is N.O. (Normally Open); if you set DZU (Upper Leveling Sensor) to 1001, the contact becomes N.C. (Normally Closed).

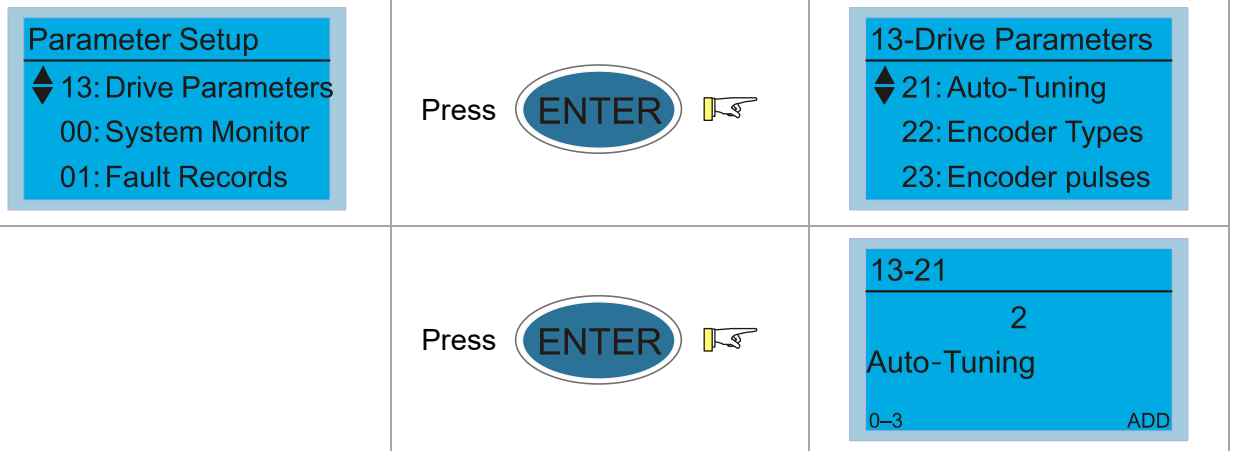
📖 The function of MI contacts is unique, that is, you cannot enter the same value into different parameters simultaneously (even across Parameter Group 06 and 07).

10-4 Motor Parameter Auto-tuning

For IM, execute setting value 2 only for Pr.13-21.

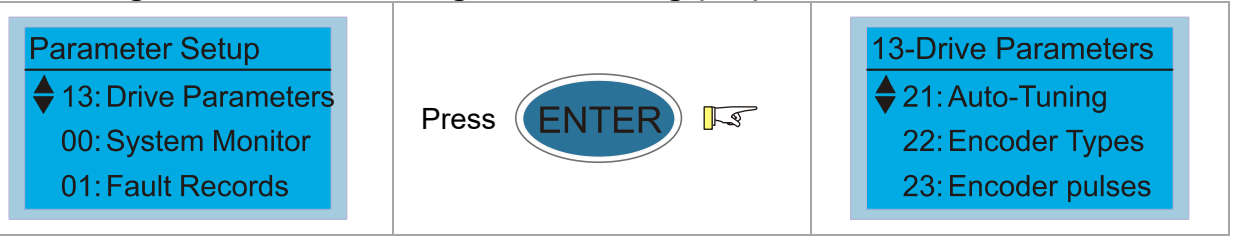
For PM, execute setting value 2 for Pr.13-21 first, and then set Pr.13-21 to 1 (motor without load) or 3 (motor with load).

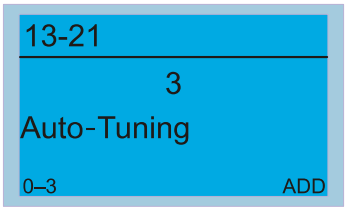
10-4-1 Pr.13-21 Motor Auto-tuning (IM, PM)



- Set the elevator position near the middle floors before auto-tuning.
- 2: Executes the motor auto-tuning. When in the manual mode (inspection), the controller executes upward or downward operation inspections, and then the motor auto-tunes immediately. After auto-tuning is finished, the inspection stops outputting for ten seconds to prevent the elevator from malfunctioning.
- Setting value:
  1: Only for an unloaded motor; auto-measures the magnetic pole offset angle (PM)
  2: Executes motor auto-tuning (IM / PM)
  3: Auto-measures the magnetic pole offset angle (PM)
- Precautions for motor auto-tuning:
  1. After you have set the motor auto-tuning, some faults and errors (including safety hatch signals, gate and layer door safety hatch signals) will not be detected. Thus make sure the motor movement (rotation) is safe before setting the motor auto-tuning.
  2. Static auto-tuning does not guarantee that the motor does not move (rotate). Make sure that no danger occurs if motor moves (rotates).
  3. After you have set the motor auto-tuning, Pr.13-21 is automatically set to 0 if the drive does not execute auto-tuning within ten seconds.
  4. After you have set the motor auto-tuning, Pr.13-21 is automatically to 0 no matter whether the auto-tuning still executes after 120 seconds or not.

10-4-2 Pr.13-21 Magnetic Pole Offset Angle Auto-tuning (PM)



	Press ENTER	

🕮 Setting value:

1: Only for an unloaded motor; auto-measures the magnetic pole offset angle (PM)

2: Executes motor auto-tuning (IM / PM)

3: Auto-measures the magnetic pole offset angle (PM)

🕮 Precautions for the magnetic pole offset angle auto-tuning:

1. Motor auto-tuning should be finished before auto-tuning.
2. When Pr.13-21=1, unload before auto-tuning.
3. When Pr.13-21=3, the motor can be loaded or unloaded before auto-tuning.
4. Make sure the brake is released before auto-tuning.
5. You can use static tuning, but Pr.13-17 Bit9 must be set to 1 and works with Pr.13-22 correspondence table among encoder, PG card and auto-tuning.
6. Make sure Pr.13-24 (Encoder Input Type Setting) is correctly set. An incorrect Pr.13-24 setting would cause a wrong magnetic position, further making Pr.13-16 (PM Magnetic Pole Offset Angle) auto-tune incorrectly.

🕮 When Pr.13-22=5, you do not need to execute the magnetic pole offset angle auto-tuning. But you must set Pr.13-16=360, and then power-on again.

10-5 Mechanical Inertia

Set Pr.13-26 to Pr.13-29 and Pr.13-60, as shown below, according to the actual elevator configurations on-site.

10-5-1 Pr.13-26 Suspension Ratio

Parameter Setup ▲▼ 13: Drive Parameters 00: System Monitor 01: Fault Records	Press ENTER	13-Drive Parameters ▲▼ 26: Suspension Ratio 27: Gear Ratio 28: Sheave Diameter
	Press ENTER	13-26 1 Suspension Ratio 0–3 ADD

Setting value:

0 = 1: 1

1 = 2: 1

2 = 4: 1

3 = 8: 1

10-5-2 Pr.13-27 Gear Ratio

Parameter Setup ▲▼ 13: Drive Parameters 00: System Monitor 01: Fault Records	Press ENTER	13-Drive Parameters ▲▼ 27: Gear Ratio 28: Sheave Diameter 29: Fmax to Lift Spd
	Press ENTER	13-27 1.00 Gear Ratio 1.00–100.00 ADD

10-5-3 Pr.13-28 Main Sheave Diameter

Parameter Setup 13: Drive Parameters 00: System Monitor 01: Fault Records	Press ENTER	13-Drive Parameters 28: Sheave Diameter 29: Fmax to Lift Spd 30: Inertia Ratio
	Press ENTER	13-28 mm 400 Sheave Diameter 100–2000 ADD

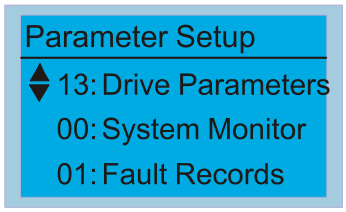
10-5-4 Pr.13-29 Elevator Rated Speed

Parameter Setup 13: Drive Parameters 00: System Monitor 01: Fault Records	Press ENTER	13-Drive Parameters 29: Fmax to Lift Spd 30: Inertia Ratio 31: Zero SP Loop BW
	Press ENTER	13-29 m/s 0.0 Fmax to Lift Spd 0.10–4.00 ADD
🕮 Elevator speed (m/sec. = m/min. / 60)		

10-5-5 Pr.13-60 Maximum Current during Acceleration

Parameter Setup 13: Drive Parameters 00: System Monitor 01: Fault Records	Press ENTER	13-Drive Parameters 60: Max. ACC Current 61: Blank 62: Blank
	Press ENTER	13-60 % 150 Max. ACC Current 50–200 ADD
🕮 Measures motor's maximum current when the elevator is under test in automatic mode.		

10-5-6 Pr.13-30 Mechanical Inertia Ratio

<table>
<tr>
<td> 
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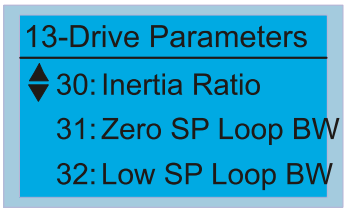
<td> 
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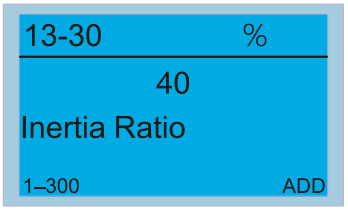
<td> 
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</table>

- The drive calculates the mechanical inertia by entering motor parameters, suspension ratio, gear ratio, main sheave diameter, elevator speed, and maximum current during acceleration. You can use Pr.13-30 to adjust the calculated load inertia ratio.
- Mechanical inertia reference value (%):

Load/Motor	IM	PM
Without load	40	10
With load	80–120	40

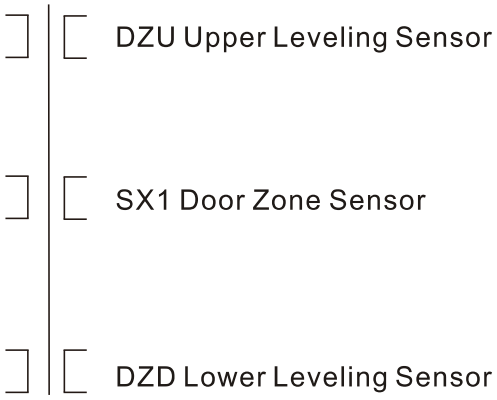
10-6 Tuning in Manual Mode

10-6-1 Leveling Plate Length

Elevator Rated Speed	Leveling Plate Length
< 1 m/s	> 150 mm
1–2 m/s	> 200 mm
2–3 m/s	> 300 mm
3–4 m/s	> 400 mm
4–5 m/s	> 500 mm
> 5 m/s	> 600 mm

10-6-2 Installation Position of Door Zone Leveling Sensors

Installation positions of DZU (Upper Leveling Sensor), DZD (Lower Leveling Sensor), and SX1 (Door Zone Sensor).

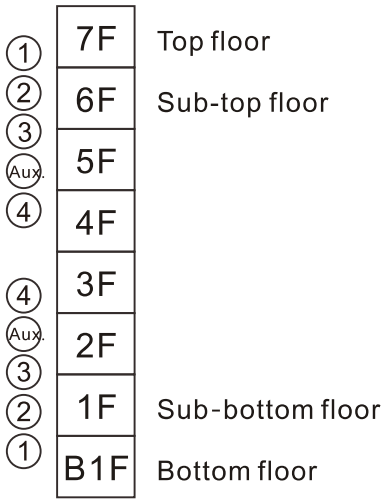


1. When the elevator is leveling, DZU, SX1, and DZD are all activated.
   DZU is about 10–20 mm at the upper edge of the leveling plate.
   SX1 is in the middle of the leveling plate.
   DZD is about 10–20 mm at the lower edge of the leveling plate.

2. When the elevator is at the top floor and levels upward before reaching upper limit switch (LSU), DZU leaves the leveling plate but DZD does not.

3. When the elevator is at the bottom floor and levels downward before reaching lower limit switch (LSD), DZD leaves the leveling plate but DZU does not.

10-6-3 Installation Position of Upward and Downward Forced Deceleration Sensors



Lx: The furthest distance between forced deceleration sensor and top and bottom floor.
Lx = (rated speed (m/s) × 0.75)^2 ÷ (2 x Pr.04-08)
L1: Distance between the first one forced deceleration sensor and top and bottom floor.
L2: Distance between the second one forced deceleration sensor and top and bottom floor.
L3: Distance between the third one forced deceleration sensor and top and bottom floor.
L4: Distance between the fourth one forced deceleration sensor and top and bottom floor.
CAM: The effective length of forced deceleration sensor cam
Lm: The furthest installation distance for the first one forced deceleration sensor.
Lm = 0.45 × floor height of the top/bottom floor and sub-top/sub-bottom floor.

1. If Lx ≤ Lm, install the first one forced deceleration sensor at Lx. L1 = Lx
2. If Lx > Lm, install the second one forced deceleration sensor at Lx and install the first one forced deceleration sensor at Lm. L1 = Lm, L2 = Lx.
3. If L2 - L1 > CAM, install the third one forced deceleration sensor at Lx. L1 = Lm, L3 = Lx, L1 + CAM ≥ L2 ≥ L3-CAM
4. If L3 - L1 > 2 CAM, install the fourth one forced deceleration sensor at Lx. L1 = Lm, L2 = L1 + CAM, L4 = Lx, L2 + CAM ≥ L3 ≥ L4-CAM.
5. If L4- L1 > 3 CAM, install an auxiliary sensor for the fourth one forced deceleration sensor between the fourth one forced deceleration sensor and the third one forced deceleration sensor. The auxiliary sensor should be connected with the circuits of the fourth one forced deceleration sensor to make sure that the third one forced deceleration sensor has been activated before the fourth one forced deceleration sensor signal deactivates.
6. If Lx – Lm is zero or a negative value, install the first one forced deceleration sensor.
   If Lx – Lm is a positive value and ≤ CAM, install the second one forced deceleration sensor.
   If Lx – Lm is a positive value, and larger than one times of CAM but smaller than or equal to two times of CAM, install the third one forced deceleration sensor.
   If Lx – Lm is a positive value, and larger than two times of CAM but smaller than or equal to three times of CAM, install the fourth one forced deceleration sensor.
   If Lx – Lm is a positive value, and larger than three times of CAM but smaller than or equal to four times of CAM, install the fourth one forced deceleration auxiliary sensor.
   If Lx – Lm is a positive value, and larger than four times of CAM but smaller than or equal to five times of CAM, install two fourth one forced deceleration auxiliary sensors.

10-6-4 Examples of Installing Upward and Downward Forced Deceleration Sensors

Assume that the distance between the sub-top/sub-bottom floor and top/bottom floor is 3.3 m, the effective length of the forced deceleration sensor CAM is 2.2 m, Pr.04-08 = 0.5 m/s^2, and Lm = 1.485 m [0.45 x 3.3].

1. If rated speed = 1 m/s, then Lx = $(1 \times 0.75)^2 \div (2 \times 0.5) = 0.563$ m.
   When Lx – Lm [= 0.563 – 1.485 = -0.922] is a negative value, install the first one forced deceleration sensor
   L1 = 0.563 m
2. If rated speed = 1.5 m/s, then Lx = $(1.5 \times 0.75)^2 \div (2 \times 0.5) = 1.266$ m.
   When Lx – Lm [= 1.266 – 1.485 = -0.219] is a negative value, install the first one forced deceleration sensor.
   L1 = 1.266 m
3. If rated speed = 1.75 m/s, then Lx = $(1.75 \times 0.75)^2 \div (2 \times 0.5) = 1.723$ m.
   When Lx – Lm [= 1.723 – 1.485 = 0.238] is a positive value and ≤ CAM, install the second one forced deceleration sensor.
   L2 = 1.723 m
   L1 = 1.485 m
4. If rated speed = 2 m/s, then Lx = $(2 \times 0.75)^2 \div (2 \times 0.5) = 2.25$ m.
   When Lx – Lm [= 2.25 – 1.485 = 0.765] is a positive value and ≤ CAM, install the second one forced deceleration sensor
   L2 = 2.25 m
   L1 = 1.485 m
5. If rated speed = 2.5 m/s, then Lx = $(2.5 \times 0.75)^2 \div (2 \times 0.5) = 3.516$ m.
   When Lx – Lm [= 3.516 – 1.485 = 2.031] is a positive value and ≤ CAM, install the second one forced deceleration sensor.
   L2 = 3.516 m
   L1 = 1.485 m
6. If rated speed = 3 m/s, then Lx = $(3 \times 0.75)^2 \div (2 \times 0.5) = 5.063$ m.
   When Lx – Lm [= 5.063 – 1.485 = 3.587] is a positive value, and ≤ two times of CAM but > one times of CAM, install the third one forced deceleration sensor.
   L1 = 1.485 m
   L3 = 5.063 m
   L1 + CAM ≥ L2 ≥ L3 - CAM
   1.485 + 2.2 ≥ L2 ≥ 5.063 - 2.2
   3.685 m ≥ L2 ≥ 2.863 m
7. If rated speed = 4 m/s, then Lx = $(4 \times 0.75)^2 \div (2 \times 0.5) = 9$ m.
   When Lx – Lm [= 9 – 1.485 = 7.515] is a positive value and ≤ four time of CAM but > three times of CAM, install the fourth one forced deceleration auxiliary sensor.
   L1 = 1.485 m
   L2 = L1 + 2.2 m = 1.485 + 2.2 = 3.685 m
   L3 = L2 + 2.2 m = 3.685 + 2.2 = 5.885 m
   L4 = Lx = 9 m
   L3 + CAM ≥ L4 auxiliary ≥ L4 – CAM
   5.885 + 2.2 ≥ L4 auxiliary ≥ 9 – 2.2
   8.085 m ≥ L4 auxiliary ≥ 6.8 m

10-6-5 Confirmation of Sensor Signal

Set the elevator position near the middle floor first, and then use the upward and downward operations for the inspection mode to check the sensor signals:

1. Check if the signals and installation positions of DZU, SX1, and DZD for each floor are correct
2. Check if the signals and installation positions of upward and downward forced deceleration sensors are correct
3. Check if the signals and installation positions of the upper limit and lower limit are correct

10-6-6 Pr.02-06 Door Function Test

<table>
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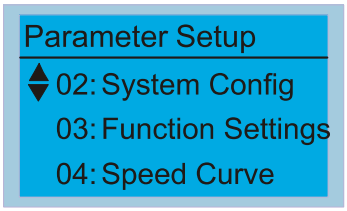
<td> 
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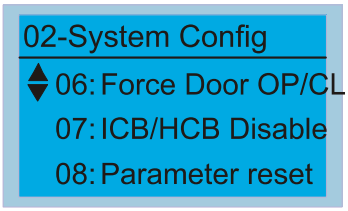
<td> 
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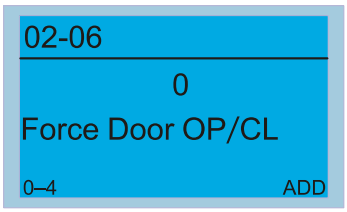
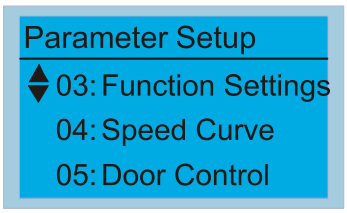
<td> 
</td>
</tr>
<tr>
<td colspan="3">🕮 Valid only when in inspection mode.
🕮 Setting value:
0: Normal mode
1: Front door is forced to open
2: Rear door is forced to open
3: Front and rear door are forced to open
4: Front and rear door are forced to close
🕮 When not in manual mode, Pr.02-06 is automatically set to 0, and the door is forced to open both in leveling or non-leveling area.</td>
</tr>
</table>

10-6-7 Pr.03-51 ICB (Car Command Board) Function Setting

<table>
<tr>
<td> 
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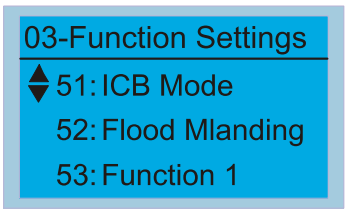
<td> 
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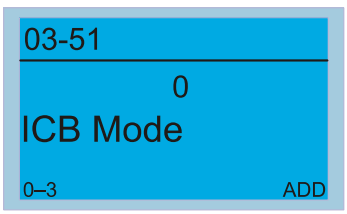
<td> 
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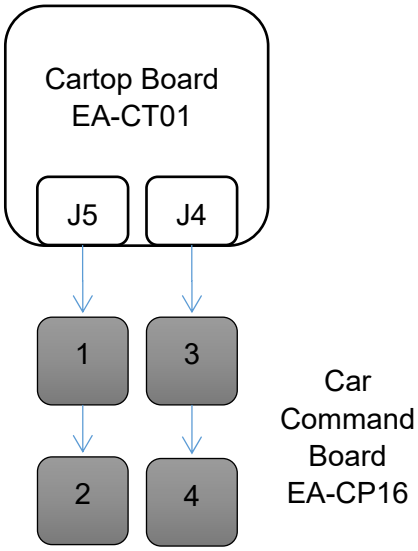
🕮 The installation method for car command boards:



Pr.03-51 Setting Value	Function	The Installation Sequence for Car Command Board			
		1	2	3	4
0	Front door 1–64F	F 1–16F	F 17–32F	F 33–48F	F 49–64F
1	Front door + disability 1–32F	F 1–16F	F 17–32F	F+D 1–16F	F+D 17–32F
2	Front and rear door 1–32F	F 1–16F	F 17–32F	B 1–16F	B 17–32F
3	Front and rear door + disability 1–16F	F 1–16F	F+D 1–16F	B 1–16F	B+D 1–16F

* F: Front door / B: Rear door / D: Disability

Note: Pr.03-51 synchronously enables or disables the corresponding hall calls

10-6-8 Description of Manual Operation

1. Manual operation includes inspection operation and emergency operation.
2. Easy steps in entering cartop or pit:
   (1) In automatic mode, press the following buttons simultaneously for more than four seconds:
      a. Open and close buttons in the car, and
      b. Call buttons at the bottom floor and sub-bottom floor.
      Then, open and close buttons flash at the same time.
   (2) Walk out of the car, and then the door closes automatically.
   (3) If the elevator is at the bottom floor, it automatically moves 2.2 m upward at inspection speed, and then stops. If the elevator is not at the bottom floor, it automatically moves 2.2 m downward at inspection speed, and then stops.
   (4) After the elevator stops, open the layer door within ten seconds. Otherwise, the elevator returns to automatic mode.
   (5) Then, you can enter the cartop or pit. Note that the cartop or pit mode will be cancelled if the action is not finished within 50 seconds.
3. Priority for the manual operation:
   INSCP (control panel inspection switch) = TCI (cartop inspection switch) > EIS (emergency operation) > INSIC (car inspection switch)

4. The usage of TCIN (traveling cable insertion), INSCP (control panel inspection switch), EIS (emergency operation), TCI (cartop inspection switch), and INSIC (car inspection switch):
   (1) Definition of Term:
      a. Control panel in manual operation: signals, such as INSCP (control panel inspection switch) and EIS (emergency operation), connected with the inspection signals in the control panel.
      b. Car in manual operation: signals, such as TCI (cartop inspection switch) and INSIC (car inspection switch), connected with the inspection signals in the cartop board or car command board.
      c. CAR Link: the communication status between IED-S and cartop board.
   (2) When to use:

	TCIN	CAR LINK	Car in manual operation	Control panel in manual operation	Not in manual operation
With TCIN function	ON	Normal	✓	✓	✓
	ON	Abnormal			
	OFF	Normal		✓	
	OFF	Abnormal		✓	
Without TCIN function	X	Normal		✓	✓
	X	Abnormal		✓	

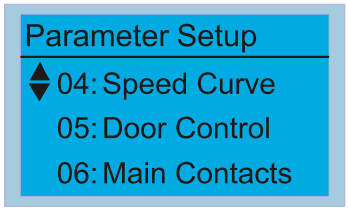
5. Speed for different modes: In manual operation mode, the elevator runs with Pr.04-05 (Leveling Speed) within Pr.04-18 (Low-speed Running Time When Enabled Manually) setting time. In inspection mode, the elevator runs with Pr.04-01 (Inspection Speed). In emergency operation mode, the elevator runs with Pr.04-04 (Non-leveling Speed). If the first one upward or downward forced deceleration activates in the manual operation mode, the elevator runs with Pr.04-04 (Non-leveling Speed) instead. If the upper leveling, or lower leveling, or door zone switch activates in the manual operation mode, the elevator runs with Pr.04-05 (Leveling Speed) instead.
6. Reset procedures of inspection from pit:
   When in the mode of inspection from pit, the elevator does not change to automatic mode simply because you switch the mode from pit inspection to automatic, unless you complete the steps below:
   (1) Change the pit inspection switch to automatic on the precondition that the safety hatch is OFF, layer door safety hatch is OFF, and external reset device is not pressed.
   (2) Switch the safety hatch to normal.
   (3) Close the layer door.
   (4) Press the external reset device to complete the reset. Or you can press the hall call button at the bottom floor for three to six seconds and release it after layer door closes (step (3)) for 30 seconds. Pressing and holding it too long or too short does not work. Then, the elevator changes to automatic mode successfully.
   (5) If you set them incorrectly, you only have to repeat steps (1) to (4) after switching the pit inspection switch to inspection.

10-7 Tuning in Automatic Mode

10-7-1 Hoistway Auto-tuning

1. Install all the switches before executing hoistway auto-tuning: DZU (upper leveling switch), DZD (lower leveling switch), leveling plates for each floor, LSU (upper limit switch), LSD (lower limit switch), ULS1 (first one upward forced deceleration switch), and DLS1 (first one downward forced deceleration switch).
2. The installation position of LSU (upper limit switch) should be upward higher than the leveling of top floor, and DZD should be ON before LSU activates. The installation position of LSD (lower limit switch) should be downward lower than the leveling of top floor, and DZU should be ON before LSD activates.
3. Set the running speed during hoistway tuning (Pr.04-03 Hoistway Auto-tuning Speed). The slower the speed, the accurate the tuning. The suggested speed is 0.25 m/s.
4. Set Pr.03-24 (Constant Running Protection Time). If the time that the elevator auto-tunes from the bottom floor to the top floor exceeds Pr.03-24 setting time, the auto-tuning fails (fault code F141). If necessary, set Pr.03-24 to a larger value before auto-tuning, and then set it back to normal values after finishing auto-tuning.
5. Change the control panel inspection switch to inspection.
6. Set Pr.03-01 (Highest Physical Floor) and Pr.03-02 (Lowest Physical Floor).
7. Set Pr.03-00 (Hoistway Auto-tuning) to 1.
8. Change the control panel inspection switch to automatic.
9. When floor indicator from hall call and inspection are flashing alternately, it means the elevator is in hoistway auto-tuning. The elevator automatically moves downward to the bottom floor until LSD (lower limit switch) activates and then stops. After stopping for five seconds, the elevator automatically moves upward until LSU (upper limit switch) activates and then stops. After stopping for five seconds, the elevator automatically moves downward to the leveling position of the top floor, and then stops. Then, the auto-tuning process is finished.
10. The values obtained from auto-tuning are saved in Parameter Group 09 (Floor Position 1) and Parameter Group 10 (Floor Position 2).
11. Change the control panel inspection switch to inspection.
12. Set Pr.03-67 (Brake Test Starting) to 1 to start the braking force test.
13. Change the control panel inspection switch to automatic.

Pr.04-03 Hoistway Auto-tuning Speed

<table>
<tr>
<td> 
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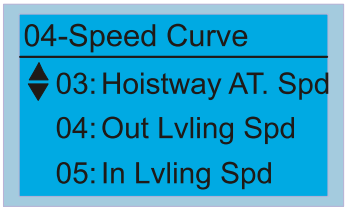
<td> 
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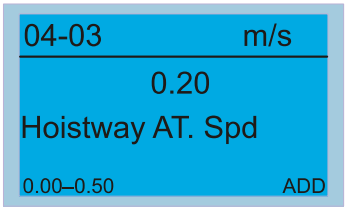
<td> 
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Pr.03-24 Constant Running Protection Time

Parameter Setup ▲▼ 03: Function Settings 04: Speed Curve 05: Door Control	Press ENTER	03-Function Settings ▲▼ 24: E/V run Prot. 25: Floor run Prot. 26: E/V run delay
	Press ENTER	03-24 sec 120 E/V run Prot. 1–600 ADD

Pr.03-01 Highest Physical Floor

Parameter Setup ▲▼ 03: Function Settings 04: Speed Curve 05: Door Control	Press ENTER	03-Function Settings ▲▼ 01: Phy. Top floor 02: Phy. Btm floor 03: Group number
	Press ENTER	03-01 F 1 Phy. Top floor 1–64 ADD

Pr.03-02 Lowest Physical Floor

Parameter Setup ▲▼ 03: Function Settings 04: Speed Curve 05: Door Control	Press ENTER	03-Function Settings ▲▼ 02: Phy. Btm floor 03: Group number 04: Group quantity
	Press ENTER	03-02 F 1 Phy. Btm floor 1–64 ADD

🕮 If the actual floor is from B1F to 10F, then the lowest physical floor is 1; the highest physical floor is 11.

🕮 When using group controls, set the physical floor based on the highest and lowest physical floors.

Example:

If the actual floor for Elevator 1 is B1F–9F,

If the actual floor for Elevator 2 is 1F–10F,

	Elevator/Physical Floor	Lowest Physical Floor	Highest Physical Floor
Single Control	Elevator 1	1	10
	Elevator 2	1	10
Group Control	Elevator/Physical Floor	Lowest Physical Floor	Highest Physical Floor
	Elevator 1	1	10
	Elevator 2	2	11

Pr.03-00 Hoistway Auto-tuning

<table>
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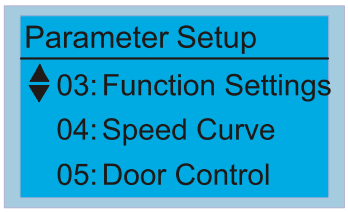
<td> 
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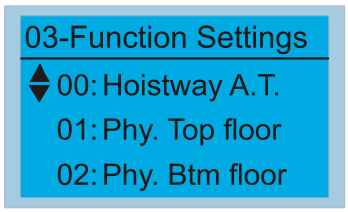
<td> 
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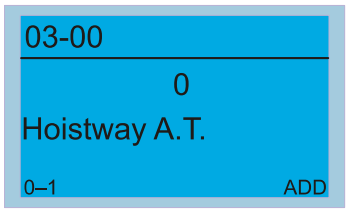
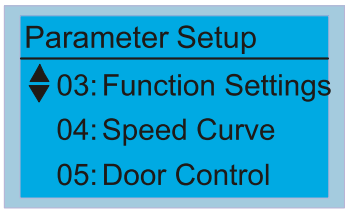
<td> 
</td>
</tr>
</table>

🕮 During hoistway auto-tuning, the displayed value for Pr.03-00 is 0. It automatically clears to 0 until the auto-tuning process is finished.

🕮 NOTE: If you stop the auto-tuning process by setting Pr.03-00 to 0, the auto-tuning process stops but the elevator cannot run normally. You must finish the tuning process once it starts.

Pr.03-67 Brake Test Starting

<table>
<tr>
<td> 
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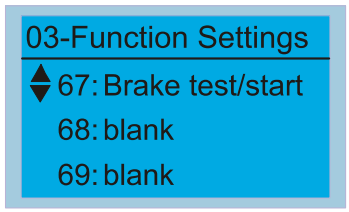
<td> 
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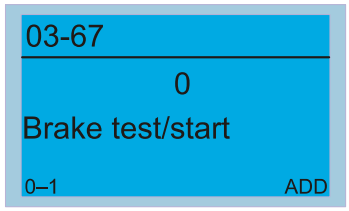
<td> 
</td>
</tr>
</table>

🕮 Actions:

1. Make the elevator stop at leveling position first. Make sure that the elevator is in manul mode and there is no fulat occurred.
2. Set Pr.03-67 (Brake Test Starting) = 1 to begin the braking force test.
3. After the braking force test is finished, Pr.03-67 is automaticlly returns to 0. You must finish the braking force test before elevator's first automatic running. Otherwise, fault code F150 (Uniqualified braking force test) occurs.

🕮 See Pr.03-67 (Brake Test Starting) parameter descriptions in Chapter 12 for details.

10-7-2 Car Call / Hall Call Test

Pr.02-00 Car Call Test

Parameter Setup 02: System Config 03: Function Settings 04: Speed Curve	Press ENTER	02-System Config 00: ICB test 01: HCB Up test 02: HCB Down test
	Press ENTER	02-00 0 ICB test 0–64 ADD

Uses the digital keypad as the car command board to call the car.

Pr.02-01 Upward Hall Call Test

Parameter Setup 02: System Config 03: Function Settings 04: Speed Curve	Press ENTER	02-System Config 01: HCB Up test 02: HCB Down test 03: E/V Auto
	Press ENTER	02-01 0 HCB Up test 0–64 ADD

Uses the digital keypad as the hall call display board to call the car upward.

Pr.02-02 Downward Hall Call Test

Parameter Setup 02: System Config 03: Function Settings 04: Speed Curve	Press ENTER	02-System Config 02: HCB Down test 03: E/V Auto 04: E/V times
	Press ENTER	02-02 0 HCB Down tset 0–64 ADD

Uses the digital keypad as the hall call display board to call the car downward.

10-7-3 Entering Correct Floor Display of Hall Call into Parameter Group 08

Setting value: XXYY

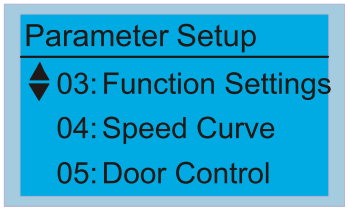
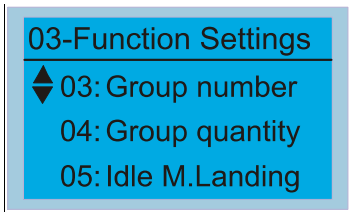
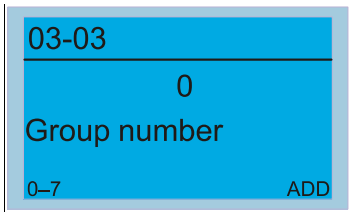
XX: Tens digit	YY: Units digit
00 = '0'	
01 = '1'	
02 = '2'	
03 = '3'	
04 = '4'	
05 = '5'	
06 = '6'	
07 = '7'	
08 = '8'	
09 = '9'	
10 = 'A'	
11 = 'B'	
12 = 'G'	
13 = 'H'	
14 = 'L'	
15 = 'M'	
16 = 'P'	
17 = 'R'	
18 = '-'	
19 = ' '	
20 = 'X'	
21 = up_icon	
22 = down_icon	

Parameter Group 08 sets the displayed value for each floor. The first two digits (XX) are the tens digit of the displayed value; the last two digits (YY) are the units digit of the displayed value.

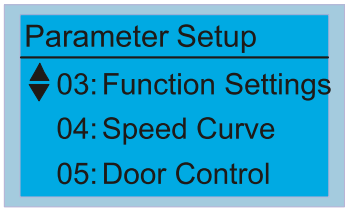
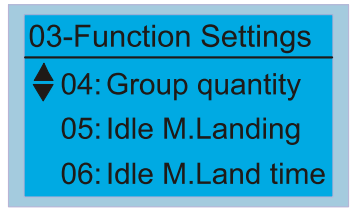
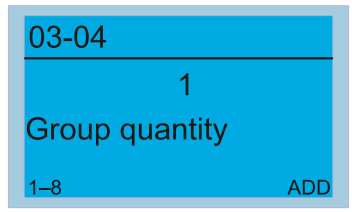
For example, if you need to display the basement first floor as "B1", set XXYY to "1101".

10-8 Group Control

10-8-1 Pr.03-03 Group Control Station Number

	Press ENTER 	
	Press ENTER 	
🕮 You can only use one group control station number at one time among all group control elevators.		

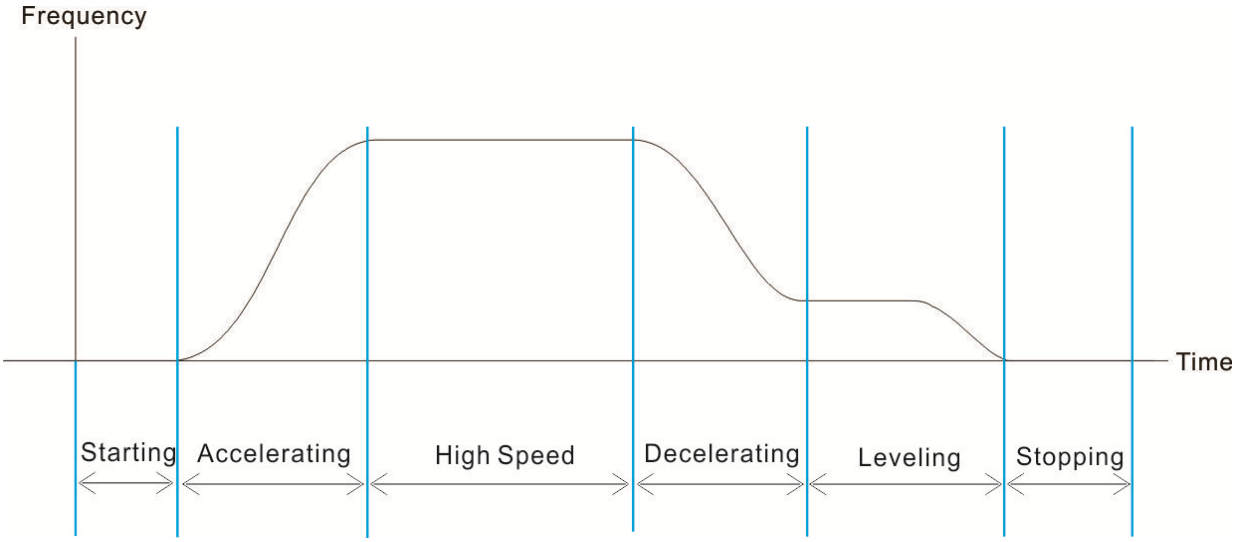
10-8-2 Pr.03-04 Group Control Enabled

	Press ENTER 	
	Press ENTER 	
🕮 Setting value: 0: Single control operation 1: Group control operation		

10-8-3 Method of Disabling Group Control

1. Set Pr.03-04=0 to disable the group control function of the elevator.
2. Remove the CAR communication cable of the elevator.
3. Activate MI=161 ISS (Independent Operation Switch)

10-9 Elevator Performance Fine-tuning



Stage	Function	Pr.	Description	Settings	Default
Starting	Delay Time	13-42	IM Mechanical Brake Release Delay Time / PM Position Control Delay Time	0.000–2.000 sec.	0.250
	Comfort	13-17	System Control	Bit 0=1: ARS auto-tuning; PDFF enabled; speed bandwidth control enabled (Pr.13-31–Pr.13-34) Bit 7=1: Zero speed position control is enabled (Pr.13-58 and Pr.13-59)	0281H
		13-59	PM Position Control Gain (P) (FOCPM)	0.00–655.00%	80.00
		13-58	PM Position Control Duration (FOCPM)	0.000–65.535 sec.	0.000
		13-31	Zero Speed at Start-up Bandwidth	1–40 Hz	10
	DC Brake	13-54	Zero Speed Activation Time	0.1–60.0 sec.	0.7
Accelerating	Multi-step Speed	04-07	Acceleration	0.10–1.50 m/s^2	0.40
		04-14	Acceleration Begin Time S1	0.01–25.00 sec.	3.00
		04-15	Acceleration Arrival Time S2	0.01–25.00 sec.	1.00
		13-32	Low Speed Bandwidth	1–40 Hz	10
		13-33	High Speed Bandwidth	1–40 Hz	10
High Speed	Comfort	13-33	High Speed Bandwidth	1–40 Hz	10

Stage	Function	Pr.	Description	Settings	Default
Decelerating	Multi-step Speed	04-08	Deceleration	0.10–1.50 m/s^2	1.50
		04-16	Deceleration Begin Time S3	0.01–25.00 sec.	1.00
		04-17	Deceleration Arrival Time S4	0.01–25.00 sec.	3.00
		13-32	Low Speed Bandwidth	1–40 Hz	10
		13-33	High Speed Bandwidth	1–40 Hz	10
Leveling	Comfort	13-32	Low Speed Bandwidth	1–40 Hz	10
Stopping	Delay Time	13-43	Mechanical Brake Engage Delay Time	0.000–2.000 sec.	0.250
	Comfort	13-34	Zero Speed at Stop Bandwidth	1–40 Hz	10
	DC Brake	13-55	Zero Speed Stopping Time	0.0–3.0 sec.	0.7

10-10 Frequently Asked Questions (FAQs)

1. Method of Adjusting Elevator Speed
   (1) Multi-step Speed Mode:
   Assume that the inspection speed is at 0.5 m/s, and the actual speed is 0.25 m/s. You can set Pr.13-03 (Elevator Rated Frequency) to Pr.13-03 × 0.5 ÷ 0.25.
   (2) Direct Docking Mode:
   Assume that the rated speed is 2.0 m/s, and the actual speed is 1.0 m/s. Check if Pr.13-20 (Maximum Elevator Speed Percentage) is set to 100%. If yes, you can set Pr.13-03 (Elevator Rated Frequency) to Pr.13-03 × 2.0 ÷ 1.0.
   (3) Direct Docking Mode:
   If elevator speed is correct, and you only need to change the highest speed for direct docking, adjust Pr.13-20 (Maximum Elevator Speed Percentage) instead of Pr.13-03 (Elevator Rated Frequency) or Pr.13-29 (Elevator Rated Speed).

2. Reasons for Runaway
   (1) Incorrect encoder type
   See Section 10-2-11 Encoder Input Type Setting
   (2) Too large mechanical inertia
   See Section 10-5-6 Mechanical Inertia Ratio
   (3) The setting value of Pr.13-03 (Elevator Rated Frequency) is larger than that of Pr.13-04 (Motor Rated Frequency)

3. Method of Adjusting Inaccurate Stop Position for Direct Docking (Overshoot)
   (1) Decrease Pr.04-08 (Deceleration)
   (2) Increase Pr.04-17 (Deceleration Arrival Time S4)

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Chapter 11 Summary of Parameter Settings

This chapter provides a summary of parameter settings including the ranges and defaults that help you set the parameters. You can set, change, and reset the parameters with the digital keypad.

NOTE

1） ✓: Parameters that you can set during operation.
2） For more details on parameters, see Chapter 12 Descriptions of Parameter Settings.

00 System Monitoring

Pr.	Parameter Name	Setting Range	Default
00-00	Present Fault Code	0–65535	Read only
00-01	Speed Command	0–65535 5: Emergency stop, using Pr.04-29 (Inspection Deceleration) 6: Braking force test 7: EPS runs 8: Braking force test ended 10: Inspection stops, using Pr.04-29 (Inspection Deceleration) 15: Executes DC braking, stopping at zero speed control 20: Runs multi-step speed using Pr.04-11 (Re-leveling Deceleration) deceleration to zero speed 25: Pr.04-00 (Speed at Emergency) 30: Pr.04-01 (Inspection Speed) 40: Pr.04-05 (Leveling Speed) 45: Pr.04-04 (Non-leveling Speed) 55: Pr.04-03 (Hoistway Auto-tuning Speed) 60: Pr.04-02 (Speed at Returning to Two Ends of the Hoistway) 65: Speed at direct docking 66: Direct docking enables zero speed 70: Does not output 75: Drive Pr.01-22 (JOG Frequency) setting value is being modified 76: Auto-tunes 77: No speed command 80: No speed command exceeds 0.1 second or STO is not ON	Read only
00-02	HVX1–HVX5 Status	0000h–FFFFh	Read only
00-03	X1–X16 Status	0000h–FFFFh	Read only
00-04	X17–X25 Status	0000h–FFFFh	Read only
00-05	Y1–Y8 Status	0000h–FFFFh	Read only
00-07	Elevator Speed Detection	0.000–65.535	Read only
00-08	Elevator Mode 0	0000h–FFFFh bit 0: Manual (EIS Emergency Operation) bit 1: Manual (INSCP inspection) bit 2: Manual (MATPT inspection) bit 3: Manual (TCI inspection) bit 4: Manual (INSIC inspection) bit 5: Manual (DBP Doorlock bypass) bit 6: Auto-resets at flood bit 7: Does not auto-rest at flood bit 8: When using emergency power supply (UPS),	Read only

Pr.	Parameter Name	Setting Range	Default
		the elevator runs to designated floor and stops. bit 9: UPS safety landing bit 10: EPS safety landing bit 11: Car returns to the main landing at fire emergency bit 12: Car returns to the secondary landing at fire emergency bit 13: Minor earthquake (Seismic P-wave) bit 14: Small earthquake (Seismic S-wave) bit 15: Severe earthquake	
00-09	Elevator Mode 1	0000h–FFFFh bit 0: Fault occurs bit 1: Warning occurs bit 2: FSD (Forced Stop Deceleration) mode bit 3: Normal mode bit 4: Evacuation mode bit 5: Inspection mode bit 6: Hoistway Auto-tuning bit 7: Car returns to the main landing at fire emergency bit 8: First class fireman bit 9: Second class fireman bit 10: Elevator lock mode bit 11: UPS (Uninterruptible Power Supply) mode bit 12: Earthquake mode bit 13: Flood mode bit 14: Overload mode bit 15: Full-load mode	Read only
00-10	Elevator Mode 2	0000h–FFFFh bit 0: VIP mode bit 1: Attendant mode bit 2: Auto-leveling after power-on again bit 3: Car returns to the main landing for standby while idling bit 4: Group control upward peaking running bit 5: Motor auto-tuning bit 6: Group control downward peak running bit 7: Automatic test for braking force once per day bit 8: Group control peak running at random floor bit 9: Set not to group control mode. When MI=161 ISS (Independent Operation Switch) is enabled, or Pr.03-04 (Number of Group Control) is set to 0. bit 10: Security floor bit 11: Mode of stop at each floor bit 12: Car call password bit 13: Medical recall running bit 14: Goods only bit 15: Group control running	Read only
00-11	Front Door Status	0000h–FFFFh bit 0: Front door opens bit 1: Front door closes bit 2: Front door is ready to open bit 3: Front door closes, MO = 102 (CL1) bit 4: Front door reaches its open position, MI = 100 (OLT1) bit 5: Front door reaches its closed position, MI = 102 (CLT1) bit 6: Front door light sensor, MI = 104 (EDP1) bit 7: Front door safety edge, MI = 106 (SE1) bit 8: Front door over-torque, MI = 119 (TOEX1) bit 9: Front door open button, MI = 151 (DOB1) bit 10: Front door open auxiliary button, MI = 171 (DOB1B)	Read only

Pr.	Parameter Name	Setting Range	Default
		bit 11: Front door open extended button, MI = 152 (DOBH1) bit 12: Front door open auxiliary extended button, MI = 172 (DOBH1B) bit 13: Front door open extended button lamp, MO = 152 (DOBHL1), MO = 172 (DOBHL1B) bit 14: Front door at this floor can be opened, Pr.05-02–05-05 bit 15: With front door, MI = 115 (HFD)	
00-12	Rear Door Status	0000h–FFFFh bit 0: Rear door opens bit 1: Rear door closes bit 2: Rear door is ready to open bit 3: Rear door closes, MO = 103 (CL2) bit 4: Rear door reaches its open position, MI = 101 (OLT2) bit 5: Rear door reaches its closed position, MI = 103 (CLT2) bit 6: Rear door light sensor, MI = 105 (EDP2) bit 7: Rear door safety edge, MI = 107 (SE2) bit 8: Rear door over-torque, MI = 120 (TOEX2) bit 9: Rear door open button, MI = 168 (DOB2) bit 10: Rear door open auxiliary button, MI = 174 (DOB2B) bit 11: Rear door open extended button, MI = 169 (DOBH2) bit 12: Rear door open auxiliary extended button, MI = 175 (DOBH2B) bit 13: Rear door open extended button lamp, MO = 169 (DOBHL2), MO = 175 (DOBHL2B) bit 14: Rear door at this floor can be opened, Pr.05-06–05-09 bit 15: With rear door, MI = 116 (HBD)	Read only
00-13	OCB Input Status	0000h–FFFFh	Read only
00-14	OCB Output Status	0000h–FFFFh	Read only
00-15	ICB_1 Input	0000h–FFFFh	Read only
00-16	ICB_1 Output	0000h–FFFFh	Read only
00-17	Current Floor	0–65535S	Read only
00-18	Target Floor	0–65535S	Read only
00-19	Furthest Floor	0–65535S	Read only
00-20	Current Position (H)	-32768–32767 m	Read only
00-21	Current Position (L)	3276.8–3276.7 mm	Read only
00-22	Number of Times for Running (Ten Thousand Times)	0–65535	0
00-23	Number of Times for Running (Times)	0–9999	0
00-24	Accumulated Running Time (Hour)	0–65535	0
00-25	Accumulated Running Time (Hour)	0.0–3599.9	0.0
00-27	HCB_F Error 16–01	0000h–FFFFh	Read only
00-28	HCB_F Error 32–17	0000h–FFFFh	Read only
00-29	HCB_F Error 48–33	0000h–FFFFh	Read only
00-30	HCB_F Error 64–49	0000h–FFFFh	Read only

Pr.	Parameter Name	Setting Range	Default
00-31	HCB_B Error 16–01	0000h–FFFFh	Read only
00-32	HCB_B Error 32–17	0000h–FFFFh	Read only
00-33	HCB_B Error 48–33	0000h–FFFFh	Read only
00-34	HCB_B Error 64–49	0000h–FFFFh	Read only
00-35	Nearest Stop Floor	0–65535S	Read only
00-36	Accumulated Time for Power Transmission (Day)	0–65535	0
00-37	Accumulated Time for Power Transmission (Min.)	0–1439	0
00-38	ICB_2 Input	0000h–FFFFh	Read only
00-39	ICB_2 Output	0000h–FFFFh	Read only
00-40	ICB_3 Input	0000h–FFFFh	Read only
00-41	ICB_3 Output	0000h–FFFFh	Read only
00-42	ICB_4 Input	0000h–FFFFh	Read only
00-43	ICB_4 Output	0000h–FFFFh	Read only
00-44	J4-12 HCB_F 16–01	0000h–FFFFh	Read only
00-45	J4-12 HCB_F 32–17	0000h–FFFFh	Read only
00-46	J4-12 HCB_F 48–33	0000h–FFFFh	Read only
00-47	J4-12 HCB_F 64–49	0000h–FFFFh	Read only
00-48	J4-12 HCB_B 16–01	0000h–FFFFh	Read only
00-49	J4-12 HCB_B 32–17	0000h–FFFFh	Read only
00-50	J4-12 HCB_B 48–33	0000h–FFFFh	Read only
00-51	J4-12 HCB_B 64–49	0000h–FFFFh	Read only
0-52	J4-34 HCB_F 16–01	0000h–FFFFh	Read only
00-53	J4-34 HCB_F 32–17	0000h–FFFFh	Read only
00-54	J4-34 HCB_F 48–33	0000h–FFFFh	Read only
00-55	J4-34 HCB_F 64–49	0000h–FFFFh	Read only
00-56	J4-34 HCB_B 16–01	0000h–FFFFh	Read only
00-57	J4-34 HCB_B 32–17	0000h–FFFFh	Read only
00-58	J4-34 HCB_B 48–33	0000h–FFFFh	Read only
00-59	J4-34 HCB_B 64–49	0000h–FFFFh	Read only
00-61	Group Control of Each Elevator's Connection Status	0000h–FFFFh bit 0: Station number 0 is connected or not bit 1: Station number 1 is connected or not bit 2: Station number 2 is connected or not bit 3: Station number 3 is connected or not bit 4: Station number 4 is connected or not bit 5: Station number 5 is connected or not bit 6: Station number 6 is connected or not bit 7: Station number 7 is connected or not bit 8: Station number 0 is main group control or not bit 9: Station number 1 is main group control or not bit 10: Station number 2 is main group control or not bit 11: Station number 3 is main group control or not bit 12: Station number 4 is main group control or not bit 13: Station number 5 is main group control or not bit 14: Station number 6 is main group control or not	Read only

Pr.	Parameter Name	Setting Range	Default
		bit 15: Station number 7 is main group control or not	
00-62	Elevator Running Direction	0000h–FFFFh bit 0: Host controller (controller) runs upward bit 1: Host controller (controller) runs downward bit 2: Host controller (controller) makes drive run upward bit 3: Host controller (controller) makes drive run downward bit 4: Drive responds receiving upward commands bit 5: Drive responds receiving downward commands bit 6: Upward high-speed enabled command bit 7: Downward high-speed enabled command bit 8: Runs upward after stop bit 9: Runs downward after stop bit 10: Hall call displays an upward arrow bit 11: Hall call displays a downward arrow bit 12: Car call displays a upward arrow bit 13: Car call displays a downward arrow	Read only
00-63	Hoistway Auto-tuning Action Status	0–65535 0: Not in INSCP (control panel inspection switch) or EIS (electrical operation) mode 0: Not in INSCP (control panel inspection switch) or EIS (electrical operation) mode 2: Still in inspection mode after setting Pr.03-00 (Hoistway Auto-tuning) = 1 3: Switch inspection switch to auto 10: Door does not close 11: Elevator starts to run downward 12: Elevator runs downward, first one downward forced deceleration (DLS1) is ON 13: Elevator runs downward, first one downward forced deceleration (DLS1) is ON 14: Elevator runs downward, first one downward forced deceleration (DLS1) and leveling sensor are ON 15: Lower leveling sensor (DZD) is ON, door zone signal (SX1) and upper leveling sensor (DZU) are OFF 16: Lower leveling sensor (DZD) and door zone signal (SX1) are ON, upper leveling sensor (DZU) is OFF 17: Lower leveling sensor (DZD), door zone signal (SX1), and upper leveling sensor (DZU) are all ON 18: Lower leveling sensor (DZD) is OFF, door zone signal (SX1) and upper leveling sensor (DZU) are ON 19: Lower leveling sensor (DZD) and door zone signal (SX1) are OFF, upper leveling sensor (DZU) is ON 20: Lower leveling sensor (DZD), door zone signal (SX1), and upper leveling sensor (DZU) are all OFF 21: Lower limit switch (LSD) is ON 24: Lower limit switch (LSD) is ON 25: Lower limit switch (LSD) is ON for more than 2 seconds 26: Elevator starts to run upward 27: Elevator runs upwards, first one upward forced deceleration (ULS1) is ON 28: Elevator runs upwards, first one upward forced deceleration (ULS1) is ON 29: Elevator runs upward, first one upward forced deceleration (ULS1) and leveling sensor are ON 30: Elevator runs upward, first one upward forced	0

Pr.	Parameter Name	Setting Range	Default
		deceleration (ULS1) and leveling sensor are ON 31: Upper limit switch (LSU) is ON 32: Upper limit switch (LSU) is ON 33: Upper limit switch (LSU) is ON for more than 1 second 34: Upper limit switch (LSU) is ON for more than 1.5 seconds 35: Upper limit switch (LSU) is ON for more than 2 seconds 36: Upper limit switch (LSU) is ON for more than 2 seconds 37: Elevator stops at leveling (level) for more than 2 seconds 38: Elevator stops at leveling (level) for more than 2 seconds 39: Hoistway auto-tuning ended 200 (Error): Set Pr.03-00 = 1 when error occurs 201 (Error): Set Pr.03-00 = 1 when Pr.03-01 = 1 (Highest Physical Floor) 202 (Error): Change inspection switch to manual during hoistway auto-tuning process 203 (Error): Press inspection upward or downward button during hoistway auto-tuning process 204 (Error): Lower limit switch (LSD) is installed too low. Lower limit switch (LSD) activates after upper leveling sensor (DZU) is OFF 205 (Error): Lower limit switch (LSD) is installed too low. Lower limit switch (LSD) activates after upper leveling sensor (DZU) is OFF 206 (Error): Lower limit switch (LSD) is ON, first one downward forced deceleration (DLS1) is not ON 207 (Error): Upper limit switch (LSU) is ON, lower leveling sensor (DZD) is not ON 208 (Error): Upper limit switch (LSU) is ON, first one upward forced deceleration (ULS1) is not ON 209 (Error): Error occurs during hoistway auto-tuning process 210 (Error): Pr.03-00 = 0 during hoistway auto-tuning process	
00-97	IED-S Program Version	0.00–655.35	Read only
00-98	IED-S DateCode	0–65535	Read only

01 Fault Records

Pr.	Parameter Name	Setting Range	Default
01-00	Latest Fault Record	111: cF2 EEPROM error	Read only
01-04	2nd Fault Record	112: Floor auto-tuning is not finished	Read only
01-08	3rd Fault Record	113: Drive is not ready	Read only
01-12	4th Fault Record	114: BK1 is not active	Read only
01-16	5th Fault Record	115: BK2 is not active	Read only
01-20	6th Fault Record	116: SWNC ON detection error	Read only
01-24	7th Fault Record	117: Drive 02 communication time-out	Read only
01-28	8th Fault Record	118: Drive 04 communication time-out	Read only
01-32	9th Fault Record	119: SFNC ON error	Read only
01-36	10th Fault Record	120: SFNC OFF error	Read only
01-40	11th Fault Record	121: Mismatched highest floor	Read only
01-44	12th Fault Record	122: Door zone MI setting error	Read only
01-48	13th Fault Record	123: FL1NC ON error	Read only
01-52	14th Fault Record	124: FL1NC OFF error	Read only
01-56	15th Fault Record	125: FL2NC ON error	Read only
01-60	16th Fault Record	126: FL2NC OFF error	Read only
01-64	17th Fault Record	127: GSNC ON error	Read only
01-68	18th Fault Record	128: GSNC OFF error	Read only
		129: DSNC ON error	
		130: DSNC OFF error	
		131: BUNC ON error	
		132: BUNC OFF error	
		133: Door zone signal OFF error	
		134: Door zone signal ON error	
		135: Load exceeds 150%	
		136: FX (MPSCC) feedback ON error	
		137: Safety hatch high voltage error	
		138: Upward operation at stop exceeds	
		139: Downward operation at stop exceeds	
		140: Motor temperature error	
		141: Exceeds the constant running time	
		142: Governor error	
		143: Exceeds specified floor running time	
		144: Mismatched current floor	
		145: The number of times for drive error occurred has reached five	
		146: Drive communication time-out	
		147: Communication between IED-S and cartop board	
		148: BY1NC ON detection error	

Pr.	Parameter Name	Setting Range	Default
		149: BY2NC ON detection error 150: Unqualified braking force test 151: Operation contactor sticking 152: Runs with door open 153: Safety hatch low voltage error 154: Runs in an opposite direction 155: BK3 is not active 156: BY3NC ON detection error 157: Traveling cable insertion car communication 158: MPSCC feedback OFF error 159: SX2 door unlock OFF detection error 160: STO relay sticking 161: STO OFF error 162: BK1 is not reset 163: BK2 is not reset 164: BK3 is not reset 165: BK1 contactor sticking 166: BK2 contactor sticking 167: BK3 contactor sticking 168: Upward operation exceeds 169: Downward operation exceeds 170: SY door unlock output sticking 172 :Upward limit action 173: Upward forced deceleration 1 174: Upward forced deceleration 2 175: Upward forced deceleration 3 176: Downward limit action 177: Downward forced deceleration 1 178: Downward forced deceleration 2 179: Downward forced deceleration 3 180: Not at the bottom floor as displayed 181: Not at the top floor as displayed 182: At the bottom floor but not as displayed 183: At the top floor but not as displayed 184: Speed is slower than 0.01 m/s 185: All inputs are OFF 186: Upward forced deceleration 4 187: Downward forced deceleration 4 188: Starting signal abnormally disappears	

Pr.	Parameter Name	Setting Range	Default
		189: Upward target error in direct docking 190: Downward target error in direct docking 191: INV DRV DIR error 192: INV VFD DIR error 193: VFD DRV DIR error 194: ULS1 over-speed 195: ULS2 over-speed 196: ULS3 over-speed 197: ULS4 over-speed 198: DLS4 over-speed 199: DLS3 over-speed 200: DLS2 over-speed 201: DLS1 over-speed 202: Target error 1 203: Target error 2 204: Target error 3 205: Target error 4 221: GSH (Gate safety hatch high voltage) is OFF 222: GSH (Gate safety hatch high voltage) contact sticking 223: DSH (Layer door safety hatch high voltage) is OFF 224: DSH (Layer door safety hatch high voltage) contact sticking 225: Front door open time exceeds 226: Front door close time exceeds 227: Rear door open time exceeds 228: Rear door close time exceeds 229: Front door close times exceed 230: Rear door close times exceed 231: GSL (Gate safety hatch low voltage) is OFF 232: GSL (Gate safety hatch low voltage) contact sticking 233: DSL (Layer door safety hatch low voltage) is OFF 234: DSL (Layer door safety hatch low voltage) contact sticking 235: Discharge resistance temperature is too high 236: Watchdog action 1109: Braking force, Under test 1110: Inspection, Unqualified, Braking force 1111: Leveling, Unqualified, Braking force 1112: Braking force, Test, Qualified 1113: Fault, Unqualified, Braking force	

Pr.	Parameter Name	Setting Range	Default
		1114: Button, Unqualified, Braking force 1115: Wait, Braking force test 1116: Recall, Braking force test 1117: Inspection, Unqualified, Door unlock board 1118: Doorlock, Unqualified, Door unlock board 1119: Door unlock board, Test, Overtime 1120: Door unlock board, Under test 1127: Highest floor warning 1128: Elevator lock main landing warning 1129: Elevator main landing warning 1130: Main landing at fire emergency warning 1132: Fireman class II invalid 1133: Motor temperature at front door overheats 1134: Motor temperature at rear door overheats 1135: CAR+/CAR- time-out 1136: Running time-out during auto-tuning 1137: Auto-tuning time-out 1138: Coin cell battery is at low voltage	
01-01	Latest Fault Record Year/Month	0–65535	Read only
01-02	Latest Fault Record Day/Hour	0–65535	Read only
01-03	Latest Fault Record Minute/Second	0–65535	Read only
01-05	2nd Fault Record Year/Month	0–65535	Read only
01-06	2nd Fault Record Day/Hour	0–65535	Read only
01-07	2nd Fault Record Minute/Second	0–65535	Read only
01-09	3th Fault Record Year/Month	0–65535	Read only
01-10	3thFault Record Day/Hour	0–65535	Read only
01-11	3th Fault Record Minute/Second	0–65535	Read only
01-13	4th Fault Record Year/Month	0–65535	Read only
01-14	4th Fault Record Day/Hour	0–65535	Read only
01-15	4th Fault Record Minute/Second	0–65535	Read only
01-17	5th Fault Record Year/Month	0–65535	Read only
01-18	5th Fault Record Day/Hour	0–65535	Read only
01-19	5th Fault Record Minute/Second	0–65535	Read only
01-21	6th Fault Record Year/Month	0–65535	Read only
01-22	6th Fault Record Day/Hour	0–65535	Read only
01-23	6th Fault Record Minute/Second	0–65535	Read only
01-25	7th Fault Record Year/Month	0–65535	Read only

Pr.	Parameter Name	Setting Range	Default
01-26	7th Fault Record Day/Hour	0–65535	Read only
01-27	7th Fault Record Minute/Second	0–65535	Read only
01-29	8th Fault Record Year/Month	0–65535	Read only
01-30	8th Fault Record Day/Hour	0–65535	Read only
01-31	8th Fault Record Minute/Second	0–65535	Read only
01-33	9th Fault Record Year/Month	0–65535	Read only
01-34	9th Fault Record Day/Hour	0–65535	Read only
01-35	9th Fault Record Minute/Second	0–65535	Read only
01-37	10th Fault Record Year/Month	0–65535	Read only
01-38	10th Fault Record Day/Hour	0–65535	Read only
01-39	10th Fault Record Minute/Second	0–65535	Read only
01-41	11th Fault Record Year/Month	0–65535	Read only
01-42	11th Fault Record Day/Hour	0–65535	Read only
01-43	11th Fault Record Minute/Second	0–65535	Read only
01-45	12th Fault Record Year/Month	0–65535	Read only
01-46	12th Fault Record Day/Hour	0–65535	Read only
01-47	12th Fault Record Minute/Second	0–65535	Read only
01-49	13th Fault Record Year/Month	0–65535	Read only
01-50	13th Fault Record Day/Hour	0–65535	Read only
01-51	13th Fault Record Minute/Second	0–65535	Read only
01-53	14th Fault Record Year/Month	0–65535	Read only
01-54	14th Fault Record Day/Hour	0–65535	Read only
01-55	14th Fault Record Minute/Second	0–65535	Read only
01-57	15th Fault Record Year/Month	0–65535	Read only
01-58	15th Fault Record Day/Hour	0–65535	Read only
01-59	15th Fault Record Minute/Second	0–65535	Read only
01-61	16th Fault Record Year/Month	0–65535	Read only
01-62	16th Fault Record Day/Hour	0–65535	Read only
01-63	16th Fault Record Minute/Second	0–65535	Read only
01-65	17th Fault Record Year/Month	0–65535	Read only
01-66	17th Fault Record Day/Hour	0–65535	Read only
01-67	17th Fault Record Minute/Second	0–65535	Read only
01-69	18th Fault Record Year/Month	0–65535	Read only
01-70	18th Fault Record Day/Hour	0–65535	Read only
01-71	18th Fault Record Minute/Second	0–65535	Read only
01-72	Clear All Fault Records	0–1	0

Pr.	Parameter Name	Setting Range	Default
01-73	Fault Record Index	1–18	1
01-74	Fault Record (Index)	0–65535	Read only
01-75	Furthest Floor (Index)	0–65535	Read only
01-76	Nearest Stop Floor (Index)	0–65535	Read only
01-77	Elevator Running Direction (Index)	0–65535	Read only
01-78	Speed Command (Index)	0–65535	Read only
01-79	Speed Feedback (Index)	0.000–65.535	Read only
01-80	X1–X16 (Index)	0000h–FFFFh	Read only
01-81	X17–X25 (Index)	0000h–FFFFh	Read only
01-82	Y1–Y8 (Index)	0000h–FFFFh	Read only
01-83	Elevator Mode 0 (Index)	0000h–FFFFh	Read only
01-84	Elevator Mode 1 (Index)	0000h–FFFFh	Read only
01-85	Elevator Mode 2 (Index)	0000h–FFFFh	Read only
01-86	Front Door Status (Index)	0000h–FFFFh	Read only
01-87	Rear Door Status (Index)	0000h–FFFFh	Read only
01-88	OCB Input (Index)	0000h–FFFFh	Read only
01-89	OCB Output (Index)	0000h–FFFFh	Read only
01-90	ICB_1 Input (Index)	0000h–FFFFh	Read only
01-91	ICB_1 Output (Index)	0000h–FFFFh	Read only
01-92	Current Floor (Index)	0–65535	Read only
01-93	Target Floor (Index)	0–65535	Read only
01-94	Current Position (m) (Index)	-32768–32767 m	Read only
01-95	Current Position (mm) (Index)	-3276.8–3276.7 mm	Read only
01-96	HVX1–HVX5 (Index)	0000h–FFFFh	Read only
01-97	ICB_2 Input (Index)	0000h–FFFFh	Read only
01-98	ICB_3 Input (Index)	0000h–FFFFh	Read only
01-99	Running Time at This Time (Index)	0000h–FFFFh	Read only

02 System Configuration

	Pr.	Parameter Name	Setting Range	Default
✓	02-00	Car Call Test	0–164	1
✓	02-01	Upward Hall Call Test	0–164	1
✓	02-02	Downward Hall Call Test	0–164	1
	02-03	Auto-test Method	0–3 0: No test 1: Test for the top and bottom floor 2: Test for each floor 3: Random call	0
	02-04	Number of Times for Auto-test	0–65535 65535: Continues to random test	0
	02-05	Interval for Auto-test	0–3600	30
	02-06	Forced Door Opening/Closing Test	0–4 0: Normal mode 1: Front door is forced to open 2: Rear door is forced to open 3: Front and rear door are forced to open 4: Front and rear door are forced to close	0
	02-07	Car/Hall Call Disabled	0–5 0: Normal 1: Hall call is disabled 2: Hall call is disabled, and car call cannot register any new call. Pr.02-00 (Car Call Test) is valid. 3: Car call and hall call are both disabled 4: Car call and hall call are both disabled, and door opening is also disabled. 5: Hall call is disabled, car call cannot register any new call, and the door opening is disabled. Pr.02-00 (Car Call Test) is valid.	0
	02-08	Parameter Reset	0–65535 101: Single-door + Normal + First one forced deceleration 102: Single -door + Normal + Second one forced deceleration 111: Single -door + Disability + First one forced deceleration 112: Single -door + Disability + Second one forced deceleration 201: Two-door + Normal + First one forced deceleration 202: Two-door + Normal + Second one forced deceleration 211: Two-door + Disability + First one forced deceleration 212: Two-door + Disability + Second one forced deceleration 300: Specifically defined single IED-S 1 301: Specifically defined control cabinet 1	0
	02-10	Doorlock Bypass Buzzer Off	0–1 0: Disabled 1: If the elevator runs with doorlock bypass device, the multi-function output terminal setting 105 BPSL (Doorlock bypass lighting alarm) and 104 BZ (buzzer) do not output, and 106 UDCL (Car bottom Light) remains ON without flashing. Pr.02-10 is automatically set to 0 after power-on again.	0
✓	02-25	Clock-Year	0–2099	0
✓	02-26	Clock-Month	0–12	0

	Pr.	Parameter Name	Setting Range	Default
✓	02-27	Clock-Day	0–31	0
✓	02-28	Clock-Hour	0–24	0
✓	02-29	Clock-Minute	0–59	0
✓	02-30	Clock-Second	0–59	0
	02-31	No Display of Faults and Warnings	0–3 0: Digital keypad KPC-CC01 and LED panel display faults and warnings 1: Digital keypad KPC-CC01 does not display faults and warnings 2: LED panel does not display faults and warnings 3: Digital keypad KPC-CC01 and LED panel does not display faults and warnings	0

03 Function Settings

Pr.	Parameter Name	Setting Range	Default
03-00	Hoistway Auto-tuning	0–1	0
03-01	Highest Physical Floor	1–64F	1
03-02	Lowest Physical Floor	1–64F	1
03-03	Group Control Station Number	0–7	0
03-04	Group Control Enabled	0–1 0: Single control operation 1: Group control operation	0
03-05	Main Landing for Standby While Idling	1–64S	1
03-06	Idle Time Before Returning to the Main Landing for Standby	0–65535 sec.	0
03-07	Car Lighting Disabled While Idling	0–65535 sec.	600
03-08	Car Fan Disabled While Idling	0–65535 sec.	30
03-09	UPS Designated Floor	0–164	0
03-10	Light Sensor and Safety Edges Alarm	0–199 sec.	0
03-11	Service Floor 16–1	0–65535	65535
03-12	Service Floor 32–17	0–65535	65535
03-13	Service Floor 48–33	0–65535	65535
03-14	Service Floor 49–64	0–65535	65535
03-15	Automatic Safety Landing for Severe Earthquake	0–1 0: Disabled 1: When “severe earthquake” occurs, the automatic safety landing activates	1
03-16	Position Difference Protection	0.0–1000.0 mm	300.0
03-17	Auto-leveling After Re-power	0–3 0: Disabled 1: Runs to the bottom floor for leveling after power-on again 2: Runs to the top floor for leveling after power-on again 3: Automatically runs downward or upward for leveling, depending on the elevator’s current floor	0
03-18	Delayed Time for Leveling Switch	0.000–2.000 sec.	0.200
03-19	Seismic S-wave Deceleration Time	0.0–6553.5 sec.	7.0
03-20	Door Pre-open at Stop	0–90 mm 0: Door opens until the elevator reaches the leveling 1–90: Door opens before the elevator is near the leveling	0
03-21	Re-leveling After Door Open	0–1 0: Re-leveling is not allowed after the door opens 1: Re-leveling is allowed after the door opens	0
03-22	Reverse Pulse Logic	0–1 0: The same as the setting direction 1: Opposite to the setting direction	0
03-23	Number of Fault Reset	0–10 times 0: Reset function is disabled 1–10: The fault automatically resets if the number of the same fault occurred does not exceed the Pr.03-23 setting in one hour	1
03-24	Constant Running Protection Time	1–600 sec.	120

Pr.	Parameter Name	Setting Range	Default
03-25	Specified Floor Protection Time	1–45 sec.	20
03-27	Selective Control Mode	0–3 0: Disabled 1: Respond to all hall calls 2: Respond to upward hall calls 3: Respond to downward hall calls	0
03-28	Registration Cancel Function	0–1 0: No registration cancel function 1: Registration cancel for car calls	1
03-29	Security Floor Main Landing	0–164S	0
03-30	Security Floor Begin Time	0–2359	0
03-31	Security Floor End Time	0–2359	0
03-32	VIP Standby Time	0–65535 sec.	40
03-33	VIP Floor	0: No function 1–64: Set the setting value as the VIP floor of front door 101–164: Set the setting value after minus 100 as the VIP floor of rear door	0
03-34	VIP Car Call Limit	0–1	0
03-35	HCB J4 Pin1&2 Function	0: No function 1: Elevator lock 2: Recall at fire emergency 3: VIP 4: Medical recall 5: Car reader 6: Door open extended button	1
03-36	HCB J4 Pin3&4 Function	0: No function 1: Elevator lock 2: Recall at fire emergency 3: VIP 4: Medical recall 5: Car reader 6: Door open extended button	2
03-37	ULS1 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-38	DLS1 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-39	ULS2 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-40	DLS2 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-41	ULS3 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-42	DLS3 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-43	ULS4 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50
03-44	DLS4 Over-speed Protection	0–100% 0: No protection 1–100%: percentage of rated speed	50

Pr.	Parameter Name	Setting Range	Default
03-45	Car Call Password	0–65535 0: No protection 1–100%: percentage of rated speed	0
03-46	Floor Display under Inspection	0–1 0: Does not display floor when in inspection mode 1: Displays floor when in inspection mode	0
03-47	Floor Position Display for Car/Hall Call	0–1 0: Displays floor using Pr.00-35 (Nearest Stop Floor) 1: Displays floor using Pr.00-17 (Current Floor) (current floor position)	0
03-48	Elevator Lock Main Landing	0–164S 0: Elevator lock is disabled 1–64: Front door 101–164: Rear door	1
03-49	Primary Main Landing at Fire Emergency	0–164S 0: Primary fire emergency is disabled 1–64: Front door 101–164: Rear door	1
03-50	Secondary Main Landing at Fire Emergency	0–164S 0: Secondary fire emergency is disabled 1–64: Front door 101–164: Rear door	1
03-51	ICB (Car Command Board) Mode	0–3 0: Single door mode 1: Single door disability mode 2: Front and rear door mode 3: Front and rear door disability mode	0
03-52	Main Landing at Flood	2–164S 2–64: Front door 102–164: Rear door	2
03-53	Function Set 1	0–65535 1 (bit0): Leveling switch pulse adjustment 2 (bit1): Deceleration switch pulse adjustment 4 (bit2): Forced deceleration switch error detection 8 (bit3): Leveling switch protection	0
03-57	Voice Announcer Bottom Floor Code	0–64	1
03-59	Door Unlock Board Test	0–1 0: Disabled 1: Runs the function test for door unlock board, and forces the multi-function output (MO) terminal Door Unlock Contactor [SY] to be ON	0
03-60	Brake Test Duration	0.0–20.0 sec.	5.0
03-61	Brake Test Output Torque	0–200%	100
03-62	Brake Test Moving Distance	0.0–50.0 mm	5.0
03-63	Brake Test Running Direction	0–1 0: Runs downward during braking force test 1: Runs upward during braking force test	1
03-64	Brake Test Time (Hour)	0–23	2
03-65	Brake Test Time (Minute)	0–59	59
03-66	Brake Test Floor	0–64	0
03-67	Brake Test Starting	0–1	0
03-68	First Main Group Control	0–63S	0
03-69	Second Main Group Control	0–63S	0
03-70	Third Main Group Control	0–63S	0

Pr.	Parameter Name	Setting Range	Default
03-71	Fourth Main Group Control	0–63S	0
03-72	Fifth Main Group Control	0–63S	0
03-73	Sixth Main Group Control	0–63S	0
03-74	Seventh Main Group Control	0–63S	0
03-75	Dispersed Waiting	0–65535 sec.	0
03-76	Upward Peak 1 Begin	0–2359	0
03-77	Upward Peak 1 End	0–2359	0
03-78	Downward Peak 1 Begin	0–2359	0
03-79	Downward Peak 1 End	0–2359	0
03-80	Upward Peak 2 Begin	0–2359	0
03-81	Upward Peak 2 End	0–2359	0
03-82	Downward Peak 2 Begin	0–2359	0
03-83	Downward Peak 2 End	0–2359	0
03-84	Number of Full-load at Upward Peak	0–65535	0
03-85	Number of Full-load at Downward Peak	0–65535	0
03-86	Number of Calls for Downward Peak	0–65535	0
03-87	Holding Time for Upward and Downward Peak	0–65535 sec.	0
03-88	Holding Time at Random Floor	0–65535 sec.	0
03-89	Number of Full-load at Random Floor	0–65535	0
03-90	Automatically Runs Downward at Downward Peak	0–1 0: Does not automatically run downward when elevator is automatically recalled to the position near top floor for standby during downward peak running 1: Automatically runs downward when elevator is automatically recalled to the position near top floor for standby during downward peak running	0

04 Speed Curve

Pr.	Parameter Name	Setting Range	Default
04-00	Speed at Emergency	0.00–0.30 m/s	0.15
04-01	Inspection Speed	0.00–0.63 m/s	0.25
04-02	Speed at Returning to Two Ends of the Hoistway	0.00–1.50 m/s	0.50
04-03	Hoistway Auto-tuning Speed	0.00–0.50 m/s	0.20
04-04	Non-leveling Speed	0.01–0.30 m/s	0.12
04-05	Leveling Speed	0.01–0.15 m/s	0.04
04-06	Constant Speed Duration	0–3000	500
04-07	Acceleration	0.10–1.50 m/s^2	0.40
04-08	Deceleration	0.10–1.50 m/s^2	1.50
04-09	Inspection Deceleration	0.500–3.000 m/s^2	2.000
04-10	Inspection Acceleration	0.10–1.50 m/s^2	0.20
04-11	Re-leveling Deceleration	0.10–1.50 m/s^2	1.50
04-14	Acceleration Begin Time S1	0.01–25.00 sec.	3.00
04-15	Acceleration Arrival Time S2	0.01–25.00 sec.	1.00
04-16	Deceleration Begin Time S3	0.01–25.00 sec.	1.00
04-17	Deceleration Arrival Time S4	0.01–25.00 sec.	3.00
04-18	Low-speed Running Time When Enabled Manually	0.0–10.0 sec.	3.0

05 Door Control

Pr.	Parameter Name	Setting Range	Default
05-00	Number of Doors	1–2 1: Single-door system 2: Two-door system	1
05-01	Door Open Control	0–2 0: Door does not open 1: Front door opens before rear door opens 2: Font and rear door open at the same time	1
05-02	DSF 16–1	0–65535	65535
05-03	DSF 32–17	0–65535	65535
05-04	DSF 48–33	0–65535	65535
05-05	DSF 64–49	0–65535	65535
05-06	DSB 16–1	0–65535	0
05-07	DSB 32–17	0–65535	0
05-08	DSB 48–33	0–65535	0
05-09	DSB 64–49	0–65535	0
05-10	Door Open Time during Hall Calls	0.0–6553.5 sec.	5.0
05-11	Door Open Time during Car Calls	0.0–6553.5 sec.	5.0
05-12	Door Open Extended Time	0.0–6553.5 sec.	30.0
05-13	Disability Door Open Time	0.0–6553.5 sec.	9.0
05-14	Door Open Time Protection	0–100 sec.	10
05-15	Door Close Time Protection	0–100 sec.	10
05-16	Number of Times for Door Close Protection	0–100 0: No limit on the number of times for door close protection 1–100: If the number of times for door close protection exceeds Pr.05-16 in one hour, the door remains open and will be no longer automatically close, and the door close button flashes quickly. In this case, press the door close button to automatically reset the fault.	5
05-17	Extended Door Close Pre-warning Enabled	0.0–100.0 sec.	5.0
05-18	Door Close Pre-warning Time	0.0–199.9 sec.	2.0
05-19	Door Close for Elevator Lock Main Landing	0–1 0: Door remains open when the elevator returns to the elevator lock main landing 1: Door opens for 20 seconds and then closes automatically when the elevator returns to the elevator lock main landing	0
05-20	Door Close Recall at Fire Emergency	0–1 0: Door remains open when the elevator returns to the main landing at fire emergency 1: Door opens for 20 seconds and then closes automatically when the elevator returns to the main landing at fire emergency	0
05-21	Time for Door Re-open While Closing	0.0–6553.5 sec.	5.0
05-23	Automatic Door Open at Fire Emergency	0–1 0: Door does not open automatically when the elevator arrives at the designated floor until you press the door open button continuously. The elevator door closes automatically once you release the door open button before the door is in its full open position.	0

Pr.	Parameter Name	Setting Range	Default
		1: Door opens automatically when the elevator arrives at the designated floor	
05-24	Door Open/Close Mode when in Manual Operation	0–2 0: Door open/close signal does not output 1: The door does not open, and automatically closes if the door is not closing. 2: The door opens automatically when the elevator stops in the leveling area; the door closes when you press the upward or downward operation button for the manual mode respectively.	0
05-25	Door Open Delayed Time at Stop	0.0–2.0 sec.	0.5
05-26	Closing Time for Door Open Signal	0.0–600.0 sec. 0.0: The door opening signal outputs continuously 0.1–600.0: Starts to count the time after the door opens to its full position. The door opening signal stops output when the counting time exceeds Pr.05-26.	0.0
05-27	Closing Time for Door Close Signal	0.0–600.0 sec. 0.0: The door closing signal outputs continuously 0.1–600.0: Starts to count the time after the door closes. The door closing signal stops output when the counting time exceeds Pr.05-27.	0.0
05-28	Time for No Response to Hall Calls	0–60 sec.	0

06 Contacts of Main Control Board

Pr.	Parameter Name	Setting Range	Default
06-00	High-speed MI Filter Time	0–20 m/s	3
06-01	X1	1: DZU (Upper leveling sensor)	1
06-02	X2	2: DZD (Lower leveling sensor)	61
06-03	X3	3: FL1 (Upper door zone sensor)	2
06-04	X4	4: FL2 (Lower door zone sensor)	62
06-05	X5	5: FL1NC (Contact B of the relay for FL1)	12
06-06	X6	6: FL2NC (Contact B of the relay for FL2)	13
06-07	X7	7: INSCP (Control panel inspection switch)	11
06-08	X8	8: ICPUP (Control panel inspection upward)	1007
06-09	X9	9: ICPDN (Control panel inspection downward)	10
06-10	X10	10: MATPT (Inspection from pit)	14
06-11	X11	11: EIS (Emergency operation)	1056
06-12	X12	12: UDB (Emergency upward operation button)	25
06-13	X13	13: DDB (Emergency downward operation button)	58
06-14	X14	14: RESET (External reset device)	50
06-15	X15	15: SFH (Safety hatch high voltage)	1026
06-16	X16	16: SFL (Safety hatch low voltage)	1030
06-17	X17	17: SFNC (N.C. contact of safety hatch contactor)	1031
06-18	X18	18: GSH (Gate safety hatch high voltage)	1027
06-19	X19	19: GSL (Gate safety hatch low voltage)	0
06-20	X20	20: GSNC (N. C. contact of gate safety (GS) hatch contactor)	0
06-21	X21	21: DSH (Layer door safety hatch high voltage)	0
06-22	X22	22: DSL (Layer door safety hatch low voltage)	1033
06-23	X23	23: DSNC (N. C. contact of layer door safety (DS) hatch contactor)	1035
06-24	X24	25: TCIN (Traveling cable insertion)	1038
06-25	X25	26: SWNC (N.C. contact of operation contactor (SW))	1034
06-26	HVX1	27: BY1NC (N.C. contact of Brake-1 contactor (BY1))	15
06-27	HVX2	28: BY2NC (N.C. contact of Brake-2 contactor (BY2))	18
06-28	HVX3	29: BY3NC (N.C. contact of Brake-3 contactor (BY3))	21
06-29	HVX4	30: BK1 (Brake-1 travel switch)	9
06-30	HVX5	31: BK2 (Brake-2 travel switch)	8
		32: BK3 (Brake-3 travel switch)	
		33: LSU (Upper limit switch)	
		34: LSD (Lower limit switch)	
		35: ULS1 (First one upward forced deceleration)	
		36: ULS2 (Second one upward forced deceleration)	
		37: ULS3 (Third one upward forced deceleration)	
		38: DLS1 (First one downward forced deceleration)	

Pr.	Parameter Name	Setting Range	Default
		39: DLS2 (Second one downward forced deceleration) 40: DLS3 (Third one downward forced deceleration) 41: IUS (Inspection uppermost limit switch) 42: IDS (Inspection lowermost limit switch) 43: PARK (Elevator lock) 44: FIRM (Main landing recall at fire emergency) 45: FIRS (Secondary landing recall at fire emergency) 46: FIRS1 (Fireman class I) 47: FIRS2 (Fireman class II) 48: FLOOD (Not auto-reset at flood) 49: FLOODA (Auto-reset at flood) 50: MTS (Motor temperature overheat) 51: ERP (Seismic P-wave) 52: ERS (Seismic S-wave) 53: ERH (Severe earthquake) 54: EPS (Emergency Power Supply) 55: GOV (Governor) 56: DBP (Doorlock bypass) 57: BUNC (N.C. contact of brake unit (BU) contactor) 58: IBRTS (Drive's discharge resistance temperature switch) 59: UPK (Upward peak running) 60: DPK (Downward peak running) 61: SX1 (Door zone signal) 62: SX2 (Door unlock output feedback) 63: FXNO (N.O. contact of MPSCC (Motor Phase Short Circuit Contactor)) 64: ERGO (Safety landing while severe earthquake) 65: ULS4 (Fourth one upward forced deceleration) 66: DLS4 (Fourth one downward forced deceleration) 67: UPS (Uninterruptible Power Supply) 100: OLT1 (Front door reaches its open position) 101: OLT2 (Rear door reaches its open position) 102: CLT1 (Front door reaches its closed position) 103: CLT2 (Rear door reaches its closed position) 104: EDP1 (Front door light sensor) 105: EDP2 (Rear door light sensor) 106: SE1 (Front door safety edge) 107: SE2 (Rear door safety edge) 108: 100KG (Light-duty switch) 109: LWX (Full-load switch) 110: LWO (Overload switch)	

Pr.	Parameter Name	Setting Range	Default
		111: 150% (Forklift overload switch) 112: TCI (Cartop inspection switch) 113: TCIU (Cartop inspection upward) 114: TCID (Cartop inspection downward) 115: HFD (With front door) 116: HBD (With rear door) 117: DTS1 (Front door motor temperature switch) 118: DTS2 (Rear door motor temperature switch) 119: TOEX1 (Front door over-torque) 120: TOEX2 (Rear door over-torque) 121: DOBOC1 (Cartop inspection front door open button) 122: DOBOC2 (Cartop inspection rear door open button) 123: DCBOC1(Cartop inspection front door close button) 124: DCBOC2 (Cartop inspection rear door close button) 125: BALWG (Balanced switch) 150: DCB1 (Front door close button) 151: DOB1 (Front door open button) 152: DOBH1 (Front door open extended button) 153: INSIC (Car inspection switch) 154: IICUP (Car inspection upward and attendant direction change) 155: IICDN (Car inspection downward and attendant direct landing) 156: CARD (Car reader) 157: CFNLT (Car fan and lighting control switch) 158: ESS (Stop at each floor) 159: FUP (Manual upward fine-tune button) 160: FDN (Manual downward fine-tune button) 161: ISS (Independent operation switch) 162: IND (Goods only switch) 163: ATS (Attendant mode) 164: VIP (VIP mode) 165: CLIS (Car lighting switch) 166: FS (Car fan switch) 167: DCB2 (Rear door close button) 168: DOB2 (Rear door open button) 169: DOBH2 (Rear door open extended button) 170: DCB1B (Front door close auxiliary button) 171: DOB1B (Front door open auxiliary button) 172: DOBH1B (Front door open auxiliary extended button) 173: DCB2B (Rear door close auxiliary button)	

Pr.	Parameter Name	Setting Range	Default
		174: DOB2B (Rear door open auxiliary button) 175: DOBH2B (Rear door open auxiliary extended button) 201: PK (Peak running at random floor) 202: REPK (Remove peak running) 203: PASSWORD (Execute password car call while LED lights) 204: PASSSET (Execute password setting while LED lights)	
06-31	Y1	1: SW (Operation contactor)	1
06-32	Y2	2: BY1 (Brake-1 contactor)	2
06-33	Y3	3: BY2 (Brake-2 contactor)	5
06-34	Y4	4: BY3 (Brake-3 contactor)	15
06-35	Y5	5: BY4 (Brake contactor for full voltage)	7
06-36	Y6	6: FX (Motor Phase Short Circuit Contactor (PM))	13
06-37	Y7	7: BU (Contactor of brake unit)	0
06-38	Y8	8: MFN (Main fan)	0
		9: YUPS (UPS stops output) 10: PRST (Earthquake reset) 11: NOR (Normal running) 12: ERR (Error output) 13: FIRLD (Main landing at fire emergency) 14: RG (Rope gripper) 15: SY (Door unlock contactor) 16: QKOK (Earthquake control finished) 17: SDBZ (Supervisory panel alarm) 18: ERHL (Severe earthquake light) 100: OP1 (Front door opens) 101: OP2 (Rear door opens) 102: CL1 (Front door closes) 103: CL2 (Rear door closes) 104: BZ (Buzzer) 105: BPSL (Doorlock bypass lighting alarm) 106: UDCL (Car bottom light) 107: F (Car fan) 108: CLI (Car lighting) 109: LPT (Floor arrival clock) 110: LPTU (Upward floor arrival clock) 111: LPTD (Downward floor arrival clock) 112: FCL1 (Front door forced close at low speed) 113: FCL2 (Rear door forced close at low speed) 114: S2XX0 (Voice announces the floor arrives)	

Pr.	Parameter Name	Setting Range	Default
		115: S2XX1 (Voice announces the floor arrives) 116: S2XX2 (Voice announces the floor arrives) 117: S2XX3 (Voice announces the floor arrives) 118: S2XX4 (Voice announces the floor arrives) 119: S2XX5 (Voice announces the floor arrives) 120: SPK (Voice announcement) 121: SOP (Voice door open) 122: SCL (Voice door close) 123: SUP (Voice upward) 124: SDN (Voice downward) 125: SOLD (Voice overload) 126: SSEV (Voice EMT medical use) 127: SCON (Voice control) 128: SFIR (Voice fire alarm) 129: SER (Voice earthquake) 130: SFLOOD (Voice flood) 131: SUPS (Voice power loss) 132: SERR (Voice elevator failure) 133: SPACE (Voice blank) 150: DCBL1 (Front door close button lamp) 151: DOBL1 (Front door open button lamp) 152: DOBHL1 (Front door open extended button lamp) 153: FULL (Full-load) 154: OLD (Overload) 155: CLBZ (Door closing pre-warning buzzer) 167: DCBL2 (Rear door close button lamp) 168: DOBL2 (Rear door open button lamp) 169: DOBHL2 (Rear door open extended button lamp) 170: DCBL1B (Front door close auxiliary button lamp) 171: DOBL1B (Front door open auxiliary button lamp) 172: DOBHL1B (Front door open auxiliary extended button lamp) 173: DCBL2B (Rear door close auxiliary button lamp) 174: DOBL2B (Rear door open auxiliary button lamp) 175: DOBHL2B (Rear door open auxiliary extended button lamp)	
06-39	X_INV1	0000h–FFFFh	0000h
06-40	X_INV2	0000h–FFFFh	0000h
06-41	X_INV3	0000h–FFFFh	0000h
06-42	Y_INV	0000h–FFFFh	0000h
06-43	HVX_INV	0000h–FFFFh	0000h

Pr.	Parameter Name	Setting Range	Default
06-99	Clear Contacts of Main Control Board	0–3 0: No function 1: Set all MI contacts of the main control board to 0 2: Set all MO contacts of the main control board to 0 3: Set all values in Parameter Group 06 to 0	0

07 Contacts of Cartop Board

Pr.	Parameter Name	Setting Range	Default
07-01	OCB I1	100: OLT1 (Front door reaches its open position)	1112
07-02	OCB I2	101: OLT2 (Rear door reaches its open position)	113
07-03	OCB I3	102: CLT1 (Front door reaches its closed position)	114
07-04	OCB I4	103: CLT2 (Rear door reaches its closed position)	1104
07-05	OCB I5	104: EDP1 (Front door light sensor)	110
07-06	OCB I6	105: EDP2 (Rear door light sensor)	1100
07-07	OCB I7	106: SE1 (Front door safety edge)	1102
07-08	OCB I8	107: SE2 (Rear door safety edge)	0
07-09	OCB I9	108: 100KG (Light-duty switch)	0
07-19	ICB1 JP17(I1)	109: LWX (Full-load switch)	150
07-20	ICB1 JP18(I2)	110: LWO (Overload switch)	151
07-21	ICB1 JP19(I3)	111: 150% (Forklift overload switch)	152
07-22	ICB1 JP20(I4)	112: TCI (Cartop inspection switch)	1153
07-23	ICB1 JP21(I5)	113: TCIU (Cartop inspection upward)	154
07-24	ICB1 JP22(I6)	114: TCID (Cartop inspection downward)	155
07-25	ICB1 JP23(I7)	115: HFD (With front door)	157
07-26	ICB1 JP24(I8)	116: HBD (With rear door)	162
07-35	ICB2 JP17(I1)	117: DTS1 (Front door motor temperature switch)	0
07-36	ICB2 JP18(I2)	118: DTS2 (Rear door motor temperature switch)	0
07-37	ICB2 JP19(I3)	119: TOEX1 (Front door over-torque)	0
07-38	ICB2 JP20(I4)	120: TOEX2 (Rear door over-torque)	0
07-39	ICB2 JP21(I5)	121: DOBOC1 (Cartop inspection front door open button)	0
07-40	ICB2 JP22(I6)	122: DOBOC2 (Cartop inspection rear door open button)	0
07-41	ICB2 JP23(I7)	123: DCBOC1(Cartop inspection front door close button)	0
07-42	ICB2 JP24(I8)	124: DCBOC2 (Cartop inspection rear door close button)	0
07-51	ICB3 JP17(I1)	125: BALWG (Balanced switch)	0
07-52	ICB3 JP18(I2)	150: DCB1 (Front door close button)	0
07-53	ICB3 JP19(I3)	151: DOB1 (Front door open button)	0
07-54	ICB3 JP20(I4)	152: DOBH1 (Front door open extended button)	0
07-55	ICB3 JP21(I5)	153: INSIC (Car inspection switch)	0
07-56	ICB3 JP22(I6)	154: IICUP (Car inspection upward and attendant direction change)	0
07-57	ICB3 JP23(I7)	155: IICDN (Car inspection downward and attendant direct landing)	0
07-58	ICB3 JP24(I8)	156: CARD (Car reader)	0
07-67	ICB4 JP17(I1)	157: CFNLT (Car fan and lighting control switch)	0
07-68	ICB4 JP18(I2)	158: ESS (Stop at each floor)	0
07-69	ICB4 JP19(I3)	159: FUP (Manual upward fine-tune button)	0
07-70	ICB4 JP20(I4)	160: FDN (Manual downward fine-tune button)	0

Pr.	Parameter Name	Setting Range	Default
07-71	ICB4 JP21(I5)	161: ISS (Independent operation switch)	0
07-72	ICB4 JP22(I6)	162: IND (Goods only switch)	0
07-73	ICB4 JP23(I7)	163: ATS (Attendant mode)	0
07-74	ICB4 JP24(I8)	164: VIP (VIP mode)	0
		165: CLIS (Car lighting switch) 166: FS (Car fan switch) 167: DCB2 (Rear door close button) 168: DOB2 (Rear door open button) 169: DOBH2 (Rear door open extended button) 170: DCB1B (Front door close auxiliary button) 171: DOB1B (Front door open auxiliary button) 172: DOBH1B (Front door open auxiliary extended button) 173: DCB2B (Rear door close auxiliary button) 174: DOB2B (Rear door open auxiliary button) 175: DOBH2B (Rear door open auxiliary extended button) 201: PK (Peak running at random floor) 202: REPK (Remove peak running) 203: PASSWORD (Execute password car call while LED lights) 204: PASSSET (Execute password setting while LED lights)	
07-10	OCB Od2(Y1)	100: OP1 (Front door opens)	100
07-11	OCB Od1(Y2)	101: OP2 (Rear door opens)	102
07-12	OCB Oc3(Y3)	102: CL1 (Front door closes)	0
07-13	OCB Oc2(Y4)	103: CL2 (Rear door closes)	0
07-14	OCB Oc1(Y5)	104: BZ (Buzzer)	105
07-15	OCB Ob3(Y6)	105: BPSL (Doorlock bypass lighting alarm)	106
07-16	OCB Ob2(Y7)	106: UDCL (Car bottom light)	154
07-17	OCB Ob1(Y8)	107: F (Car fan)	107
07-18	OCB Oa(Y9)	108: CLI (Car lighting)	108
07-27	ICB1 JP17(Y1)	109: LPT (Floor arrival clock)	150
07-28	ICB1 JP18(Y2)	110: LPTU (Upward floor arrival clock)	151
07-29	ICB1 JP19(Y3)	111: LPTD (Downward floor arrival clock)	152
07-30	ICB1 JP20(Y4)	112: FCL1 (Front door forced close at low speed)	0
07-31	ICB1 JP21(Y5)	113: FCL2 (Rear door forced close at low speed)	154
07-32	ICB1 JP22(Y6)	114: S2XX0 (Voice announces the floor arrives)	155
07-33	ICB1 JP23(Y7)	115: S2XX1 (Voice announces the floor arrives)	0
07-34	ICB1 JP24(Y8)	116: S2XX2 (Voice announces the floor arrives)	0
07-43	ICB2 JP17(Y1)	117: S2XX3 (Voice announces the floor arrives)	0
07-44	ICB2 JP18(Y2)	118: S2XX4 (Voice announces the floor arrives)	0
07-45	ICB2 JP19(Y3)	119: S2XX5 (Voice announces the floor arrives)	0

Pr.	Parameter Name	Setting Range	Default
07-46	ICB2 JP20(Y4)	120: SPK (Voice announcement)	0
07-47	ICB2 JP21(Y5)	121: SOP (Voice door open)	0
07-48	ICB2 JP22(Y6)	122: SCL (Voice door close)	0
07-49	ICB2 JP23(Y7)	123: SUP (Voice upward)	0
07-50	ICB2 JP24(Y8)	124: SDN (Voice downward)	0
07-59	ICB3 JP17(Y1)	125: SOLD (Voice overload)	0
07-60	ICB3 JP18(Y2)	126: SSEV (Voice EMT medical use)	0
07-61	ICB3 JP19(Y3)	127: SCON (Voice control)	0
07-62	ICB3 JP20(Y4)	128: SFIR (Voice fire alarm)	0
07-63	ICB3 JP21(Y5)	129: SER (Voice earthquake)	0
07-64	ICB3 JP22(Y6)	130: SFLOOD (Voice flood)	0
07-65	ICB3 JP23(Y7)	131: SUPS (Voice power loss)	0
07-66	ICB3 JP24(Y8)	132: SERR (Voice elevator failure)	0
07-75	ICB4 JP17(Y1)	133: SPACE (Voice blank)	0
07-76	ICB4 JP18(Y2)	150: DCBL1 (Front door close button lamp)	0
07-77	ICB4 JP19(Y3)	151: DOBL1 (Front door open button lamp)	0
07-78	ICB4 JP20(Y4)	152: DOBHL1 (Front door open extended button lamp)	0
07-79	ICB4 JP21(Y5)	153: FULL (Full-load)	0
07-80	ICB4 JP22(Y6)	154: OLD (Overload)	0
07-81	ICB4 JP23(Y7)	155: CLBZ (Door closing pre-warning buzzer)	0
07-82	ICB4 JP24(Y8)	167: DCBL2 (Rear door close button lamp)	0
		168: DOBL2 (Rear door open button lamp) 169: DOBHL2 (Rear door open extended button lamp) 170: DCBL1B (Front door close auxiliary button lamp) 171: DOBL1B (Front door open auxiliary button lamp) 172: DOBHL1B (Front door open auxiliary extended button lamp) 173: DCBL2B (Rear door close auxiliary button lamp) 174: DOBL2B (Rear door open auxiliary button lamp) 175: DOBHL2B (Rear door open auxiliary extended button lamp)	
07-99	Clear Contacts of Cartop Board	0–3 0: No function 1: Set all MI contacts of the cartop board to 0 2: Set all MO contacts of the cartop board to 0 3: Set all values in Parameter Group 07 to 0	0

08 Floor Display

Pr.	Parameter Name	Setting Range	Default
08-01	Physical Floor 1	0–65535	1
08-02	Physical Floor 2	0–65535	2
08-03	Physical Floor 3	0–65535	3
08-04	Physical Floor 4	0–65535	4
08-05	Physical Floor 5	0–65535	5
08-06	Physical Floor 6	0–65535	6
08-07	Physical Floor 7	0–65535	7
08-08	Physical Floor 8	0–65535	8
08-09	Physical Floor 9	0–65535	9
08-10	Physical Floor 10	0–65535	100
08-11	Physical Floor 11	0–65535	101
08-12	Physical Floor 12	0–65535	102
08-13	Physical Floor 13	0–65535	103
08-14	Physical Floor 14	0–65535	104
08-15	Physical Floor 15	0–65535	105
08-16	Physical Floor 16	0–65535	106
08-17	Physical Floor 17	0–65535	107
08-18	Physical Floor 18	0–65535	108
08-19	Physical Floor 19	0–65535	109
08-20	Physical Floor 20	0–65535	200
08-21	Physical Floor 21	0–65535	201
08-22	Physical Floor 22	0–65535	202
08-23	Physical Floor 23	0–65535	203
08-24	Physical Floor 24	0–65535	204
08-25	Physical Floor 25	0–65535	205
08-26	Physical Floor 26	0–65535	206
08-27	Physical Floor 27	0–65535	207
08-28	Physical Floor 28	0–65535	208
08-29	Physical Floor 29	0–65535	209
08-30	Physical Floor 30	0–65535	300
08-31	Physical Floor 31	0–65535	301
08-32	Physical Floor 32	0–65535	302
08-33	Physical Floor 33	0–65535	303
08-34	Physical Floor 34	0–65535	304
08-35	Physical Floor 35	0–65535	305
08-36	Physical Floor 36	0–65535	306
08-37	Physical Floor 37	0–65535	307
08-38	Physical Floor 38	0–65535	308

Pr.	Parameter Name	Setting Range	Default
08-39	Physical Floor 39	0–65535	309
08-40	Physical Floor 40	0–65535	400
08-41	Physical Floor 41	0–65535	401
08-42	Physical Floor 42	0–65535	402
08-43	Physical Floor 43	0–65535	403
08-44	Physical Floor 44	0–65535	404
08-45	Physical Floor 45	0–65535	405
08-46	Physical Floor 46	0–65535	406
08-47	Physical Floor 47	0–65535	407
08-48	Physical Floor 48	0–65535	408
08-49	Physical Floor 49	0–65535	409
08-50	Physical Floor 50	0–65535	500
08-51	Physical Floor 51	0–65535	501
08-52	Physical Floor 52	0–65535	502
08-53	Physical Floor 53	0–65535	503
08-54	Physical Floor 54	0–65535	504
08-55	Physical Floor 55	0–65535	505
08-56	Physical Floor 56	0–65535	506
08-57	Physical Floor 57	0–65535	507
08-58	Physical Floor 58	0–65535	508
08-59	Physical Floor 59	0–65535	509
08-60	Physical Floor 60	0–65535	600
08-61	Physical Floor 61	0–65535	601
08-62	Physical Floor 62	0–65535	602
08-63	Physical Floor 63	0–65535	603
08-64	Physical Floor 64	0–65535	604

09 Floor Position 1

Pr.	Parameter Name	Setting Range	Default
09-00	Current Position (H)	-32768–32767 m	Read only
09-01	Current Position (L)	-3276.8–3276.7 mm	Read only
09-02	Current Pulse 10k (H)	0–65535 10k	Read only
09-03	Current Pulse (L)	0–65535	Read only
09-04	Leveling Plate Length (H)	0–65535 m	Read only
09-05	Leveling Plate Length (L)	0.0–6553.5 mm	Read only
09-06	Leveling Clearance (H)	0–65535 m	Read only
09-07	Leveling Clearance (L)	0.0–6553.5 mm	Read only
09-08	1S High Position	0–65535 m	Read only
09-09	1S Low Position	0.0–6553.5 mm	Read only
09-10	2S High Position	0–65535 m	Read only
09-11	2S Low Position	0.0–6553.5 mm	Read only
09-12	3S High Position	0–65535 m	Read only
09-13	3S Low Position	0.0–6553.5 mm	Read only
09-14	4S High Position	0–65535 m	Read only
09-15	4S Low Position	0.0–6553.5 mm	Read only
09-16	5S High Position	0–65535 m	Read only
09-17	5S Low Position	0.0–6553.5 mm	Read only
09-18	6S High Position	0–65535 m	Read only
09-19	6S Low Position	0.0–6553.5 mm	Read only
09-20	7S High Position	0–65535 m	Read only
09-21	7S Low Position	0.0–6553.5 mm	Read only
09-22	8S High Position	0–65535 m	Read only
09-23	8S Low Position	0.0–6553.5 mm	Read only
09-24	9S High Position	0–65535 m	Read only
09-25	9S Low Position	0.0–6553.5 mm	Read only
09-26	10S High Position	0–65535 m	Read only
09-27	10S Low Position	0.0–6553.5 mm	Read only
09-28	11S High Position	0–65535 m	Read only
09-29	11S Low Position	0.0–6553.5 mm	Read only
09-30	12S High Position	0–65535 m	Read only
09-31	12S Low Position	0.0–6553.5 mm	Read only
09-32	13S High Position	0–65535 m	Read only
09-33	13S Low Position	0.0–6553.5 mm	Read only
09-34	14S High Position	0–65535 m	Read only
09-35	14S Low Position	0.0–6553.5 mm	Read only
09-36	15S High Position	0–65535 m	Read only
09-37	15S Low Position	0.0–6553.5 mm	Read only

Pr.	Parameter Name	Setting Range	Default
09-38	16S High Position	0–65535 m	Read only
09-39	16S Low Position	0.0–6553.5 mm	Read only
09-40	17S High Position	0–65535 m	Read only
09-41	17S Low Position	0.0–6553.5 mm	Read only
09-42	18S High Position	0–65535 m	Read only
09-43	18S Low Position	0.0–6553.5 mm	Read only
09-44	19S High Position	0–65535 m	Read only
09-45	19S Low Position	0.0–6553.5 mm	Read only
09-46	20S High Position	0–65535 m	Read only
09-47	20S Low Position	0.0–6553.5 mm	Read only
09-48	21S High Position	0–65535 m	Read only
09-49	21S Low Position	0.0–6553.5 mm	Read only
09-50	22S High Position	0–65535 m	Read only
09-51	22S Low Position	0.0–6553.5 mm	Read only
09-52	23S High Position	0–65535 m	Read only
09-53	23S Low Position	0.0–6553.5 mm	Read only
09-54	24S High Position	0–65535 m	Read only
09-55	24S Low Position	0.0–6553.5 mm	Read only
09-56	25S High Position	0–65535 m	Read only
09-57	25S Low Position	0.0–6553.5 mm	Read only
09-58	26S High Position	0–65535 m	Read only
09-59	26S Low Position	0.0–6553.5 mm	Read only
09-60	27S High Position	0–65535 m	Read only
09-61	27S Low Position	0.0–6553.5 mm	Read only
09-62	28S High Position	0–65535 m	Read only
09-63	28S Low Position	0.0–6553.5 mm	Read only
09-64	29S High Position	0–65535 m	Read only
09-65	29S Low Position	0.0–6553.5 mm	Read only
09-66	30S High Position	0–65535 m	Read only
09-67	30S Low Position	0.0–6553.5 mm	Read only
09-68	31S High Position	0–65535 m	Read only
09-69	31S Low Position	0.0–6553.5 mm	Read only
09-70	32S High Position	0–65535 m	Read only
09-71	32S Low Position	0.0–6553.5 mm	Read only
09-72	33S High Position	0–65535 m	Read only
09-73	33S Low Position	0.0–6553.5 mm	Read only
09-74	34S High Position	0–65535 m	Read only
09-75	34S Low Position	0.0–6553.5 mm	Read only
09-76	35S High Position	0–65535 m	Read only

Pr.	Parameter Name	Setting Range	Default
09-77	35S Low Position	0.0–6553.5 mm	Read only
09-78	36S High Position	0–65535 m	Read only
09-79	36S Low Position	0.0–6553.5 mm	Read only
09-80	37S High Position	0–65535 m	Read only
09-81	37S Low Position	0.0–6553.5 mm	Read only
09-82	38S High Position	0–65535 m	Read only
09-83	38S Low Position	0.0–6553.5 mm	Read only
09-84	39S High Position	0–65535 m	Read only
09-85	39S Low Position	0.0–6553.5 mm	Read only
09-86	40S High Position	0–65535 m	Read only
09-87	40S Low Position	0.0–6553.5 mm	Read only
09-88	41S High Position	0–65535 m	Read only
09-89	41S Low Position	0.0–6553.5 mm	Read only
09-90	42S High Position	0–65535 m	Read only
09-91	42S Low Position	0.0–6553.5 mm	Read only
09-92	43S High Position	0–65535 m	Read only
09-93	43S Low Position	0.0–6553.5 mm	Read only
09-94	44S High Position	0–65535 m	Read only
09-95	44S Low Position	0.0–6553.5 mm	Read only
09-96	45S High Position	0–65535 m	Read only
09-97	45S Low Position	0.0–6553.5 mm	Read only
09-98	46S High Position	0–65535 m	Read only
09-99	46S Low Position	0.0–6553.5 mm	Read only

10 Floor Position 2

Pr.	Parameter Name	Setting Range	Default
10-00	47S High Position	0–65535 m	Read only
10-01	47S Low Position	0.0–6553.5 mm	Read only
10-02	48S High Position	0–65535 m	Read only
10-03	48S Low Position	0.0–6553.5 mm	Read only
10-04	49S High Position	0–65535 m	Read only
10-05	49S Low Position	0.0–6553.5 mm	Read only
10-06	50S High Position	0–65535 m	Read only
10-07	50S Low Position	0.0–6553.5 mm	Read only
10-08	51S High Position	0–65535 m	Read only
10-09	51S Low Position	0.0–6553.5 mm	Read only
10-10	52S High Position	0–65535 m	Read only
10-11	52S Low Position	0.0–6553.5 mm	Read only
10-12	53S High Position	0–65535 m	Read only
10-13	53S Low Position	0.0–6553.5 mm	Read only
10-14	54S High Position	0–65535 m	Read only
10-15	54S Low Position	0.0–6553.5 mm	Read only
10-16	55S High Position	0–65535 m	Read only
10-17	55S Low Position	0.0–6553.5 mm	Read only
10-18	56S High Position	0–65535 m	Read only
10-19	56S Low Position	0.0–6553.5 mm	Read only
10-20	57S High Position	0–65535 m	Read only
10-21	57S Low Position	0.0–6553.5 mm	Read only
10-22	58S High Position	0–65535 m	Read only
10-23	58S Low Position	0.0–6553.5 mm	Read only
10-24	59S High Position	0–65535 m	Read only
10-25	59S Low Position	0.0–6553.5 mm	Read only
10-26	60S High Position	0–65535 m	Read only
10-27	60S Low Position	0.0–6553.5 mm	Read only
10-28	61S High Position	0–65535 m	Read only
10-29	61S Low Position	0.0–6553.5 mm	Read only
10-30	62S High Position	0–65535 m	Read only
10-31	62S Low Position	0.0–6553.5 mm	Read only
10-32	63S High Position	0–65535 m	Read only
10-33	63S Low Position	0.0–6553.5 mm	Read only
10-34	64S High Position	0–65535 m	Read only
10-35	64S Low Position	0.0–6553.5 mm	Read only
10-36	Downward Forced Stop (H)	-32768–32767 m	Read only
10-37	Downward Forced Stop (L)	-3276.8–3276.7 mm	Read only

Pr.	Parameter Name	Setting Range	Default
10-38	First One Downward Deceleration (H)	0–65535 m	Read only
10-39	First One Downward Deceleration (L)	0.0–6553.5 mm	Read only
10-40	Second One Downward Deceleration (H)	0–65535 m	Read only
10-41	Second One Downward Deceleration (L)	0.0–6553.5 mm	Read only
10-42	Third One Downward Deceleration (H)	0–65535 m	Read only
10-43	Third One Downward Deceleration (L)	0.0–6553.5 mm	Read only
10-44	Upward Forced Stop (H)	0–65535 m	Read only
10-45	Upward Forced Stop (L)	0.0–6553.5 mm	Read only
10-46	First One Upward Deceleration (H)	0–65535 m	Read only
10-47	First One Upward Deceleration (L)	0.0–6553.5 mm	Read only
10-48	Second One Upward Deceleration (H)	0–65535 m	Read only
10-49	Second One Upward Deceleration (L)	0.0–6553.5 mm	Read only
10-50	Third One Upward Deceleration (H)	0–65535 m	Read only
10-51	Third One Upward Deceleration (L)	0.0–6553.5 mm	Read only
10-52	51S Upward Adjustment	-100–100 mm	0
10-53	51S Downward Adjustment	-100–100 mm	0
10-54	52S Upward Adjustment	-100–100 mm	0
10-55	52S Downward Adjustment	-100–100 mm	0
10-56	53S Upward Adjustment	-100–100 mm	0
10-57	53S Downward Adjustment	-100–100 mm	0
10-58	54S Upward Adjustment	-100–100 mm	0
10-59	54S Downward Adjustment	-100–100 mm	0
10-60	55S Upward Adjustment	-100–100 mm	0
10-61	55S Downward Adjustment	-100–100 mm	0
10-62	56S Upward Adjustment	-100–100 mm	0
10-63	56S Downward Adjustment	-100–100 mm	0
10-64	57S Upward Adjustment	-100–100 mm	0
10-65	57S Downward Adjustment	-100–100 mm	0

Pr.	Parameter Name	Setting Range	Default
10-66	58S Upward Adjustment	-100–100 mm	0
10-67	58S Downward Adjustment	-100–100 mm	0
10-68	59S Upward Adjustment	-100–100 mm	0
10-69	59S Downward Adjustment	-100–100 mm	0
10-70	60S Upward Adjustment	-100–100 mm	0
10-71	60S Downward Adjustment	-100–100 mm	0
10-72	61S Upward Adjustment	-100–100 mm	0
10-73	61S Downward Adjustment	-100–100 mm	0
10-74	62S Upward Adjustment	-100–100 mm	0
10-75	62S Downward Adjustment	-100–100 mm	0
10-76	63S Upward Adjustment	-100–100 mm	0
10-77	63S Downward Adjustment	-100–100 mm	0
10-78	64S Upward Adjustment	-100–100 mm	0
10-79	64S Downward Adjustment	-100–100 mm	0
10-80	Fourth One Upward Deceleration (H)	0–65535 m	Read only
10-81	Fourth One Upward Deceleration (L)	0.0–6553.5 mm	Read only
10-82	Fourth One Downward Deceleration (H)	0–65535 m	Read only
10-83	Fourth One Downward Deceleration (L)	0.0–6553.5 mm	Read only

11 Position Adjustment

Pr.	Parameter Name	Setting Range	Default
11-00	1S Upward Adjustment	-100–100 mm	0
11-01	1S Downward Adjustment	-100–100 mm	0
11-02	2S Upward Adjustment	-100–100 mm	0
11-03	2S Downward Adjustment	-100–100 mm	0
11-04	3S Upward Adjustment	-100–100 mm	0
11-05	3S Downward Adjustment	-100–100 mm	0
11-06	4S Upward Adjustment	-100–100 mm	0
11-07	4S Downward Adjustment	-100–100 mm	0
11-08	5S Upward Adjustment	-100–100 mm	0
11-09	5S Downward Adjustment	-100–100 mm	0
11-10	6S Upward Adjustment	-100–100 mm	0
11-11	6S Downward Adjustment	-100–100 mm	0
11-12	7S Upward Adjustment	-100–100 mm	0
11-13	7S Downward Adjustment	-100–100 mm	0
11-14	8S Upward Adjustment	-100–100 mm	0
11-15	8S Downward Adjustment	-100–100 mm	0
11-16	9S Upward Adjustment	-100–100 mm	0
11-17	9S Downward Adjustment	-100–100 mm	0
11-18	10S Upward Adjustment	-100–100 mm	0
11-19	10S Downward Adjustment	-100–100 mm	0
11-20	11S Upward Adjustment	-100–100 mm	0
11-21	11S Downward Adjustment	-100–100 mm	0
11-22	12S Upward Adjustment	-100–100 mm	0
11-23	12S Downward Adjustment	-100–100 mm	0
11-24	13S Upward Adjustment	-100–100 mm	0
11-25	13S Downward Adjustment	-100–100 mm	0
11-26	14S Upward Adjustment	-100–100 mm	0
11-27	14S Downward Adjustment	-100–100 mm	0
11-28	15S Upward Adjustment	-100–100 mm	0
11-29	15S Downward Adjustment	-100–100 mm	0
11-30	16S Upward Adjustment	-100–100 mm	0
11-31	16S Downward Adjustment	-100–100 mm	0
11-32	17S Upward Adjustment	-100–100 mm	0
11-33	17S Downward Adjustment	-100–100 mm	0
11-34	18S Upward Adjustment	-100–100 mm	0
11-35	18S Downward Adjustment	-100–100 mm	0
11-36	19S Upward Adjustment	-100–100 mm	0
11-37	19S Downward Adjustment	-100–100 mm	0

Pr.	Parameter Name	Setting Range	Default
11-38	20S Upward Adjustment	-100–100 mm	0
11-39	20S Downward Adjustment	-100–100 mm	0
11-40	21S Upward Adjustment	-100–100 mm	0
11-41	21S Downward Adjustment	-100–100 mm	0
11-42	22S Upward Adjustment	-100–100 mm	0
11-43	22S Downward Adjustment	-100–100 mm	0
11-44	23S Upward Adjustment	-100–100 mm	0
11-45	23S Downward Adjustment	-100–100 mm	0
11-46	24S Upward Adjustment	-100–100 mm	0
11-47	24S Downward Adjustment	-100–100 mm	0
11-48	25S Upward Adjustment	-100–100 mm	0
11-49	25S Downward Adjustment	-100–100 mm	0
11-50	26S Upward Adjustment	-100–100 mm	0
11-51	26S Downward Adjustment	-100–100 mm	0
11-52	27S Upward Adjustment	-100–100 mm	0
11-53	27S Downward Adjustment	-100–100 mm	0
11-54	28S Upward Adjustment	-100–100 mm	0
11-55	28S Downward Adjustment	-100–100 mm	0
11-56	29S Upward Adjustment	-100–100 mm	0
11-57	29S Downward Adjustment	-100–100 mm	0
11-58	30S Upward Adjustment	-100–100 mm	0
11-59	30S Downward Adjustment	-100–100 mm	0
11-60	31S Upward Adjustment	-100–100 mm	0
11-61	31S Downward Adjustment	-100–100 mm	0
11-62	32S Upward Adjustment	-100–100 mm	0
11-63	32S Downward Adjustment	-100–100 mm	0
11-64	33S Upward Adjustment	-100–100 mm	0
11-65	33S Downward Adjustment	-100–100 mm	0
11-66	34S Upward Adjustment	-100–100 mm	0
11-67	34S Downward Adjustment	-100–100 mm	0
11-68	35S Upward Adjustment	-100–100 mm	0
11-69	35S Downward Adjustment	-100–100 mm	0
11-70	36S Upward Adjustment	-100–100 mm	0
11-71	36S Downward Adjustment	-100–100 mm	0
11-72	37S Upward Adjustment	-100–100 mm	0
11-73	37S Downward Adjustment	-100–100 mm	0
11-74	38S Upward Adjustment	-100–100 mm	0
11-75	38S Downward Adjustment	-100–100 mm	0
11-76	39S Upward Adjustment	-100–100 mm	0

Pr.	Parameter Name	Setting Range	Default
11-77	39S Downward Adjustment	-100–100 mm	0
11-78	40S Upward Adjustment	-100–100 mm	0
11-79	40S Downward Adjustment	-100–100 mm	0
11-80	41S Upward Adjustment	-100–100 mm	0
11-81	41S Downward Adjustment	-100–100 mm	0
11-82	42S Upward Adjustment	-100–100 mm	0
11-83	42S Downward Adjustment	-100–100 mm	0
11-84	43S Upward Adjustment	-100–100 mm	0
11-85	43S Downward Adjustment	-100–100 mm	0
11-86	44S Upward Adjustment	-100–100 mm	0
11-87	44S Downward Adjustment	-100–100 mm	0
11-88	45S Upward Adjustment	-100–100 mm	0
11-89	45S Downward Adjustment	-100–100 mm	0
11-90	46S Upward Adjustment	-100–100 mm	0
11-91	46S Downward Adjustment	-100–100 mm	0
11-92	47S Upward Adjustment	-100–100 mm	0
11-93	47S Downward Adjustment	-100–100 mm	0
11-94	48S Upward Adjustment	-100–100 mm	0
11-95	48S Downward Adjustment	-100–100 mm	0
11-96	49S Upward Adjustment	-100–100 mm	0
11-97	49S Downward Adjustment	-100–100 mm	0
11-98	50S Upward Adjustment	-100–100 mm	0
11-99	50S Downward Adjustment	-100–100 mm	0

12 Signal Monitoring

Pr.	Parameter Name	Setting Range	Default
12-00	UF 16–01	0–65535	0
12-01	UF 32–17	0–65535	0
12-02	UF 48–33	0–65535	0
12-03	UF 64–49	0–65535	0
12-04	DF 16–01	0–65535	0
12-05	DF 32–17	0–65535	0
12-06	DF 48–33	0–65535	0
12-07	DF 64–49	0–65535	0
12-08	CF 16–01	0–65535	0
12-09	CF 32–17	0–65535	0
12-10	CF 48–33	0–65535	0
12-11	CF 64–49	0–65535	0
12-12	UB 16–01	0–65535	0
12-13	UB 32–17	0–65535	0
12-14	UB 48–33	0–65535	0
12-15	UB 64–49	0–65535	0
12-16	DB 16–01	0–65535	0
12-17	DB 32–17	0–65535	0
12-18	DB 48–33	0–65535	0
12-19	DB 64–49	0–65535	0
12-20	CB 16–01	0–65535	0
12-21	CB 32–17	0–65535	0
12-22	CB 48–33	0–65535	0
12-23	CB 64–49	0–65535	0
12-24	UFL 16–01	0–65535	0
12-25	UFL 32–17	0–65535	0
12-26	UFL 48–33	0–65535	0
12-27	UFL 64–49	0–65535	0
12-28	DFL 16–01	0–65535	0
12-29	DFL 32–17	0–65535	0
12-30	DFL 48–33	0–65535	0
12-31	DFL 64–49	0–65535	0
12-32	CFL 16–01	0–65535	0
12-33	CFL 32–17	0–65535	0
12-34	CFL 48–33	0–65535	0
12-35	CFL 64–49	0–65535	0
12-36	UBL 16–01	0–65535	0
12-37	UBL 32–17	0–65535	0

Pr.	Parameter Name	Setting Range	Default
12-38	UBL 48–33	0–65535	0
12-39	UBL 64–49	0–65535	0
12-40	DBL 16–01	0–65535	0
12-41	DBL 32–17	0–65535	0
12-42	DBL 48–33	0–65535	0
12-43	DBL 64–49	0–65535	0
12-44	CBL 16–01	0–65535	0
12-45	CBL 32–17	0–65535	0
12-46	CBL 48–33	0–65535	0
12-47	CBL 64–49	0–65535	0
12-48	UFH 16–01	0–65535	0
12-49	UFH 32–17	0–65535	0
12-50	UFH 48–33	0–65535	0
12-51	UFH 64–49	0–65535	0
12-52	DFH 16–01	0–65535	0
12-53	DFH 32–17	0–65535	0
12-54	DFH 48–33	0–65535	0
12-55	DFH 64–49	0–65535	0
12-56	CFH 16–01	0–65535	0
12-57	CFH 32–17	0–65535	0
12-58	CFH 48–33	0–65535	0
12-59	CFH 64–49	0–65535	0
12-60	UBH 16–01	0–65535	0
12-61	UBH 32–17	0–65535	0
12-62	UBH 48–33	0–65535	0
12-63	UBH 64–49	0–65535	0
12-64	DBH 16–01	0–65535	0
12-65	DBH 32–17	0–65535	0
12-66	DBH 48–33	0–65535	0
12-67	DBH 64–49	0–65535	0
12-68	CBH 16–01	0–65535	0
12-69	CBH 32–17	0–65535	0
12-70	CBH 48–33	0–65535	0
12-71	CBH 64–49	0–65535	0
12-72	UFHL 16–01	0–65535	0
12-73	UFHL 32–17	0–65535	0
12-74	UFHL 48–33	0–65535	0
12-75	UFHL 64–49	0–65535	0
12-76	DFHL 16–01	0–65535	0

Pr.	Parameter Name	Setting Range	Default
12-77	DFHL 32–17	0–65535	0
12-78	DFHL 48–33	0–65535	0
12-79	DFHL 64–49	0–65535	0
12-80	CFHL 16–01	0–65535	0
12-81	CFHL 32–17	0–65535	0
12-82	CFHL 48–33	0–65535	0
12-83	CFHL 64–49	0–65535	0
12-84	UBHL 16–01	0–65535	0
12-85	UBHL 32–17	0–65535	0
12-86	UBHL 48–33	0–65535	0
12-87	UBHL 64–49	0–65535	0
12-88	DBHL 16–01	0–65535	0
12-89	DBHL 32–17	0–65535	0
12-90	DBHL 48–33	0–65535	0
12-91	DBHL 64–49	0–65535	0
12-92	CBHL 16–01	0–65535	0
12-93	CBHL 32–17	0–65535	0
12-94	CBHL 48–33	0–65535	0
12-95	CBHL 64–49	0–65535	0

13 Drive Parameters

Pr.	Parameter Name	Setting Range	Default
13-00	Drive Software Version	Read only	#.##
13-01	Control Mode	0–8 3: FOC vector control + Encoder (FOCPG) 8: FOC Permanent Motor control (FOCPM)	0
13-02	Drive Output Direction	0–1 0: The same as the setting direction 1: Opposite to the setting direction	0
13-03	Elevator Rated Frequency	0.00–400.00 Hz	60.00
13-04	Motor Rated Frequency	0.00–400.00 Hz	60.00
13-05	Motor Rated Voltage	0.0–510.0 V	440.0
13-06	Motor Rated Current	0.10–650.00 Amps	2.00
13-07	Motor Rated Power	0.10–650.00 kW	2.00
13-08	Motor Rated Speed	0–65535 rpm	0
13-09	Number of Motor Poles	0–96	0
13-10	IM No-load Current	0.00–655.35	0.00
13-11	IM/PM Rs	0.000–65.535 Ω	0.000
13-12	IM Rr	0.000–65.535 Ω	0.000
13-13	IM Lm	0.0–6553.5 mH	0.0
13-14	IM Lx/PM Lq	0.0–6553.5 mH	0.0
13-15	PM Back Electromotive Force	0.0–6553.5 Vrms	0.0
13-16	PM Magnetic Pole Offset Angle	0.0–360.0°	360.0
13-17	System Control	0000h–FFFFh Bit 0=0: No function Bit 0=1: ARS auto-tuning; PDFF enabled; speed bandwidth control enabled Bit 7=0: No function Bit 7=1: Zero speed position control is enabled Bit 9=0: Dynamic PG origin auto-tuning with load (supported by PGHSD-x) Bit 9=1: Static PG origin auto-tuning with load by enabling PGHSD-x	0281h
13-18	Current Floor of the Drive	1–64	1
13-19	Pulse Adjustment Condition	0–100	100
13-20	Maximum Elevator Speed Percentage	30–100	50
13-21	Motor Auto-tuning	0–3 0: No function 1: Only for an unloaded motor; auto-measures the magnetic pole offset angle (PM) 2: Executes motor auto-ting (IM / PM) 3: Auto-measures the magnetic pole offset angle (PM)	0
13-22	Selection of Encoder	0–6 0: Disabled 1: ABZ 2: ABZ + Hall (UVW type) 3: SIN/COS + Sinusoidal (ERN1185, ERN1387) 4: SIN/COS + Endat (ECN1313, ECN413) 5: SIN/COS 6: SIN/COS + Hiperface (SRS50/60)	0
13-23	Encoder Pulse	1–25000	2048

Pr.	Parameter Name	Setting Range	Default
13-24	Encoder Input Type Settings	0–5 0: Disabled 1: Phase A leads in a forward run command and phase B leads in a reverse run command 2: Phase B leads in a forward run command and phase A leads in a reverse run command 3: Phase A is a pulse input and phase B is a direction input. (low input=reverse direction, high input=forward direction) 4: Phase A is a pulse input and phase B is a direction input. (low input=forward direction, high input=reverse direction) 5: Single-phase input	1
13-25	PG Card C+/C-	0000h–0001h	0000h
13-26	Suspension Ratio	0–3 0 = 1: 1 1 = 2: 1 2 = 4: 1 3 = 8: 1	1
13-27	Gear Ratio	1.00–100.00	1.00
13-28	Main Sheave Diameter	100–2000 mm	400
13-29	Elevator Rated Speed	0.10–4.00 m/s	1.00
13-30	Mechanical Inertia Ratio	1–300	20
13-31	Zero Speed at Start-up Bandwidth	1–40 Hz	10
13-32	Low Speed Bandwidth	1–40 Hz	10
13-33	High Speed Bandwidth	1–40 Hz	10
13-34	Zero Speed at Stop Bandwidth	1–40 Hz	10
13-42	IM Mechanical Brake Release Delay Time / PM Position Control Delay Time	0.000–2.000 sec.	0.250
13-43	Mechanical Brake Engage Delay Time	0.000–2.000 sec.	0.250
13-44	Drive Output Delay Time	0.010–0.500 sec.	0.200
13-45	Operation Contactor Off Delay Time	0.010–1.667 sec.	0.200
13-48	Voltage of Emergency Power	24.0–375.0 V_{DC} 48.0–750.0 V_{DC}	24.0 48.0
13-49	EPS Running Frequency	0.00–655.35 Hz	Read only
13-51	Power Generation Direction Search Time	0.0–5.0 sec.	1.0
13-52	Power Capacity of Emergency Power	0.0–100.0 kVA	0.0
13-53	STO Latch Selection	0000h–0007h	0003h
13-54	Zero Speed Activation Time	0.1–60.0 sec.	0.7
13-55	Zero Speed Stopping Time	0.0–3.0 sec.	0.7
13-57	Time for Decreasing Torque at Stop	0.000–5.000 sec.	0.000
13-58	PM Position Control Duration	0.000–65.535 sec.	0.000
13-59	PM Position Control Gain (P)	0.00–655.00	80.00
13-60	Maximum Current during Acceleration	50–200%	150
13-61	Forced Deceleration Limit	0000h–FFFFh	0000h

Pr.	Parameter Name	Setting Range	Default
		Bit 5=1: Enables forced deceleration switch speed limit (Pr.13-62–Pr.13-65) protection function	
13-62	First One Forced Deceleration Limit	0.00–99.99 m/s	1.00
13-63	Seconds One Forced Deceleration Limit	0.00–99.99 m/s	2.00
13-64	Third One Forced Deceleration Limit	0.00–99.99 m/s	3.00
13-65	Fourth One Forced Deceleration Limit	0.00–99.99 m/s	4.00
13-66	Cooling Fan Control	0: Cooling fan is always ON. 1: One minute after AC motor drive stops, cooling fan is OFF. 2: AC motor drive runs and cooling fan is ON; AC motor drive stops and cooling fan is OFF. 3: Cooling fan is ON to run when preliminary IGBT temperature (°C) reached. 4: Cooling fan is always OFF.	2
13-99	Drive All Write	0–1	0

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Chapter 12 Descriptions of Parameter Settings

00 System Monitoring

↗: You can set this parameter during operation.

00-00 Present Fault Code

Default: Read only

Settings 0–65535

00-01 Speed Command

Default: Read only

Settings 0–65535
5: Emergency stop, using Pr.04-29 (Inspection Deceleration)
6: Braking force test
7: EPS runs
8: Braking force test ended
10: Inspection stops, using Pr.04-29 (Inspection Deceleration)
15: Executes DC braking, stopping at zero speed control
20: Runs multi-step speed using Pr.04-11 (Re-leveling Deceleration) deceleration to zero speed
25: Pr.04-00 (Speed at Emergency)
30: Pr.04-01 (Inspection Speed)
40: Pr.04-05 (Leveling Speed)
45: Pr.04-04 (Non-leveling Speed)
55: Pr.04-03 (Hoistway Auto-tuning Speed)
60: Pr.04-02 (Speed at Returning to Two Ends of the Hoistway)
65: Speed at direct docking
66: Direct docking enables zero speed
70: Does not output
75: Drive Pr.01-22 (JOG Frequency) setting value is being modified
76: Auto-tunes
77: No speed command
80: No speed command exceeds 0.1 second or STO is not ON

🕮 Sets the speed command.

00-02 HVX1–HVX5 Status

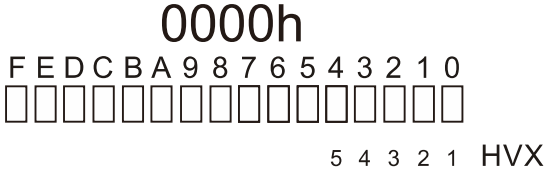
Default: Read only

Settings 0000h–FFFFh

🕮 The high-voltage input terminal status for IED-S.

🕮 LED display

The display for digital keypad KPC-CC01



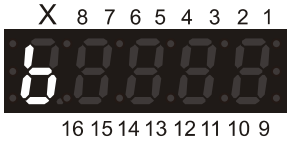
00-03 X1–X16 Status

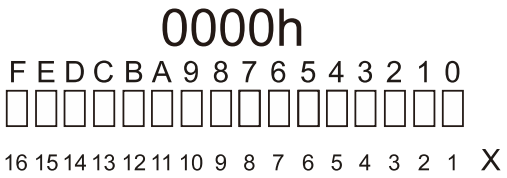
Default: Read only

Settings 0000h–FFFFh

🕮 The low-voltage input terminal status for IED-S.

📖 LED display The display for digital keypad KPC-CC01





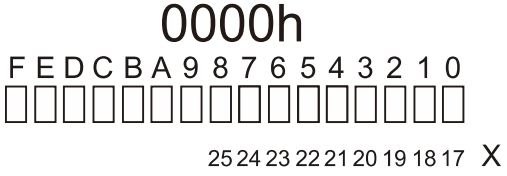
00-04 X17–X25 Status

Default: Read only

Settings 0000h–FFFFh

📖 The low-voltage input terminal status for IED-S.

📖 LED display The display for digital keypad KPC-CC01



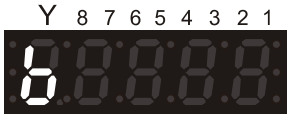
00-05 Y1–Y8 Status

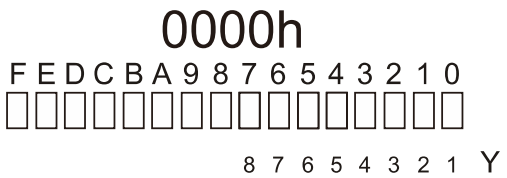
Default: Read only

Settings 0000h–FFFFh

📖 The low-voltage output terminal status for IED-S.

📖 LED display The display for digital keypad KPC-CC01





00-07 Elevator Speed Detection

Default: Read only

Settings 0.000–65.535

📖 Sets the running speed for the elevator (Unit: m/s).

00-08 Elevator Mode 0

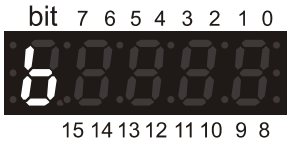
Default: Read only

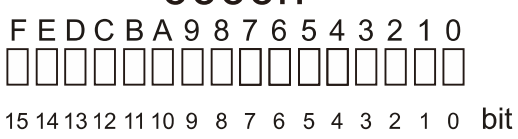
Settings 0000h–FFFFh
bit 0: Manual (EIS Emergency Operation)
bit 1: Manual (INSCP inspection)
bit 2: Manual (MATPT inspection)
bit 3: Manual (TCI inspection)
bit 4: Manual (INSIC inspection)
bit 5: Manual (DBP Doorlock bypass)
bit 6: Auto-resets at flood
bit 7: Does not auto-rest at flood
bit 8: When using emergency power supply (UPS), the elevator runs to designated floor and stops.
bit 9: UPS safety landing
bit 10: EPS safety landing
bit 11: Car returns to the main landing at fire emergency

bit 12: Car returns to the secondary landing at fire emergency
bit 13: Minor earthquake (Seismic P-wave)
bit 14: Small earthquake (Seismic S-wave)
bit 15: Severe earthquake

📖 Sets the elevator's mode.

📖 LED display The display for digital keypad KPC-CC01





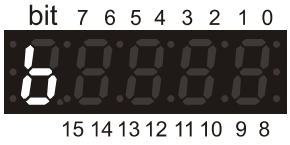
00-09 Elevator Mode 1

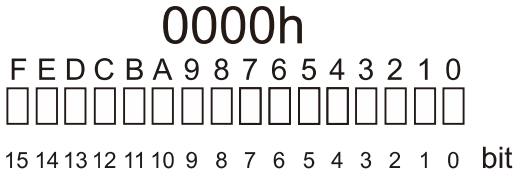
Default: Read only

Settings 0000h–FFFFh
bit 0: Fault occurs
bit 1: Warning occurs
bit 2: FSD (Forced Stop Deceleration) mode
bit 3: Normal mode
bit 4: Evacuation mode
bit 5: Inspection mode
bit 6: Hoistway Auto-tuning
bit 7: Car returns to the main landing at fire emergency
bit 8: First class fireman
bit 9: Second class fireman
bit 10: Elevator lock mode
bit 11: UPS (Uninterruptible Power Supply) mode
bit 12: Earthquake mode
bit 13: Flood mode
bit 14: Overload mode
bit 15: Full-load mode

📖 Sets the elevator's mode.

📖 LED display The display for digital keypad KPC-CC01





00-10 Elevator Mode 2

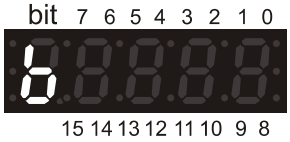
Default: Read only

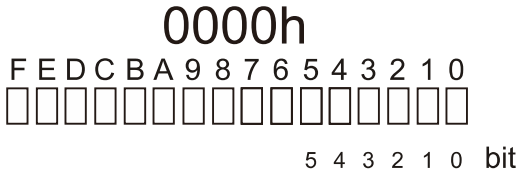
Settings 0000h–FFFFh
bit 0: VIP mode
bit 1: Attendant mode
bit 2: Auto-leveling after power-on again
bit 3: Car returns to the main landing for standby while idling
bit 4: Group control upward peak running
bit 5: Motor auto-tuning
bit 6: Group control downward peak running
bit 7: Automatic test for braking force once per day
bit 8: Group control peak running at random floor
bit 9: Set not to group control mode. Activate MI=161 ISS (Independent Operation Switch) or set Pr.03-04 (Number of Group Control) to 0 can set not to group control mode.

bit 10: Security floor
bit 11: Mode of stop at each floor
bit 12: Car call password
bit 13: Medical recall running
bit 14: Goods only
bit 15: Group control running

📖 Sets the elevator's mode.

📖 LED display The display for digital keypad KPC-CC01





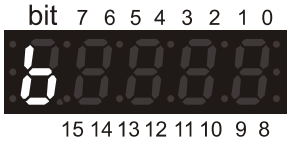
00-11 Font Door Status

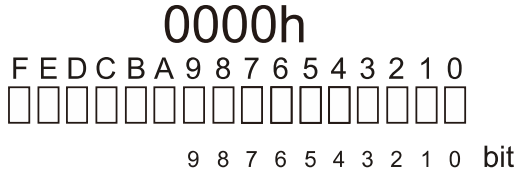
Default: Read only

Settings 0000h–FFFFh
bit 0: Front door opens
bit 1: Front door closes
bit 2: Front door is ready to open
bit 3: Front door closes, MO = 102 (CL1)
bit 4: Front door reaches its open position, MI = 100 (OLT1)
bit 5: Front door reaches its closed position, MI = 102 (CLT1)
bit 6: Front door light sensor, MI = 104 (EDP1)
bit 7: Front door safety edge, MI = 106 (SE1)
bit 8: Front door over-torque, MI = 119 (TOEX1)
bit 9: Front door open button, MI = 151 (DOB1)
bit 10: Front door open auxiliary button, MI = 171 (DOB1B)
bit 11: Front door open extended button, MI = 152 (DOBH1)
bit 12: Front door open auxiliary extended button, MI = 172 (DOBH1B)
bit 13: Front door open extended button lamp, MO = 152 (DOBHL1), MO = 172 (DOBHL1B)
bit 14: Front door at this floor can be opened, Pr.05-02–05-05
bit 15: With front door, MI = 115 (HFD)

📖 Sets the status for the front door.

📖 LED display The display for digital keypad KPC-CC01





00-12 Rear Door Status

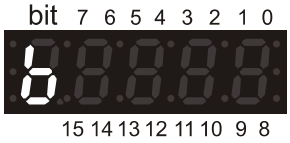
Default: Read only

Settings 0000h–FFFFh
bit 0: Rear door opens
bit 1: Rear door closes
bit 2: Rear door is ready to open
bit 3: Rear door closes, MO = 103 (CL2)
bit 4: Rear door reaches its open position, MI = 101 (OLT2)
bit 5: Rear door reaches its closed position, MI = 103 (CLT2)
bit 6: Rear door light sensor, MI = 105 (EDP2)
bit 7: Rear door safety edge, MI = 107 (SE2)
bit 8: Rear door over-torque, MI = 120 (TOEX2)

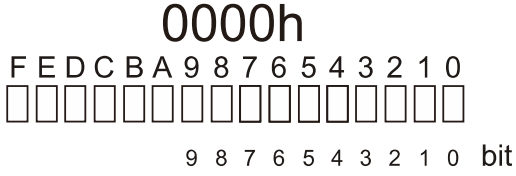
bit 9: Rear door open button, MI = 168 (DOB2)
bit 10: Rear door open auxiliary button, MI = 174 (DOB2B)
bit 11: Rear door open extended button, MI = 169 (DOBH2)
bit 12: Rear door open auxiliary extended button, MI = 175 (DOBH2B)
bit 13: Rear door open extended button lamp, MO = 169 (DOBHL2), MO = 175 (DOBHL2B)
bit 14: Rear door at this floor can be opened, Pr.05-06–05-09
bit 15: With rear door, MI = 116 (HBD)

🕮 Sets the status for the rear door.

🕮 LED display



The display for digital keypad KPC-CC01



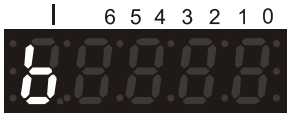
00-13 OCB Input Status

Default: Read only

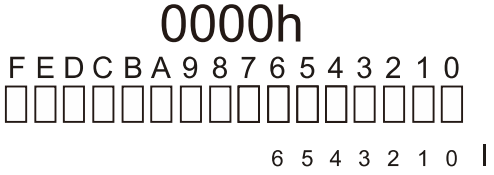
Settings 0000h–FFFFh

🕮 The input status for the cartop board (OCB).

🕮 LED display



The display for digital keypad KPC-CC01



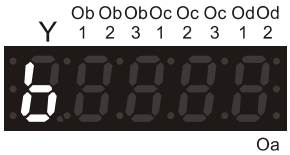
00-14 OCB Output Status

Default: Read only

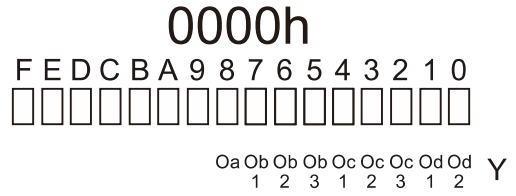
Settings 0000h–FFFFh

🕮 The output status for the cartop board (OCB).

🕮 LED display



The display for digital keypad KPC-CC01



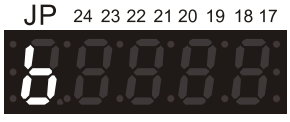
00-15 ICB_1 Input

Default: Read only

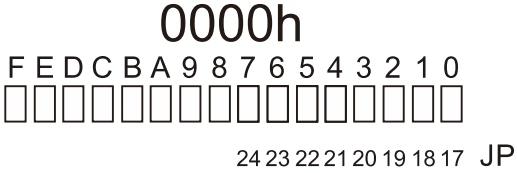
Settings 0000h–FFFFh

🕮 The input status for the car command board at the front door (ICB_1).

🕮 LED display



The display for digital keypad KPC-CC01



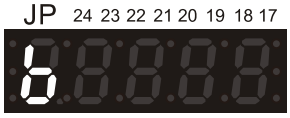
00-16 ICB_1 Output

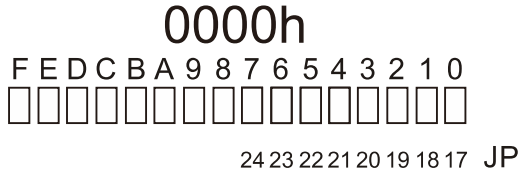
Default: Read only

Settings 0000h–FFFFh

📖 The output status for the car command board at the front door (ICB_1).

📖 LED display The display for digital keypad KPC-CC01





00-17 Current Floor

Default: Read only

Settings 0–65535S

📖 Sets the current floor of the host controller. Make sure Pr.00-17 is the same as the current floor for the drive (Pr.13-18). Otherwise, fault code F144 occurs.

00-18 Target Floor

Default: Read only

Settings 0–65535S

📖 Set the floor that the elevator runs toward.

00-19 Furthest Floor

Default: Read only

Settings 0–65535S

📖 Sets the floor that the elevator finally arrives in its current running direction.

00-20 Current Position (H)

Default: Read only

Settings -32768–32767 m

📖 The elevator’s current high position.

00-21 Current Position (L)

Default: Read only

Settings 3276.8–3276.7 mm

📖 The elevator’s current low position.

00-22 Number of Times for Running (Ten Thousand Times)

Default: 0

Settings 0–65535

📖 Accumulated number of times for the elevator’s running (Unit: ten thousand).

00-23 Number of Times for Running (Times)

Default: 0

Settings 0–9999

📖 Accumulated number of times for the elevator’s running (Unit: times).

00-24 Accumulated Running Time (Hour)

Default: 0

Settings 0–65535

📖 Accumulated running time for the elevator (Unit: hour).

00-25 Accumulated Running Time (Sec.)

Default: 0.0

Settings 0.0–3599.9

📖 Accumulated running time for the elevator (Unit: 0.1 second).

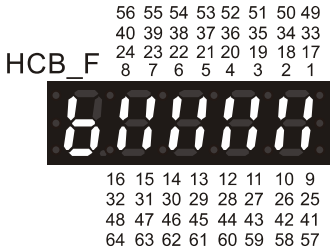
00-27 HCB_F Error 16–01
00-28 HCB_F Error 32–17
00-29 HCB_F Error 48–33
00-30 HCB_F Error 64–49

Default: Read only

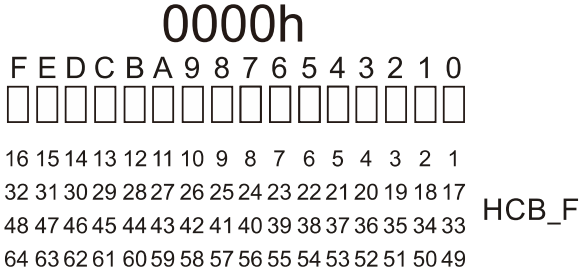
Settings 0000h–FFFFh

📖 Front door hall call error for 1–64F (Hall call: HCB; F: Front door)

📖 LED display



The display for digital keypad KPC-CC01



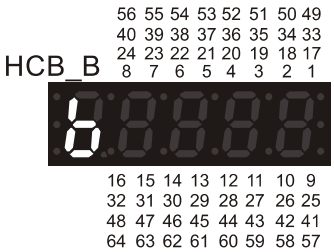
00-31 HCB_B Error 16–01
00-32 HCB_B Error 32–17
00-33 HCB_B Error 48–33
00-34 HCB_B Error 64–49

Default: Read only

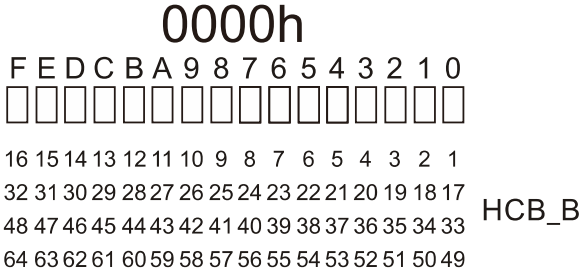
Settings 0000h–FFFFh

📖 Rear door hall call error for 1–64F (Hall call: HCB; B: Rear door)

📖 LED display



The display for digital keypad KPC-CC01



00-35 Nearest Stop Floor

Default: Read only

Settings 0–65535S

📖 The floor at which the elevator can normally decelerate to stop with its current running speed.

00-36 Accumulated Time for Power Transmission (Day)

Default: 0

Settings 0–65535

📖 Accumulated time for the elevator's power transmission (Unit: day).

00-37 Accumulated Time for Power Transmission (Min.)

Default: 0

Settings 0–1439

🕮 Accumulated time for the elevator's power transmission (Unit: minute).

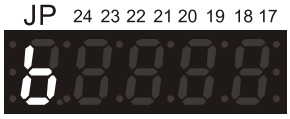
00-38 ICB_2 Input

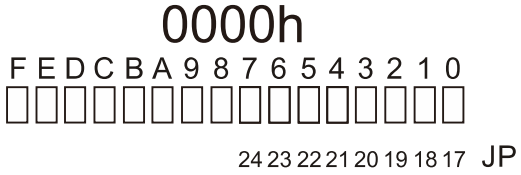
Default: Read only

Settings 0000h–FFFFh

🕮 The input status for the car command board at the front door (ICB_2).

🕮 LED display The display for digital keypad KPC-CC01





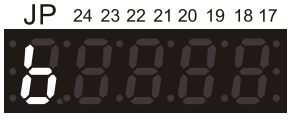
00-39 ICB_2 Output

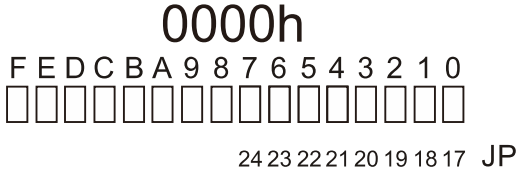
Default: Read only

Settings 0000h–FFFFh

🕮 The output status for the car command board at the front door (ICB_2).

🕮 LED display The display for digital keypad KPC-CC01





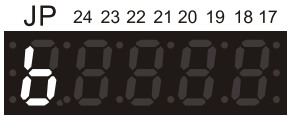
00-40 ICB_3 Input

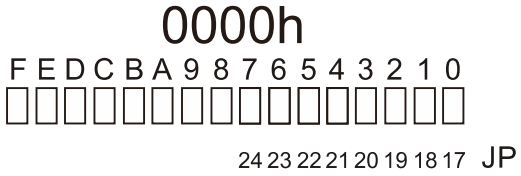
Default: Read only

Settings 0000h–FFFFh

🕮 The input status for the car command board at the front door (ICB_3).

🕮 LED display The display for digital keypad KPC-CC01





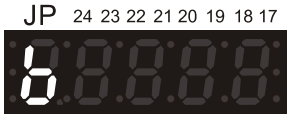
00-41 ICB_3 Output

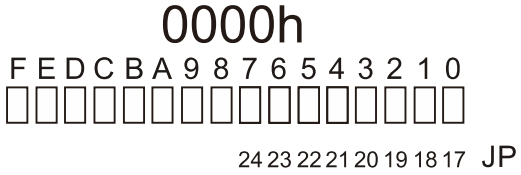
Default: Read only

Settings 0000h–FFFFh

🕮 The output status for the car command board (ICB_3).

🕮 LED display The display for digital keypad KPC-CC01





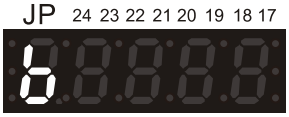
00-42 ICB_4 Input

Default: Read only

Settings 0000h–FFFFh

📖 The input status for the car command board (ICB_4).

📖 LED display The display for digital keypad KPC-CC01



0000h

F E D C B A 9 8 7 6 5 4 3 2 1 0

24 23 22 21 20 19 18 17 JP

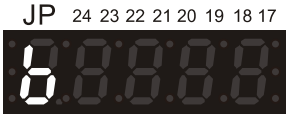
00-43 ICB_4 Output

Default: Read only

Settings 0000h–FFFFh

📖 The output status for the car command board (ICB_4).

📖 LED display The display for digital keypad KPC-CC01



0000h

F E D C B A 9 8 7 6 5 4 3 2 1 0

24 23 22 21 20 19 18 17 JP

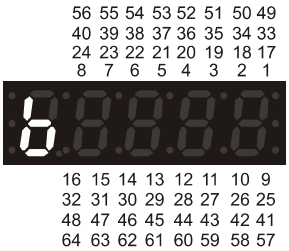
00-44 J4-12 HCB_F 16–01
00-45 J4-12 HCB_F 32–17
00-46 J4-12 HCB_F 48–33
00-47 J4-12 HCB_F 64–49

Default: Read only

Settings 0000h–FFFFh

📖 Displays the current status of PIN1 and PIN2 for J4 connector (input) is ON or OFF on front door hall call board.

📖 LED display The display for digital keypad KPC-CC01



0000h

F E D C B A 9 8 7 6 5 4 3 2 1 0

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33

64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49

00-48 J4-12 HCB_B 16–01
00-49 J4-12 HCB_B 32–17
00-50 J4-12 HCB_B 48–33
00-51 J4-12 HCB_B 64–49

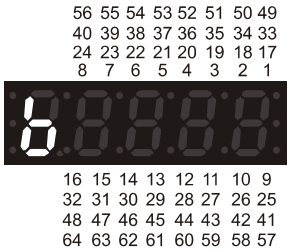
Default: Read only

Settings 0000h–FFFFh

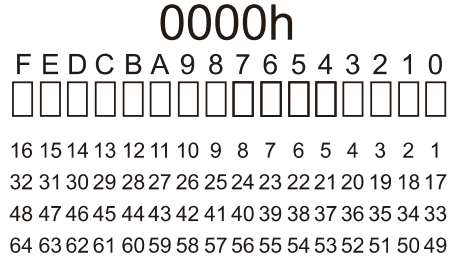
📖 Displays the current status of PIN1 and PIN2 for J4 connector (input) is ON or OFF on rear door

hall call board.

📖 LED display



The display for digital keypad KPC-CC01



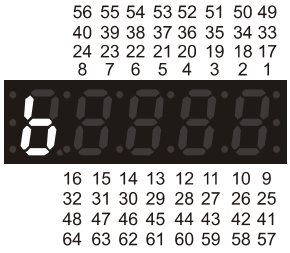
00-52	J4-34 HCB_F 16–01
00-53	J4-34 HCB_F 32–17
00-54	J4-34 HCB_F 48–33
00-55	J4-34 HCB_F 64–49

Default: Read only

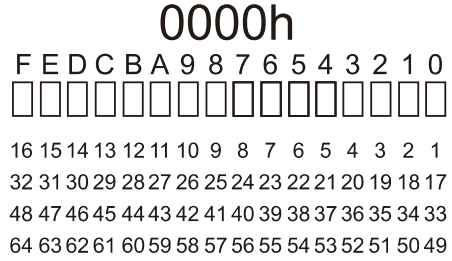
Settings 0000h–FFFFh

📖 Displays the current status of PIN3 and PIN4 for J4 connector (input) is ON or OFF on front door hall call board.

📖 LED display



The display for digital keypad KPC-CC01



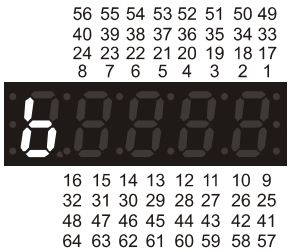
00-56	J4-34 HCB_B 16–01
00-57	J4-34 HCB_B 32–17
00-58	J4-34 HCB_B 48–33
00-59	J4-34 HCB_B 64–49

Default: Read only

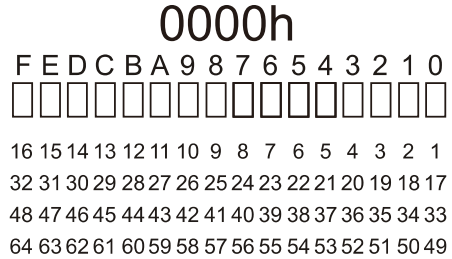
Settings 0000h–FFFFh

📖 Displays the current status of PIN3 and PIN4 for J4 connector (input) is ON or OFF on rear door hall call board.

📖 LED display



The display for digital keypad KPC-CC01

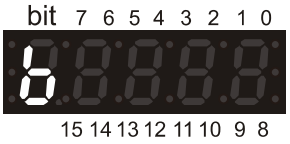


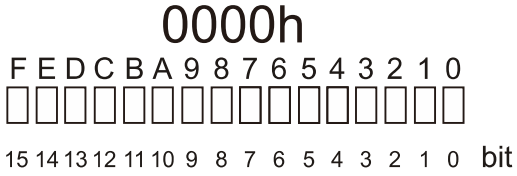
00-61 Group Control of Each Elevator's Connection Status

Default: Read only

Settings 0000h–FFFFh
bit 0: Station number 0 is connected or not
bit 1: Station number 1 is connected or not
bit 2: Station number 2 is connected or not
bit 3: Station number 3 is connected or not
bit 4: Station number 4 is connected or not
bit 5: Station number 5 is connected or not
bit 6: Station number 6 is connected or not
bit 7: Station number 7 is connected or not
bit 8: Station number 0 is main group control or not
bit 9: Station number 1 is main group control or not
bit 10: Station number 2 is main group control or not
bit 11: Station number 3 is main group control or not
bit 12: Station number 4 is main group control or not
bit 13: Station number 5 is main group control or not
bit 14: Station number 6 is main group control or not
bit 15: Station number 7 is main group control or not

📖 LED display The display for digital keypad KPC-CC01



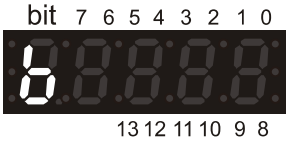


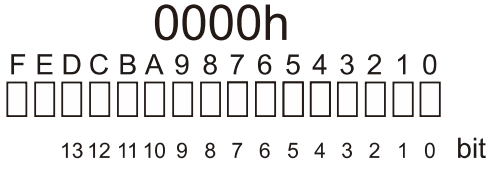
00-62 Elevator Running Direction

Default: Read only

Settings 0000h–FFFFh
bit 0: Host controller (controller) runs upward
bit 1: Host controller (controller) runs downward
bit 2: Host controller (controller) makes drive run upward
bit 3: Host controller (controller) makes drive run downward
bit 4: Drive responds receiving upward commands
bit 5: Drive responds receiving downward commands
bit 6: Upward high-speed enabled command
bit 7: Downward high-speed enabled command
bit 8: Runs upward after stop
bit 9: Runs downward after stop
bit 10: Hall call displays an upward arrow
bit 11: Hall call displays a downward arrow
bit 12: Car call displays a upward arrow
bit 13: Car call displays a downward arrow

📖 LED display The display for digital keypad KPC-CC01





00-63 Hoistway Auto-tuning Action Status

Default: 0

Settings 0–65535
0: Not in INSCP (control panel inspection switch) or EIS (electrical operation) mode

0: Not in INSCP (control panel inspection switch) or EIS (electrical operation) mode
2: Still in inspection mode after setting Pr.03-00 (Hoistway Auto-tuning) = 1
3: Switch inspection switch to auto
10: Door does not close
11: Elevator starts to run downward
12: Elevator runs downward, first one downward forced deceleration (DLS1) is ON
13: Elevator runs downward, first one downward forced deceleration (DLS1) is ON
14: Elevator runs downward, first one downward forced deceleration (DLS1) and leveling sensor are ON
15: Lower leveling sensor (DZD) is ON, door zone signal (SX1) and upper leveling sensor (DZU) are OFF
16: Lower leveling sensor (DZD) and door zone signal (SX1) are ON, upper leveling sensor (DZU) is OFF
17: Lower leveling sensor (DZD), door zone signal (SX1), and upper leveling sensor (DZU) are all ON
18: Lower leveling sensor (DZD) is OFF, door zone signal (SX1) and upper leveling sensor (DZU) are ON
19: Lower leveling sensor (DZD) and door zone signal (SX1) are OFF, upper leveling sensor (DZU) is ON
20: Lower leveling sensor (DZD), door zone signal (SX1), and upper leveling sensor (DZU) are all OFF
21: Lower limit switch (LSD) is ON
24: Lower limit switch (LSD) is ON
25: Lower limit switch (LSD) is ON for more than 2 seconds
26: Elevator starts to run upward
27: Elevator runs upwards, first one upward forced deceleration (ULS1) is ON
28: Elevator runs upwards, first one upward forced deceleration (ULS1) is ON
29: Elevator runs upward, first one upward forced deceleration (ULS1) and leveling sensor are ON
30: Elevator runs upward, first one upward forced deceleration (ULS1) and leveling sensor are ON
31: Upper limit switch (LSU) is ON
32: Upper limit switch (LSU) is ON
33: Upper limit switch (LSU) is ON for more than 1 second
34: Upper limit switch (LSU) is ON for more than 1.5 seconds
35: Upper limit switch (LSU) is ON for more than 2 seconds
36: Upper limit switch (LSU) is ON for more than 2 seconds
37: Elevator stops at leveling (level) for more than 2 seconds
38: Elevator stops at leveling (level) for more than 2 seconds
39: Hoistway auto-tuning ended
200 (Error): Set Pr.03-00 = 1 when error occurs
201 (Error): Set Pr.03-00 = 1 when Pr.03-01 = 1 (Highest Physical Floor)
202 (Error): Change inspection switch to manual during hoistway auto-tuning process
203 (Error): Press inspection upward or downward button during hoistway auto-tuning process
204 (Error): Lower limit switch (LSD) is installed too low. Lower limit switch (LSD) activates after upper leveling sensor (DZU) is OFF
205 (Error): Lower limit switch (LSD) is installed too low. Lower limit switch (LSD) activates after upper leveling sensor (DZU) is OFF
206 (Error): Lower limit switch (LSD) is ON, first one downward forced deceleration (DLS1) is not ON
207 (Error): Upper limit switch (LSU) is ON, lower leveling sensor (DZD) is not ON
208 (Error): Upper limit switch (LSU) is ON, first one upward forced deceleration (ULS1) is not ON

209 (Error): Error occurs during hoistway auto-tuning process
210 (Error): Pr.03-00 = 0 during hoistway auto-tuning process

📖 The current tuning status and errors occurred during hoistway auto-tuning process

00-97 IED-S Program Version

Default: Read only

Settings 0.00–655.35

00-98 IED-S DateCode

Default: Read only

Settings 0–65535

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Chapter 12 Descriptions of Parameter Settings

01 Fault Records

↗: You can set this parameter during operation.

01-00	Latest Fault Record
01-04	2nd Fault Record
01-08	3rd Fault Record
01-12	4th Fault Record
01-16	5th Fault Record
01-20	6th Fault Record
01-24	7th Fault Record
01-28	8th Fault Record
01-32	9th Fault Record
01-36	10th Fault Record
01-40	11th Fault Record
01-44	12th Fault Record
01-48	13th Fault Record
01-52	14th Fault Record
01-56	15th Fault Record
01-60	16th Fault Record
01-64	17th Fault Record
01-68	18th Fault Record

Default: Read only

Settings
111: cF2 EEPROM error
112: Floor auto-tuning is not finished
113: Drive is not ready
114: BK1 is not active
115: BK2 is not active
116: SWNC ON detection error
117: Drive 02 communication time-out
118: Drive 04 communication time-out
119: SFNC ON error
120: SFNC OFF error
121: Mismatched highest floor
122: Door zone MI setting error
123: FL1NC ON error
124: FL1NC OFF error
125: FL2NC ON error
126: FL2NC OFF error
127: GSNC ON error
128: GSNC OFF error
129: DSNC ON error
130: DSNC OFF error
131: BUNC ON error
132: BUNC OFF error
133: Door zone signal OFF error

134: Door zone signal ON error
135: Load exceeds 150%
136: FX (MPSCC) feedback ON error
137: Safety hatch high voltage error
138: Upward operation at stop exceeds
139: Downward operation at stop exceeds
140: Motor temperature error
141: Exceeds the constant running time
142: Governor error
143: Exceeds specified floor running time
144: Mismatched current floor
145: The number of times for drive error occurred has reached five
146: Drive communication time-out
147: Communication between IED-S and cartop board
148: BY1NC ON detection error
149: BY2NC ON detection error
150: Unqualified braking force test
151: Operation contactor sticking
152: Runs with door open
153: Safety hatch low voltage error
154: Runs in an opposite direction
155: BK3 is not active
156: BY3NC ON detection error
157: Traveling cable insertion car communication
158: MPSCC feedback OFF error
159: SX2 door unlock OFF detection error
160: STO relay sticking
161: STO OFF error
162: BK1 is not reset
163: BK2 is not reset
164: BK3 is not reset
165: BK1 contactor sticking
166: BK2 contactor sticking
167: BK3 contactor sticking
168: Upward operation exceeds
169: Downward operation exceeds
170: SY door unlock output sticking
172 :Upward limit action
173: Upward forced deceleration 1
174: Upward forced deceleration 2
175: Upward forced deceleration 3
176: Downward limit action
177: Downward forced deceleration 1
178: Downward forced deceleration 2
179: Downward forced deceleration 3
180: Not at the bottom floor as displayed
181: Not at the top floor as displayed
182: At the bottom floor but not as displayed
183: At the top floor but not as displayed
184: Speed is slower than 0.01 m/s
185: All inputs are OFF
186: Upward forced deceleration 4
187: Downward forced deceleration 4
188: Starting signal abnormally disappears
189: Upward target error in direct docking
190: Downward target error in direct docking
191: INV DRV DIR error
192: INV VFD DIR error
193: VFD DRV DIR error

194: ULS1 over-speed
195: ULS2 over-speed
196: ULS3 over-speed
197: ULS4 over-speed
198: DLS4 over-speed
199: DLS3 over-speed
200: DLS2 over-speed
201: DLS1 over-speed
202: Target error 1
203: Target error 2
204: Target error 3
205: Target error 4
221: GSH (Gate safety hatch high voltage) is OFF
222: GSH (Gate safety hatch high voltage) contact sticking
223: DSH (Layer door safety hatch high voltage) is OFF
224: DSH (Layer door safety hatch high voltage) contact sticking
225: Front door open time exceeds
226: Front door close time exceeds
227: Rear door open time exceeds
228: Rear door close time exceeds
229: Front door close times exceed
230: Rear door close times exceed
231: GSL (Gate safety hatch low voltage) is OFF
232: GSL (Gate safety hatch low voltage) contact sticking
233: DSL (Layer door safety hatch low voltage) is OFF
234: DSL (Layer door safety hatch low voltage) contact sticking
235: Discharge resistance temperature is too high
236: Watchdog action
1109: Braking force, Under test
1110: Inspection, Unqualified, Braking force
1111: Leveling, Unqualified, Braking force
1112: Braking force, Test, Qualified
1113: Fault, Unqualified, Braking force
1114: Button, Unqualified, Braking force
1115: Wait, Braking force test
1116: Recall, Braking force test
1117: Inspection, Unqualified, Door unlock board
1118: Doorlock, Unqualified, Door unlock board
1119: Door unlock board, Test, Overtime
1120: Door unlock board, Under test
1127: Highest floor warning
1128: Elevator lock main landing warning
1129: Elevator main landing warning
1130: Main landing at fire emergency warning
1132: Fireman class II invalid
1133: Motor temperature at front door overheats
1134: Motor temperature at rear door overheats
1135: CAR+/CAR- time-out
1136: Running time-out during auto-tuning
1137: Auto-tuning time-out
1138: Coin cell battery is at low voltage

📖 If you see code number from 1001 to 1100 display on the keypad, they are the drive's warning codes. For more information on these warning codes, see Chapter 13 Warning Codes in the VFD-ED user manual. Ignore the thousands digits when referring to the VFD-ED user manual.

📖 If you see code number from E001 to E100 display on the keypad, they are the drive's fault codes. For more information on these fault codes, see Chapter 14 Fault Codes in the VFD-ED user manual.

01-01	Latest Fault Record Year/Month
01-02	Latest Fault Record Day/Hour
01-03	Latest Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-05	2nd Fault Record Year/Month
01-06	2nd Fault Record Day/Hour
01-07	2nd Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-09	3th Fault Record Year/Month
01-10	3thFault Record Day/Hour
01-11	3th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-13	4th Fault Record Year/Month
01-14	4th Fault Record Day/Hour
01-15	4th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-17	5th Fault Record Year/Month
01-18	5th Fault Record Day/Hour
01-19	5th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-21	6th Fault Record Year/Month
01-22	6th Fault Record Day/Hour
01-23	6th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-25	7th Fault Record Year/Month
01-26	7th Fault Record Day/Hour
01-27	7th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-29	8th Fault Record Year/Month
01-30	8th Fault Record Day/Hour
01-31	8th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-33 9th Fault Record Year/Month
01-34 9th Fault Record Day/Hour
01-35 9th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-37 10th Fault Record Year/Month
01-38 10th Fault Record Day/Hour
01-39 10th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-41 11th Fault Record Year/Month
01-42 11th Fault Record Day/Hour
01-43 11th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-45 12th Fault Record Year/Month
01-46 12th Fault Record Day/Hour
01-47 12th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-49 13th Fault Record Year/Month
01-50 13th Fault Record Day/Hour
01-51 13th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-53 14th Fault Record Year/Month
01-54 14th Fault Record Day/Hour
01-55 14th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-57 15th Fault Record Year/Month
01-58 15th Fault Record Day/Hour
01-59 15th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-61 16th Fault Record Year/Month
01-62 16th Fault Record Day/Hour
01-63 16th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-65 17th Fault Record Year/Month
01-66 17th Fault Record Day/Hour
01-67 17th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-69 18th Fault Record Year/Month
01-70 18th Fault Record Day/Hour
01-71 18th Fault Record Minute/Second

Default: Read only

Settings 0–65535

01-72 Clear All Fault Records

Default: 0

Settings 0–1

📖 Clear all fault records in Pr.01-00–Pr.01-71

01-73 Fault Record Index

Default: 1

Settings 1–18

📖 Indexes fault records. For example, setting value 1 indexes the latest fault record, and so on.

01-74 Fault Record (Index)

Default: Read only

Settings 0–65535

📖 Displays the fault record that Pr.01-73 indexes.

01-75 Furthest Floor (Index)

Default: Read only

Settings 0–65535

📖 Records Pr.00-19 (furthest floor) when the fault occurs according to Pr.01-73 index.

01-76 Nearest Stop Floor (Index)

Default: Read only

Settings 0–65535

📖 Records Pr.00-35 (nearest stop floor) when the fault occurs according to Pr.01-73 index.

01-77 Elevator Running Direction (Index)

Default: Read only

Settings 0–65535

📖 Records Pr.00-62 (elevator running direction) when the fault occurs according to Pr.01-73 index.

01-78 Speed Command (Index)

Default: Read only

Settings 0–65535

📖 Records Pr.00-01 (speed command) when the fault occurs according to Pr.01-73 index.

01-79 Speed Feedback (Index)

Default: Read only

Settings 0.000–65.535

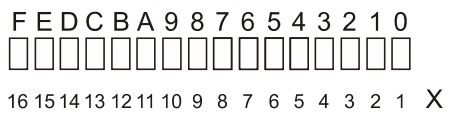
📖 Records Pr.00-07 (elevator speed) when the fault occurs according to Pr.01-73 index.

01-80 X1–X16 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the status of IED-S low-voltage input terminals when the fault occurs according to Pr.01-73 index.

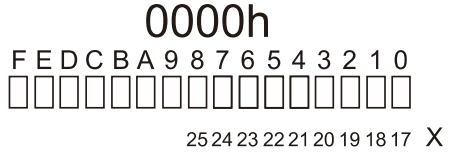


01-81 X17–X25 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the status of IED-S low-voltage input terminals when the fault occurs according to Pr.01-73 index.

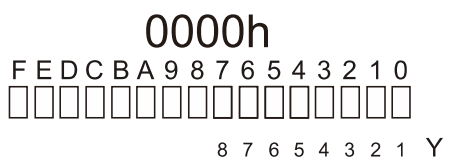


01-82 Y1–Y8 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the status of IED-S low-voltage output terminals when the fault occurs according to Pr.01-73 index.



01-83 Elevator Mode 0 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-08 (elevator mode 0) when the fault occurs according to Pr.01-73 index.

01-84 Elevator Mode 1 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-09 (elevator mode 1) when the fault occurs according to Pr.01-73 index.

01-85 Elevator Mode 2 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-10 (elevator mode 2) when the fault occurs according to Pr.01-73 index.

01-86 Front Door Status (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-11 (front door status) when the fault occurs according to Pr.01-73 index.

01-87 Rear Door Status (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-12 (rear door status) when the fault occurs according to Pr.01-73 index.

01-88 OCB Input (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the cartop board (OCB) input status when the fault occurs according to Pr.01-73 index.

01-89 OCB Output (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the cartop board (OCB) output status when the fault occurs according to Pr.01-73 index.

01-90 ICB_1 Input (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the front door car command board (ICB_1) input status when the fault occurs according to Pr.01-73 index.

01-91 ICB_1 Output (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records the front door car command board (ICB_1) output status when the fault occurs according to Pr.01-73 index.

01-92 Current Floor (Index)

Default: Read only

Settings 0–65535

📖 Records the current floor when the fault occurs according to Pr.01-73 index.

01-93 Target Floor (Index)

Default: Read only

Settings 0–65535

📖 Records the target floor when the fault occurs according to Pr.01-73 index.

01-94 Current Position (m) (Index)

Default: Read only

Settings -32768–32767 m

📖 Records the elevator height position (unit: m) when the fault occurs according to Pr.01-73 index.

01-95 Current Position (mm) (Index)

Default: Read only

Settings -3276.8–3276.7 mm

📖 Records the elevator height position (unit: mm) when the fault occurs according to Pr.01-73 index.

01-96 HVX1–HVX5 (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-01 (HVX1–HVX5 status) when the fault occurs according to Pr.01-73 index.

01-97 ICB_2 Input (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-38 (ICB_2 input) when the fault occurs according to Pr.01-73 index.

01-98 ICB_3 Input (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records Pr.00-40 (ICB_3 input) when the fault occurs according to Pr.01-73 index.

01-99 Running Time at This Time (Index)

Default: Read only

Settings 0000h–FFFFh

📖 Records time that elevator takes from starting to error occurred when the fault occurs according to Pr.01-73 index.

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Chapter 12 Descriptions of Parameter Settings

02 System Configuration

↗: You can set this parameter during operation.

↗ 02-00 Car Call Test

Default: 1

Settings 0–164

📖 Uses the digital keypad as the car command board to call the car

↗ 02-01 Upward Hall Call Test

Default: 1

Settings 0–164

📖 Uses the digital keypad as the hall call display board to call the car upward.

↗ 02-02 Downward Hall Call Test

Default: 1

Settings 0–164

📖 Uses the digital keypad as the hall call display board to call the car downward.

02-03 Auto-test Method

Default: 0

Settings 0–3
0: No test
1: Test for the top and bottom floor
2: Test for each floor
3: Random call

📖 0: test one time when the car runs to the top floor or one time to the bottom floor

📖 2: If the car does not stop at the bottom floor, the car runs downward and stops at each floor until arriving the bottom floor, which is regarded as test for one time. If the car stops at the bottom floor, the car runs upward and stops at each floor until arriving the top floor, which is also regarded as test for one time.

02-04 Number of Times for Auto-test

Default: 0

Settings 0–65535
65535: Continues to random test

📖 Whenever the elevator is activated, the number of times for auto-test counts as one time. When the number of times for auto-test is 0, the test is finished.

02-05 Interval for Auto-test

Default: 30

Settings 0–3600

📖 The interval starts to count when the elevator stops. Once the interval counts to this parameter setting value, the elevator automatically executes the auto-test.

02-06 Forced Door Opening/Closing Test

Default: 0

Settings 0–4
0: Normal mode

1: Front door is forced to open
2: Rear door is forced to open
3: Front and rear door are forced to open
4: Front and rear door are forced to close

- Valid only when in inspection mode.
- When not in manual mode, Pr.02-06 is automatically set to 0, and the door is forced to open both in leveling or non-leveling area.

02-07 Car/Hall Call Disabled

Default: 0

Settings 0–5
0: Normal
1: Hall call is disabled
2: Hall call is disabled, and car call cannot register any new call. Pr.02-00 (Car Call Test) is valid.
3: Car call and hall call are both disabled
4: Car call and hall call are both disabled, and door opening is also disabled.
5: Hall call is disabled, car call cannot register any new call, and the door opening is disabled. Pr.02-00 (Car Call Test) is valid.

02-08 Parameter Reset

Default: 0

Settings 0–65535
101: Single-door + Normal + First one forced deceleration
102: Single -door + Normal + Second one forced deceleration
111: Single -door + Disability + First one forced deceleration
112: Single -door + Disability + Second one forced deceleration
201: Two-door + Normal + First one forced deceleration
202: Two-door + Normal + Second one forced deceleration
211: Two-door + Disability + First one forced deceleration
212: Two-door + Disability + Second one forced deceleration
300: Specifically defined single IED-S 1
301: Specifically defined control cabinet 1

Pr.	Parameter Name	Pr.02-08 Setting Value									
		101	102	111	112	201	202	211	212	300	301
03-51	ICB Mode	0	0	1	1	2	2	3	3	0	0
05-00	Number of Doors	1	1	1	1	2	2	2	2	1	1
05-06	DSB 16–1	0000H	0000H	0000H	0000H	FFFFH	FFFFH	FFFFH	FFFFH	0000H	0000H
05-07	DSB 32–17	0000H	0000H	0000H	0000H	FFFFH	FFFFH	FFFFH	FFFFH	0000H	0000H
05-08	DSB 48–33	0000H	0000H	0000H	0000H	FFFFH	FFFFH	FFFFH	FFFFH	0000H	0000H
05-09	DSB 64–49	0000H	0000H	0000H	0000H	FFFFH	FFFFH	FFFFH	FFFFH	0000H	0000H
06-01	X1	1	1	1	1	1	1	1	1	1	1
06-02	X2	61	61	61	61	61	61	61	61	61	61
06-03	X3	2	2	2	2	2	2	2	2	2	2
06-04	X4	62	62	62	62	62	62	62	62	16	1056
06-05	X5	12	12	12	12	12	12	12	12	19	0
06-06	X6	13	13	13	13	13	13	13	13	1026	1026
06-07	X7	11	11	11	11	11	11	11	11	1027	1027

Pr.	Parameter Name	Pr.02-08 Setting Value									
		101	102	111	112	201	202	211	212	300	301
06-08	X8	1007	1007	1007	1007	1007	1007	1007	1007	62	63
06-09	X9	10	10	10	10	10	10	10	10	1007	1007
06-10	X10	14	14	14	14	14	14	14	14	8	8
06-11	X11	1056	1056	1056	1056	1056	1056	1056	1056	9	9
06-12	X12	25	25	25	25	25	25	25	25	1033	1033
06-13	X13	58	58	58	58	58	58	58	58	1034	1034
06-14	X14	50	50	50	50	50	50	50	50	1035	1035
06-15	X15	1026	1026	1026	1026	1026	1026	1026	1026	1038	1038
06-16	X16	1030	1030	1030	1030	1030	1030	1030	1030	1036	1036
06-17	X17	1031	1031	1031	1031	1031	1031	1031	1031	1039	1039
06-18	X18	1027	1027	1027	1027	1027	1027	1027	1027	0	1030
06-19	X19	0	0	0	0	0	0	0	0	0	62
06-20	X20	0	1033	0	1033	0	1033	0	1033	0	54
06-21	X21	0	1035	0	1035	0	1035	0	1035	0	44
06-22	X22	1033	1036	1033	1036	1033	1036	1033	1036	0	1031
06-23	X23	1035	1039	1035	1039	1035	1039	1035	1039	0	37
06-24	X24	1038	1038	1038	1038	1038	1038	1038	1038	0	40
06-25	X25	1034	1034	1034	1034	1034	1034	1034	1034	0	0
06-26	HVX1	15	15	15	15	15	15	15	15	0	15
06-27	HVX2	18	18	18	18	18	18	18	18	0	18
06-28	HVX3	21	21	21	21	21	21	21	21	0	21
06-29	HVX4	9	9	9	9	9	9	9	9	0	0
06-30	HVX5	8	8	8	8	8	8	8	8	0	0
06-31	Y1	1	1	1	1	1	1	1	1	1	1
06-32	Y2	2	2	2	2	2	2	2	2	2	2
06-33	Y3	5	5	5	5	5	5	5	5	15	6
06-34	Y4	15	15	15	15	15	15	15	15	13	13
06-35	Y5	7	7	7	7	7	7	7	7	0	15
06-36	Y6	13	13	13	13	13	13	13	13	0	0
06-37	Y7	0	0	0	0	0	0	0	0	0	0
06-38	Y8	0	0	0	0	0	0	0	0	0	0
07-01	OCB I1	1112	1112	1112	1112	1112	1112	1112	1112	1104	1104
07-02	OCB I2	113	113	113	113	113	113	113	113	1105	1105
07-03	OCB I3	114	114	114	114	114	114	114	114	1100	1100
07-04	OCB I4	1104	1104	1104	1104	1104	1104	1104	1104	1101	1101
07-05	OCB I5	110	110	110	110	110	110	110	110	1102	1102
07-06	OCB I6	1100	1100	1100	1100	1100	1100	1100	1100	1103	1103
07-07	OCB I7	1102	1102	1102	1102	1102	1102	1102	1102	109	109
07-08	OCB I8	0	0	0	0	1101	1101	1101	1101	110	110

Pr.	Parameter Name	Pr.02-08 Setting Value									
		101	102	111	112	201	202	211	212	300	301
07-09	OCB I9	0	0	0	0	1103	1103	1103	1103	0	0
07-10	OCB Od2(Y1)	100	100	100	100	100	100	100	100	100	100
07-11	OCB Od1(Y2)	102	102	102	102	102	102	102	102	102	102
07-12	OCB Oc3(Y3)	0	0	0	0	101	101	101	101	112	112
07-13	OCB Oc2(Y4)	0	0	0	0	103	103	103	103	101	101
07-14	OCB Oc1(Y5)	105	105	105	105	105	105	105	105	103	103
07-15	OCB Ob3(Y6)	106	106	106	106	106	106	106	106	113	113
07-16	OCB Ob2(Y7)	154	154	154	154	154	154	154	154	110	110
07-17	OCB Ob1(Y8)	107	107	107	107	107	107	107	107	111	111
07-18	OCB Oa(Y9)	108	108	108	108	108	108	108	108	108	105
07-19	ICB1 JP17(I1)	150	150	150	150	150	150	150	150	151	151
07-20	ICB1 JP18(I2)	151	151	151	151	151	151	151	151	150	150
07-21	ICB1 JP19(I3)	152	152	152	152	152	152	152	152	152	152
07-22	ICB1 JP20(I4)	1153	1153	1153	1153	1153	1153	1153	1153	155	155
07-23	ICB1 JP21(I5)	154	154	154	154	154	154	154	154	163	163
07-24	ICB1 JP22 (I6)	155	155	155	155	155	155	155	155	154	154
07-25	ICB1 JP23(I7)	157	157	157	157	157	157	157	157	162	162
07-26	ICB1 JP24(I8)	162	162	162	162	162	162	162	162	46	46
07-27	ICB1 JP17(Y1)	150	150	150	150	150	150	150	150	151	151
07-28	ICB1 JP18(Y2)	151	151	151	151	151	151	151	151	150	150
07-29	ICB1 JP19(Y3)	152	152	152	152	152	152	152	152	152	152
07-30	ICB1 JP20(Y4)	0	0	0	0	0	0	0	0	149	149
07-31	ICB1 JP21(Y5)	154	154	154	154	154	154	154	154	0	0
07-32	ICB1 JP22 (Y6)	155	155	155	155	155	155	155	155	0	0
07-33	ICB1 JP23(Y7)	0	0	0	0	0	0	0	0	0	0
07-34	ICB1 JP24(Y8)	0	0	0	0	0	0	0	0	0	0
07-35	ICB2 JP17(I1)	0	0	0	0	0	0	170	170	0	0
07-36	ICB2 JP18(I2)	0	0	0	0	0	0	171	171	0	0
07-37	ICB2 JP19(I3)	0	0	0	0	0	0	172	172	0	0
07-38	ICB2 JP20(I4)	0	0	0	0	0	0	0	0	0	0

Pr.	Parameter Name	Pr.02-08 Setting Value									
		101	102	111	112	201	202	211	212	300	301
07-39	ICB2 JP21(I5)	0	0	0	0	0	0	0	0	0	0
07-40	ICB2 JP22 (I6)	0	0	0	0	0	0	0	0	0	0
07-41	ICB2 JP23(I7)	0	0	0	0	0	0	0	0	0	0
07-42	ICB2 JP24(I8)	0	0	0	0	0	0	0	0	0	0
07-43	ICB2 JP17(Y1)	0	0	0	0	0	0	170	170	0	0
07-44	ICB2 JP18(Y2)	0	0	0	0	0	0	171	171	0	0
07-45	ICB2 JP19(Y3)	0	0	0	0	0	0	172	172	0	0
07-46	ICB2 JP20(Y4)	0	0	0	0	0	0	0	0	0	0
07-47	ICB2 JP21(Y5)	0	0	0	0	0	0	0	0	0	0
07-48	ICB2 JP22 (Y6)	0	0	0	0	0	0	0	0	0	0
07-49	ICB2 JP23(Y7)	0	0	0	0	0	0	0	0	0	0
07-50	ICB2 JP24(Y8)	0	0	0	0	0	0	0	0	0	0
07-51	ICB3 JP17(I1)	0	0	170	170	167	167	167	167	0	0
07-52	ICB3 JP18(I2)	0	0	171	171	168	168	168	168	0	0
07-53	ICB3 JP19(I3)	0	0	172	172	169	169	169	169	0	0
07-54	ICB3 JP20(I4)	0	0	0	0	0	0	0	0	0	0
07-55	ICB3 JP21(I5)	0	0	0	0	0	0	0	0	0	0
07-56	ICB3 JP22 (I6)	0	0	0	0	0	0	0	0	0	0
07-57	ICB3 JP23(I7)	0	0	0	0	0	0	0	0	0	0
07-58	ICB3 JP24(I8)	0	0	0	0	0	0	0	0	0	0
07-59	ICB3 JP17(Y1)	0	0	170	170	167	167	167	167	0	0
07-60	ICB3 JP18(Y2)	0	0	171	171	168	168	168	168	0	0
07-61	ICB3 JP19(Y3)	0	0	172	172	169	169	169	169	0	0
07-62	ICB3 JP20(Y4)	0	0	0	0	0	0	0	0	0	0
07-63	ICB3 JP21(Y5)	0	0	0	0	0	0	0	0	0	0
07-64	ICB3 JP22 (Y6)	0	0	0	0	0	0	0	0	0	0
07-65	ICB3 JP23(Y7)	0	0	0	0	0	0	0	0	0	0
07-66	ICB3 JP24(Y8)	0	0	0	0	0	0	0	0	0	0
07-67	ICB4 JP17(I1)	0	0	0	0	0	0	173	173	0	0
07-68	ICB4	0	0	0	0	0	0	174	174	0	0

Pr.	Parameter Name	Pr.02-08 Setting Value									
		101	102	111	112	201	202	211	212	300	301
	JP18(I2)										
07-69	ICB4 JP19(I3)	0	0	0	0	0	0	175	175	0	0
07-70	ICB4 JP20(I4)	0	0	0	0	0	0	0	0	0	0
07-71	ICB4 JP21(I5)	0	0	0	0	0	0	0	0	0	0
07-72	ICB4 JP22 (I6)	0	0	0	0	0	0	0	0	0	0
07-73	ICB4 JP23(I7)	0	0	0	0	0	0	0	0	0	0
07-74	ICB4 JP24(I8)	0	0	0	0	0	0	0	0	0	0
07-75	ICB4 JP17(Y1)	0	0	0	0	0	0	173	173	0	0
07-76	ICB4 JP18(Y2)	0	0	0	0	0	0	174	174	0	0
07-77	ICB4 JP19(Y3)	0	0	0	0	0	0	175	175	0	0
07-78	ICB4 JP20(Y4)	0	0	0	0	0	0	0	0	0	0
07-79	ICB4 JP21(Y5)	0	0	0	0	0	0	0	0	0	0
07-80	ICB4 JP22 (Y6)	0	0	0	0	0	0	0	0	0	0
07-81	ICB4 JP23(Y7)	0	0	0	0	0	0	0	0	0	0
07-82	ICB4 JP24(Y8)	0	0	0	0	0	0	0	0	0	0

02-10 Doorlock Bypass Buzzer Off

Default: 0

Settings 0–1
0: Disabled
1: If the elevator runs with doorlock bypass device, the multi-function output terminal setting 105 BPSL (Doorlock bypass lighting alarm) and 104 BZ (buzzer) do not output, and 106 UDCL (Car bottom Light) remains ON without flashing. Pr.02-10 is automatically set to 0 after power-on again.

02-25 Clock-Year

Default: 0

Settings 0–2099

02-26 Clock-Month

Default: 0

Settings 0–12

02-27 Clock-Day

Default: 0

Settings 0–31

02-28 Clock-Hour

Default: 0

Settings 0–24

02-29 Clock-Minute

Default: 0

Settings 0–59

02-30 Clock-Second

Default: 0

Settings 0–59

02-31 No Display of Faults and Warnings

Default: 0

Settings 0–3
0: Digital keypad KPC-CC01 and LED panel display faults and warnings
1: Digital keypad KPC-CC01 does not display faults and warnings
2: LED panel does not display faults and warnings
3: Digital keypad KPC-CC01 and LED panel does not display faults and warnings

- All the setting values only set the display of faults and warnings, and do not affect the functions of faults and warnings.
- When ten minutes have passed after you have set the value or when power-on again, Pr.02-31 automatically returns to 0.
- If you press the HAND key on the digital keypad KPC-CC01 more than five times in five seconds, Pr.02-31 automatically sets to 1.

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Chapter 12 Descriptions of Parameter Settings

03 Function Settings

: You can set this parameter during operation.

03-00 Hoistway Auto-tuning

Default: 0

Settings 0–1

- When using the hoistway auto-tuning function, you must set IED-S to the inspection mode first (manually) and set Pr.03-00=1. Then, change the elevator to automatic control, and the hoistway auto-tuning function is enabled. The elevator runs downward to the lower limit first, and then runs upward and searches the leveling signals and forced deceleration switch signals for each floor for adjustment, and stops until it reaches the upper limit. Finally, it runs to the highest floor to stop. Then, the hoistway auto-tuning is finished.
- During hoistway auto-tuning, the displayed value for Pr.03-00 is 1. It automatically clears to 0 until the auto-tuning process is finished.
- NOTE: If you stop the auto-tuning process by setting Pr.03-00 to 0, the auto-tuning process stops but the elevator cannot run normally. You must finish the tuning process once it starts.
- Sets the running speed during hoistway tuning (Pr.04-03 Hoistway Auto-tuning Speed). The slower the speed, the accurate the tuning. The suggested speed is 0.25 m/s.
- If the fault code F141 occurs during the hoistway auto-tuning, increase the setting time for Pr.03-24. After the hoistway turning is finished, change Pr.03-24 to normal settings values.

03-01 Highest Physical Floor
03-02 Lowest Physical Floor

Default: 1

Settings 1–64F

- If the actual floor is from B1F to 10F, then the lowest physical floor is 1; the highest physical floor is 11.
- When using group controls, set the physical floor based on the highest and lowest physical floors. Example:

  If the actual floor for Elevator 1 is B1F–9F,

  If the actual floor for Elevator 2 is 1F–10F,

	Elevator/Physical Floor	Lowest Physical Floor	Highest Physical Floor
Single Control	Elevator 1	1	10
	Elevator 2	1	10
Group Control	Elevator/Physical Floor	Lowest Physical Floor	Highest Physical Floor
	Elevator 1	1	10
	Elevator 2	2	11

03-03 Group Control Station Number

Default: 0

Settings 0–7

- You can only use one group control station number at one time among all group control elevators.

03-04 Group Control Enabled

Default: 0

Settings 0–1
0: Single control operation
1: Group control operation

03-05 Main Landing for Standby While Idling

Default: 1

Settings 1–64S

- Sets the physical floor for standby when the elevator is idle and exceeds Pr.03-06 setting time. The elevator automatically runs to the physical floor for standby.

03-06 Idle Time Before Returning to the Main Landing for Standby

Default: 0

Settings 0–65535 sec.

- When this parameter is not set to 0, the elevator's returning to the main landing for standby while idling is enabled. When the elevator does not receive any call within Pr.03-06 setting time, it automatically runs to the main landing that is set in Pr.03-05.

03-07 Car Lighting Disabled While Idling

Default: 600

Settings 0–65535 sec.

- Sets the time the lighting automatically turns off when the elevator does not run for a specified period. If you set this parameter to 0, this function is disabled.

03-08 Car Fan Disabled While Idling

Default: 30

Settings 0–65535 sec.

- Sets the time the fan automatically turns off when the elevator does not run for a specified period. If you set this parameter to 0, this function is disabled.

03-09 UPS Designated Floor

Default: 0

Settings 1–164

- When the mains electricity is powered off, and UPS (MI=67) or EPS (MI=54) is activated, the elevator automatically runs to the physical floor that is set in Pr.03-09 or lands safely to make the elevator run to the leveling position to automatically open the door and release the passengers.
- 1–64: The designated physical floor is 1F to 64F for the front door.
- 101–164: The designated physical floor is 1F to 64F for the rear door.
- 0: When in UPS mode, you must work with the IED-S multi-function input terminal BALWG (Balanced switch) (MI=125) to safely land at the nearest floor. If the car weight is heavier than the counterweight, the car runs downward slowly for safety landing; on the contrary, if the car weight is lighter than the counterweight, the car runs upward slowly for safety landing.

03-10 Light Sensor and Safety Edges Alarm

Default: 0

Settings 0–199 sec.

- When the light sensor or safety edge activates and exceeds Pr.03-10 setting time, the alarm raises and the door is forced to close slowly.
- 1–99: The alarm raises and the door is not forced to close when the setting time arrives.
- 101–199: The alarm raises and the door is forced to close slowly when the setting time minus 100 arrives.
- 0 or 100: No alarm and no forced door closing.
- Related parameters: Multi-function output FCL1 (Front door forced closed at low speed) (MO=112), multi-function output FCL2 (Rear door forced close at low speed) (MO=113)

03-11 Service Floor 16–1

03-12 Service Floor 32–17

03-13 Service Floor 48–33

03-14 Service Floor 49–64

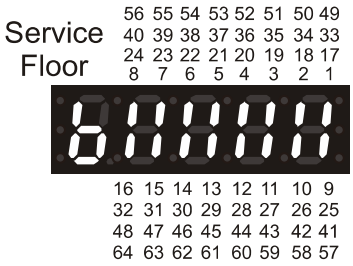
Default: 65535

Settings 0–65535

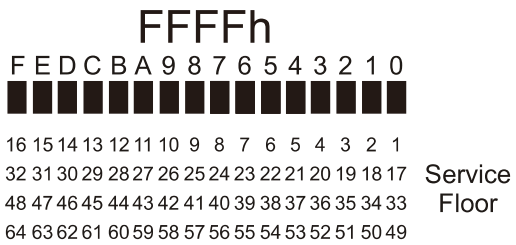
📖 Uses 16-bit setting for every sixteen floor. If the bit setting that corresponds to the floor is 1, the elevator responds to the floor's call. If the bit setting that corresponds to the floor is 0, the elevator does not respond to the floor's call.

📖 For example, in a building with elevator of ten floors, if you need to set the third and fifth floors as non-service floors, which corresponds to bit 2 and bit 4 respectively, set Pr.03-11 to 65515 (0xFFEB) [=65535 - 2^2 - 2^4]. Use the same setting method for similar parameters.

📖 Setting method of LED display



Setting method of digital keypad KPC-CC01



03-15 Automatic Safety Landing for Severe Earthquake

Default: 1

Settings 0–1
0: Disabled
1: When "severe earthquake" occurs, the automatic safety landing activates

03-16 Position Difference Protection

Default: 300.0

Settings 0.0–1000.0 mm

📖 When Pr.03-16=0, the position difference protection is disabled.

📖 If position difference exceeds Pr.03-16 setting while forced deceleration switch is activated, the elevator stops urgently and the following fault codes occur: F173 (Upward forced deceleration 1), F174 (Upward forced deceleration 2), F175 (Upward forced deceleration 3); F177 (Downward forced deceleration 1), F178 (Downward forced deceleration 2), F179 (Downward forced deceleration 3).

03-17 Auto-leveling After Re-power

Default: 0

Settings 0–3
0: Disabled
1: Runs to the bottom floor for leveling after power-on again
2: Runs to the top floor for leveling after power-on again
3: Automatically runs downward or upward for leveling, depending on the elevator's current floor

03-18 Delayed Time for Leveling Switch

Default: 0.200

Settings 0.000–2.000 sec.

📖 Adjusts the leveling accuracy while re-leveling. If the elevator stops before reaching the accurate leveling position, increase the delayed time. If the elevator stops after reaching the accurate leveling position, decrease the delayed time.

03-19 Seismic S-wave Deceleration Time

Default: 7.0

Settings 0.0–6553.5 sec.

📖 When "seismic s-wave" occurs, the elevator stops at the nearest floor. If the elevator does not decelerate within this setting time, the elevator is forced to emergency stop.

03-20 Door Pre-open at Stop

Default: 0

Settings 0–90 mm
0: Door opens until the elevator reaches the leveling
1–90: Door opens before the elevator is near the leveling

- If enabled, the elevator can open the door in advance after entering the leveling area for time-saving.
- For compliance with EN-81 standard, a maximum leveling difference is 20 mm.

03-21 Re-leveling After Door Open

Default: 0

Settings 0–1
0: Re-leveling is not allowed after the door opens
1: Re-leveling is allowed after the door opens

- Immediately re-levels if the leveling difference is caused by passengers' getting on and off after the elevator stops and the door opens.

03-22 Reverse Pulse Logic

Default: 0

Settings 0–1
0: The same as the setting direction
1: Opposite to the setting direction

- Use this parameter to correct when the motor running direction is opposite to the encoder's and the fault code F154 occurs.
- If the elevator running direction is opposite to the setting direction, you must set Pr.13-02 and Pr.03-22 (Reverse Pulse Logic) simultaneously.

03-23 Number of Fault Reset

Default: 1

Settings 0–10 times
0: Reset function is disabled
1–10: The fault automatically resets if the number of the same fault occurred does not exceed the Pr.03-23 setting in one hour

- Faults cannot be automatically reset if the number of the same fault occurred exceeds Pr.03-23 setting within one hour:
  1) Exceeds the constant running time (fault code F141)
  2) Runs in an opposite direction (fault code F154)
  3) GSH (Gate safety hatch high voltage) contact sticking (fault code F222)
  4) DSH (Layer door safety hatch high voltage) contact sticking (fault code F224)
  5) GSL (Gate safety hatch low voltage) contact sticking (fault code F232)
  6) DSL (Layer door safety hatch low voltage) contact sticking (fault code F234)

03-24 Constant Running Protection Time

Default: 120

Settings 1–600 sec.

- When the elevator runs constantly at any speed in any condition, and exceeds Pr.03-24 setting time, the fault code F141 occurs. If F141 occurs when the elevator is in manual mode, release the UP and DOWN keys to automatically reset. Otherwise, the elevator stops urgently and automatically resets after stopping five seconds. If the number of fault occurred is larger than the number of fault reset (Pr.03-23) within one hour, the elevator does not reset automatically. Under such circumstance, switch to the manual mode, or press the RESET key on the digital keypad, or press the external reset device, or power-on again to finish the reset.
- Recommended normal setting value = (travel between the top and bottom floors [m]) ÷ Pr.04-03 Hoistway Auto-tuning Speed) + 20 seconds
  If the normal setting value is less than 120 seconds, it is suggested that you set 120 seconds.
- During hoistway auto-tuning, Pr.03-24 (Constant Running Protection Time) is automatically doubled.

📖 Fault code F141 may occur in the process of hoistway tuning. If this happens, increase the setting time for Pr.03-24. After the hoistway tuning is finished, change Pr.03-24 to normal setting values.

03-25 Specified Floor Protection Time

Default: 20

Settings 1–45 sec.

📖 When the elevator runs at high speed, and does not pass through or arrives at the specified floor within Pr.03-25 setting time, the fault code F143 occurs and an emergency stop is triggered. In this case, switch to the manual mode first, or press the RESET key on the digital keypad, or press the external reset device, or power-on again to finish the reset.

03-27 Selective Control Mode

Default: 0

Settings 0–3
0: Disabled
1: Respond to all hall calls
2: Respond to upward hall calls
3: Respond to downward hall calls

📖 0: Disabled.
📖 1: The elevator responds to all hall call signals.
📖 2: The elevator responds to upward calls from hall call only, not downward calls from hall call.
📖 3: The elevator responds to downward calls from hall call only, not upward calls from hall call.

03-28 Registration Cancel Function

Default: 1

Settings 0–1
0: No registration cancel function
1: Registration cancel for car calls

📖 1: If passengers press the wrong button in the car command board, press the same button twice incessantly to cancel the registration.

03-29 Security Floor Main Landing

Default: 0

Settings 0–164S

03-30 Security Floor Begin Time

Default: 0

Settings 0–2359

03-31 Security Floor End Time

Default: 0

Settings 0–2359

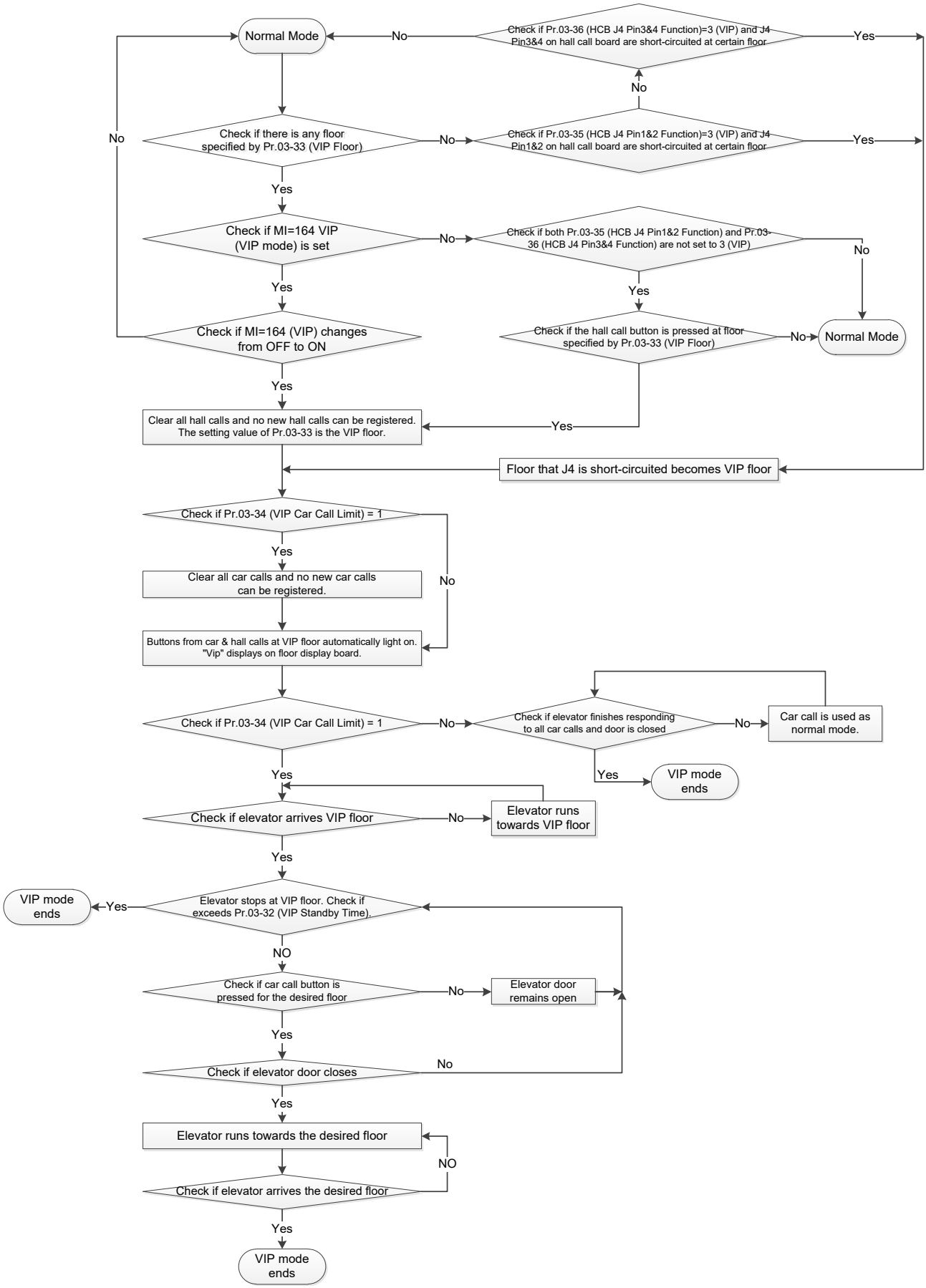
📖 0000–2359: 00:00 to 23:59 in 24-hour clock.
📖 Within each day setting time, any upward or downward car call makes the elevator automatically run and stop at security floor and door opens. When you set Pr.03-30 (Security Floor Begin Time) and Pr.03-31 (Security Floor End Time) to the same value and not 0, the security floor operation function remains until you set both of them to 0. Security floor operation starts from Pr.03-30 and ends at Pr.03-31 on the day or until next day. When elevator passes through and stops at security floor, the door automatically closes or you can press the close button to close the door only when Pr.05-13 (Disability Door Open Time) setting time ends.

03-32 VIP Standby Time

Default: 40

Settings 0–65535 sec.

VIP Operation Flow Chart



03-33 VIP Floor

Default: 0

Settings 0: No function
1–64: Set the setting value as the VIP floor of front door
101–164: Set the setting value after minus 100 as the VIP floor of rear door

03-34 VIP Car Call Limit

Default: 0

Settings 0–1

- 0: When in VIP mode, the method of car call and door open/closing is the same as normal mode. If elevator has not yet been recalled to VIP floor, VIP mode does not reset to normal mode. If elevator has been recalled to VIP floor, no matter the floor at which the elevator stops, the VIP mode is automatically cancelled once there is no car call after door closes.
- 1: When elevator is in VIP mode, all car calls are cancelled first. Then, when elevator is recalled to VIP floor, the elevator door does not close until you press the car call floor button that you would like to go or press the door closing button. If you release the car call floor button before door is fully closed, the door opens automatically and no car call can be registered. When elevator arrives the desired floor, VIP mode is automatically cancelled. When elevator stops at VIP floor, VIP mode is also automatically cancelled if you do not press the car call floor button that you would like to go within 30 seconds.
- Common ground of VIP modes:
  1. Elevator does not respond to hall calls, and VIP mode is automatically cleared once hall call is registered (except VIP floor). Elevator responds to car calls only.
  2. Once elevator has entered VIP mode, VIP does not return to normal mode until you finish running the VIP mode according to Pr.03-34 (VIP Cal Call Limit).
- Choose either of the methods to set VIP floor according to Pr.03-33 (VIP Floor) settings:
  1. Use MI=164 VIP (VIP mode): When MI=164 is activated, elevator enters VIP mode, is recalled to the floor specified by Pr.03-33 (VIP Floor), and runs according to Pr.03-34 (VIP Car Call Limit) settings.
  2. Does not use MI=164 VIP (VIP mode): When you press upward or downward hall call button for the VIP floor, elevator enters VIP mode, is recalled to the floor specified by Pr.03-33 (VIP Floor), and runs according to Pr.03-34 (VIP Car Call Limit) settings.
- When either Pr.03-35 (HCB J4 Pin1&2 Function) or Pr.03-36 (HCB J4 Pin3&4 Function) is set to 3 (VIP), and the corresponding J4 Pin1&2 or Pin3&4 from hall call board is activated, elevator enters VIP mode, and uses the floor at which either J4 Pin1&2 or Pin3&4 from hall call board is activated as VIP floor. Then, elevator is recalled to the VIP floor and runs according to Pr.03-34 (VIP Car Call Limit).

03-35 HCB J4 Pin1&2 Function

Default: 1

Settings 0: No function
1: Elevator lock
2: Recall at fire emergency
3: VIP
4: Medical recall
5: Car reader
6: Door open extended button

03-36 HCB J4 Pin3&4 Function

Default: 2

Settings 0: No function
1: Elevator lock
2: Recall at fire emergency
3: VIP
4: Medical recall
5: Car reader
6: Door open extended button

03-37 ULS1 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs upward detection, it starts speed detection 0.5 sec. after ULS1 (First one upward forced deceleration) activates if there is no ULS2, and starts speed detection once ULS1 activates if there is ULS2. If the speed detected is larger than Pr.03-37, fault code F194 (ULS1 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-38 DLS1 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs downward detection, it starts speed detection 0.5 sec. after DLS1 (First one downward forced deceleration) activates if there is no DLS2, and starts speed detection once DLS1 activates if there is DLS2. If the speed detected is larger than Pr.03-38, fault code F201 (DLS1 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-39 ULS2 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs upward detection, it starts speed detection 0.5 sec. after ULS2 (Second one upward forced deceleration) activates if there is no ULS3, and starts speed detection once ULS2 activates if there is ULS3. If the speed detected is larger than Pr.03-39, fault code F195 (ULS2 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-40 DLS2 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs downward detection, it starts speed detection 0.5 sec. after DLS2 (Second one downward forced deceleration) activates if there is no DLS3, and starts speed detection once DLS2 activates if there is DLS3. If the speed detected is larger than Pr.03-40, fault code F200 (DLS2 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-41 ULS3 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs upward detection, it starts speed detection 0.5 sec. after ULS3 (Third one upward forced deceleration) activates if there is no ULS4, and starts speed detection once ULS3 activates if there is ULS4. If the speed detected is larger than Pr.03-41, fault code F196 (ULS3 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-42 DLS3 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs downward detection, it starts speed detection 0.5 sec. after DLS3 (Third one downward forced deceleration) activates if there is no DLS4, and starts speed detection once DLS3 activates if there is DLS4. If the speed detected is larger than Pr.03-42, fault code F199 (DLS3 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-43 ULS4 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs upward detection, it starts speed detection 0.5 sec. after ULS4 (Fourth one upward forced deceleration) activates. If the speed detected is larger than Pr.03-43, fault code F197 (ULS4 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-44 DLS4 Over-speed Protection

Default: 50

Settings 0–100%
0: No protection
1–100%: percentage of rated speed

📖 When elevator runs downward detection, it starts speed detection 0.5 sec. after DLS4 (Fourth one downward forced deceleration) activates. If the speed detected is larger than Pr.03-42, fault code F198 (DLS4 Over-speed) occurs. The elevator stops urgently and automatically resets after 60 seconds.

03-45 Car Call Password

Default: 0

Settings 0–65535
0: No protection
1–100%: percentage of rated speed

📖 When Pr.03-45 (Car Call Password) is not set to 0 (no 0 in the password code), and MI=203 PASSWORD (password car call) is ON, you must press the same value as set in Pr.03-45 for the car call button on car call board for car call, and then press the desired floor button. At this time, car call is registered. The car call button at the bottom floor is equal to 1. The interval between each button pressed should be less than two seconds.

📖 To modify the car call password, you can choose either:

1. Use built-in keypad or digital keypad KPC-CC01 to modify Pr.03-45 (Car Call Password).
2. Activate MI=204 PASSSET (Execute password setting) first. Then, use car call button settings on car call board to change or cancel Pr.03-45 (Car Call Password).

📖 To cancel car call password, press door closing button for five times to set Pr.03-45 (Car Call Password) to 0.
Four-digit password setting: Press door closing button for one time first, and then use car call button to set four-digit password.
Five-digit password setting: Use car call button to set.

03-46 Floor Display under Inspection

Default: 0

Settings 0–1
0: Does not display floor when in inspection mode
1: Displays floor when in inspection mode

03-47 Floor Position Display for Car/Hall Call

Default: 0

Settings 0–1
0: Displays floor using Pr.00-35 (Nearest Stop Floor)
1: Displays floor using Pr.00-17 (Current Floor) (current floor position)

03-48 Elevator Lock Main Landing

Default: 1

Settings 0–164S
0: Elevator lock is disabled
1–64: Front door
101–164: Rear door

📖 Sets the physical floor that the elevator automatically returns after the elevator lock is activated. Note that once the elevator lock is activated, the elevator does not respond to any car/hall calls.

03-49 Primary Main Landing at Fire Emergency

Default: 1

Settings 0–164S
0: Primary fire emergency is disabled
1–64: Front door
101–164: Rear door

📖 Sets the physical floor that the elevator automatically returns when fire emergency function is enabled or fire emergency multi-function terminals are activated.

03-50 Secondary Main Landing at Fire Emergency

Default: 1

Settings 0–164S
0: Secondary fire emergency is disabled
1–64: Front door
101–164: Rear door

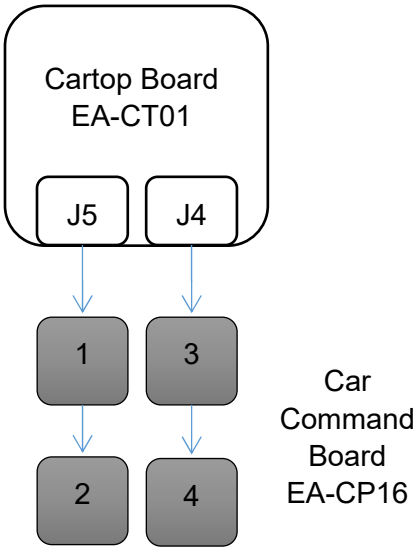
📖 Valid only for fireman. Press door open/close buttons continuously to open and close the door.

03-51 ICB (Car Command Board) Mode

Default: 0

Settings 0–3
0: Single door mode
1: Single door disability mode
2: Front and rear door mode
3: Front and rear door disability mode

📖 The installation method for car command boards:



Pr.03-51 Setting Value	Function	The Installation Sequence for Car Command Board			
		1	2	3	4
0	Front door 1–64F	F 1–16F	F 17–32F	F 33–48F	F 49–64F
1	Front door + disability 1–32F	F 1–16F	F 17–32F	F+D 1–16F	F+D 17–32F
2	Front and rear door 1–32F	F 1–16F	F 17–32F	B 1–16F	B 17–32F
3	Front and rear door + disability 1–16F	F 1–16F	F+D 1–16F	B 1–16F	B+D 1–16F

* F: Front door / B: Rear door / D: Disability

Note: Pr.03-51 synchronously enables or disables the corresponding hall calls

03-52 Main Landing at Flood

Default: 2

Settings 2–164S
2–64: Front door
102–164: Rear door

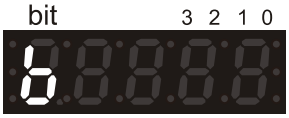
📖 Sets the physical floor that the elevator automatically runs above and stops when flood occurs. For example, in a building with elevator from B2–5F, if you need to make the elevator automatically run and stop at 5F, set Pr.03-52 to 7 when flood occurs; in a similar way, set Pr.03-52 to 2 if you need the elevator to stop at floors other than B2 when flood occurs.

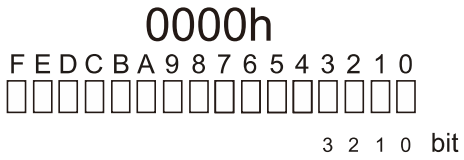
03-53 Function Set 1

Default: 0

Settings 0–65535
1 (bit0): Adjusts the leveling switch position whenever the elevator runs through the leveling switch
2 (bit1): Adjusts the deceleration switch position whenever the elevator runs through the deceleration switch
4 (bit2): Automatically detects if the sequence of forced deceleration switch action is correct
8 (bit3): Automatically checks the sequence of leveling switch action

📖 Setting method of LED display Setting method of digital keypad KPC-CC01





03-57 Voice Announcer Bottom Floor Code

Default: 1

Settings 0–64

📖 Valid only when using parallel voice announcement.

📖 Example 1:
Assumes that the floor codes of voice announcer are as follows:
1: 0001 announces as floor B4
2: 0010 announces as floor B3
3: 0011 announces as floor B2
4: 0100 announces as floor B1
5: 0101 announces as floor 1
6: 0110 announces as floor 2
If the bottom floor is B1, set Pr.03-57=4; if the bottom floor is B3, set Pr.03-57=2.

📖 Example 2:
Assumes that the floor codes of voice announcer are as follows:
1: 0001 announces as floor B3
2: 0010 announces as floor B2

3: 0011 announces as floor B1
4: 0100 announces as floor 1
5: 0101 announces as floor 2
If the bottom floor is B1, set Pr.03-57=3; if the bottom floor is B3, set Pr.03-57=1.

03-59 Door Unlock Board Test

Default: 0

Settings 0–1
0: Disabled
1: Runs the function test for door unlock board, and forces the multi-function output (MO) terminal Door Unlock Contactor [SY] to be ON

- The setting automatically returns to 0 when the following conditions happen:
  1. When the elevator is not in emergency operation mode or in control panel inspection mode, the warning code 1117 (Inspection, Unqualified, Door unlock board) occurs.
  2. When the layer door safety hatch and gate safety hatch signals do not change to ON in one second after setting Pr.03-59 to 1, that is, you set Pr.03-59=1 while the door opens, the warning code 1118 (Doorlock, Unqualified, Door unlock board) occurs.
  3. When the function test for door unlock board is not finished in 120 seconds, the warning code 1119 (Door unlock board, Test, Overtime) occurs.
  4. When the function test for door unlock board is normal, the fault code F152 (Runs with door open) occurs.
- The method for door unlock board test:
  1. Make the elevator stop at the leveling position, and keep the door closed.
  2. The elevator must be in emergency operation mode or in control panel inspection mode.
  3. Switch the test switch on the door unlock board to “TEST” to simulate that the door is open.
  4. Set Pr.03-59 (Door Unlock Board Test) to 1 to force the MO terminal Door Unlock Contactor [SY] to be ON.
  5. Press and hold the upward operation or downward operation button for the manual mode. At this time, the elevator runs a normal manual operation.
  6. When the elevator runs away from the leveling area, the door unlock board deactivates and the doorlock of the brake contactor circuit short-circuits, further making both the door unlock board and the brake contactor OFF. Then, the motor power is OFF, the brake is ON, the fault code F152 (Runs with door open) occurs, and the elevator stops running.

03-60 Brake Test Duration

Default: 5.0

Settings 0.0–20.0 sec.

- Sets the duration of braking force test in seconds. If Pr.03-60=0, the automatic test for braking force once per day does not run.

03-61 Brake Test Output Torque

Default: 100

Settings 0–200%

- Sets the output torque during the braking force test.

03-62 Brake Test Moving Distance

Default: 5.0

Settings 0.0–50.0 mm

- Sets the car moving distance during braking force test. If the car moving distance is larger than or equal to Pr.03-62, the elevator stops and the fault code F150 (Unqualified braking force test) occurs.

03-63 Brake Test Running Direction

Default: 1

Settings 0–1
0: Runs downward during braking force test
1: Runs upward during braking force test

03-64 Brake Test Time (Hour)

Default: 2

Settings 0–23

📖 Sets the time (hour) to run the automatic braking force test once per day.

03-65 Brake Test Time (Minute)

Default: 59

Settings 0–59

📖 Sets the time (minute) to run the automatic braking force test once per day.

03-66 Brake Test Floor

Default: 0

Settings 0–64

📖 Sets the physical floor to run the automatic braking force test once per day. If Pr.03-66=0, the test runs at the floor where the elevator stops.

03-67 Brake Test Starting

Default: 0

Settings 0–1

📖 If Pr.03-67=1, the manual braking force test starts to run. The setting automatically returns to 0 once the test is finished or the test failed.

📖 Manual braking force test

1. Set the time (seconds) to run the braking force test in Pr.03-60 (Brake Test Duration), ranging from 0.0 to 20.0 seconds.
2. Set the output torque to run the braking force test in Pr.03-61 (Brake Test Output Torque), ranging from 0% to 200%.
3. Set the car moving distance during braking force test in Pr.03-62 (Brake Test Moving Distance), ranging from 0.0 to 50.0 mm.
4. Set Pr.03-63 (Brake Test Running Direction). If Pr.03-63=1, the elevator runs upward during braking force test. If Pr.03-63=0, the elevator runs downward during braking force test.
5. Make the elevator car stop at the leveling position, and the elevator must be in emergency operation mode or in control panel inspection mode. Moreover, ensure that there is no fault occurred, and upward operation or downward operation button for the manual mode is not allowed to press.
6. Set Pr.03-67 (Brake Test Starting) =1 to start the braking force test. If the condition does not meet the fifth description above, Pr.03-67 immediately returns to 0 after setting to 1, and the following warning codes occur: 1110 (Inspection, Unqualified, Braking force), or 1111 (Leveling, Unqualified, Braking force), or 1113 (Fault, Unqualified, Braking force), or 1114 (Button, Unqualified, Braking force). However, if the condition meet the fifth description above, warning codes 1115 (Wait, Braking force test) or 1109 (Braking force, Under test) occurs.
   If the door does not close after setting Pr.03-67=1, the warning code 1115 (Wait, Braking force test) occurs, and then the door closes automatically. After the door closes, the warning code 1109 (Braking force, Under test) occurs. Then, the operation contactor outputs automatically, the brake contactor does not output, torque outputs and gradually increases to Pr.03-61 (Brake Test Output Torque) setting value.
7. If the car moving distance is not smaller than Pr.03-62 (Brake Test Moving Distance) within Pr.03-60 (Brake Test Duration) setting time, the test stops automatically and the fault code F150 (Unqualified braking force test) occurs. At this time, you must press the external reset device in the manual mode, or press the RESET key on the digital keypad in the manual mode, or press and hold both the upward operation and downward operation buttons simultaneously in the manual mode for more than five seconds to reset the fault code F150.
   If the car moving distance is smaller than Pr.03-62 (Brake Test Moving Distance), and time exceeds Pr.03-60 (Brake Test During), the test also stops automatically and the warning code 1112 (Braking force, Test, Qualified) occurs.
8. Once the braking force test is finished, Pr.03-67 (Brake Test Starting) automatically returns to 0. The elevator runs automatically only when the braking force test is qualified. Otherwise,

the fault code F150 (Unqualified braking force test) occurs when changing the inspection switch to automatic mode, and the elevator does not run.

- 🕮 Automatic braking force test once per day
  1. Set the time (seconds) to run the braking force test in Pr.03-60 (Brake Test Duration), ranging from 0.0 to 20.0 seconds. If Pr.03-60=0, the automatic test for braking force once per day does not run.
  2. Set the output torque to run the braking force test in Pr.03-61 (Brake Test Output Torque), ranging from 0% to 200%.
  3. Set the car moving distance during braking force test in Pr.03-62 (Brake Test Moving Distance), ranging from 0.0 to 50.0 mm
  4. Set Pr.03-63 (Brake Test Running Direction). If Pr.03-63=1, the elevator runs upward during braking force test. If Pr.03-63=0, the elevator runs downward during braking force test.
  5. Set the time to run the automatic braking force test once per day in Pr.03-64 (Brake Test Time (Hour)) and Pr.03-65 (Brake Test Time (Minute)).
  6. Set the physical floor to run the automatic braking force test in Pr.03-66 (Brake Test Floor), ranging from 0 to 64 floors.
  7. After finishing the setting, the elevator automatically runs to the designated floor (the warning code 1116 (Recall, Braking force test) occurs) in the specified time every day while idling (if the warning code 1115 (Wait, Braking force test) occurs during the elevator's running) to run the upward or downward braking force test (the warning code 1109 (Braking force, Under test) occurs) with the brake OFF. In the process of test, car call cannot register any call; hall call can register but not respond to the calls.
  8. If the test result is qualified, the elevator returns to normal mode and the warning code 1112 (Braking force, Test, Qualified) occurs. But if the car moving distance is not smaller than Pr.03-62 (Brake Test Moving Distance), the elevator malfunctions and is unavailable, and the fault code F150 (Unqualified braking force test) occurs. At this time, change to the manual mode first, and then press the external reset device, or press the RESET key on the digital keypad, or press and hold both the upward operation and downward operation buttons simultaneously for more than five seconds to reset the fault code F150. Moreover, use the methods described in the "Manual braking force test" section above until the warning code 1112 (Braking force, Test, Qualified) appears to make the elevator run automatically. Otherwise, the fault code F150 (Unqualified braking force test) remains when changing from manual to automatic mode, and the elevator does not run.

03-68 First Main Group Control
03-69 Second Main Group Control
03-70 Third Main Group Control
03-71 Fourth Main Group Control
03-72 Fifth Main Group Control
03-73 Sixth Main Group Control
03-74 Seventh Main Group Control

Default: 0

Settings 0–63S

03-75 Dispersed Waiting

Default: 0

Settings 0–65535 sec.

- 🕮 Sets the idle time that elevator automatically runs dispersed waiting.
- 🕮 Goal: To make elevator arrive within ten seconds when there is hall call from any floor in off-peak hours
- 🕮 Method:
  1. In parallel control, when normally there are at least two running elevators and Pr.03-75 is not set to 0, you can execute dispersed waiting.
  2. After elevator finishes responding to all car/hall calls in group control operation, time starts to

count. When time exceeds Pr.03-75, each elevator automatically runs to the nearest main group control to standby.

3. If the number of main group controls is smaller than the number of elevators, elevators that have no main group control for standby will automatically run to Pr.03-68 (First Main Group Control). If you do not set Pr.03-68, these elevators stay at where they were for standby.
4. Pr.03-68 (First Main Group Control) is also the main upward peak; Pr.03-74 (Seventh Main Group Control) is also the main downward peak.
5. If there is any car/hall call occurs while elevators run to main group control for standby, dispersed waiting will be cancelled, and elevators stop at the nearest floor.

03-76 Upward Peak 1 Begin

Default: 0

Settings 0–2359

🕮 0000–2359: 00:00 to 23:59 in 24-hour clock.

🕮 Sets the beginning time for the first upward peak hours. See Pr.03-90 peak running in group control operation for details.

03-77 Upward Peak 1 End

Default: 0

Settings 0–2359

🕮 0000–2359: 00:00 to 23:59 in 24-hour clock.

🕮 Sets the end time for the first upward peak hours. See Pr.03-90 peak running in group control operation for details.

03-78 Downward Peak 1 Begin

Default: 0

Settings 0–2359

🕮 0000–2359: 00:00 to 23:59 in 24-hour clock.

🕮 Sets the beginning time for the first downward peak hours. See Pr.03-90 peak running in group control operation for details.

03-79 Downward Peak 1 End

Default: 0

Settings 0–2359

🕮 0000–2359: 00:00 to 23:59 in 24-hour clock.

🕮 Sets the end time for the first downward peak hours. See Pr.03-90 peak running in group control operation for details.

03-80 Upward Peak 2 Begin

Default: 0

Settings 0–2359

🕮 0000–2359: 00:00 to 23:59 in 24-hour clock.

🕮 Sets the beginning time for the second upward peak hours. See Pr.03-90 peak running in group control operation for details.

03-81 Upward Peak 2 End

Default: 0

Settings 0–2359

🕮 0000–2359: 00:00 to 23:59 in 24-hour clock.

🕮 Sets the end time for the second upward peak hours. See Pr.03-90 peak running in group control operation for details.

03-82 Downward Peak 2 Begin

Default: 0

Settings 0–2359

- 0000–2359: 00:00 to 23:59 in 24-hour clock.
- Sets the beginning time for the second downward peak hours. See Pr.03-90 peak running in group control operation for details.

03-83 Downward Peak 2 End

Default: 0

Settings 0–2359

- 0000–2359: 00:00 to 23:59 in 24-hour clock.
- Sets the end time for the second downward peak hours. See Pr.03-90 peak running in group control operation for details.

03-84 Number of Full-load at Upward Peak
03-85 Number of Full-load at Downward Peak

Default: 0

Settings 0–65535

- See Pr.03-90 peak running in group control operation for details.

03-86 Number of Calls for Downward Peak

Default: 0

Settings 0–65535

- See Pr.03-90 peak running in group control operation for details.

03-87 Holding Time for Upward and Downward Peak

Default: 0

Settings 0–65535 sec.

- See Pr.03-90 peak running in group control operation for details.

03-88 Holding Time at Random Floor

Default: 0

Settings 0–65535 sec.

- See Pr.03-90 peak running in group control operation for details.

03-89 Number of Full-load at Random Floor

Default: 0

Settings 0–65535

- See Pr.03-90 peak running in group control operation for details.

03-90 Automatically Runs Downward at Downward Peak

Default: 0

Settings 0–1
0: Does not automatically run downward when elevator is automatically recalled to the position near top floor for standby during downward peak running
1: Automatically runs downward when elevator is automatically recalled to the position near top floor for standby during downward peak running

- Upward peak running:
  1. Goal: To prevent too many passengers from waiting the elevator in the lobby during peak hours such as on-duty hour
  2. Method: After elevator finishes responding to car calls and hall calls during upward peak running, it automatically runs to Pr.03-68 (First Main Group Control) and door opens for one time. When elevator runs upward and passes through Pr.03-68 (First Main Group Control), it automatically stops and door opens for one time. Upward peak running and downward peak running have the same priority and can coexist at the same time. These two modes have priority over peak running at random floor. If elevator is currently in the mode of peak running at random floor, it is cancelled once conditions that trigger upward or downward peaking

running are established.

3. Conditions that trigger upward peak running:
   (1) MI = upward peak: When MI=59 (UPK) is ON, upward peaking running is enabled. When MI=59 (UPK) is OFF, upward peaking running is disabled. When MI=59 is ON for any of the elevators in group control operations, all elevators in group control enter upward peak running mode.
   (2) Upward peak hour 1: When time is currently between Pr.03-76 (Upward Peak 1 Begin) to Pr.03-77 (Upward Peak 1 End), elevator executes upward peak running. This function is determined by group control.
   (3) Upward peak hour 2: When time is currently between Pr.03-80 (Upward Peak 2 Begin) to Pr.03-81 (Upward Peak 2 End), elevator executes upward peak running. This function is determined by group control.
   (4) The number of starting with full-load for first main group control exceeds setting value:
   If elevator starts at Pr.03-68 (First Main Group Control) with full-load, the number of full-load increases by one until it reaches Pr.03-84 (Number of Full-load at Upward Peak). On the contrary, it decreases by one until it reaches zero. When the number of full-load reaches Pr.03-84, upward peak running is enabled. If you set Pr.03-84=0, upward peak running is disabled. If the number of full-load is smaller than Pr.03-84 while upward peak running is enabled, time starts to count and upward peak running is not disabled until time reaches Pr.03-87 (Holding Time for Upward and Downward Peak). This function is determined by group control.

📖 Downward peak running:

1. Goal: Shorten time that passengers wait elevators during lunch breaks or off-duty hour
2. Method: When in the mode of downward peak running, elevator automatically runs to Pr.03-74 (Seven Main Group Control) after finishing running to floors below Pr.03-68 (First Main Group Control). Elevator automatically runs to Pr.03-68 (First Main Group Control) after finishing running to floors above Pr.03-74 (Seven Main Group Control) if Pr.03-90 (Automatically Runs Downward at Downward Peak) =1.
3. Conditions that trigger downward peak running:
   (1) MI = downward peak: When MI=60 (DPK) is ON, downward peak running is enabled. When MI=60 (DPK) is OFF, downward peak running is disabled. When MI=60 is ON for any of the elevators in group control operations, all elevators in group control enter downward peak running mode.
   (2) Downward peak hour 1: When time is currently between Pr.03-78 (Downward Peak 1 Begin) to Pr.03-79 (Downward Peak 1 End), elevator executes downward peak running. This function is determined by group control.
   (3) Downward peak hour 2: When time is currently between Pr.03-82 (Downward Peak 2 Begin) to Pr.03-83 (Downward Peak 2 End), elevator executes downward peak running. This function is determined by group control.
   (4) The number of full-load when elevator runs downward and arrives at first main group control exceeds setting value:
   If elevator runs downward at Pr.03-68 (First Main Group Control) with full-load, the number of full-load increases by one until it reaches Pr.03-85 (Number of Full-load at Downward Peak). On the contrary, it decreases by one until it reaches zero. When the number of full-load reaches Pr.03-85, downward peak running is enabled. If you set Pr.03-85=0, downward peak running is disabled. If the number of full-load is smaller than Pr.03-85 while downward peak running is enabled, time starts to count and downward peak running is not disabled until time reaches Pr.03-87 (Holding Time for Upward and Downward Peak). This function is determined by group control. Peak running at random floor has priority over downward peak running.
   (5) The number of downward hall calls exceeds setting value:
   For hall calls from floors above Pr.03-68 (First Main Group Control), if the number of downward calls is larger than or equal to Pr.03-86 (Number of Calls for Downward Peak), and also larger than upward calls, downward peak running is enabled. If you set Pr.03-86=0, downward peaking running is disabled. If the number of downward calls is smaller than Pr.03-86 while downward peak running is enabled, time starts to count and downward peak running is not disabled until time reaches Pr.03-87 (Holding Time for Upward and Downward Peak). This function is determined by group control.

📖 Peak running at random floor

1. Goal: To ride crowded passengers from certain floor in a short time. For example, a lot of people suddenly come out after conference or movie. Note that if this happens in the lobby, use upward peak running instead of peak running at random floor.
2. Method: When peak running at random floor is enabled, all elevators in group control operations automatically run to the floor with crowded passengers. For upward peak running at random floor, door opens automatically for one time when elevator arrives at that floor if it does not run downward. For downward peak running at random floor, door opens automatically for one time when elevator arrives at that floor if it does not run upward.
3. Conditions that trigger peak running at random floor:
   (1) MI = Peak running at random floor: When any of the elevators in group control operations stops at the floor that prepares to execute peak running, activate MI=201 (PK) for more than one second and then deactivate it to make elevator enter MI=upward peak running at random floor if elevator runs upward and make elevator enter MI=downward peak running at random floor if elevator runs downward.
   (2) The number of starting with full-load at certain floor exceeds setting value:
   If elevator starts at certain floor with full-load, the number of full-load increases by one until it reaches Pr.03-89 (Number of Full-load at Random Floor). On the contrary, it decreases by one until it reaches zero. When the number of full-load reaches Pr.03-89, peak running at random floor is enabled. If you set Pr.03-89=0, peak running at random floor is disabled. If the number of full-load is smaller than Pr.03-89 while peak running at random floor is enabled, time starts to count and peak running at random floor is not disabled until time reaches Pr.03-88 (Holding Time at Random Floor). This function is determined by group control.

🕮 To disable peak running:
Activating MI=202 (REPK) for any of the elevators in group control operations disables all peak running.

Chapter 12 Descriptions of Parameter Settings

04 Speed Curve

↗: You can set this parameter during operation.

04-00 Speed at Emergency

Default: 0.15

Settings 0.00–0.30 m/s

📖 Sets the speed when the elevator runs with emergency power.

04-01 Inspection Speed

Default: 0.25

Settings 0.00–0.63 m/s

📖 Sets the inspection speed when the elevator executes the inspection.

04-02 Speed at Returning to Two Ends of the Hoistway

Default: 0.50

Settings 0.00–1.50 m/s

📖 Sets the speed during the elevator's position adjustment when returning to two ends of the hoistway.

04-03 Hoistway Auto-tuning Speed

Default: 0.20

Settings 0.00–0.50 m/s

📖 Sets the speed during the elevator's hoistway auto-tuning.

04-04 Non-leveling Speed

Default: 0.12

Settings 0.01–0.30 m/s

📖 Sets the speed when the elevator stops at the non-leveling area to safely land at the nearest floor.

04-05 Leveling Speed

Default: 0.04

Settings 0.01–0.15 m/s

📖 Sets the speed for elevator re-leveling.

04-06 Constant Speed Duration

Default: 500

Settings 0–3000

04-07 Acceleration

Default: 0.40

Settings 0.10–1.50 m/s^2

📖 Sets the acceleration for direct docking.

04-08 Deceleration

Default: 1.50

Settings 0.10–1.50 m/s^2

📖 Sets the deceleration for direct docking.

04-09 Inspection Deceleration

Default: 2.000

Settings 0.500–3.000 m/s^2

📖 Setting a too low value may cause runaway while adjusting position during return to two ends of the hoistway.

04-10 Inspection Acceleration

Default: 0.20

Settings 0.10–1.50 m/s^2

04-11 Re-leveling Deceleration

Default: 1.50

Settings 0.10–1.50 m/s^2

04-14 Acceleration Begin Time S1

Default: 3.00

Settings 0.01–25.00 sec.

04-15 Acceleration Arrival Time S2

Default: 1.00

Settings 0.01–25.00 sec.

04-16 Deceleration Begin Time S3

Default: 1.00

Settings 0.01–25.00 sec.

04-17 Deceleration Arrival Time S4

Default: 3.00

Settings 0.01–25.00 sec.

04-18 Low-speed Running Time When Enabled Manually

Default: 3.0

Settings 0.0–10.0 sec.

📖 When enabling manually, the elevator runs at leveling speed within Pr.04-18 setting time first, and then runs at inspection speed.

Chapter 12 Descriptions of Parameter Settings

05 Door Control

: You can set this parameter during operation.

05-00 Number of Doors

Default: 1

Settings 1–2
1: Single-door system
2: Two-door system

- 1: Controls one door
- 2: Control two doors

05-01 Door Open Control

Default: 1

Settings 0–2
0: Door does not open
1: Front door opens before rear door opens
2: Font and rear door open at the same time

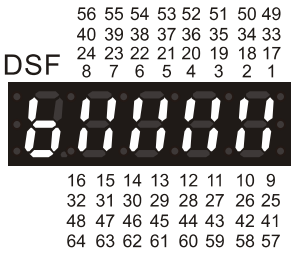
05-02 DSF 16–1
05-03 DSF 32–17
05-04 DSF 48–33
05-05 DSF 64–49

Default: 65535

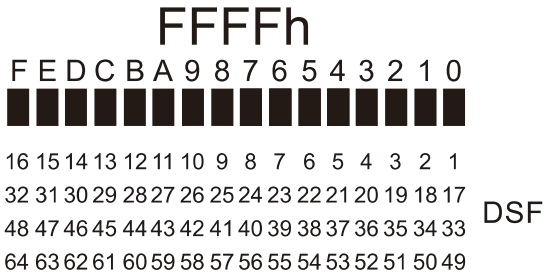
Settings 0–65535

- Serviced physical floor 1S–64S at the front door.
- Uses 16-bit setting for every sixteen floor. If the bit setting that corresponds to the floor is 1, the elevator responds to the front door of the floor. If the bit setting that corresponds to the floor is 0, the elevator does not respond to the front door of the floor.
- For example, in a building with elevator of ten floors, if you need to set the elevator not respond to the front doors at 3F and 5F, which corresponds to bit2 and bit4 respectively, set Pr.05-02 to 65515 (0xFFEB) [=65535 - 2^2 - 2^4]. Use the same setting method for similar parameters.

Setting method of LED display



Setting method of digital keypad KPC-CC01

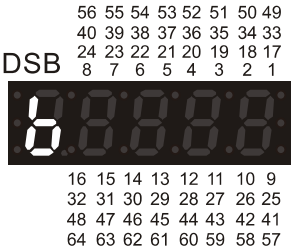


05-06 DSB 16–1
05-07 DSB 32–17
05-08 DSB 48–33
05-09 DSB 64–49

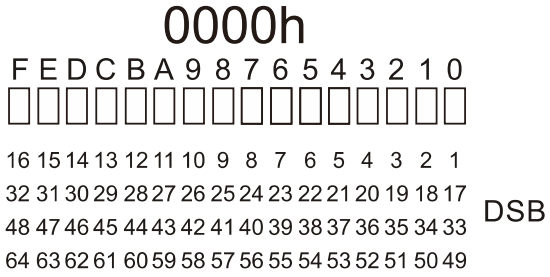
Default: 0

Settings 0–65535

- Serviced physical floor 1S–64S at the rear door
- See Pr.05-02 for details on the setting method.
- Setting method of LED display



Setting method of digital keypad KPC-CC01



05-10 Door Open Time during Hall Calls

Default: 5.0

Settings 0.0–6553.5 sec.

- Sets the door opening time when the elevator arrives at the designated floor during hall calls.

05-11 Door Open Time during Car Calls

Default: 5.0

Settings 0.0–6553.5 sec.

- Sets the door opening time for the door open button in the car.
- Sets the door opening time when the elevator arrives at the designated floor during car calls.

05-12 Door Open Extended Time

Default: 30.0

Settings 0.0–6553.5 sec.

- Sets the door opening time for the door open extended button in the car.

05-13 Disability Door Open Time

Default: 9.0

Settings 0.0–6553.5 sec.

- Sets the door opening time for the disability door open button in the car.

05-14 Door Open Time Protection

Default: 10

Settings 0–100 sec.

- 0: The door opening time protection function is disabled.
- If IED-S does not receive any door open limit signal after the door opens and exceeds Pr.05-14 setting time, the fault code F225 or F227 occurs and the door closes.

05-15 Door Close Time Protection

Default: 10

Settings 0–100 sec.

- 0: The door closing time protection function is disabled.
- If the elevator door does not close for Pr.05-15 setting time after the door closes, the fault code F226 or F228 occurs and the door opens.

05-16 Number of Times for Door Close Protection

Default: 5

Settings 0–100
0: No limit on the number of times for door close protection

1–100: If the number of times for door close protection exceeds Pr.05-16 in one hour, the door remains open and will be no longer automatically close, and the door close button flashes quickly. In this case, press the door close button to automatically reset the fault.

05-17 Extended Door Close Pre-warning Enabled

Default: 5.0

Settings 0.0–100.0 sec.

📖 When the door open extended button lights on, the buzzer on the command board and the multi-function output terminal setting 155 CLBZ (Door closing pre-warning buzzer) output for the time set in Pr.05-17 before the door closes.

05-18 Door Close Pre-warning Time

Default: 2.0

Settings 0.0–199.9 sec.

📖 0–99.9: The voice announces “the elevator is closing” in advance for the time set in Pr.05-18 before the door closes. In the meanwhile, the buzzer on the command board and the multi-function output terminal setting 155 CLBZ (Door closing pre-warning buzzer) output.

📖 100.0–199.9: The voice announces “the elevator is closing” in advance for the time set in Pr.05-18 minus (-) 100.0 seconds before the door closes. At this time, the buzzer on the command board and the multi-function output terminal setting 155 CLBZ (Door closing pre-warning buzzer) do not output.

05-19 Door Close for Elevator Lock Main Landing

Default: 0

Settings 0–1
0: Door remains open when the elevator returns to the elevator lock main landing
1: Door opens for 20 seconds and then closes automatically when the elevator returns to the elevator lock main landing

05-20 Door Close Recall at Fire Emergency

Default: 0

Settings 0–1
0: Door remains open when the elevator returns to the main landing at fire emergency
1: Door opens for 20 seconds and then closes automatically when the elevator returns to the main landing at fire emergency

05-21 Time for Door Re-open While Closing

Default: 5.0

Settings 0.0–6553.5 sec.

📖 When the elevator door re-opens before closing, the door reaches its open position first, and then starts to close until Pr.05-21 setting time arrives.

05-23 Automatic Door Open at Fire Emergency

Default: 0

Settings 0–1
0: Door does not open automatically when the elevator arrives at the designated floor until you press the door open button continuously. The elevator door closes automatically once you release the door open button before the door is in its full open position.
1: Door opens automatically when the elevator arrives at the designated floor

05-24 Door Open/Close Mode when in Manual Operation

Default: 0

Settings 0–2
0: Door open/close signal does not output
1: The door does not open, and automatically closes if the door is not closing.
2: The door opens automatically when the elevator stops in the leveling area; the door closes when you press the upward or downward operation button for the manual mode respectively.

0: The door opening/closing signal does not output if they are NOT in the conditions below.
The door opens when:
1. The elevator stops in the leveling area, and you press the upward and downward operation buttons for the manual mode simultaneously.
2. The elevator stops in the non-leveling area, and you press the UP and DOWN buttons in the car simultaneously when the elevator is in the car inspection mode.

The door closes when:
1. The elevator is running.
2. You press the upward or downward operation button for the manual mode respectively.

No matter what you set in Pr.05-24 for the manual mode, the following door opening/closing may still occur even the elevator stops in the non-leveling area:
The front door opens when MI=121 DOBOC1 (Cartop inspection front door opening button) activates;
The rear door opens when MI122 DOBOC2 (Cartop inspection rear door opening button) activates;
The front door closes when MI123 DCBOC1 (Cartop inspection front door closing button) activates;
The rear door closes when MI124 DCBOC2 (Cartop inspection rear door closing button) activates.

05-25 Door Open Delayed Time at Stop

Default: 0.5

Settings 0.0–2.0 sec.

Sets the door open delayed time when elevator stops at leveling and after operation contactor deactivates.

If you have already set Pr.03-20 (Door Pre-open at Stop), door open time is not affected by Pr.05-25 (Pr.05-25 is invalid).

05-26 Closing Time for Door Open Signal

Default: 0.0

Settings 0.0–600.0 sec.
0.0: The door opening signal outputs continuously
0.1–600.0: Starts to count the time after the door opens to its full position. The door opening signal stops output when the counting time exceeds Pr.05-26.

05-27 Closing Time for Door Close Signal

Default: 0.0

Settings 0.0–600.0 sec.
0.0: The door closing signal outputs continuously
0.1–600.0: Starts to count the time after the door closes. The door closing signal stops output when the counting time exceeds Pr.05-27.

05-28 Time for No Response to Hall Calls

Default: 0

Settings 0–60 sec.

- When the elevator door opens, the elevator does not respond to the hall call at the current floor during Pr.05-28 setting time. This is to prevent the following conditions from happening:
  1. Hall call buttons are stuck.
  2. The door re-opens due to passengers' pressing the buttons at the hall call while the elevator is in full load and in door closing status.
  3. The door re-opens due to hall calls from passengers who arrive the landing hall later than those already in the elevator car.
- If Pr.05-28=0, this function is disabled.

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Chapter 12 Descriptions of Parameter Settings

06 Contacts of Main Control Board

↗: You can set this parameter during operation.

06-00 High-speed MI Filter Time

Default: 3

Settings 0–20 m/s

📖 Defines the filter time of multi-function input terminals X1 (DZU) and X3 (DZD).

06-01 X1

Default: 1

06-02 X2

Default: 61

06-03 X3

Default: 2

06-04 X4

Default: 62

06-05 X5

Default: 12

06-06 X6

Default: 13

06-07 X7

Default: 11

06-08 X8

Default: 1007

06-09 X9

Default: 10

06-10 X10

Default: 14

06-11 X11

Default: 1056

06-12 X12

Default: 25

06-13 X13

Default: 58

06-14 X14

Default: 50

06-15 X15

Default: 1026

06-16 X16

Default: 1030

06-17 X17

Default: 1031

06-18 X18

Default: 1027

06-19 X19

Default: 0

06-20 X20

Default: 0

06-21 X21

Default: 0

06-22 X22

Default: 1033

06-23 X23

Default: 1035

06-24 X24

Default: 1038

06-25 X25

Default: 1034

06-26 HVX1

Default: 15

06-27 HVX2

Default: 18

06-28 HVX3

Default: 21

06-29 HVX4

Default: 9

06-30 HVX5

Default: 8

Settings See the setting value in the **Description of Function Settings** for details

- You must set X1=1 (DZU; Upper Leveling Sensor) and X3=2 (DZD; Lower Leveling Sensor). For other MIs, you can set them to different functions according to your needs.
- Setting the setting value to thousands digit changes the contact from N.O. to N.C. or vice versa. For example, if you set DZU (Upper Leveling Sensor) to 1, the contact is N.O. (Normally Open); if you set DZU (Upper Leveling Sensor) to 1001, the contact becomes N.C. (Normally Closed).
- The function of MI contacts is unique, that is, you cannot enter the same value into different parameters simultaneously (even across Parameter Group 06 and 07).

Description of Function Settings

Normally open (N.O.) (contact A). ON: The contact is closed; OFF: The contact is open.
Normally closed (N.C.) (contact B). OFF: The contact is closed; ON: The contact is open.

Setting Value	MI Function	Description
1	DZU (Upper leveling sensor)	1. IED-S uses the leveling sensor signals to ensure the elevator leveling position. The elevator drive system enables three configurations: single-door sensor, upper/lower leveling sensor and upper/lower door zone sensor. 2. When running upward, the elevator receives upper leveling signal, door zone signal, and lower leveling signal in sequence. When running downward, the elevator receives lower leveling signal, door zone signal, and upper leveling signal in sequence. 3. LED indicator is ON when the sensor is covered.
2	DZD (Lower leveling sensor)	
3	FL1 (Upper door zone sensor)	1. Determines whether the elevator door opens or not. 2. LED indicator is ON when the sensor is covered.
4	FL2 (Lower door zone sensor)	
5	FL1NC (Contact B of the relay for	Contact B (N.C.) of FL1 contactor (Relay). Used to

Setting Value	MI Function	Description
	FL1)	detect whether FL1 contactor (Relay) sticks or not.
6	FL2NC (Contact B of the relay for FL2)	Contact B (N.C.) of FL2 contactor (Relay). Used to detect whether FL2 contactor (Relay) sticks or not..
7	INSCP (Control panel inspection switch)	When LED indicator is ON, the control panel inspection mode is enabled. When LED indicator is OFF, the automatic mode is enabled.
8	ICPUP (Control panel inspection upward)	When in the control panel inspection mode, the elevator runs inspection upward if LED indicator is ON and runs inspection downward if LED indicator is OFF.
9	ICPDN (Control panel inspection downward)	
10	MATPT (Inspection from pit)	When LED indicator is ON, the pit inspection operation mode is enabled. When LED indicator is OFF, the automatic mode is enabled.
11	EIS (Emergency operation)	When LED indicator is ON, emergency operation mode is enabled. The system cancels automatic operation and automatic door open/close function. You can only press the upward/downward button of the emergency operation to run the elevator.
12	UDB (Emergency upward operation button)	Run the emergency upward operation when LED indicator is ON.
13	DDB (Emergency downward operation button)	Run the emergency downward operation when LED indicator is ON.
14	RESET (External reset device)	Runs the external reset when LED indicator is ON.
15	SFH (Safety hatch high voltage)	The safety hatch safeguards the running of the elevator. To ensure safety, the elevator is prohibited to run when the safety hatch is OFF. When LED indicator is ON, the safety hatch is normal.
16	SFL (Safety hatch low voltage)	
17	SFNC (N.C. contact of safety hatch contactor)	The N.C. (B) contact of safety (SF) hatch contactor (relay). Used to detect whether the safety hatch contactor (relay) sticks or not.
18	GSH (Gate safety hatch high voltage)	Rear and front gate have closed when LED indicator is ON.
19	GSL (Gate safety hatch low voltage)	
20	GSNC (N.C. contact of gate safety (GS) hatch contactor)	The N.C. (B) contact of gate safety (GS) hatch contactor (relay). Used to detect whether the gate safety hatch contactor (relay) sticks or not.
21	DSH (Layer door safety hatch high voltage)	All layer doors have closed when LED indicator is ON.
22	DSL (Layer door safety hatch low voltage)	
23	DSNC (N.C. contact of layer door safety (DS) hatch contactor)	The N.C. (B) contact of layer door safety (DS) hatch contactor (relay). Used to detect whether the layer door safety hatch contactor (relay) sticks or not.
25	TCIN (Traveling cable insertion)	1. When LED indicator is ON, the traveling cable is inserted and communication between IED-S and cartop is normal. If communication between IED-S and cartop is bad even traveling cable is inserted, the elevator cannot run, and inspection operation is also unavailable. 2. If cartop or car inspection uses serial communication, and traveling cable is not inserted, then the elevator can run inspection operation in machine room, but cannot run inspection operation in cartop or car.
26	SWNC (N.C. contact of operation contactor (SW))	N.C. contact of operation contactor (SW). Used to detect whether the SW contactor (relay) sticks or not.

Setting Value	MI Function	Description
27	BY1NC (N.C. contact of Brake-1 contactor (BY1))	N.C. contact of brake contactor (BY). Used to detect whether the BY contactor (relay) sticks or not.
28	BY2NC (N.C. contact of Brake-2 contactor (BY2))	
29	BY3NC (N.C. contact of Brake-3 contactor (BY3))	
30	BK1 (Brake-1 travel switch)	The switch to detect whether the brake releases or engages. When LED indicator is ON, the brake releases. When LED indicator is OFF, the brake engages.
31	BK2 (Brake-2 travel switch)	
32	BK3 (Brake-3 travel switch)	
33	LSU (Upper limit switch)	When LED indicator is ON, the elevator has reached the limit switch. LSU and LSD limit that the elevator can only run between the upper and lower limit switch.
34	LSD (Lower limit switch)	
35	ULS1 (First one upward forced deceleration)	1. To ensure safety, when the car is near two ends of the hoistway, forced deceleration is triggered to force the elevator decelerate. 2. For upward forced deceleration switch, the smaller the switch number, the closer the car is to the top floor. 3. For downward forced deceleration switch, the smaller the switch number, the close the car is to the bottom floor. 4. The switch is triggered when the LED indicator is ON.
36	ULS2 (Second one upward forced deceleration)	
37	ULS3 (Third one upward forced deceleration)	
38	DLS1 (First one downward forced deceleration)	
39	DLS2 (Second one downward forced deceleration)	
40	DLS3 (Third one downward forced deceleration)	
41	IUS (Inspection uppermost limit switch)	Activates when LED indicator is ON. Inspection upward is unavailable at this time.
42	IDS (Inspection lowermost limit switch)	Activates when LED indicator is ON. Inspection downward is unavailable at this time.
43	PARK (Elevator lock)	Runs the elevator lock when LED indicator is ON.
44	FIRM (Main landing recall at fire emergency)	Executes returning to main landing at fire emergency when LED indicator is ON.
45	FIRS (Secondary landing recall at fire emergency)	Executes returning to secondary landing at fire emergency when LED indicator is ON.
46	FIRS1 (Fireman class I)	Executes fireman class I when LED indicator is ON.
47	FIRS2 (Fireman class II)	Executes fireman class II when LED indicator is ON.
48	FLOOD (Not auto-reset at flood)	1. An error is detected by pit flood switch when LED indicator is ON. 2. When FLOOD switch is reset, it remains at flood and does not return to normal until it changes to inspection switch. 3. When FLOODA switch is reset, it returns to normal.
49	FLOODA (Auto-reset at flood)	
50	MTS (Motor temperature overheat)	Temperature is normal when LED indicator is ON.
51	ERP (Seismic P-wave)	Switch for minor earthquake (P-wave). Earthquake occurs when LED indicator is ON.
52	ERS (Seismic S-wave)	Switch for small earthquake (S-wave). Earthquake occurs when LED indicator is ON.
53	ERH (Severe earthquake)	Switch for severe earthquake. Earthquake occurs when LED indicator is ON.
54	EPS (Emergency Power Supply)	A signal indicates that mains electricity is powered off. Executes safety landing during power-off when LED indicator is ON. Difference between EPS (MI=54) and UPS (MI=67): EPS: The elevator can automatically determine to execute upward safety landing or downward safety landing.

Setting Value	MI Function	Description
		UPS: The elevator must work with MI=125 BALWG (Balanced switch) to execute safety landing. The elevator executes downward safety landing when BALWG is ON; executes upward safety landing when BALWG is OFF.
55	GOV (Governor)	Governor is normal when LED indicator is ON.
56	DBP (Doorlock bypass)	Doorlock bypass is the current status when LED indicator is ON.
57	BUNC (N.C. contact of brake unit (BU) contactor)	The N.C. contact of brake unit (BU) contactor. Used to detect whether the BU contactor (relay) sticks or not.
58	IBRTS (Drive's discharge resistance temperature switch)	Discharge resistance temperature is normal when LED indicator is ON.
59	UPK (Upward peak running)	Executes upward peak running when LED indicator is ON.
60	DPK (Downward peak running)	Executes downward peak running when LED indicator is ON.
61	SX1 (Door zone signal)	The elevator is currently in the door zone when LED indicator is ON.
62	SX2 (Door unlock output feedback)	1. When the elevator is leveling, door unlock output feedback [SX2] ON is normal as long as door unlock output [SY] is ON. 2. When the elevator is not in inspection mode, door unlock output feedback [SX2] OFF is normal as long as door unlock output [SY] is OFF. 3. When error occurs on item 1 and 2, UCMP board is abnormal, and elevator cannot run.
63	FXNO (N.O. contact of MPSCC (Motor Phase Short Circuit Contactor))	The N.O. contact of MPSCC. Used to detect whether FX contactor (relay) sticks or not.
64	ERGO (Safety landing while severe earthquake)	Executes severe earthquake safety landing when LED indicator is ON.
65	ULS4 (Fourth one upward forced deceleration)	See description of MI=35 to MI=40.
66	DLS4 (Fourth one downward forced deceleration)	
67	UPS (Uninterruptible Power Supply)	Mains electricity is supplied by UPS when LED indicator is ON. Difference between EPS (MI=54) and UPS (MI=67): EPS: The elevator can automatically determine to execute upward safety landing or downward safety landing. UPS: The elevator must work with MI=125 BALWG (Balanced switch) to execute safety landing. The elevator executes downward safety landing when BALWG is ON; executes upward safety landing when BALWG is OFF.
100	OLT1 (Front door reaches its open position)	The door is in its full open position when LED indicator is ON. If you did not set this, door open time by default is three seconds.
101	OLT2 (Rear door reaches its open position)	
102	CLT1 (Front door reaches its closed position)	The door is in its full closed position when LED indicator is ON.
103	CLT2 (Rear door reaches its closed position)	
104	EDP1 (Front door light sensor)	An object is detected by the door light sensor when LED indicator is ON. At this time, the door is unable to act when door full close signal and doorlock signal activate.
105	EDP2 (Rear door light sensor)	

Setting Value	MI Function	Description
106	SE1 (Front door safety edge)	The safety edge is touched when LED indicator is ON. At this time, the door is unable to act when door full close signal and doorlock signal activate.
107	SE2 (Rear door safety edge)	
108	100KG (Light-duty switch)	Car load exceeds 100 kg when LED indicator is ON.
109	LWX (Full-load switch)	Elevator load is 85% larger than the rated load when LED indicator is ON. The elevator does not respond to hall call once this switch activates.
110	LWO (Overload switch)	When LED indicator is ON, elevator load exceeds, door remains open, buzzer bees, car displays overload, and the elevator does not execute re-leveling.
111	150% (Forklift overload switch)	Elevator load is 150% larger than the rated load. This is a forklift application function. When this function is enabled, the elevator re-levels once overload (LWO) activates. When 150% switch activates, elevator door remains open, 150% buzzer alarms, and the elevator does not execute re-leveling. The registered call from car or hall is cancelled.
112	TCI (Cartop inspection switch)	Enters cartop inspection mode when LED indicator is ON and enters automatic mode when LED indicator is OFF.
113	TCIU (Cartop inspection upward)	Uses inspection upward operation when LED indicator is ON.
114	TCID (Cartop inspection downward)	Uses inspection downward operation when LED indicator is ON.
115	HFD (With front door)	Current floor at which the elevator is has a front door when LED indicator is ON. This is used for elevator with front and rear doors.
116	HBD (With rear door)	Current floor at which the elevator is has a rear door when LED indicator is ON. This is used for elevator with front and rear doors.
117	DTS1 (Front door motor temperature switch)	Motor temperature is normal when LED indicator is ON.
118	DTS2 (Rear door motor temperature switch)	
119	TOEX1 (Front door over-torque)	Over-torque while closing door when LED indicator is ON.
120	TOEX2 (Rear door over-torque)	
121	DOBOC1 (Cartop inspection front door open button)	Executes cartop inspection door open test when LED indicator is ON.
122	DOBOC2 (Cartop inspection rear door open button)	
123	DCBOC1(Cartop inspection front door close button)	Executes cartop inspection door closing test when LED indicator is ON.
124	DCBOC2 (Cartop inspection rear door close button)	
125	BALWG (Balanced switch)	Car weight is heavier than counterweight when LED indicator is ON. Executes downward safety landing when power is supplied by EPS. Car weight is lighter than counterweight when LED indicator is OFF. Executes upward safety landing when power is supplied by EPS.
150	DCB1 (Front door close button)	Front door close button is pressed when LED indicator is ON.
151	DOB1 (Front door open button)	Front door open button is pressed when LED indicator is ON.
152	DOBH1 (Front door open extended button)	Front door open extended button is pressed when LED indicator is ON.
153	INSIC (Car inspection switch)	Under car inspection mode when LED indicator is

Setting Value	MI Function	Description
		ON; under automatic mode when LED indicator is OFF. Car inspection mode has the lowest priority for inspection mode (lower than emergency operation).
154	IICUP (Car inspection upward and attendant direction change)	When LED indicator is ON: Executes inspection upward operation while in car inspection mode. Forces to change the elevator running direction while in attendant mode.
155	IICDN (Car inspection downward and attendant direct landing)	When LED indicator is ON: Executes inspection downward operation while in car inspection mode. Makes elevator stop at registered car call only, and does not respond to hall call. But hall call remains registered and cannot be cancelled while in attendant mode.
156	CARD (Car reader)	Car call can be registered only when LED indicator is ON.
157	CFNLT (Car fan and lighting control switch)	Fan stops and lighting is off when LED indicator is ON.
158	ESS (Stop at each floor)	Executes stop at each floor for car call when LED indicator is ON. For example, if the elevator stops at 1F, and there is a car call from 5F, it will stop at each floor–2F, 3F, and 4F–before arriving at 5F.
159	FUP (Manual upward fine-tune button)	When LED indicator is ON and door open extended button is activated, elevator is forced to run upward manually at fine-tuned speed under automatic mode, and runs with Pr.04-05 (Leveling Speed)..
160	FDN (Manual downward fine-tune button)	When LED indicator is ON and door open extended button is activated, elevator is forced to run downward manually at fine-tuned speed under automatic mode, and runs with Pr.04-05 (Leveling Speed).
161	ISS (Independent operation switch)	The elevator runs in normal mode independently instead of parallel control when LED indicator is ON.
162	IND (Goods only switch)	Enters goods carrying mode when LED indicator is ON.
163	ATS (Attendant mode)	An attendant is accompanied in the elevator to control upward or downward running and make elevator stop at designated floor as per passenger needs.
164	VIP (VIP mode)	
165	CLIS (Car lighting switch)	Car lighting equipment is off when LED indicator is ON.
166	FS (Car fan switch)	Car fan stops when LED indicator is ON.
167	DCB2 (Rear door close button)	Rear door close button is pressed when LED indicator is ON.
168	DOB2 (Rear door open button)	Rear door open button is pressed when LED indicator is ON.
169	DOBH2 (Rear door open extended button)	Rear door open extended button is pressed when LED indicator is ON.
170	DCB1B (Front door close auxiliary button)	Front door close auxiliary button is pressed when LED indicator is ON.
171	DOB1B (Front door open auxiliary button)	Front door open auxiliary button is pressed when LED indicator is ON.
172	DOBH1B (Front door open auxiliary extended button)	Front door open auxiliary extended button is pressed when LED indicator is ON.
173	DCB2B (Rear door close auxiliary button)	Rear door close auxiliary button is press when LED indicator is ON.
174	DOB2B (Rear door open auxiliary	Rear door open auxiliary button is pressed when

Setting Value	MI Function	Description
	button)	LED indicator is ON.
175	DOBH2B (Rear door open auxiliary extended button)	Rear door open auxiliary extended button is pressed when LED indicator is ON.
201	PK (Peak running at random floor)	Executes floor setting for peak running at random floor when LED indicator is ON.
202	REPK (Remove peak running)	Cancels peak running when LED indicator is ON.
203	PASSWORD (Execute password car call while LED lights)	Executes password car call when LED indicator is ON.
204	PASSSET (Execute password setting while LED lights)	Executes password setting when LED indicator is ON.

06-31 Y1

Default: 1

06-32 Y2

Default: 2

06-33 Y3

Default: 5

06-34 Y4

Default: 15

06-35 Y5

Default: 7

06-36 Y6

Default: 13

06-37 Y7

Default: 0

06-38 Y8

Default: 0

Settings See the setting value in **Description of Function Settings** for details

Description of Function Settings

Normally open (N.O.) (contact A). ON: The contact is closed; OFF: The contact is open.
Normally closed (N.C.) (contact B). OFF: The contact is closed; ON: The contact is open.

Setting Value	MO Function	Description
1	SW (Operation contactor)	Controls the operation
2	BY1 (Brake-1 contactor)	Controls brake-1 contactor
3	BY2 (Brake-2 contactor)	Controls brake-2 contactor
4	BY3 (Brake-3 contactor)	Controls brake-3 contactor
5	BY4 (Brake contactor for full voltage)	Controls brake for full voltage
6	FX (Motor Phase Short Circuit Contactor (PM))	Controls MPSCC
7	BU (Contactor of brake unit)	The contactor that controls between brake unit and discharge resistance. Also can be used as a contactor that controls among motor, control panel, and discharge resistance fan.
8	MFN (Main fan)	Controls among motor, control panel, and discharge resistance fan.
9	YUPS (UPS stops output)	Make UPS stop supplying power after UPS emergent safety landing is finished.
10	PRST (Earthquake reset)	Resets minor earthquake (P-wave) signal of earthquake detector
11	NOR (Normal running)	Elevator runs in normal mode

Setting Value	MO Function	Description
12	ERR (Error output)	Outputs when error occurs in elevator
13	FIRLD (Main landing at fire emergency)	Outputs when elevator arrives main landing at fire emergency under fire mode.
14	RG (Rope gripper)	Makes standby break (rope gripper) NOT brake when LED indicator is ON.
15	SY (Door unlock contactor)	Outputs only when re-leveling after door open and door pre-opens at stop. Otherwise, SY is OFF.
16	QKOK (Earthquake control finished)	Outputs after earthquake control operation procedure is finished.
17	SDBZ (Supervisory panel alarm)	When “severe earthquake (ERH)” signal activates, supervisory panel alarm bees until “severe earthquake safety landing (ERGO)” switch is triggered.
18	ERHL (Severe earthquake light)	ERHL light is ON when “severe earthquake (ERH)” signal activates; ERHL light is OFF when “severe earthquake (ERH)” signal resets.
100	OP1 (Front door opens)	Outputs front door open signal
101	OP2 (Rear door opens)	Outputs rear door open signal
102	CL1 (Front door closes)	Outputs front door close signal
103	CL2 (Rear door closes)	Outputs rear door close signal
104	BZ (Buzzer)	Outputs when overload occurs or doorlock bypass is activated.
105	BPSL (Doorlock bypass lighting alarm)	Outputs when doorlock bypass is activated. The alarm is ON for 0.4 seconds and OFF for 0.4 seconds.
106	UDCL (Car bottom light)	Steady ON when in inspection. The light is ON for 0.4 seconds and OFF for 0.4 seconds when doorlock bypass is activated.
107	F (Car fan)	Outputs fan signal. Fan stops when LED indicator is ON.
108	CLI (Car lighting)	Outputs lighting signal. Lighting is off when LED indicator is ON.
109	LPT (Floor arrival clock)	Outputs floor arrival clock signal for 0.5 second
110	LPTU (Upward floor arrival clock)	Outputs floor arrival clock signal when arriving at designated floor upward for 0.5 second.
111	LPTD (Downward floor arrival clock)	Outputs floor arrival clock signal when arriving at designated floor downward for 0.5 second.
112	FCL1 (Front door forced close at low speed)	Executes front door forced close at low speed when LED indicator is ON.
113	FCL2 (Rear door forced close at low speed)	Executes rear door forced close at low speed when LED indicator is ON.
114	S2XX0 (Voice announces the floor arrives)	Outputs when floor arrives
115	S2XX1 (Voice announces the floor arrives)	Outputs when floor arrives
116	S2XX2 (Voice announces the floor arrives)	Outputs when floor arrives
117	S2XX3 (Voice announces the floor arrives)	Outputs when floor arrives
118	S2XX4 (Voice announces the floor arrives)	Outputs when floor arrives
119	S2XX5 (Voice announces the floor arrives)	Outputs when floor arrives
120	SPK (Voice announcement)	Provides audible announcement of an elevator’s arrival on floor
121	SOP (Voice door open)	Voice announces the elevator is opening the door
122	SCL (Voice door close)	Voice announces the elevator is closing the door
123	SUP (Voice upward)	Voice announces the elevator is running upward
124	SDN (Voice downward)	Voice announces the elevator is running downward
125	SOLD (Voice overload)	Voice announces the elevator is overloading
126	SSEV (Voice EMT medical use)	Voice announces the elevator is in emergency medical

Setting Value	MO Function	Description
		use
127	SCON (Voice control)	Voice shutdown and is in control operation
128	SFIR (Voice fire alarm)	Voice is in fire alarm
129	SER (Voice earthquake)	Voice is under earthquake
130	SFLOOD (Voice flood)	Voice is at flood
131	SUPS (Voice power loss)	Voice is lack of power
132	SERR (Voice elevator failure)	Voice elevator is in failure
133	SPACE (Voice blank)	Voice blank
150	DCBL1 (Front door close button lamp)	Outputs the signal of front door close button lamp
151	DOBL1 (Front door open button lamp)	Outputs the signal of front door open button lamp
152	DOBHL1 (Front door open extended button lamp)	Outputs the signal of front door open extended button lamp
153	FULL (Full-load)	Outputs full-load signal
154	OLD (Overload)	Outputs overload signal
155	CLBZ (Door closing pre-warning buzzer)	Door closing pre-warning buzzer
167	DCBL2 (Rear door close button lamp)	Outputs the signal of rear door close button lamp
168	DOBL2 (Rear door open button lamp)	Outputs the signal of rear door open button lamp
169	DOBHL2 (Rear door open extended button lamp)	Outputs the signal of rear door open extended button lamp
170	DCBL1B (Front door close auxiliary button lamp)	Outputs the signal of front door close auxiliary button lamp
171	DOBL1B (Front door open auxiliary button lamp)	Outputs the signal of front door open auxiliary button lamp
172	DOBHL1B (Front door open auxiliary extended button lamp)	Outputs the signal of front door open auxiliary extended button lamp
173	DCBL2B (Rear door close auxiliary button lamp)	Outputs the signal of rear door close auxiliary button lamp
174	DOBL2B (Rear door open auxiliary button lamp)	Outputs the signal of rear door open auxiliary button lamp
175	DOBHL2B (Rear door open auxiliary extended button lamp)	Outputs the signal of rear door open auxiliary extended button lamp

06-39 X_INV1

Default: 0000h

06-40 X_INV2

Default: 0000h

06-41 X_INV3

Default: 0000h

06-42 Y_INV

Default: 0000h

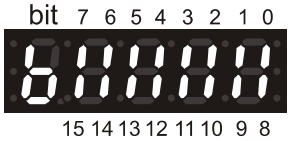
06-43 HVX_INV

Default: 0000h

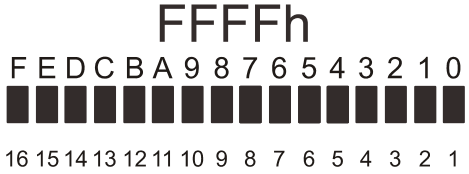
Settings 0000h–FFFFh

- This function sets the contact from N.O. to N.C. or vice versa (reverse contact). Use this function for test only. Do NOT use it under normal mode for elevator.
- If you have set Pr.06-01 to thousands digit, namely reverse contact, setting it at Pr.06-39 makes the reverse function invalid.
- Pr.06-39 reverse contact setting: 1–16 = Pr.06-01–Pr.06-16

Setting method of LED display



Setting method of digital keypad KPC-CC01



06-99 Clear Contacts of Main Control Board

Default: 0

Settings 0–3
0: No function
1: Set all MI contacts of the main control board to 0
2: Set all MO contacts of the main control board to 0
3: Set all values in Parameter Group 06 to 0

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Chapter 12 Descriptions of Parameter Settings

07 Contacts of Cartop Board

: You can set this parameter during operation.

07-01 OCB I1

Default: 1112

07-02 OCB I2

Default: 113

07-03 OCB I3

Default: 114

07-04 OCB I4

Default: 1104

07-05 OCB I5

Default: 110

07-06 OCB I6

Default: 1100

07-07 OCB I7

Default: 1102

07-08 OCB I8

Default: 0

07-09 OCB I9

Default: 0

07-19 ICB1 JP17(I1)

Default: 150

07-20 ICB1 JP18(I2)

Default: 151

07-21 ICB1 JP19(I3)

Default: 152

07-22 ICB1 JP20(I4)

Default: 1153

07-23 ICB1 JP21(I5)

Default: 154

07-24 ICB1 JP22(I6)

Default: 155

07-25 ICB1 JP23(I7)

Default: 157

07-26 ICB1 JP24(I8)

Default: 162

07-35 ICB2 JP17(I1)

Default: 0

07-36 ICB2 JP18(I2)

Default: 0

07-37 ICB2 JP19(I3)

Default: 0

07-38 ICB2 JP20(I4)

Default: 0

07-39 ICB2 JP21(I5)

Default: 0

07-40 ICB2 JP22(I6)

Default: 0

07-41 ICB2 JP23(I7)

Default: 0

07-42 ICB2 JP24(I8)

Default: 0

07-51 ICB3 JP17(I1)

Default: 0

07-52 ICB3 JP18(I2)

Default: 0

07-53 ICB3 JP19(I3)

Default: 0

07-54 ICB3 JP20(I4)

Default: 0

07-55 ICB3 JP21(I5)

Default: 0

07-56 ICB3 JP22(I6)

Default: 0

07-57 ICB3 JP23(I7)

Default: 0

07-58 ICB3 JP24(I8)

Default: 0

07-67 ICB4 JP17(I1)

Default: 0

07-68 ICB4 JP18(I2)

Default: 0

07-69 ICB4 JP19(I3)

Default: 0

07-70 ICB4 JP20(I4)

Default: 0

07-71 ICB4 JP21(I5)

Default: 0

07-72 ICB4 JP22(I6)

Default: 0

07-73 ICB4 JP23(I7)

Default: 0

07-74 ICB4 JP24(I8)

Default: 0

Settings	See descriptions of Parameter Group 06 Contacts of Main Control Board for details

📖 Use the same multi-function input (MI) functions as Parameter Group 06. See descriptions of Parameter Group 06 Contacts of Main Control Board for details.

07-10 OCB Od2(Y1)

Default: 100

07-11 OCB Od1(Y2)

Default: 102

07-12 OCB Oc3(Y3)

Default: 0

07-13 OCB Oc2(Y4)

Default: 0

07-14 OCB Oc1(Y5)

Default: 105

07-15 OCB Ob3(Y6)

Default: 106

07-16 OCB Ob2(Y7)

Default: 154

07-17 OCB Ob1(Y8)

Default: 107

07-18 OCB Oa(Y9)

Default: 108

07-27 ICB1 JP17(Y1)

Default: 150

07-28 ICB1 JP18(Y2)

Default: 151

07-29 ICB1 JP19(Y3)

Default: 152

07-30 ICB1 JP20(Y4)

Default: 0

07-31 ICB1 JP21(Y5)

Default: 154

07-32 ICB1 JP22(Y6)

Default: 155

07-33 ICB1 JP23(Y7)

Default: 0

07-34 ICB1 JP24(Y8)

Default: 0

07-43 ICB2 JP17(Y1)

Default: 0

07-44 ICB2 JP18(Y2)

Default: 0

07-45 ICB2 JP19(Y3)

Default: 0

07-46 ICB2 JP20(Y4)

Default: 0

07-47 ICB2 JP21(Y5)

Default: 0

07-48 ICB2 JP22(Y6)

Default: 0

07-49 ICB2 JP23(Y7)

Default: 0

07-50 ICB2 JP24(Y8)

Default: 0

07-59 ICB3 JP17(Y1)

Default: 0

07-60 ICB3 JP18(Y2)

Default: 0

07-61 ICB3 JP19(Y3)

Default: 0

07-62 ICB3 JP20(Y4)

Default: 0

07-63 ICB3 JP21(Y5)

Default: 0

07-64 ICB3 JP22(Y6)

Default: 0

07-65 ICB3 JP23(Y7)

Default: 0

07-66 ICB3 JP24(Y8)

Default: 0

07-75 ICB4 JP17(Y1)

Default: 0

07-76 ICB4 JP18(Y2)

Default: 0

07-77 ICB4 JP19(Y3)

Default: 0

07-78 ICB4 JP20(Y4)

Default: 0

07-79 ICB4 JP21(Y5)

Default: 0

07-80 ICB4 JP22(Y6)

Default: 0

07-81 ICB4 JP23(Y7)

Default: 0

07-82 ICB4 JP24(Y8)

Default: 0

Settings See descriptions of Parameter Group 06 Contacts of Main Control Board for details

- 🕮 Use the same multi-function output (MO) functions as Parameter Group 06. See descriptions of Parameter Group 06 Contacts of Main Control Board for details.
- 🕮 Pr.07-01–Pr.07-09 are cartop board (OCB) input contacts.
- 🕮 Pr.07-10–Pr.07-18 are cartop board (OCB) output contacts
- 🕮 Pr.07-19–Pr.07-26 are command board (ICB1) input contacts.
- 🕮 Pr.07-27–Pr.07-34 are command board (ICB1) output contacts.
- 🕮 Pr.07-35–Pr.07-42 are command board (ICB2) input contacts.

07-99 Clear Contacts of Cartop Board

Default: 0

Settings 0–3
0: No function
1: Set all MI contacts of the cartop board to 0
2: Set all MO contacts of the cartop board to 0
3: Set all values in Parameter Group 07 to 0

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Chapter 12 Descriptions of Parameter Settings

08 Floor Display

↗: You can set this parameter during operation.

08-01 Physical Floor 1

Default: 1

08-02 Physical Floor 2

Default: 2

08-03 Physical Floor 3

Default: 3

08-04 Physical Floor 4

Default: 4

08-05 Physical Floor 5

Default: 5

08-06 Physical Floor 6

Default: 6

08-07 Physical Floor 7

Default: 7

08-08 Physical Floor 8

Default: 8

08-09 Physical Floor 9

Default: 9

08-10 Physical Floor 10

Default: 100

08-11 Physical Floor 11

Default: 101

08-12 Physical Floor 12

Default: 102

08-13 Physical Floor 13

Default: 103

08-14 Physical Floor 14

Default: 104

08-15 Physical Floor 15

Default: 105

08-16 Physical Floor 16

Default: 106

08-17 Physical Floor 17

Default: 107

08-18 Physical Floor 18

Default: 108

08-19 Physical Floor 19

Default: 109

08-20 Physical Floor 20

Default: 200

08-21 Physical Floor 21

Default: 201

08-22 Physical Floor 22

Default: 202

08-23 Physical Floor 23

Default: 203

08-24 Physical Floor 24

Default: 204

08-25 Physical Floor 25

Default: 205

08-26 Physical Floor 26

Default: 206

08-27 Physical Floor 27

Default: 207

08-28 Physical Floor 28

Default: 208

08-29 Physical Floor 29

Default: 209

08-30 Physical Floor 30

Default: 300

08-31 Physical Floor 31

Default: 301

08-32 Physical Floor 32

Default: 302

08-33 Physical Floor 33

Default: 303

08-34 Physical Floor 34

Default: 304

08-35 Physical Floor 35

Default: 305

08-36 Physical Floor 36

Default: 306

08-37 Physical Floor 37

Default: 307

08-38 Physical Floor 38

Default: 308

08-39 Physical Floor 39

Default: 309

08-40 Physical Floor 40

Default: 400

08-41 Physical Floor 41

Default: 401

08-42 Physical Floor 42

Default: 402

08-43 Physical Floor 43

Default: 403

08-44 Physical Floor 44

Default: 404

08-45 Physical Floor 45

Default: 405

08-46 Physical Floor 46

Default: 406

08-47 Physical Floor 47

Default: 407

08-48 Physical Floor 48

Default: 408

08-49 Physical Floor 49

Default: 409

08-50 Physical Floor 50

Default: 500

08-51 Physical Floor 51

Default: 501

08-52 Physical Floor 52

Default: 502

08-53 Physical Floor 53

Default: 503

08-54 Physical Floor 54

Default: 504

08-55 Physical Floor 55

Default: 505

08-56 Physical Floor 56

Default: 506

08-57 Physical Floor 57

Default: 507

08-58 Physical Floor 58

Default: 508

08-59 Physical Floor 59

Default: 509

08-60 Physical Floor 60

Default: 600

08-61 Physical Floor 61

Default: 601

08-62 Physical Floor 62

Default: 602

08-63 Physical Floor 63

Default: 603

08-64 Physical Floor 64

Default: 604

Settings 0–65535

📖 Pr.08-00 is not available for the user. The first physical floor starts from Pr.08-01.

📖 Setting value: XXYY

XX: Tens digit	YY: Units digit
00 = ’0’	
01 = ’1’	
02 = ’2’	
03 = ’3’	

04 = ’4’	
05 = ’5’	
06 = ’6’	
07 = ’7’	
08 = ’8’	
09 = ’9’	
10 = ’A’	
11 = ’B’	
12 = ’G’	
13 = ’H’	
14 = ’L’	
15 = ’M’	
16 = ’P’	
17 = ’R’	
18 = ’-’	
19 = ’ ’	
20 = ’X’	
21 = up_icon	
22 = down_icon	

📖 Parameter Group 08 sets the displayed value for each floor. The first two digits (XX) are the tens digit of the displayed value; the last two digits (YY) are the units digit of the displayed value. For example, if you need to display the basement first floor as “B1”, set XXYY to “1101”.

Chapter 12 Descriptions of Parameter Settings

09 Floor Position 1

- Parameter Group 09 sets the hoistway parameter values. You can use hoistway auto-tuning to obtain the hoistway parameter values.
- Each floor uses two sets of parameters; one is the high position (meter/m), and the other is the low position (millimeter/mm) to indicate the accurate floor position. For example, the second floor uses Pr.09-10 and Pr.09-11 to indicate floor position. If Pr.09-10 is set to 7, and Pr.09-11 is set to 1234, then the second floor position is 7.1234 meter (m).

↗: You can set this parameter during operation.

09-00 Current Position (H)

Default: Read only

Settings -32768–32767 m

09-01 Current Position (L)

Default: Read only

Settings -3276.8–3276.7 mm

09-02 Current Pulse 10k (H)

Default: Read only

Settings 0–65535 10k

09-03 Current Pulse (L)

Default: Read only

Settings 0–65535

09-04 Leveling Plate Length (H)

Default: Read only

Settings 0–65535 m

09-05 Leveling Plate Length (L)

Default: Read only

Settings 0.0–6553.5 mm

09-06 Leveling Clearance (H)

Default: Read only

Settings 0–65535 m

09-07 Leveling Clearance (L)

Default: Read only

Settings 0.0–6553.5 mm

09-08 1S High Position

Default: Read only

Settings 0–65535 m

09-09 1S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-10 2S High Position

Default: Read only

Settings 0–65535 m

09-11 2S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-12 3S High Position

Default: Read only

Settings 0–65535 m

09-13 3S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-14 4S High Position

Default: Read only

Settings 0–65535 m

09-15 4S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-16 5S High Position

Default: Read only

Settings 0–65535 m

09-17 5S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-18 6S High Position

Default: Read only

Settings 0–65535 m

09-19 6S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-20 7S High Position

Default: Read only

Settings 0–65535 m

09-21 7S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-22 8S High Position

Default: Read only

Settings 0–65535 m

09-23 8S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-24 9S High Position

Default: Read only

Settings 0–65535 m

09-25 9S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-26 10S High Position

Default: Read only

Settings 0–65535 m

09-27 10S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-28 11S High Position

Default: Read only

Settings 0–65535 m

09-29 11S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-30 12S High Position

Default: Read only

Settings 0–65535 m

09-31 12S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-32 13S High Position

Default: Read only

Settings 0–65535 m

09-33 13S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-34 14S High Position

Default: Read only

Settings 0–65535 m

09-35 14S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-36 15S High Position

Default: Read only

Settings 0–65535 m

09-37 15S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-38 16S High Position

Default: Read only

Settings 0–65535 m

09-39 16S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-40 17S High Position

Default: Read only

Settings 0–65535 m

09-41 17S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-42 18S High Position

Default: Read only

Settings 0–65535 m

09-43 18S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-44 19S High Position

Default: Read only

Settings 0–65535 m

09-45 19S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-46 20S High Position

Default: Read only

Settings 0–65535 m

09-47 20S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-48 21S High Position

Default: Read only

Settings 0–65535 m

09-49 21S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-50 22S High Position

Default: Read only

Settings 0–65535 m

09-51 22S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-52 23S High Position

Default: Read only

Settings 0–65535 m

09-53 23S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-54 24S High Position

Default: Read only

Settings 0–65535 m

09-55 24S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-56 25S High Position

Default: Read only

Settings 0–65535 m

09-57 25S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-58 26S High Position

Default: Read only

Settings 0–65535 m

09-59 26S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-60 27S High Position

Default: Read only

Settings 0–65535 m

09-61 27S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-62 28S High Position

Default: Read only

Settings 0–65535 m

09-63 28S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-64 29S High Position

Default: Read only

Settings 0–65535 m

09-65 29S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-66 30S High Position

Default: Read only

Settings 0–65535 m

09-67 30S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-68 31S High Position

Default: Read only

Settings 0–65535 m

09-69 31S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-70 32S High Position

Default: Read only

Settings 0–65535 m

09-71 32S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-72 33S High Position

Default: Read only

Settings 0–65535 m

09-73 33S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-74 34S High Position

Default: Read only

Settings 0–65535 m

09-75 34S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-76 35S High Position

Default: Read only

Settings 0–65535 m

09-77 35S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-78 36S High Position

Default: Read only

Settings 0–65535 m

09-79 36S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-80 37S High Position

Default: Read only

Settings 0–65535 m

09-81 37S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-82 38S High Position

Default: Read only

Settings 0–65535 m

09-83 38S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-84 39S High Position

Default: Read only

Settings 0–65535 m

09-85 39S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-86 40S High Position

Default: Read only

Settings 0–65535 m

09-87 40S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-88 41S High Position

Default: Read only

Settings 0–65535 m

09-89 41S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-90 42S High Position

Default: Read only

Settings 0–65535 m

09-91 42S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-92 43S High Position

Default: Read only

Settings 0–65535 m

09-93 43S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-94 44S High Position

Default: Read only

Settings 0–65535 m

09-95 44S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-96 45S High Position

Default: Read only

Settings 0–65535 m

09-97 45S Low Position

Default: Read only

Settings 0.0–6553.5 mm

09-98 46S High Position

Default: Read only

Settings 0–65535 m

09-99 46S Low Position

Default: Read only

Settings 0.0–6553.5 mm

Chapter 12 Descriptions of Parameter Settings

10 Floor Position 2

- Parameter Group 10 sets the hoistway parameter values. You can use hoistway auto-tuning to obtain the hoistway parameter values.
- Pr.10-52 to Pr.10-79 are for position adjustments (51S–64S). Use them to fine-tune each floor position after being obtained from floor turning for an optimal elevator height position.
- Each floor uses two sets of parameter; one is the high position (meter/m), and the other is the low position (millimeter/mm) to indicate the accurate floor position.
  1. Pr.10-36 to Pr.10-51 are the accurate positions for hoistway switch, including the upper/lower limit switch and forced deceleration sensors.
  2. A maximum of four forced deceleration sensors are provided for IED-S. Among them, the nearest to the top and bottom floors is the first one forced deceleration sensor; the furthest is the fourth one; between them are the second one and third one.
  3. If the forced deceleration sensor is triggered during the elevator's running, IED-S detects the elevator's running speed and checks if the speed and position are abnormal. If abnormal, the elevator will be forced to decelerate to prevent overshoot.
  4. For details on the installation position of the forced deceleration sensors, see Section 10-6-3 <Installation Position of Upward and Downward Forced Deceleration Sensor>.

↗: You can set this parameter during operation.

10-00 47S High Position

Default: Read only

Settings 0–65535 m

10-01 47S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-02 48S High Position

Default: Read only

Settings 0–65535 m

10-03 48S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-04 49S High Position

Default: Read only

Settings 0–65535 m

10-05 49S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-06 50S High Position

Default: Read only

Settings 0–65535 m

10-07 50S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-08 51S High Position

Default: Read only

Settings 0–65535 m

10-09 51S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-10 52S High Position

Default: Read only

Settings 0–65535 m

10-11 52S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-12 53S High Position

Default: Read only

Settings 0–65535 m

10-13 53S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-14 54S High Position

Default: Read only

Settings 0–65535 m

10-15 54S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-16 55S High Position

Default: Read only

Settings 0–65535 m

10-17 55S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-18 56S High Position

Default: Read only

Settings 0–65535 m

10-19 56S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-20 57S High Position

Default: Read only

Settings 0–65535 m

10-21 57S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-22 58S High Position

Default: Read only

Settings 0–65535 m

10-23 58S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-24 59S High Position

Default: Read only

Settings 0–65535 m

10-25 59S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-26 60S High Position

Default: Read only

Settings 0–65535 m

10-27 60S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-28 61S High Position

Default: Read only

Settings 0–65535 m

10-29 61S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-30 62S High Position

Default: Read only

Settings 0–65535 m

10-31 62S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-32 63S High Position

Default: Read only

Settings 0–65535 m

10-33 63S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-34 64S High Position

Default: Read only

Settings 0–65535 m

10-35 64S Low Position

Default: Read only

Settings 0.0–6553.5 mm

10-36 Downward Forced Stop (H)

Default: Read only

Settings -32768–32767 m

10-37 Downward Forced Stop (L)

Default: Read only

Settings -3276.8–3276.7 mm

10-38 First One Downward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-39 First One Downward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-40 Second One Downward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-41 Second One Downward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-42 Third One Downward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-43 Third One Downward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-44 Upward Forced Stop (H)

Default: Read only

Settings 0–65535 m

10-45 Upward Forced Stop (L)

Default: Read only

Settings 0.0–6553.5 mm

10-46 First One Upward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-47 First One Upward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-48 Second One Upward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-49 Second One Upward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-50 Third One Upward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-51 Third One Upward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-52 51S Upward Adjustment

Default: 0

Settings -100–100 mm

10-53 51S Downward Adjustment

Default: 0

Settings -100–100 mm

10-54 52S Upward Adjustment

Default: 0

Settings -100–100 mm

10-55 52S Downward Adjustment

Default: 0

Settings -100–100 mm

10-56 53S Upward Adjustment

Default: 0

Settings -100–100 mm

10-57 53S Downward Adjustment

Default: 0

Settings -100–100 mm

10-58 54S Upward Adjustment

Default: 0

Settings -100–100 mm

10-59 54S Downward Adjustment

Default: 0

Settings -100–100 mm

10-60 55S Upward Adjustment

Default: 0

Settings -100–100 mm

10-61 55S Downward Adjustment

Default: 0

Settings -100–100 mm

10-62 56S Upward Adjustment

Default: 0

Settings -100–100 mm

10-63 56S Downward Adjustment

Default: 0

Settings -100–100 mm

10-64 57S Upward Adjustment

Default: 0

Settings -100–100 mm

10-65 57S Downward Adjustment

Default: 0

Settings -100–100 mm

10-66 58S Upward Adjustment

Default: 0

Settings -100–100 mm

10-67 58S Downward Adjustment

Default: 0

Settings -100–100 mm

10-68 59S Upward Adjustment

Default: 0

Settings -100–100 mm

10-69 59S Downward Adjustment

Default: 0

Settings -100–100 mm

10-70 60S Upward Adjustment

Default: 0

Settings -100–100 mm

10-71 60S Downward Adjustment

Default: 0

Settings -100–100 mm

10-72 61S Upward Adjustment

Default: 0

Settings -100–100 mm

10-73 61S Downward Adjustment

Default: 0

Settings -100–100 mm

10-74 62S Upward Adjustment

Default: 0

Settings -100–100 mm

10-75 62S Downward Adjustment

Default: 0

Settings -100–100 mm

10-76 63S Upward Adjustment

Default: 0

Settings -100–100 mm

10-77 63S Downward Adjustment

Default: 0

Settings -100–100 mm

10-78 64S Upward Adjustment

Default: 0

Settings -100–100 mm

10-79 64S Downward Adjustment

Default: 0

Settings -100–100 mm

10-80 Fourth One Upward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-81 Fourth One Upward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

10-82 Fourth One Downward Deceleration (H)

Default: Read only

Settings 0–65535 m

10-83 Fourth One Downward Deceleration (L)

Default: Read only

Settings 0.0–6553.5 mm

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Chapter 12 Descriptions of Parameter Settings

11 Position Adjustment

↗: You can set this parameter during operation.

11-00	1S Upward Adjustment
11-01	1S Downward Adjustment
11-02	2S Upward Adjustment
11-03	2S Downward Adjustment
11-04	3S Upward Adjustment
11-05	3S Downward Adjustment
11-06	4S Upward Adjustment
11-07	4S Downward Adjustment
11-08	5S Upward Adjustment
11-09	5S Downward Adjustment
11-10	6S Upward Adjustment
11-11	6S Downward Adjustment
11-12	7S Upward Adjustment
11-13	7S Downward Adjustment
11-14	8S Upward Adjustment
11-15	8S Downward Adjustment
11-16	9S Upward Adjustment
11-17	9S Downward Adjustment
11-18	10S Upward Adjustment
11-19	10S Downward Adjustment
11-20	11S Upward Adjustment
11-21	11S Downward Adjustment
11-22	12S Upward Adjustment
11-23	12S Downward Adjustment
11-24	13S Upward Adjustment
11-25	13S Downward Adjustment
11-26	14S Upward Adjustment
11-27	14S Downward Adjustment
11-28	15S Upward Adjustment
11-29	15S Downward Adjustment
11-30	16S Upward Adjustment
11-31	16S Downward Adjustment
11-32	17S Upward Adjustment
11-33	17S Downward Adjustment
11-34	18S Upward Adjustment


18S Downward Adjustment


19S Upward Adjustment


19S Downward Adjustment


20S Upward Adjustment


20S Downward Adjustment


21S Upward Adjustment


21S Downward Adjustment


22S Upward Adjustment


22S Downward Adjustment


23S Upward Adjustment


23S Downward Adjustment


24S Upward Adjustment


24S Downward Adjustment

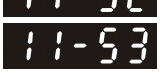

25S Upward Adjustment


25S Downward Adjustment

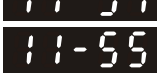

26S Upward Adjustment


26S Downward Adjustment


27S Upward Adjustment


27S Downward Adjustment


28S Upward Adjustment


28S Downward Adjustment


29S Upward Adjustment


29S Downward Adjustment


30S Upward Adjustment


30S Downward Adjustment


31S Upward Adjustment


31S Downward Adjustment


32S Upward Adjustment


32S Downward Adjustment


33S Upward Adjustment


33S Downward Adjustment


34S Upward Adjustment


34S Downward Adjustment


35S Upward Adjustment


35S Downward Adjustment


36S Upward Adjustment


36S Downward Adjustment


37S Upward Adjustment


37S Downward Adjustment

11-74	38S Upward Adjustment
11-75	38S Downward Adjustment
11-76	39S Upward Adjustment
11-77	39S Downward Adjustment
11-78	40S Upward Adjustment
11-79	40S Downward Adjustment
11-80	41S Upward Adjustment
11-81	41S Downward Adjustment
11-82	42S Upward Adjustment
11-83	42S Downward Adjustment
11-84	43S Upward Adjustment
11-85	43S Downward Adjustment
11-86	44S Upward Adjustment
11-87	44S Downward Adjustment
11-88	45S Upward Adjustment
11-89	45S Downward Adjustment
11-90	46S Upward Adjustment
11-91	46S Downward Adjustment
11-92	47S Upward Adjustment
11-93	47S Downward Adjustment
11-94	48S Upward Adjustment
11-95	48S Downward Adjustment
11-96	49S Upward Adjustment
11-97	49S Downward Adjustment
11-98	50S Upward Adjustment
11-99	50S Downward Adjustment

Default: 0

Settings -100–100 mm

📖 Use these parameters to fine-tune each floor position after being obtained from floor tuning for an optimal elevator height position.

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Chapter 12 Descriptions of Parameter Settings

12 Signal Monitoring

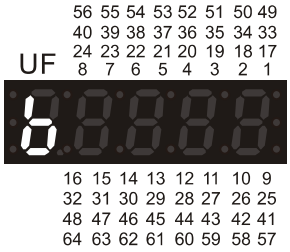
: You can set this parameter during operation.

12-00	UF 16–01
12-01	UF 32–17
12-03	UF 48–33
12-04	UF 64–49

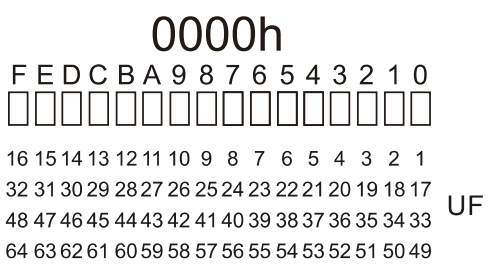
Default: 0

Settings 0–65535

- Upward call signal of the front door from hall calls 1F–64F
- LED display



The display for digital keypad KPC-CC01

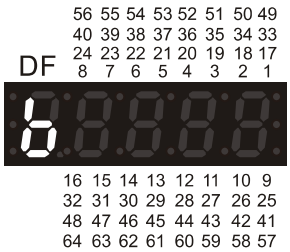


12-04	DF 16–01
12-05	DF 32–17
12-06	DF 48–33
12-07	DF 64–49

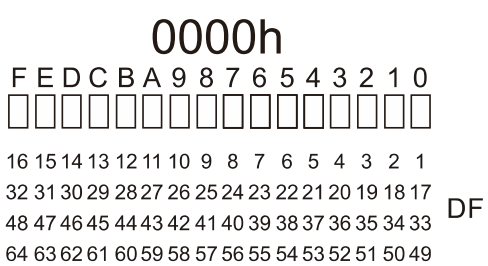
Default: 0

Settings 0–65535

- Downward call signal of the front door from hall calls 1F–64F
- LED display



The display for digital keypad KPC-CC01



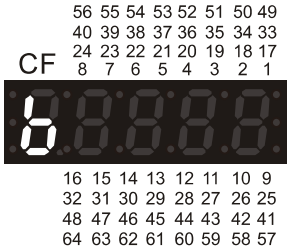
12-08	CF 16–01
12-09	CF 32–17
12-10	CF 48–33
12-11	CF 64–49

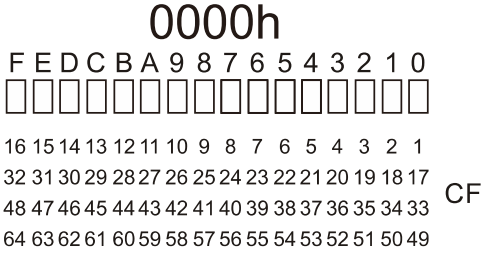
Default: 0

Settings 0–65535

- Call signal of the front door from car calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





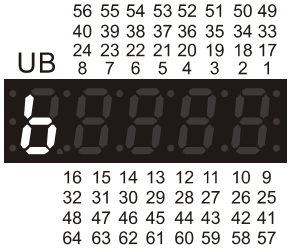
12-12	UB 16–01
12-13	UB 32–17
12-14	UB 48–33
12-15	UB 64–49

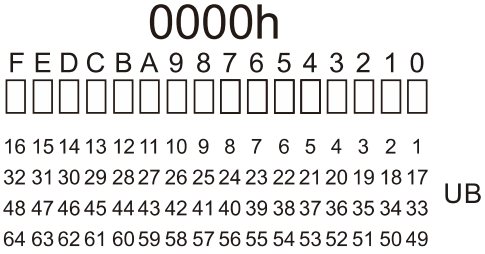
Default: 0

Settings 0–65535

🕮 Upward call signal of the rear door from hall calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





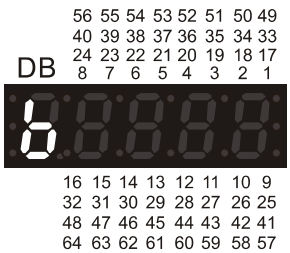
12-16	DB 16–01
12-17	DB 32–17
12-18	DB 48–33
12-19	DB 64–49

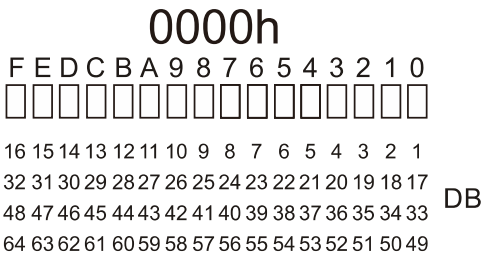
Default: 0

Settings 0–65535

🕮 Downward call signal of the rear door from hall calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





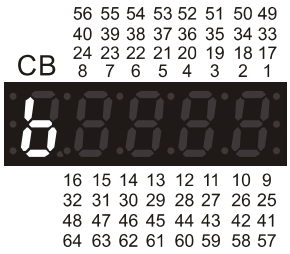
12-20	CB 16–01
12-21	CB 32–17
12-22	CB 48–33
12-23	CB 64–49

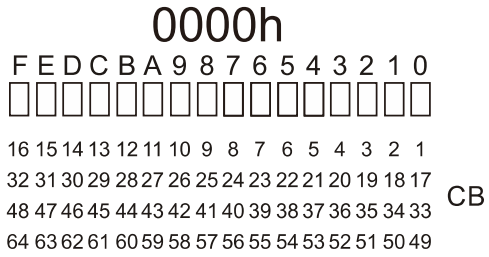
Default: 0

Settings 0–65535

🕮 Call signal of the rear door from car calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





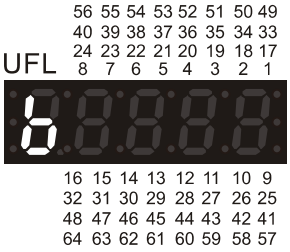
12-24	UFL 16–01
12-25	UFL 32–17
12-26	UFL 48–33
12-27	UFL 64–49

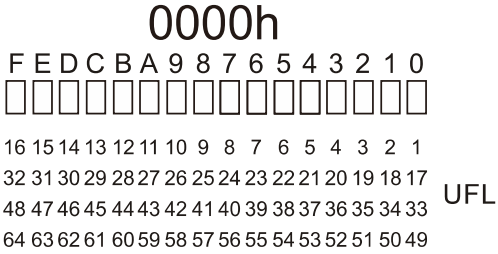
Default: 0

Settings 0–65535

🕮 Upward call signal light of the front door from hall calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





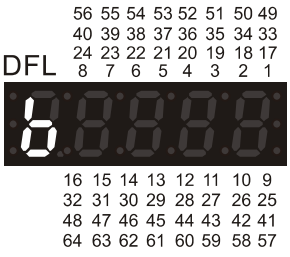
12-28	DFL 16–01
12-29	DFL 32–17
12-30	DFL 48–33
12-31	DFL 64–49

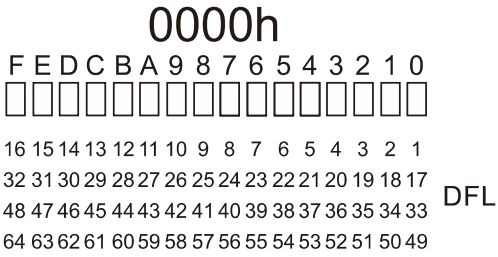
Default: 0

Settings 0–65535

🕮 Downward call signal light of the front door from hall calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





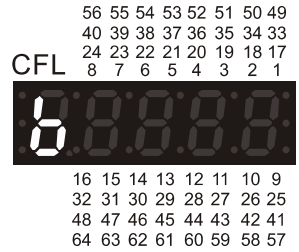
12-32	CFL 16–01
12-33	CFL 32–17
12-34	CFL 48–33
12-35	CFL 64–49

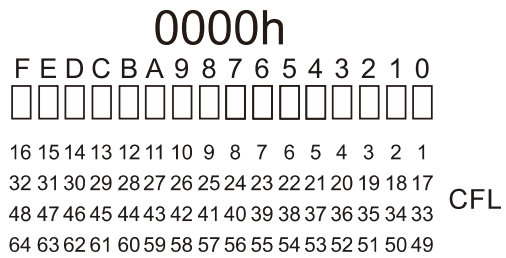
Default: 0

Settings 0–65535

📖 Call signal light of the front door from car calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





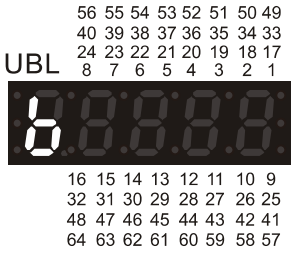
12-36	UBL 16–01
12-37	UBL 32–17
12-38	UBL 48–33
12-39	UBL 64–49

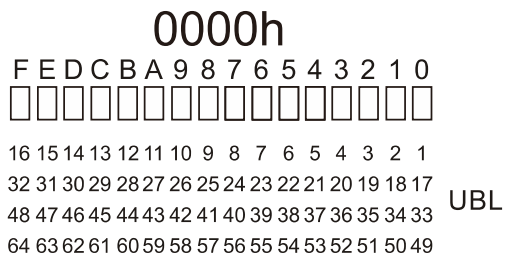
Default: 0

Settings 0–65535

📖 Upward call signal light of the rear door from hall calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





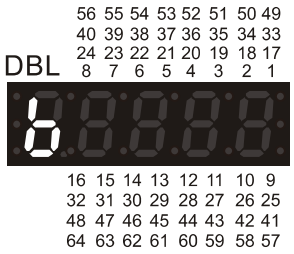
12-40	DBL 16–01
12-41	DBL 32–17
12-42	DBL 48–33
12-43	DBL 64–49

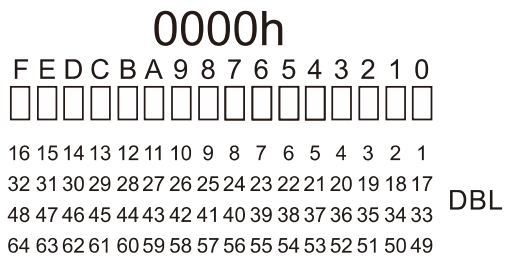
Default: 0

Settings 0–65535

📖 Downward call signal light of the rear door from hall calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





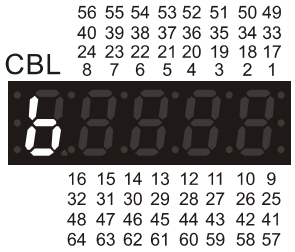
12-44	CBL 16–01
12-45	CBL 32–17
12-46	CBL 48–33
12-47	CBL 64–49

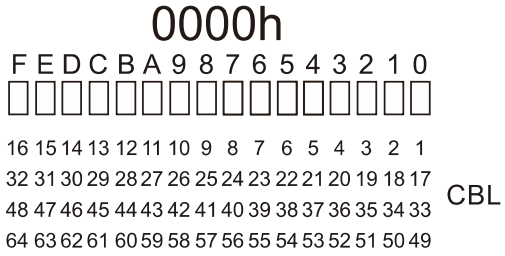
Default: 0

Settings 0–65535

Call signal light of the rear door from car calls 1F–64F

LED display The display for digital keypad KPC-CC01





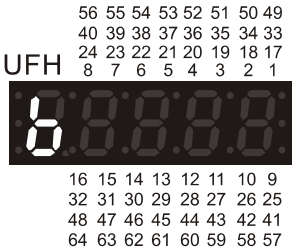
12-48	UFH 16–01
12-49	UFH 32–17
12-50	UFH 48–33
12-51	UFH 64–49

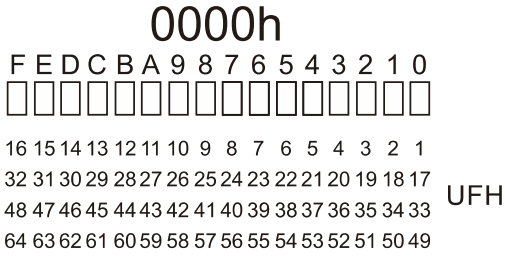
Default: 0

Settings 0–65535

Upward call signal of the front door and disability from hall calls 1F–64F

LED display The display for digital keypad KPC-CC01





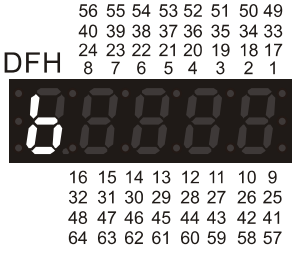
12-52	DFH 16–01
12-53	DFH 32–17
12-54	DFH 48–33
12-55	DFH 64–49

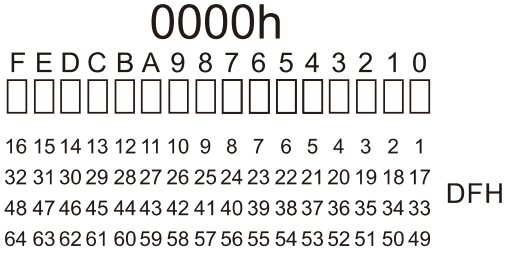
Default: 0

Settings 0–65535

Downward call signal of the front door and disability from hall calls 1F–64F

LED display The display for digital keypad KPC-CC01





12-56	CFH 16–01
12-57	CFH 32–17
12-58	CFH 48–33

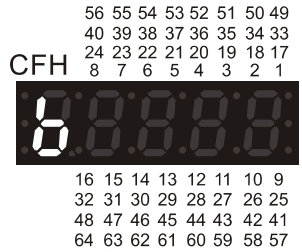
12-59 CFH 64–49

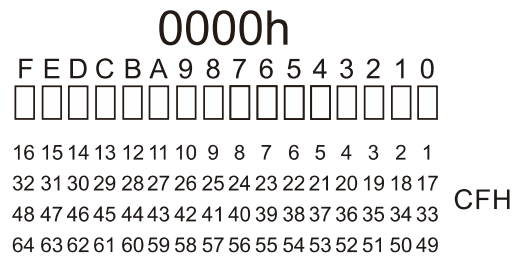
Default: 0

Settings 0–65535

📖 Call signal of the front door and disability from car calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





12-60 UBH 16–01

12-61 UBH 32–17

12-62 UBH 48–33

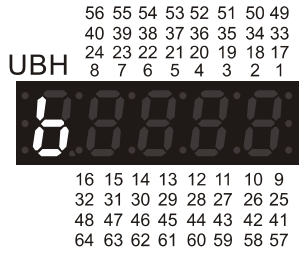
12-63 UBH 64–49

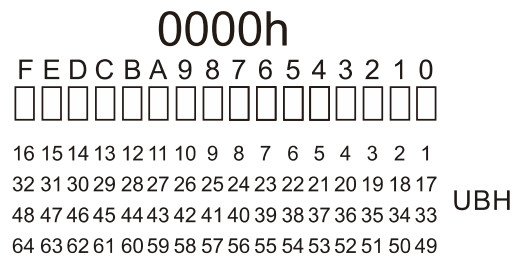
Default: 0

Settings 0–65535

📖 Upward call signal of the rear door and disability from hall calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





12-64 DBH 16–01

12-65 DBH 32–17

12-66 DBH 48–33

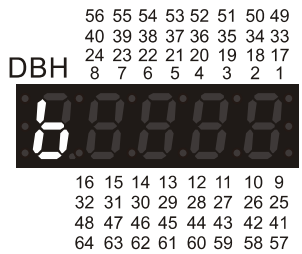
12-67 DBH 64–49

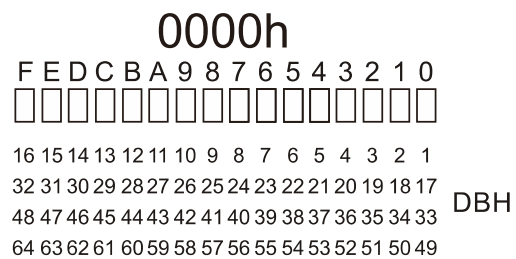
Default: 0

Settings 0–65535

📖 Downward call signal of the rear door and disability from hall calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





12-68 CBH 16–01

12-69 CBH 32–17

12-70 CBH 48–33

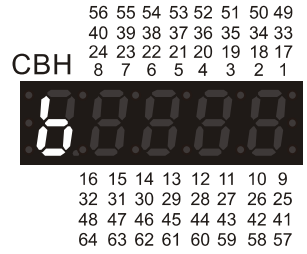
12-71 CBH 64–49

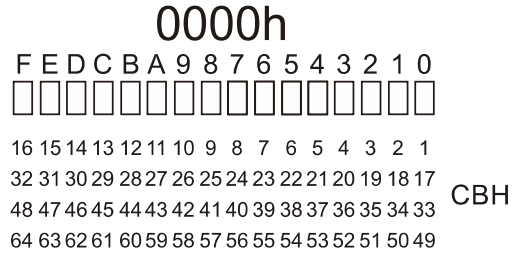
Default: 0

Settings 0–65535

🕮 Call signal of the rear door and disability from car calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





12-72 UFHL 16–01

12-73 UFHL 32–17

12-74 UFHL 48–33

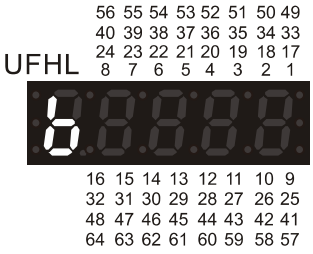
12-75 UFHL 64–49

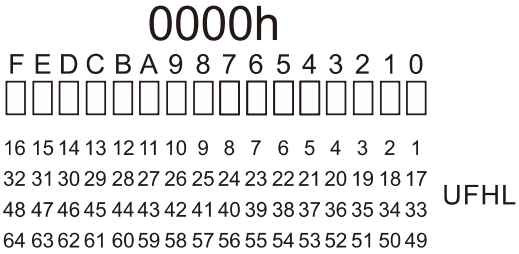
Default: 0

Settings 0–1

🕮 Upward call signal light of the front door and disability from hall calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





12-76 DFHL 16–01

12-77 DFHL 32–17

12-78 DFHL 48–33

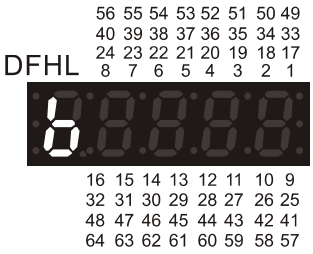
12-79 DFHL 64–49

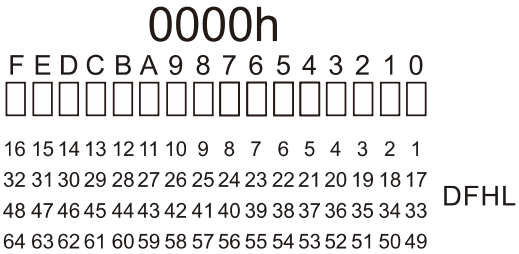
Default: 0

Settings 0–65535

🕮 Downward call signal light of the front door and disability from hall calls 1F–64F

🕮 LED display The display for digital keypad KPC-CC01





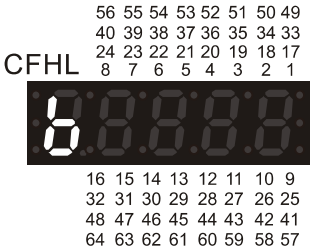
12-80 CFHL 16–01
12-81 CFHL 32–17
12-82 CFHL 48–33
12-83 CFHL 64–49

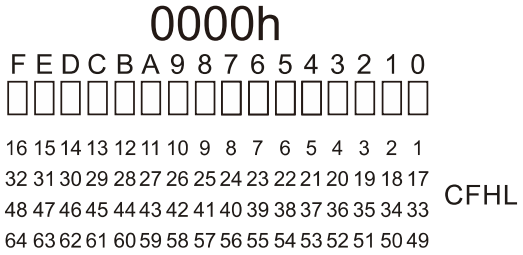
Default: 0

Settings 0–65535

📖 Call signal light of the front door and disability from car calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





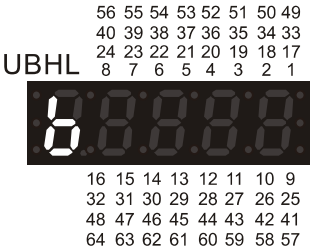
12-84 UBHL 16–01
12-85 UBHL 32–17
12-86 UBHL 48–33
12-87 UBHL 64–49

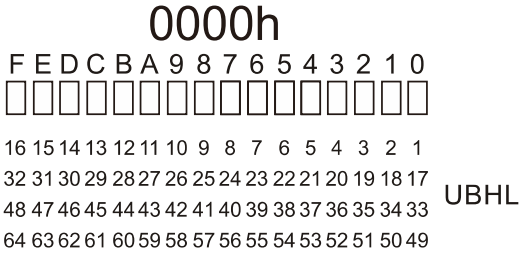
Default: 0

Settings 0–65535

📖 Upward call signal light of the rear door and disability from hall calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





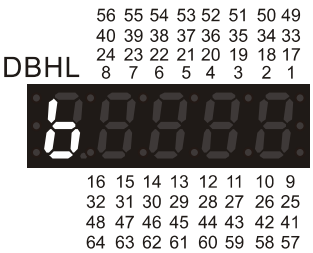
12-88 DBHL 16–01
12-89 DBHL 32–17
12-90 DBHL 48–33
12-91 DBHL 64–49

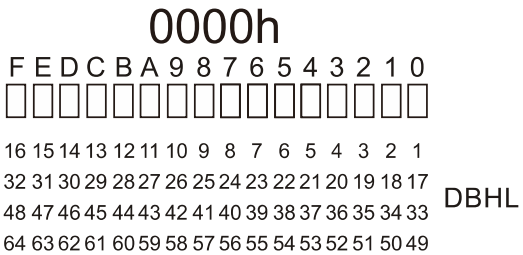
Default: 0

Settings 0–65535

📖 Downward call signal light of the rear door and disability from hall calls 1F–64F

📖 LED display The display for digital keypad KPC-CC01





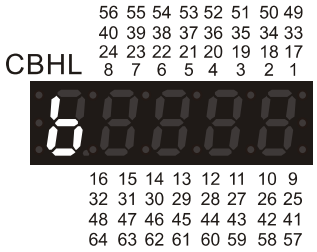
12-92	CBHL 16–01
12-93	CBHL 32–17
12-94	CBHL 48–33
12-95	CBHL 64–49

Default: 0

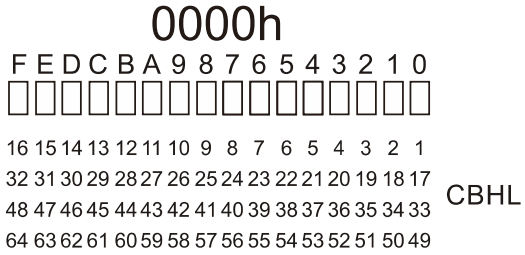
Settings 0–65535

📖 Call signal light of the rear door and disability from car calls 1F–64F

📖 LED display



The display for digital keypad KPC-CC01



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Chapter 12 Descriptions of Parameter Settings

13 Drive Parameters

✓: You can set this parameter during operation.

13-00 Drive Software Version

Default: #.##

Settings Read only

📖 Drive's released firmware version

13-01 Control Mode

Default: 0

Settings 0–8
3: FOC vector control + Encoder (FOCPG)
8: FOC Permanent Motor control (FOCPM)

📖 Mode selection:

Settings	Control Mode	Applicable Motor Type	Speed Feedback	Energy-saving	Tuning Difficulty	Ride Comfort	Speed Control Range	Motor Parameter Tuning	Basic Control	Speed Control
3	FOCPG	IM	✓	High	High	Good	1:1000	✓	Vector control	Frequency Control
8	FOCPM	PM	✓	High	High	Good	1:1000	✓	Vector control	Frequency control

📖 Determines the control mode of the drive.

3: To increase torque and the accuracy of the speed control (1:1000).

8: To increase torque and the accuracy of the speed control (1:1000).

📖 Note: Pr.13-04–Pr.13-09 are automatically cleared if you change the control mode.

13-02 Drive Output Direction

Default: 0

Settings 0–1
0: The same as the setting direction
1: Opposite to the setting direction

📖 Use this parameter when elevator running direction is opposite to the command direction.

📖 If the elevator running direction is opposite to the setting direction, you must set Pr.13-02 and Pr.03-22 (Reverse Pulse Logic) simultaneously.

13-03 Elevator Rated Frequency

Default: 60.00

Settings 0.00–400.00 Hz

📖 Sets this value according to the motor nameplate. In general, set this value equal to motor's rated frequency.

📖 Sets the drive's maximum operating frequency range.
The formula is: Pr.13-03 = (Pr.13-09 Number of Motor Poles × RPM when elevator runs with rated speed) ÷ 120

13-04 Motor Rated Frequency

Default: 60.00

Settings 0.00–400.00 Hz

📖 Sets this value according to the motor nameplate. If the motor is 60 Hz, set this parameter to 60. If the motor is 50 Hz, set it to 50.

13-05 Motor Rated Voltage

Default: 440.0

Settings 0.0–510.0 V

📖 Sets this value according to the motor nameplate. If the motor is 220V, set this parameter to 220.0. If the motor is 200V, set this parameter to 200.0.

13-06 Motor Rated Current

Default: 2.00

Settings 0.10–650.00 Amps

📖 Sets this value according to the motor nameplate.

13-07 Motor Rated Power

Default: 2.00

Settings 0.10–650.00 kW

📖 Sets this value according to the motor nameplate.

13-08 Motor Rated Speed

Default: 0

Settings 0–65535 rpm

📖 Sets this value according to the motor nameplate.
📖 Speed (RPM) = (120 × Frequency) ÷ Number of Motor Poles

13-09 Number of Motor Poles

Default: 0

Settings 0–96

📖 Sets this value according to the motor nameplate.
📖 Sets the number of motor poles (must be an even number).

13-10 IM No-load Current

Default: 0.00

Settings 0.00–655.35

📖 This value is automatically measured after motor auto-tuning.

13-11 IM/PM Rs
13-12 IM Rr

Default: 0.000

Settings 0.000–65.535 Ω

📖 The values are automatically measured after motor auto-tuning.

13-13 IM Lm
13-14 IM Lx/PM Lq

Default: 0.0

Settings 0.0–6553.5 mH

📖 This value is automatically measured after motor auto-tuning.

13-15 PM Back Electromotive Force

Default: 0.0

Settings 0.0–6553.5 Vrms

📖 This value is automatically measured after motor auto-tuning.

13-16 PM Magnetic Pole Offset Angle

Default: 360.0

Settings 0.0–360.0°

📖 The offset angle between magnetic pole and PG origin (measured by auto-tuning)

13-17 System Control

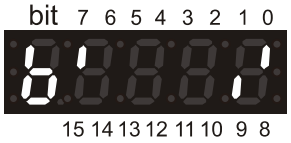
Default: 0281h

Settings 0000h–FFFFh
Bit 0=0: No function
Bit 0=1: ARS auto-tuning; PDFF enabled; speed bandwidth control enabled
Bit 7=0: No function
Bit 7=1: Zero speed position control is enabled
Bit 9=0: Dynamic PG origin auto-tuning with load (supported by PGHSD-x)
Bit 9=1: Static PG origin auto-tuning with load by enabling PGHSD-x

Setting method:

	Bit0	Bit7	Bit9	Bit0 & Bit7	Bit0 & Bit9	Bit7 & Bit9	Bit0 & Bit7 & Bit9
Setting Value	0001h	0080h	0200h	0081h	0201h	0280h	0281h

Setting method of LED display



Setting method of digital keypad KPC-CC01

- Bit 0=1: PDFF function is enabled, and a set of ASR setting is automatically generated.
- Bit 7=1: Zero speed position control is enabled (see the Elevator Timing Diagram in this Section). This function is only valid for permanent magnet synchronous motor (PM).
- Bit 9=1: Static PG origin auto-tuning with load is enabled by PGHSD-x, and the mechanical brake must be engaged.

13-18 Current Floor of the Drive

Default: 1

Settings 1–64

- Sets the current floor of the drive. Make sure Pr.13-18 is the same as the current floor for the host controller (Pr.00-17). Otherwise, fault code F144 occurs.

13-19 Pulse Adjustment Condition

Default: 100

Settings 0–100

- Automatically adjusts the current pulse difference when elevator runs through leveling sensors.
- 0–100 is the percentage of automatic adjustment in the current pulse difference.

13-20 Maximum Elevator Speed Percentage

Default: 50

Settings 30–100

- Sets the current elevator speed (current rated speed × Pr.13-20)
- After elevator tuning is finished, you can use this parameter to reduce elevator speed to avoid runaway during test run.
- If you need to set the elevator running speed to be slower than "elevator's rated speed m/s", use Pr.13-20 instead of Pr.13-03 (Elevator Rated Frequency), Pr.13-29 (Elevator Rated Speed), or Pr.13-08 (Motor Rated Speed).

13-21 Motor Auto-tuning

Default: 0

Settings 0–3
0: No function
1: Only for an unloaded motor; auto-measures the magnetic pole offset angle (PM)
2: Executes motor auto-ting (IM / PM)
3: Auto-measures the magnetic pole offset angle (PM)

- Set the elevator position near the middle floors before auto-tuning.

- 2: Executes the motor auto-tuning. When in the manual mode (inspection), the controller executes upward or downward operation inspections, and then the motor auto-tunes immediately. After auto-tuning is finished, the inspection stops outputting for ten seconds to prevent the elevator from malfunctioning.
- Precautions for motor auto-tuning:
  1. After you have set the motor auto-tuning, some faults and errors (including safety hatch signals, gate and layer door safety hatch signals) will not be detected. Thus make sure the motor movement (rotation) is safe before setting the motor auto-tuning.
  2. Static auto-tuning does not guarantee that the motor does not move (rotate). Make sure that no danger occurs if motor moves (rotates).
  3. After you have set the motor auto-tuning, Pr.13-21 is automatically set to 0 if the drive does not execute auto-tuning within ten seconds.
  4. After you have set the motor auto-tuning, Pr.13-21 is automatically to 0 no matter whether the auto-tuning still executes after 120 seconds or not.
- Precautions for the magnetic pole offset angle auto-tuning:
  1. Motor auto-tuning should be finished before auto-tuning.
  2. When Pr.13-21=1, unload before auto-tuning.
  3. When Pr.13-21=3, the motor can be loaded or unloaded before auto-tuning.
  4. Make sure the brake is released before auto-tuning.
  5. You can use static tuning, but Pr.13-17 Bit9 must be set to 1 and works with Pr.13-22 correspondence table among encoder, PG card and auto-tuning.
  6. Make sure Pr.13-24 (Encoder Input Type Setting) is correctly set. An incorrect Pr.13-24 setting would cause a wrong magnetic position, further making Pr.13-16 (PM Magnetic Pole Offset Angle) auto-tune incorrectly.
- When Pr.13-22=5, you do not need to execute the magnetic pole offset angle auto-tuning. But you must set Pr.13-16=360, and then power-on again.

13-22 Selection of Encoder

Default: 0

Settings 0–6
0: Disabled
1: ABZ
2: ABZ + Hall (UVW type)
3: SIN/COS + Sinusoidal (ERN1185, ERN1387)
4: SIN/COS + Endat (ECN1313, ECN413)
5: SIN/COS
6: SIN/COS + Hiperface (SRS50/60)

- When you set Pr.13-24 to 3, 4 or 5, you can set Pr.13-22 only to 0, 1 or 2, and you cannot use 3, 4, 5 and 6.
- When you set Pr.13-22 to 3, the encoder has one sine and one cosine signal for each revolution. The signal must be: 0.75–1.2 Vpp for the amplitude with phase angle 90°±5 elec. (E.g. ERN 1185 ERN 1387)
- When you set Pr.13-22 to 4 or 6, wait for two seconds after applying the power before executing the RUN command.
- When you set Pr.13-22 to 5, you must set Pr.13-16 to 360.
- Detection of the magnetic pole:
  (1) 1 or 5: The drive outputs a short circuit to detect the position of the magnetic pole. At this moment, the motor generates a little noise.
  (2) 2: The drive detects the position of the magnetic pole with the UVW encoder signal.
  (3) 3: The drive detects the position of the magnetic pole with the sine encoder signal.
  (4) 4 or 6: The drive detects the position of the magnetic pole with the communication encoder signal.

The table below shows the correspondence among encoder, PG card and auto-tuning

PG Signal Type Setting	PG Signal Type	Applicable PG Card x=1, 2,…	Pr.13-21=1	Pr.13-21=3
Pr.13-22=1	A, B, Z	EMED-PGAB/ABD-x	N/A	N/A
Pr.13-22=2	A, B, Z + U, V, W	EMED-PGABD-x	Rolling test*1	Rolling test*1
Pr.13-22=3	SIN/COS + Sinusoidal (e.g. ERN1185, ERN1387)	EMED-PGHSD-x	Rolling test*1	Pr.13-17 Bit9=0 Rolling test*1 Pr.13-17 Bit9=1 Static test*1
Pr.13-22=4	SIN/COS + Endat 2.1 (e.g.ECN1313, ECN413)	EMED-PGHSD-x	Dynamic test*1	Static test*1
Pr.13-22=5	SIN/COS	EMED-PGHSD-x	N/A	N/A
Pr.13-22=6	SIN/COS + Hiperface (e.g. SRS50/60)	EMED-PGHSD-x	Dynamic test*1	Static test*1

*1 Static: Brake engaged, no motor running. Dynamic: Brake released, motor rotates less than one revolution.
Rolling: Brake released, motor rotates more than one revolution.

13-23 Encoder Pulse

Default: 2048

Settings 1–25000

Sets the Pulses per Revolution (PPR) for the encoder.

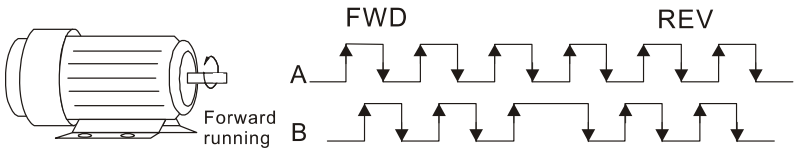
13-24 Encoder Input Type Setting

Default: 1

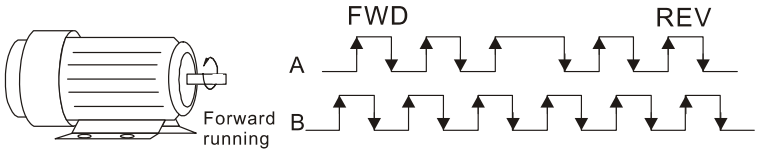
Settings 0–5

0: Disabled

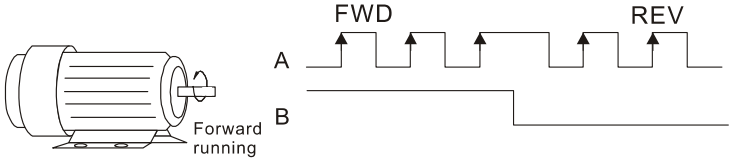
1: Phase A leads in a forward run command and phase B leads in a reverse run command



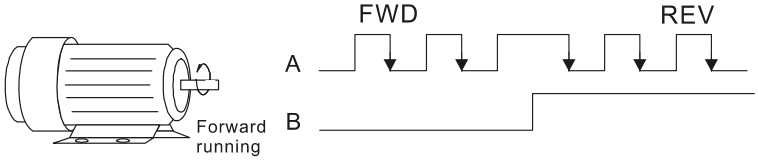
2: Phase B leads in a forward run command and phase A leads in a reverse run command



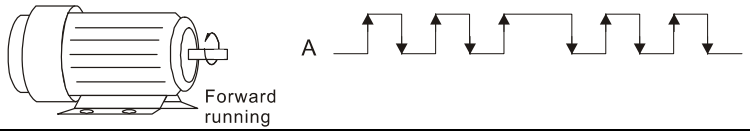
3: Phase A is a pulse input and phase B is a direction input. (low input=reverse direction, high input=forward direction)



4: Phase A is a pulse input and phase B is a direction input. (low input=forward direction, high input=reverse direction)



5: Single-phase input



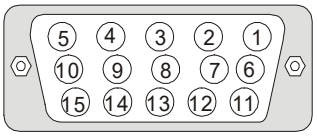
- When you set Pr.13-22 to 3, 4, 5 or 6, you can set Pr.13-24 only to 0, 1 or 2, and you cannot use 3, 4 and 5.
- You must enter the correct pulse type for stable control.

13-25 PG Card C+/C-

Default: 0000h

Settings 0000h–0001h

- When using a Heidenhain ERN1387 encoder, use Pr.13-25 to adjust the definition of the Delta PG card EMED-PGHSD-x's terminal 10 and terminal 11 (see the table below). Refer to p.7-8 for detailed terminal descriptions.
- Delta PG card: EMED-PGHSD-1 (D-sub Terminal #)



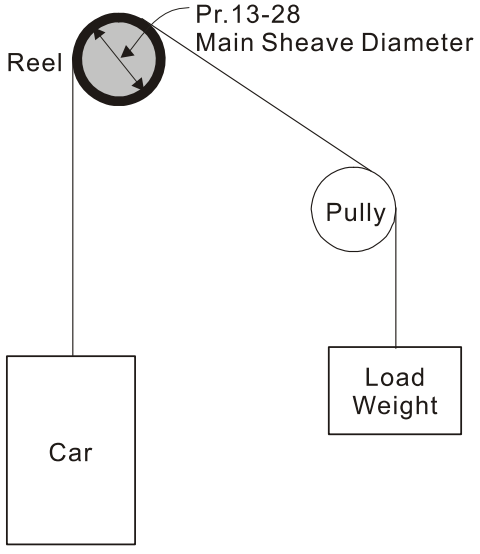
	Heidenhain ERN1387	
Terminal #	**Pr.13-25 = 0000h**	**Pr.13-25 = 0001h**
10	C-	C+
11	C+	C-

13-26 Suspension Ratio

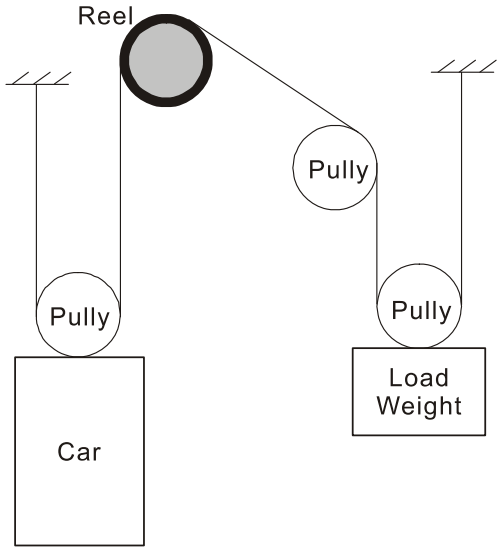
Default: 1

Settings 0–3
0 = 1: 1
1 = 2: 1
2 = 4: 1
3 = 8: 1

Suspension Ratio 1:1



Suspension Ratio 2:1



13-27 Gear Ratio

Default: 1.00

Settings 1.00–100.00

13-28 Main Sheave Diameter

Default: 400

Settings 100–2000 mm

13-29 Elevator Rated Speed

Default: 1.00

Settings 0.10–4.00 m/s

🕮 Elevator speed (m/sec. = m/min. / 60)

13-60 Maximum Current during Acceleration

Default: 150

Settings 50–200%

🕮 Measures motor's maximum current when the elevator is under test in automatic mode.

13-30 Mechanical Inertia Ratio

Default: 20

Settings 1–300

🕮 The drive calculates the mechanical inertia by entering motor parameters, suspension ratio, gear ratio, main sheave diameter, elevator speed, and maximum current during acceleration. You can use Pr.13-30 to adjust the calculated load inertia ratio.

🕮 Mechanical inertia reference value (%):

Load/Motor	IM	PM
Without load	40	10
With load	80–120	40

13-31 Zero Speed at Start-up Bandwidth
13-32 Low Speed Bandwidth
13-33 High Speed Bandwidth
13-34 Zero Speed at Stop Bandwidth

Default: 10

Settings 1–40 Hz

🕮 When speed tracking is not ideal, use these parameters to adjust based on the corresponding frequency bandwidth.

13-42 IM Mechanical Brake Release Delay Time / PM Position Control Delay Time

Default: 0.250

Settings 0.000–2.000 sec.

🕮 For IM control, when the drive runs and after Pr.13-42 delay time, the mechanical brake release contact is ON.

🕮 For PM control, the mechanical brake releases, and Pr.13-42 is used as PM position control delay time.

13-43 Mechanical Brake Engage Delay Time

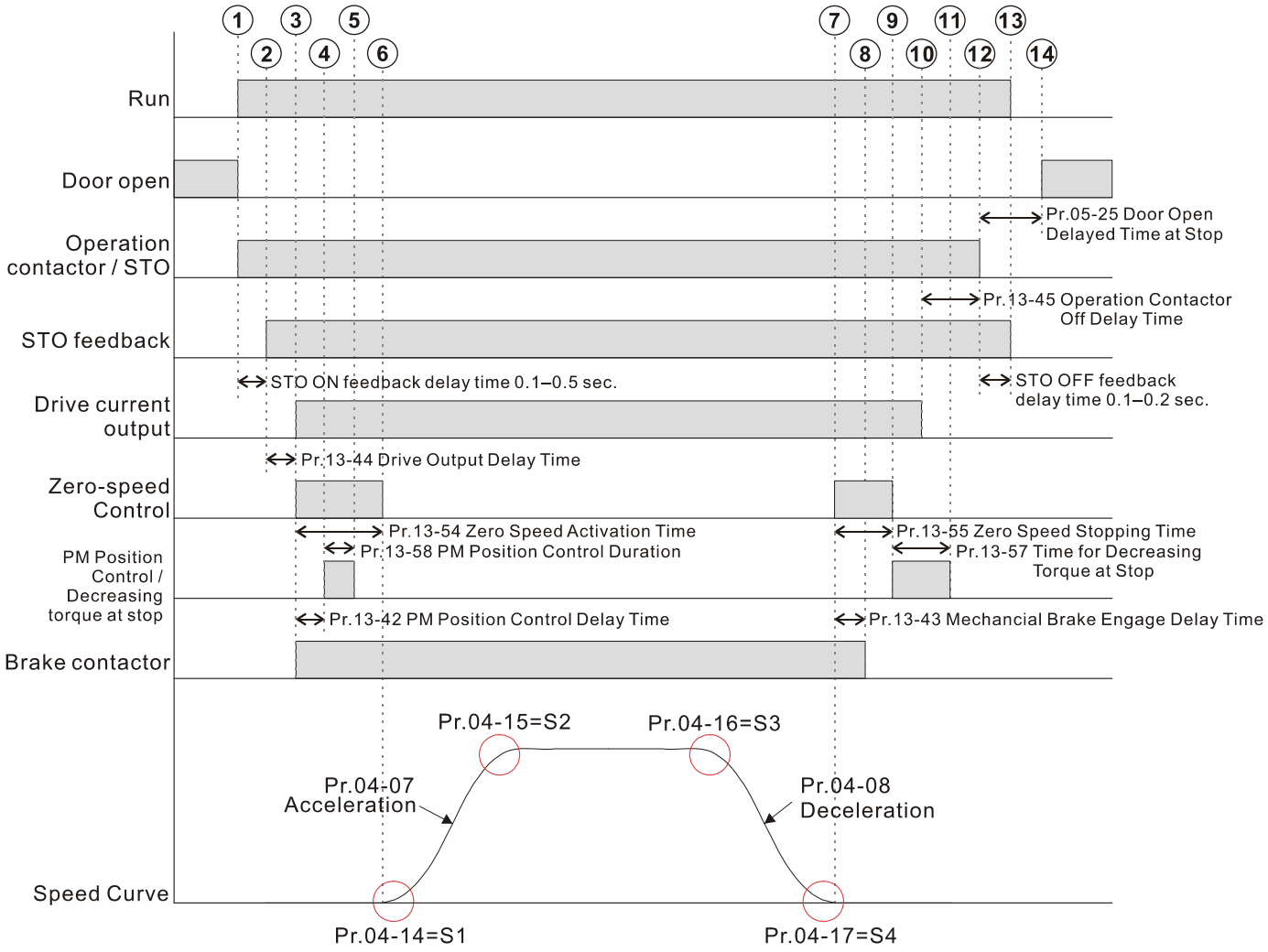
Default: 0.250

Settings 0.000–2.000 sec.

🕮 When the drive stops and after Pr.13-43 delay time, the mechanical brake release contact is OFF.

🕮 This function needs to work with DC brake.

Speed Control Timing Diagram – PM Direct Docking

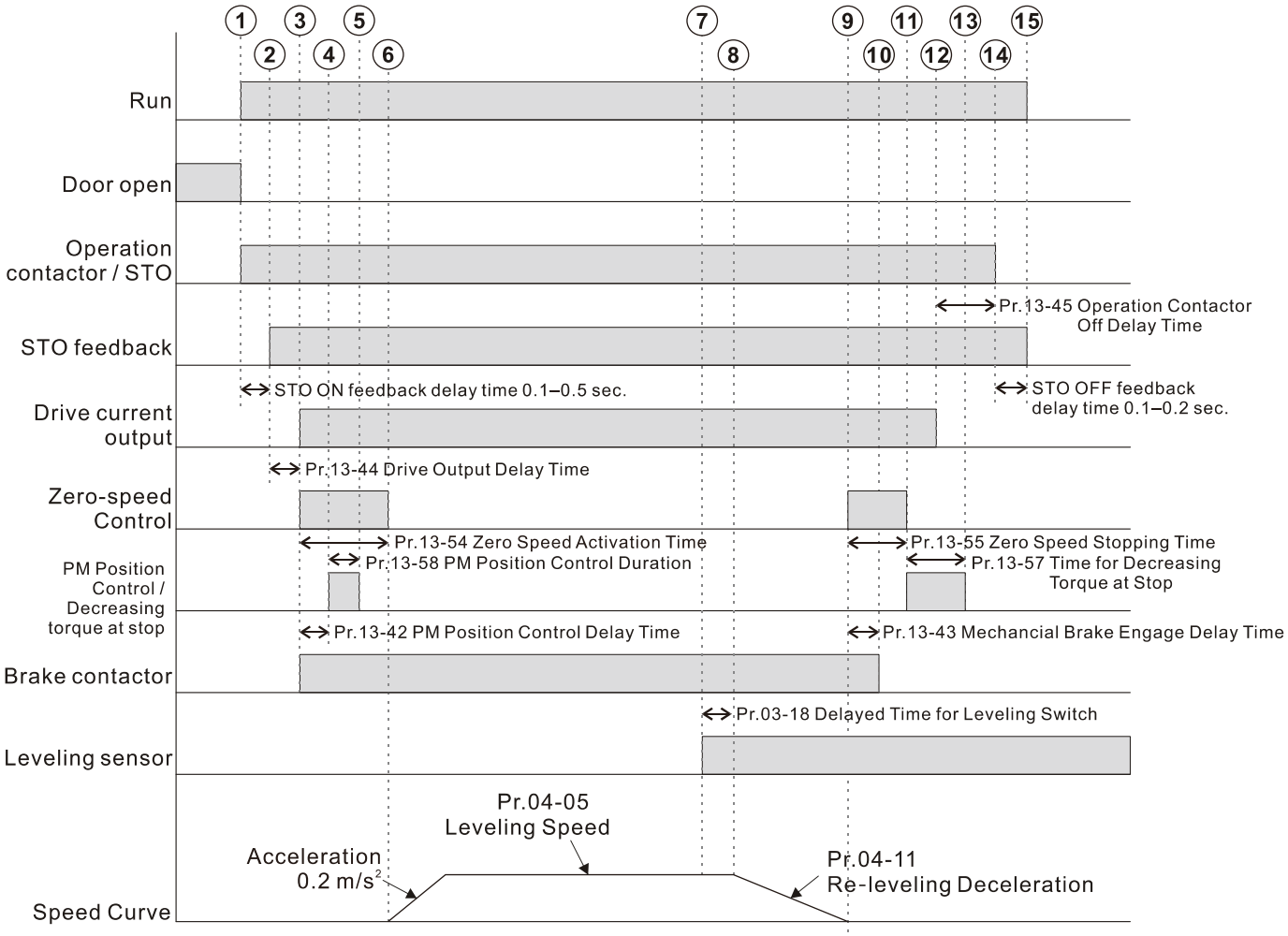


①Door closes, elevator begins to run, and operation contactor and STO are ON ②STO activation completed ③Drive outputs, starting zero-speed begins, and brake contactor is ON ④PM position control begins ⑤PM position control ends	⑥Starting zero-speed ends, and acceleration begins ⑦Decelerates to zero speed, and stopping zero-speed begins ⑧Brake contactor is OFF ⑨Stopping zero-speed ends, and decreasing torque at stop begins	⑩Decreasing torque at stop ends, and drive stops outputting ⑪Pr.13-57 (Time for Decreasing Torque at Stop) is time that triple rated current decreases to zero. The current of stopping zero-speed is lower so it usually decreases to zero in advance. ⑫Operation contactor and STO are OFF ⑬STO deactivation completed, and operation ends ⑭Door begins to open

Suggested Setting Value: Pr.03-18 (0.200 sec.) Delayed Time for Leveling Switch Pr.04-09 (1.5 m/s^2) Inspection Deceleration Pr.04-10 (0.2 m/s^2) Inspection Acceleration Pr.04-11 (0.1 m/s^2) Re-leveling Deceleration Pr.04-18 (3.0 sec.) Low-speed Running Time When Enabled Manually	Pr.05-25 (0.5 sec.) Door Open Delayed Time at Stop Pr.13-42 (0.0 sec.) IM Mechanical Brake Release Delay Time / PM Position Control Delay Time Pr.13-43 (0.2 sec.) Mechanical Brake Engage Delay Time Pr.13-44 (0.01 sec.) Drive Output Delay Time Pr.13-45 (0.01 sec.) Operation Contactor Off Delay Time	Pr.13-54 (0.4 sec.) Zero Speed Activation Time Pr.13-55 (0.5 sec.) Zero Speed Stopping Time Pr.13-57 (0.2 sec.) Time for Decreasing Torque at Stop Pr.13-58 (0.4 sec.) PM Position Control Duration Pr.13-59 (80.00) PM Position Control Gain (P)

Methods of Accurate Leveling for Direct Docking: 1. Executes hoistway auto-tuning 2. Executes upper and lower re-leveling for each floor to make leveling accurate. 3. Executes hoistway auto-tuning again. Pr.04-03 (Hoistway Auto-tuning Speed) should not be larger than 0.2 m/s.	**NOTE:** 1. If elevator starts with a jerk when brake releases, set Pr.13-54 (Zero Speed Activation Time) to 2.0 seconds, Pr.13-58 (PM Position Control Duration) to 1.0 second, and increase Pr.13-31 (Zero Speed at Start-up Bandwidth). Note that a too large Pr.13-31 value would cause a jerk when elevator starts. It is suggested to increase Pr.13-31 to a value that elevator slightly shakes when starting at top or bottom floor. Then, set Pr.13-31 = [(Pr.13-31 setting value -1) x 0.9], and set Pr.13-54 and Pr.13-58 to initial settings. In principle, set Pr.13-31 as large as possible, but cannot be too large that causes a jerk when elevator starts. 2. If brake engaged speed is slower, it may cause stopping zero-speed has already ended before brake engages, further making motor run after stop and a jerk at stop occurs. In this case, set Pr.13-43 (Mechanical Brake Engage Delay Time) to 0 first. If this problem still occurs, set Pr.13-55 (Zero Speed Stopping Time) to a larger value. 3. If main motor starts to vibrate after brake is fully engaged, set Pr.13-57 (Time for Decreasing Torque at Stop) to 5 seconds. If vibration reduces, change Pr.13-57 to a proper value. The larger the Pr.13-57 setting value, the slower the elevator opens its door.

Speed Control Timing Diagram – PM Re-leveling



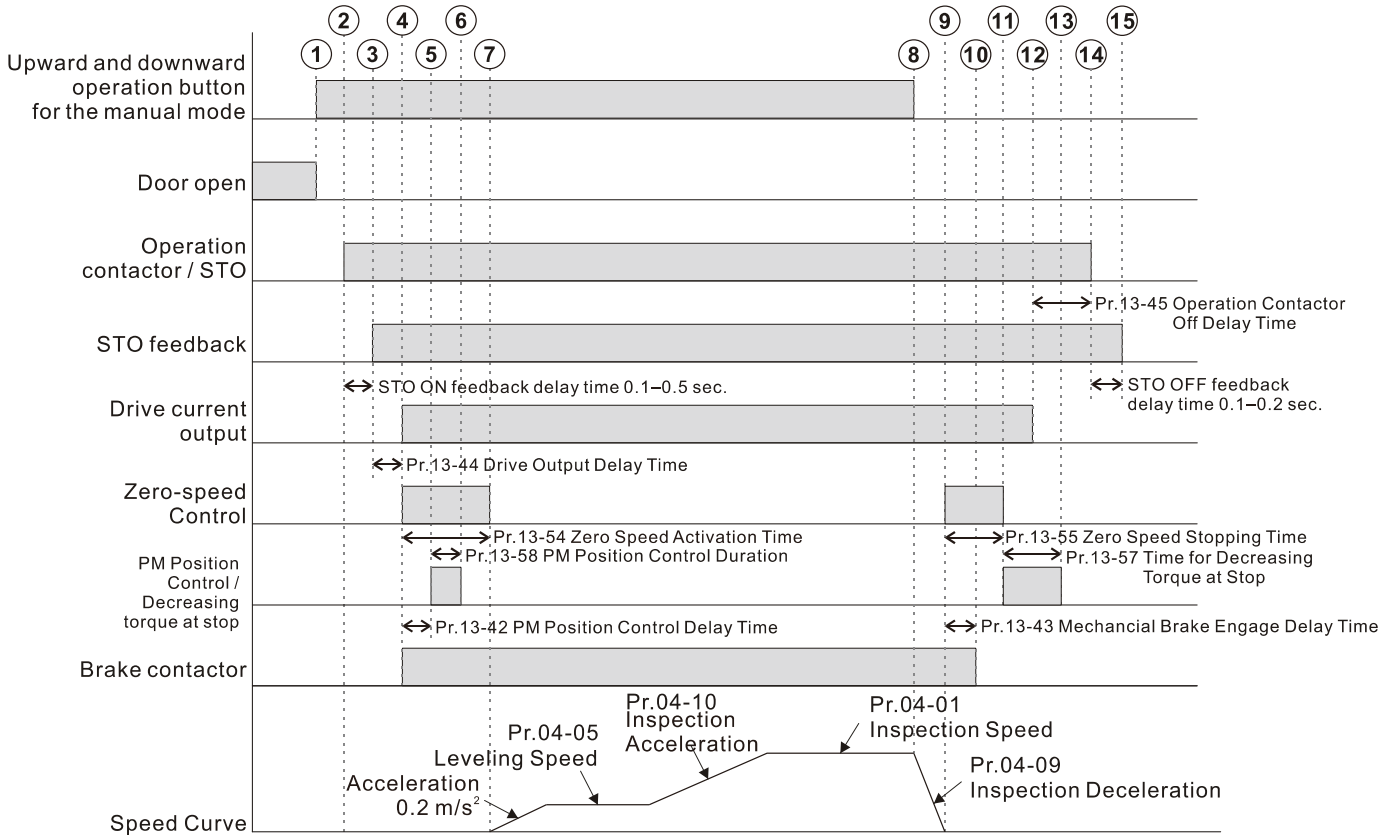
①Door closes, elevator begins to run, and operation contactor and STO are ON ②STO activation completed ③Drive outputs, starting zero-speed begins, and brake contactor is ON ④PM position control begins ⑤PM position control ends ⑥Starting zero-speed ends, and acceleration begins ⑦Enters leveling (DZU and DZD ON) ⑧Deceleration begins	⑨Decelerates to zero speed, and stopping zero-speed begins ⑩Brake contactor is OFF ⑪Stopping zero-speed ends, and decreasing torque at stop begins ⑫Decreasing torque at stop ends, and drive stops outputting ⑬Pr.13-57 (Time for Decreasing Torque at Stop) is time that triple rated current decreases to zero. The current of stopping zero-speed is lower so it usually decreases to zero in advance. ⑭Operation contactor and STO are OFF ⑮STO deactivation completed, and operation ends

Suggested Setting Value:		
Pr.03-18 (0.200 sec.) Delayed Time for Leveling Switch Pr.04-09 (1.5 m/s²) Inspection Deceleration Pr.04-10 (0.2 m/s²) Inspection Acceleration Pr.04-11 (0.1 m/s²) Re-leveling Deceleration Pr.04-18 (3.0 sec.) Low-speed Running Time When Enabled Manually	Pr.05-25 (0.5 sec.) Door Open Delayed Time at Stop Pr.13-42 (0.0 sec.) IM Mechanical Brake Release Delay Time / PM Position Control Delay Time Pr.13-43 (0.2 sec.) Mechanical Brake Engage Delay Time Pr.13-44 (0.01 sec.) Drive Output Delay Time Pr.13-45 (0.01 sec.) Operation Contactor Off Delay Time	Pr.13-54 (0.4 sec.) Zero Speed Activation Time Pr.13-55 (0.5 sec.) Zero Speed Stopping Time Pr.13-57 (0.2 sec.) Time for Decreasing Torque at Stop Pr.13-58 (0.4 sec.) PM Position Control Duration Pr.13-59 (80.00) PM Position Control Gain (P)

Methods of Accurate Leveling for Re-leveling:

1. Install the leveling plate accurately
2. Adjust the clearance between upper and lower leveling switches. In general, the clearance is fixed and not allowed to adjust.
3. Adjust Pr.04-11 (Re-leveling Deceleration). In general, set Pr.04-11 to the minimum value and it is not allowed to adjust because setting it to a larger value causes discomfort.
4. Adjust Pr.04-05 (Leveling Speed)
5. Adjust Pr.03-18 (Delayed Time for Leveling Switch). Pr.03-18 is valid only when used for stop at leveling with multi-step speed, and does not affect hoistway auto-tuning and direct docking.

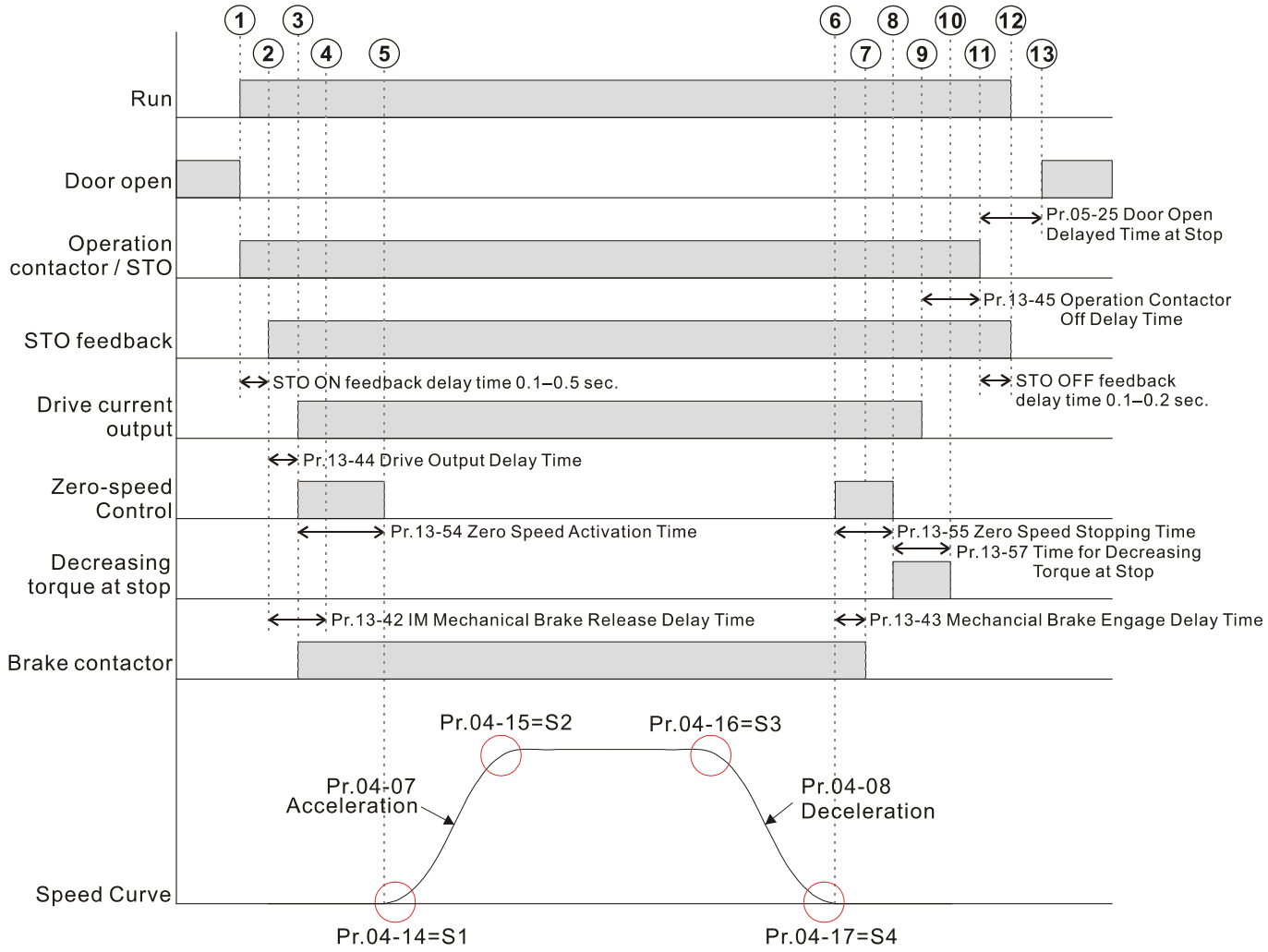
Speed Control Timing Diagram – PM Inspection



①Press the upward and downward operation buttons for the manual mode, and door begins to close. ②Door closes, elevator begins to run, and operation contactor and STO are ON ③STO activation completed ④Drive outputs, starting zero-speed begins, and brake contactor is ON ⑤PM position control begins ⑥PM position control ends ⑦Starting zero-speed ends, and acceleration begins ⑧Release the upward and downward operation buttons for the manual mode to begin decelerating	⑨Decelerates to zero speed, and stopping zero-speed begins ⑩Brake contactor is OFF ⑪Stopping zero-speed ends, and decreasing torque at stop begins ⑫Decreasing torque at stop ends, and drive stops outputting ⑬Pr.13-57 (Time for Decreasing Torque at Stop) is time that triple rated current decreases to zero. The current of stopping zero-speed is lower so it usually decreases to zero in advance. ⑭Operation contactor and STO are OFF ⑮STO deactivation completed, and operation ends

Suggested Setting Value:		
Pr.03-18 (0.200 sec.) Delayed Time for Leveling Switch Pr.04-09 (1.5 m/s²) Inspection Deceleration Pr.04-10 (0.2 m/s²) Inspection Acceleration Pr.04-11 (0.1 m/s²) Re-leveling Deceleration Pr.04-18 (3.0 sec.) Low-speed Running Time When Enabled Manually	Pr.05-25 (0.5 sec.) Door Open Delayed Time at Stop Pr.13-42 (0.0 sec.) IM Mechanical Brake Release Delay Time / PM Position Control Delay Time Pr.13-43 (0.2 sec.) Mechanical Brake Engage Delay Time Pr.13-44 (0.01 sec.) Drive Output Delay Time Pr.13-45 (0.01 sec.) Operation Contactor Off Delay Time	Pr.13-54 (0.4 sec.) Zero Speed Activation Time Pr.13-55 (0.5 sec.) Zero Speed Stopping Time Pr.13-57 (0.2 sec.) Time for Decreasing Torque at Stop Pr.13-58 (0.4 sec.) PM Position Control Duration Pr.13-59 (80.00) PM Position Control Gain (P)

Speed Control Timing Diagram – IM Direct Docking



①Door closes, elevator begins to run, and operation contactor and STO are ON ②STO activation completed ③Drive outputs, starting zero-speed begins ④Brake contactor is ON ⑤Starting zero-speed ends, and acceleration begins	⑥Decelerates to zero speed, and stopping zero-speed begins ⑦Brake contactor is OFF ⑧Stopping zero-speed ends, and decreasing torque at stop begins ⑨Decreasing torque at stop ends, and drive stops outputting	⑩Pr.13-57 (Time for Decreasing Torque at Stop) is time that triple rated current decreases to zero. The current of stopping zero-speed is lower so it usually decreases to zero in advance. ⑪Operation contactor and STO are OFF ⑫STO deactivation completed, and operation ends ⑬Door begins to open

Suggested Setting Value:		
Pr.03-18 (0.200 sec.) Delayed Time for Leveling Switch Pr.04-09 (1.5 m/s^2) Inspection Deceleration Pr.04-10 (0.2 m/s^2) Inspection Acceleration Pr.04-11 (0.1 m/s^2) Re-leveling Deceleration	Pr.05-25 (0.5 sec.) Door Open Delayed Time at Stop Pr.13-42 (0.1 sec.) IM Mechanical Brake Release Delay Time / PM Position Control Delay Time Pr.13-43 (0.2 sec.) Mechanical Brake Engage Delay Time Pr.13-44 (0.01 sec.) Drive Output Delay Time	Pr.13-45 (0.01 sec.) Operation Contactor Off Delay Time Pr.13-54 (0.4 sec.) Zero Speed Activation Time Pr.13-55 (0.5 sec.) Zero Speed Stopping Time Pr.13-57 (0.0 sec.) Time for Decreasing Torque at Stop

Methods of Accurate Leveling for Direct Docking:	NOTE:
1. Executes hoistway auto-tuning 2. Executes upper and lower re-leveling for each floor to make leveling accurate. 3. Executes hoistway auto-tuning again. Pr.04-03 (Hoistway Auto-tuning Speed) should not be larger than 0.2 m/s.	1. If elevator starts with a jerk when brake releases, set Pr.13-54 (Zero Speed Activation Time) to 2.0 seconds, and increase Pr.13-31 (Zero Speed at Start-up Bandwidth). Note that a too large Pr.13-31 value would cause a jerk when elevator starts. It is suggested to increase Pr.13-31 to a value that elevator slightly shakes when starting at top or bottom floor. Then, set Pr.13-31 = [(Pr.13-31 setting value -1) x 0.9], and set Pr.13-54 to initial settings. In principle, set Pr.13-31 as large as possible, but cannot be too large that causes a jerk when elevator starts. If jerk still occurs when brake releases, you can adjust Pr.13-44 (Drive Output Delay Time), Pr.13-54 (Zero Speed Activation Time), and Pr.13-42 (IM Mechanical Brake Release Delay Time). 2. If brake engaged speed is slower, it may cause stopping zero-speed has already ended before brake engages, further making motor run after stop and a jerk at stop occurs. In this case, set Pr.13-43 (Mechanical Brake Engage Delay Time) to 0 first. If this problem still occurs, set Pr.13-55 (Zero Speed Stopping Time) to a larger value. 3. If main motor starts to vibrate after brake is fully engaged, set Pr.13-57 (Time for Decreasing Torque at Stop) to 5 seconds. If vibration reduces, change Pr.13-57 to a proper value. The larger the Pr.13-57 setting value, the slower the elevator opens its door.

13-44 Drive Output Delay Time

Default: 0.200

Settings 0.010–0.500 sec.

🕮 Sets the time the drive starts to output current after operation contactor and STO are activated. See speed control timing diagrams in this parameter group for reference.

13-45 Operation Contactor Off Delay Time

Default: 0.200

Settings 0.010–1.667 sec.

🕮 Sets the time the operation contactor is to be deactivated after the drive stops outputting current since elevator stops. See speed control timing diagrams in this parameter group for reference.

13-48 Voltage of Emergency Power

Default: 24.0 / 48.0

Settings 24.0–375.0 V_{DC}
48.0–750.0 V_{DC}

13-49 EPS Running Frequency

Default: Read only

Settings 0.00–655.35 Hz

🕮 If emergency power is supplied by DC, set the frequency based on DC voltage. If emergency power is supplied by AC, set the frequency by multiplying AC voltage by 1.41.

13-51 Power Generation Direction Search Time

Default: 1.0

Settings 0.0–5.0 sec.

13-52 Power Capacity of Emergency Power

Default: 0.0

Settings 0.0–100.0 kVA

🕮 Set according to actual emergency power capacity.

🕮 When using emergency power (EPS), you must set the parameter to the required power capacity for the emergency power, and then the drive calculates the acceptable elevator speed (Pr.13-49) with the following equation.

I_{motor_rated} = Motor Full-load Current

$$V_{eps\_\max} = \frac{(\mathrm{Pr}.13-52)\times 0.5}{\sqrt{3}\times I_{motor\_rated}}$$

$$f_{eps\_\lim it} = \frac{V_{eps\_\max}}{(\mathrm{Pr}.13-05)}\times(\mathrm{Pr}.13-04)\times 0.5$$

When the Frequency command > fEPS, the running frequency of emergency power (EPS) is fEPS.
When the Frequency command ≤ fEPS, the running frequency of emergency power (EPS) is set according to the current Frequency command.

🕮 Using emergency power during power-off for automatic safety landing for IED-S:
There are three modes of emergency power: Pr.03-09 (UPS Designated Floor), MI function setting=54 (EPS), and MI function setting=67 (UPS). The elevator can execute inspection operation in either of these three modes.

- EPS mode:
  1. Set Pr.03-09 (UPS Designated Floor)=0, and MI function setting=54 (EPS).

2. The drive automatically runs either upward or downward, depending on which has a lighter duty, to execute safety landing.
3. When elevator starts running, it runs with either Pr.04-04 (Non-leveling Speed) or with Pr.13-49 (EPS Running Frequency) first, depending on which has a slower speed. Then, the elevator runs with Pr.04-05 (Leveling Speed) after encountering the leveling switch. Finally, it automatically stops running after leveling.
4. After safety landing is finished and elevator has stopped for a while, MO function setting 9 (YUPS) is outputted to make emergency power stop supplying.

- UPS mode:
  1. Set Pr.03-09 (UPS Designated Floor)=0, and MI function setting=67 (UPS).
  2. The elevator must work with MI function setting 125 BALWG (Balanced switch) to execute safety landing. The elevator executes downward safety landing when BALWG is ON; executes upward safety landing when BALWG is OFF.
  3. When elevator starts running, it runs with either Pr.04-04 (Non-leveling Speed) or with Pr.13-49 (EPS Running Frequency) first, depending on which has a slower speed. Then, the elevator runs with Pr.04-05 (Leveling Speed) after encountering the leveling switch. Finally, it automatically stops running after leveling.
  4. After safety landing is finished and elevator has stopped for a while, MO function setting 9 (YUPS) is outputted to make emergency power stop supplying.
- UPS designated floor mode:
  1. This mode is activated once Pr.03-09 (UPS Designed Floor)≠0, regardless of MI function setting = 67 (UPS) or 54 (EPS).
  2. As long as MI function setting UPS or EPS is activated, the elevator automatically runs with high speed to designated floor and stops. After stopping a while, MO function setting 9 (YUPS) is outputted to make emergency power stop supplying.

🕮 Set the following parameters only for EPS or UPS mode: Pr.13-48 (Voltage of Emergency Power), Pr.13-51 (Power Generation Direction Search Time), and Pr.13-52 (Power Capacity of Emergency Power).

13-53 STO Latch Selection

Default: 0003h

Settings 0000h–0007h

🕮 Sets this value to 0003h.

13-54 Zero Speed Activation Time

Default: 0.7

Settings 0.1–60.0 sec.

🕮 Sets the time that motor keeps at zero speed when activating the drive.

13-55 Zero Speed Stopping Time

Default: 0.7

Settings 0.0–3.0 sec.

🕮 Sets the time that motor keeps at zero speed when motor decelerates to zero.

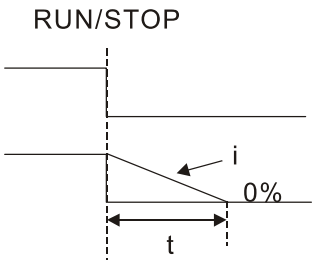
13-57 Time for Decreasing Torque at Stop

Default: 0.000

Settings 0.000–5.000 sec.

🕮 When the elevator is stopped and the mechanical brake is engaged, the drive stops output. At the same time, it produces noise from the reacting force between the motor and the mechanical brake. Use this parameter to decrease this reacting force and lower the noise.

🕮 Sets the time when torque decreases from 300% to 0%.



$$\frac{i}{\text{Drive's rated current}} \times \frac{100\%}{300\%} \times (\text{Pr.13-57}) = t$$

13-58 PM Position Control Duration

Default: 0.000

Settings 0.000–65.535 sec.

- This setting is valid only when Pr.13-17 Bit7=1.
- Sets this parameter when elevator jerk occurs at start-up or car inversion occurs. In principle, the duration cannot exceed the time when frequency starts output.

13-59 PM Position Control Gain (P)

Default: 80.00

Settings 0.00–655.00

- This setting is valid only when Pr.13-17 Bit7=1.

13-61 Forced Deceleration Limit

Default: 0000h

Settings 0000h–FFFFh
Bit 5=1: Enables forced deceleration switch speed limit (Pr.13-62–Pr.13-65) protection function

- Pr.13-61–Pr.13-65 require a software version 1.09 or above (see Pr.13-00) to work.
- The setting values are automatically generated after hoistway auto-tuning is finished. You can also manually set them.
- Once forced deceleration switch is activated, protection will be triggered if the speed exceeds the speed limit.
- The smaller the setting value, the easier protection is to be triggered. Once triggered, the elevator runs slowly to the nearest floor to stop after elevator stops. The situation is automatically cleared after elevator stops.
- When forced deceleration switch is activated, and the speed exceeds the speed limit setting, the elevator decelerates to stop by using stronger forced deceleration and the following warning codes occur:
  1033: First one upward forced deceleration over-speed
  1034: Second one upward forced deceleration over-speed
  1035: Third one upward forced deceleration over-speed
  1036: Fourth once upward forced deceleration over-speed
  1037: First one downward forced deceleration over-speed
  1038: Second one downward forced deceleration over-speed
  1039: Third one downward forced deceleration over-speed
  1040: Fourth one downward forced deceleration over-speed

13-62 First One Forced Deceleration Limit

Default: 1.00

Settings 0.00–99.99 m/s

- See Pr.13-16 parameter descriptions for details.

13-63 Second One Forced Deceleration Limit

Default: 2.00

Settings 0.00–99.99 m/s

- See Pr.13-16 parameter descriptions for details.

13-64 Third One Forced Deceleration Limit

Default: 3.00

Settings 0.00–99.99 m/s

📖 See Pr.13-16 parameter descriptions for details.

13-65 Fourth One Forced Deceleration Limit

Default: 4.00

Settings 0.00–99.99 m/s

📖 See Pr.13-16 parameter descriptions for details.

13-66 Cooling Fan Control

Default: 2

Settings 0: Cooling fan is always ON.
1: One minute after AC motor drive stops, cooling fan is OFF.
2: AC motor drive runs and cooling fan is ON; AC motor drive stops and cooling fan is OFF.
3: Cooling fan is ON to run when preliminary IGBT temperature (°C) reached.
4: Cooling fan is always OFF.

📖 Use this parameter for fan control.
📖 When set to 3, the fan starts to run until heat sink temperature is less than 40°C if temperature exceed 40°C.

13-99 Drive All Write

Default: 0

Settings 0–1

📖 1: Automatically write all parameters related to drive into the drive. The setting value automatically returns to 0 after you finish the setting.

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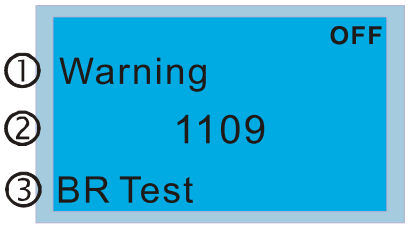
Chapter 13 Warning Codes

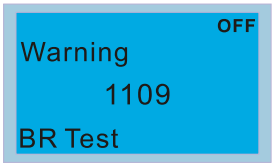


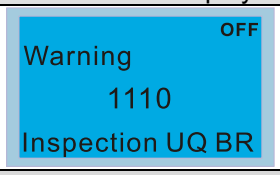
① Indicates "Warning", and ②③ are related information

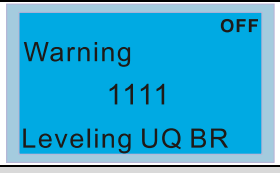
② Warning code

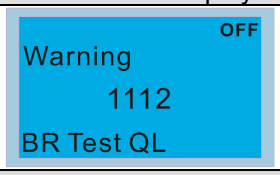
③ Description of warning code

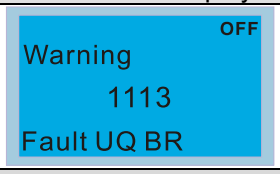
- If you see code number from 1001 to 1100 display on the keypad, they are the drive's warning codes. For more information on these warning codes, see Chapter 13 Warning Codes in the VFD-ED user manual. Ignore the thousands digits when referring to the VFD-ED user manual.

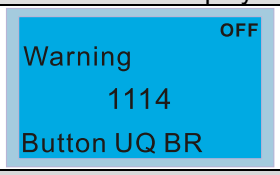
Code#	KPC-CC01 Display	Warning Name	Description
1109		Braking force, Under test	Warning occurs when running the manual braking force test
Action and Reset			
Action			The operation contactor outputs, but the brake contactor does not output. Then, the system outputs the torque, and gradually increases to Pr.03-61 (Brake Test Output Torque) setting value.
Related Parameters			Pr.03-60–Pr.03-67 (parameters relate to braking force test)
Reset Method			Resets automatically once the action is finished

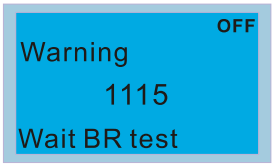
Code#	KPC-CC01 Display	Warning Name	Description
1110		Inspection, Unqualified, Braking force	Warning occurs when Pr.03-67 (Brake Test Starting) is set to 1, and the elevator is neither in an emergency operation mode nor in control panel inspection mode.
Action and Reset			
Action			Pr.03-67 (Brake Test Starting) is set to 0, and the fault code F150 (Unqualified braking force test) occurs after five seconds.
Related Parameters			Pr.03-67 (Brake Test Starting)
Reset Method			Resets automatically after five seconds

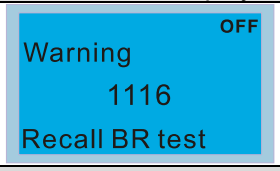
Code#	KPC-CC01 Display	Warning Name	Description
1111		Leveling, Unqualified, Braking force	Warning occurs when Pr.03-67 (Brake Test Starting) is set to 1, and the elevator car does not stop at the leveling position.
Action and Reset			
Action			Pr.03-67 (Brake Test Starting) is set to 0, and the fault code F150 (Unqualified braking force test) occurs after five seconds.
Related Parameters			Pr.03-67 (Brake Test Starting)
Reset Method			Resets automatically after five seconds

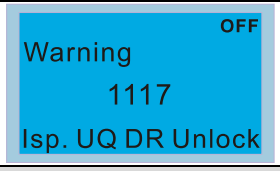
Code#	KPC-CC01 Display	Warning Name	Description
1112		Braking force, Test, Qualified	Warning occurs when the braking force test is finished and the test is qualified
Action and Reset			
Action		N/A	
Related Parameters		Pr.03-60–Pr.03-67 (parameters relate to braking force test)	
Reset Method		Resets automatically after five seconds	

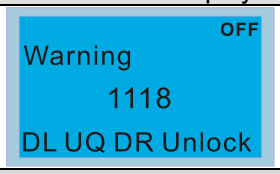
Code#	KPC-CC01 Display	Warning Name	Description
1113		Fault, Unqualified, Braking force	Warning occurs when Pr.03-67 (Brake Test Starting) is set to 1, and the elevator is currently malfunctioned
Action and Reset			
Action		Pr.03-67 (Brake Test Starting) is set to 0, and the fault code F150 (Unqualified braking force test) occurs after five seconds.	
Related Parameters		Pr.03-67 (Brake Test Starting)	
Reset Method		Resets automatically after five seconds	

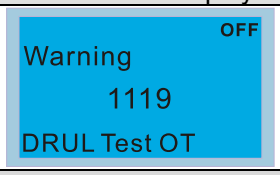
Code#	KPC-CC01 Display	Warning Name	Description
1114		Button, Unqualified, Braking force	Warning occurs when Pr.03-67 (Brake Test Starting) is set to 1, and you press the upward or downward operation button for the manual mode.
Action and Reset			
Action		Pr.03-67 (Brake Test Starting) is set to 0, and the fault code F150 (Unqualified braking force test) occurs after five seconds.	
Related Parameters		Pr.03-67 (Brake Test Starting)	
Reset Method		Resets automatically after five seconds	

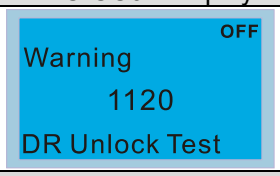
Code#	KPC-CC01 Display	Warning Name	Description
1115		Wait, Braking force test	Warning occurs when running the manual braking force test, and the door does not close after you set Pr.03-67 (Brake Test Starting) to 1. Warning occurs when running the automatic braking force test once per day in specified time, and the elevator is in use by passengers.
Action and Reset			
Action		The door automatically closes when running the manual braking force test. The door does not close automatically when running the automatic braking force test once per day.	
Related Parameters		Pr.03-67 (Brake Test Starting)	
Reset Method		Resets automatically	

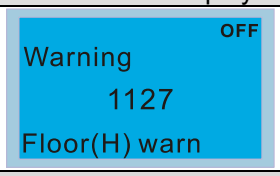
Code#	KPC-CC01 Display	Warning Name	Description
1116		Recall, Braking force test	Warning occurs when running the automatic braking force test once per day, and the elevator automatically runs to the designated floor.
Action and Reset			
Action		The car call of the floor specified by Pr.03-66 (Brake Test Floor) is automatically registered.	
Related Parameters		Pr.03-66 (Brake Test Floor)	
Reset Method		Resets automatically	

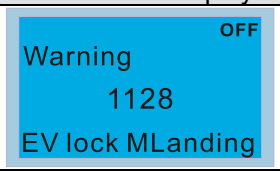
Code#	KPC-CC01 Display	Warning Name	Description
1117		Inspection, Unqualified, Door unlock board	Warning occurs when Pr.03-59 (Door Unlock Board Test) is set to 1, and the elevator is neither in an emergency operation mode nor in control panel inspection mode.
Action and Reset			
Action		Pr.03-59 (Door Unlock Board Test) is set to 0	
Related Parameters		Pr.03-59 (Door Unlock Board Test)	
Reset Method		Resets automatically	

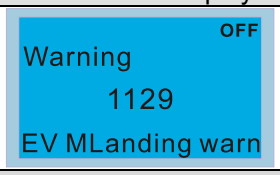
Code#	KPC-CC01 Display	Warning Name	Description
1118		Doorlock, Unqualified, Door unlock board	Warning occurs when both the signals of layer door safety hatch and gate safety hatch do not change to ON within one second (Pr.03-59=1 while the door opens) after setting Pr.03-59 (Door Unlock Board Test) to 1.
Action and Reset			
Action		Pr.03-59 (Door Unlock Board Test) is set to 0	
Related Parameters		Pr.03-59 (Door Unlock Board Test)	
Reset Method		Resets automatically	

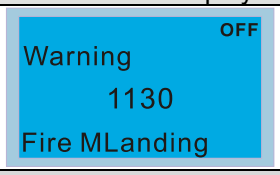
Code#	KPC-CC01 Display	Warning Name	Description
1119		Door unlock board, Test, Overtime	Warning occurs when the functional test for door unlock board is not finished within 120 seconds after setting Pr.03-59 (Door Unlock Board Test) to 1.
Action and Reset			
Action		Pr.03-59 (Door Unlock Board Test) is set to 0	
Related Parameters		Pr.03-59 (Door Unlock Board Test)	
Reset Method		Resets automatically	

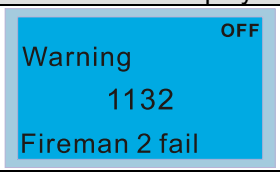
Code#	KPC-CC01 Display	Warning Name	Description
1120		Door unlock board, Under test	Warning occurs when Pr.03-59 (Door Unlock Board Test) is set to 1.
Action and Reset			
Action		Force the multi-function output Door Unlock Contactor [SY] to output	
Related Parameters		Pr.03-59 (Door Unlock Board Test)	
Reset Method		Resets automatically	

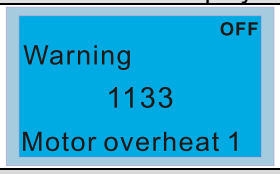
Code#	KPC-CC01 Display	Warning Name	Description
1127		Highest floor warning	Warning occurs when Pr.03-01 (Highest Physical Floor) is set to 1, or Pr.03-01 is smaller than Pr.03-02 (Lowest Physical Floor).
Action and Reset			
Action		N/A	
Related Parameters		Pr.03-01 (Highest Physical Floor), Pr.03-02 (Lowest Physical Floor)	
Reset Method		Resets automatically	

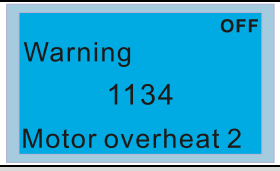
Code#	KPC-CC01 Display	Warning Name	Description
1128		Elevator lock main landing warning	Warning occurs when: 1. Pr.03-48 is set to non-service floor 2. Pr.03-48 is larger than the highest floor 3. Pr.03-48 is smaller than the lowest floor
Action and Reset			
Action		Immediately acts	
Related Parameters		Pr.03-48 (Elevator Lock Main Landing)	
Reset Method		Resets automatically	

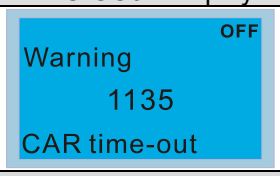
Code#	KPC-CC01 Display	Warning Name	Description
1129		Elevator main landing warning	Warning occurs when: 1. When Pr.03-05 is set to non-service floor 2. Pr.03-05 is larger than the highest floor 3. Pr.03-05 is smaller than the lowest floor
Action and Reset			
Action		Immediately acts	
Related Parameters		Pr.03-05 (Main Landing for Standby While Idling)	
Reset Method		Resets automatically	

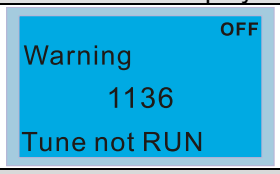
Code#	KPC-CC01 Display	Warning Name	Description
1130		Main landing at fire emergency warning	Warning occurs when: 1. Pr.03-49 is set to non-service floor 2. Pr.03-49 is larger than the highest floor 3. Pr.03-49 is smaller than the lowest floor
Action and Reset			
Action		Immediately acts	
Related Parameters		Pr.03-49 (Primary Main Landing at Fire Emergency)	
Reset Method		Resets automatically	

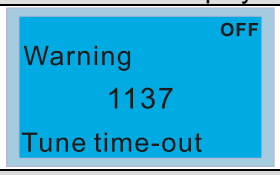
Code#	KPC-CC01 Display	Warning Name	Description
1132		Fireman class II invalid	Warning occurs when fireman class II signal is ON and fireman class I signal is OFF.
Action and Reset			
Action		Fireman class II is not activated	
Related Parameters		MI=47 FIRS2 (Fireman class II), MI=46 FIRS1 (Fireman class I)	
Reset Method		Resets when signals of fireman class II and fireman class I are identical (both are ON or OFF)	

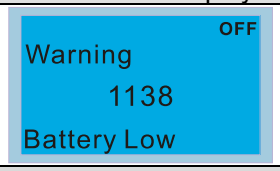
Code#	KPC-CC01 Display	Warning Name	Description
1133		Motor temperature at front door overheats	Warning occurs when motor temperature at the front door (MI=117) overheats.
Action and Reset			
Action		All call signals are cancelled, and the front door open/close signal does not output.	
Related Parameters		N/A	
Reset Method		The warning is automatically cleared after the input signal is reset.	

Code#	KPC-CC01 Display	Warning Name	Description
1134		Motor temperature at rear door overheats	Warning occurs when motor temperature at the rear door (MI=118) overheats.
Action and Reset			
Action		All call signals are cancelled, and the rear door open/close signal does not output.	
Related Parameters		N/A	
Reset Method		The warning is automatically cleared after the input signal is reset.	

Code#	KPC-CC01 Display	Warning Name	Description
1135		CAR+/CAR- time-out	Warning occurs when CAR+/CAR- communication portal is not successfully connected within default setting time.
Action and Reset			
Action		Immediately acts	
Related Parameters		N/A	
Reset Method		The warning is automatically cleared once the communication is correctly connected.	

Code#	KPC-CC01 Display	Warning Name	Description
1136		Running time-out during auto-tuning	Warning occurs when Pr.13-21 (Motor Auto-tuning) is not set to 0, and the RUN command does not execute within 10 seconds, and then Pr.13-21 is automatically set to 0.
Action and Reset			
Action		Pr.13-21 (Motor Auto-tuning) is set to 0	
Related Parameters		Pr.13-21 (Motor Auto-tuning)	
Reset Method		Resets automatically	

Code#	KPC-CC01 Display	Warning Name	Description
1137		Auto-tuning time-out	Warning occurs when motor auto-tuning is not finished within 120 seconds during motor auto-tuning, and auto-tuning automatically stops, and then Pr.13-21 (Motor Auto-tuning) is set to 0.
Action and Reset			
Action		Pr.13-21 (Motor Auto-tuning) is set to 0 and motor auto-tuning stops.	
Related Parameters		Pr.13-21 (Motor Auto-tuning)	
Reset Method		Resets automatically	

Code#	KPC-CC01 Display	Warning Name	Description
1138		Coin cell battery is at low voltage	Warning occurs when coin cell battery is at low voltage. The warning is automatically cleared after 10 seconds. Note that a low-voltage battery causes incorrect clock.
Action and Reset			
Action		This warning will be recorded in fault records	
Related Parameters		N/A	
Reset Method		Resets automatically	

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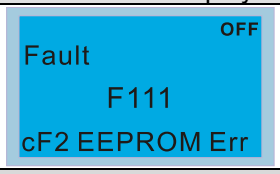
Chapter 14 Fault Codes

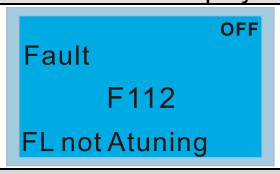
① Indicates "Fault", and②③ are related information

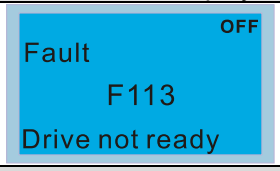
② Fault code

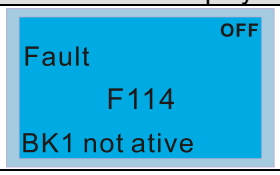
③ Description of fault code

- If you see code number from E001 to E100 display on the keypad, they are the drive's fault codes. For more information on these fault codes, see Chapter 14 Fault Codes in the VFD-ED user manual.

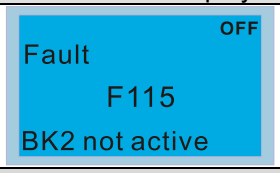
Code#	KPC-CC01 Display	Fault Name	Description
F111		cF2 EEPROM error	Fault occurs when there is an EEPROM read error
Action and Reset			
Action		All parameters return to default settings	
Related Parameters		N/A	
Reset Method		Press the RESET key on the digital keypad	

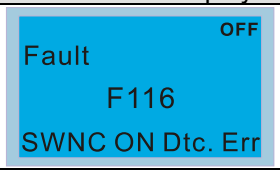
Code#	KPC-CC01 Display	Fault Name	Description
F112		Floor auto-tuning is not finished	Fault occurs when switching the manual/auto mode to auto mode without finishing the hoistway floor auto-tuning
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-00 (Hoistway Auto-tuning)	
Reset Method		Switch to the manual mode	

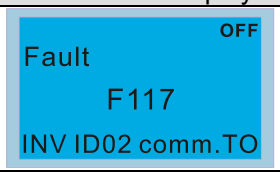
Code#	KPC-CC01 Display	Fault Name	Description
F113		Drive is not ready	Fault occurs when the drive does not respond a ready signal
Action and Reset			
Action		Two seconds	
Related Parameters		N/A	
Reset Method		Press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

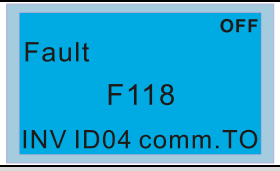
Code#	KPC-CC01 Display	Fault Name	Description
F114		BK1 is not active	Fault occurs when BK1 (Brake-1 travel switch) signal is not active after brake contactor activates (ON)

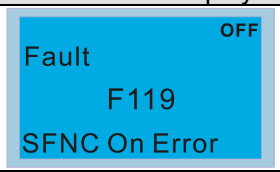
Action and Reset	
Action	Stops urgently
Related Parameters	MI=30 BK1 (Brake-1 travel switch)
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)

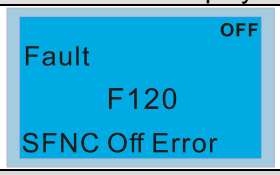
Code#	KPC-CC01 Display	Fault Name	Description
F115		BK2 is not active	Fault occurs when BK2 (Brake-2 travel switch) signal is not active after brake contactor activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=31 BK2 (Brake-2 travel switch)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

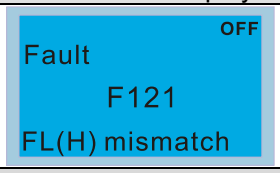
Code#	KPC-CC01 Display	Fault Name	Description
F116		SWNC ON detection error	Fault occurs when SWNC operation contactor detection signal is not OFF after SW operation contactor activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=26 SWNC (N.C. contact of operation contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

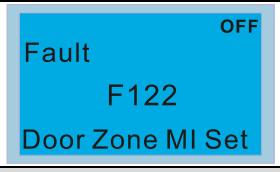
Code#	KPC-CC01 Display	Fault Name	Description
F117		Drive 02 communication time-out	Fault occurs when drive ID 02 data is not received within Pr.02-13 setting time
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.02-13 (CAN0 Communication Time-out)		
Reset Method	Resets automatically once communication is normal		

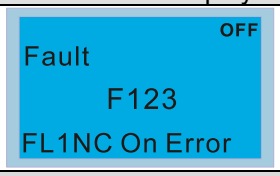
Code#	KPC-CC01 Display	Fault Name	Description
F118		Drive 04 communication time-out	Fault occurs when drive ID 04 data is not received within Pr.02-13 setting time
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.02-13 (CAN0 Communication Time-out)		
Reset Method	Resets automatically once communication is normal		

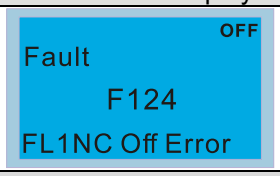
Code#	KPC-CC01 Display	Fault Name	Description
F119		SFNC ON error	Fault occurs when SFNC (N.C. contact of safety hatch contactor) is not OFF after safety hatch contactor activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=17 SFNC (N.C. contact of safety hatch contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

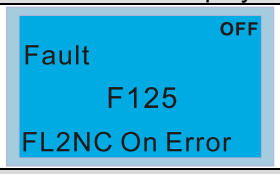
Code#	KPC-CC01 Display	Fault Name	Description
F120		SFNC OFF error	Fault occurs when SFNC (N.C. contact of safety hatch contactor) is not ON after safety hatch contactor deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=17 SFNC (N.C. contact of safety hatch contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

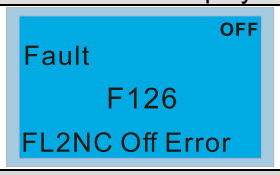
Code#	KPC-CC01 Display	Fault Name	Description
F121		Mismatched highest floor	Fault occurs when the highest floor is not identical to the highest physical floor set in Pr.03-01 after finishing hoistway auto-tuning
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.03-01 (Highest Physical Floor)		
Reset Method	Switch to the manual mode		

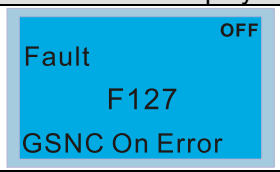
Code#	KPC-CC01 Display	Fault Name	Description
F122		Door zone MI setting error	Fault occurs when SX1 (Door one signal) and FL1 (Upper door zone sensor) or FL2 (Lower door zone sensor) are all enabled, or either of FL1 FL2 is enabled after 60 seconds
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=61 SX1 (Door zone signal) MI=3 FL1 (Upper door zone sensor) MI=4 FL2 (Lower door zone sensor)		
Reset Method	Resets automatically once the setting is normal		

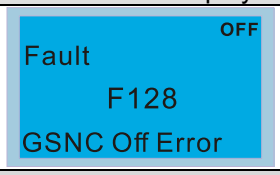
Code#	KPC-CC01 Display	Fault Name	Description
F123		FL1NC ON error	Fault occurs when FL1NC (Contact B of the relay for FL1) is not OFF after FL1 (Upper door zone sensor) activates (ON)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=3 FL1 (Upper door zone sensor) MI=5 FL1NC (Contact B of the relay for FL1)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

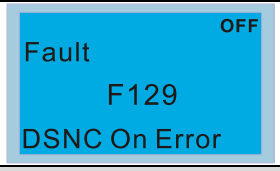
Code#	KPC-CC01 Display	Fault Name	Description
F124		FL1NC OFF error	Fault occurs when FL1NC (Contact B of the relay for FL1) is not ON after FL1 (Upper door zone sensor) deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=3 FL1 (Upper door zone sensor) MI=5 FL1NC (Contact B of the relay for FL1)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

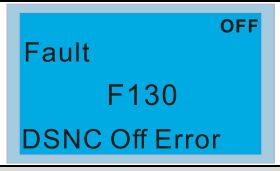
Code#	KPC-CC01 Display	Fault Name	Description
F125		FL2NC ON error	Fault occurs when FL2NC (Contact B of the relay for FL2) is not OFF after FL2 (Lower door zone sensor) activates (ON)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=4 FL2 (Lower door zone sensor) MI=6 FL2NC (Contact B of the relay for FL2)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

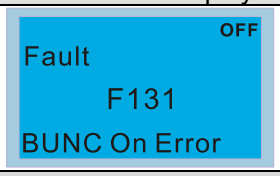
Code#	KPC-CC01 Display	Fault Name	Description
F126		FL2NC OFF error	Fault occurs when FL2NC (Contact B of the relay for FL1) is not ON after FL2 (Lower door zone sensor) deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=4 FL2 (Lower door zone sensor) MI=6 FL2NC (Contact B of the relay for FL2)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

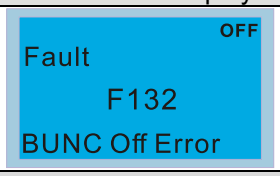
Code#	KPC-CC01 Display	Fault Name	Description
F127		GSNC ON error	Fault occurs when GSNC (N.C. contact of gate safety (GS) hatch contactor) is not OFF after GSH (Gate safety hatch) activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=18 GSH (Gate safety hatch high voltage) MI=19 GSL (Gate safety hatch low voltage) MI=20 GSNC (N.C. contact of gate safety (GS) hatch contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

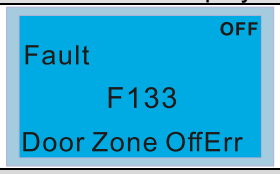
Code#	KPC-CC01 Display	Fault Name	Description
F128		GSNC OFF error	Fault occurs when GSNC (N.C. contact of gate safety (GS) hatch contactor) is not ON after GSH (Gate safety hatch) deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=18 GSH (Gate safety hatch high voltage) MI=19 GSL (Gate safety hatch low voltage) MI=20 GSNC (N.C. contact of gate safety (GS) hatch contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

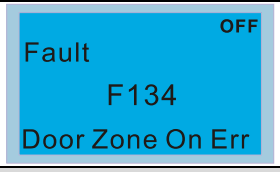
Code#	KPC-CC01 Display	Fault Name	Description
F129		DSNC ON error	Fault occurs when DSNC (N.C. contact of layer door safety (DS) hatch contactor) is not OFF after DSH (Door layer safety hatch) activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=21 DSH (Layer door safety hatch high voltage) MI=22 DSL (Layer door safety hatch low voltage) MI=23 DSNC (N.C. contact of layer door safety (DS) hatch contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

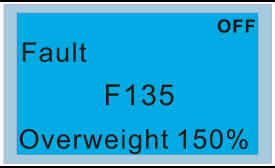
Code#	KPC-CC01 Display	Fault Name	Description
F130		DSNC OFF error	Fault occurs when DSNC (N.C. contact of layer door safety (DS) hatch contactor) is not ON after DSH (Door layer safety hatch) deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=21 DSH (Layer door safety hatch high voltage) MI=22 DSL (Layer door safety hatch low voltage) MI=23 DSNC (N.C. contact of layer door safety (DS) hatch contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

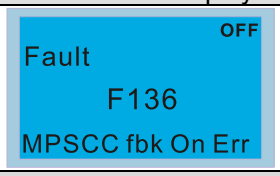
Code#	KPC-CC01 Display	Fault Name	Description
F131		BUNC ON error	Fault occurs when BUNC (N.C. contact of brake unit (BU) contactor) is not OFF after BU (Contactor of brake unit) activates (ON)
Action and Reset			
Action		Stops urgently	
Related Parameters		MO=7 BU (Contactor of brake unit) MI=57 BUNC (N.C. contact of brake unit (BU) contactor)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

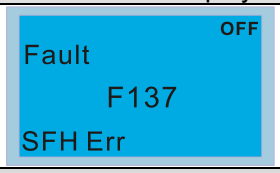
Code#	KPC-CC01 Display	Fault Name	Description
F132		BUNC OFF error	Fault occurs when BUNC (N.C. contact of brake unit (BU) contactor) is not ON after BU (Contactor of brake unit) deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MO=7 BU (Contactor of brake unit) MI=57 BUNC (N.C. contact of brake unit (BU) contactor)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

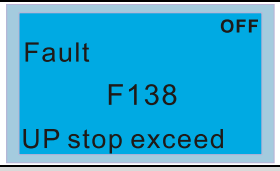
Code#	KPC-CC01 Display	Fault Name	Description
F133		Door zone signal OFF error	Error detected when both DZU and DZD are ON but door zone sensors are OFF (SX1 is not ON, or either of FL1 and FL2 is not ON). Fault code occurs until elevator stops and, at this time, elevator cannot run.
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=1 DZU (Upper leveling sensor) MI=2 DZD (Lower leveling sensor) MI=3 FL1 (Upper door zone sensor) MI=4 FL2 (Lower door zone sensor) MI=61 SX1 (Door zone signal)	
Reset Method		Make all door zone sensors ON or switch to the manual mode	

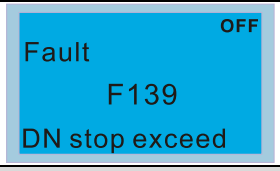
Code#	KPC-CC01 Display	Fault Name	Description
F134		Door zone signal ON error	Error detected when both DZU and DZD are OFF but door zone sensors are ON (SX1 is not OFF, or either of FL1 and FL2 is not OFF). Fault code occurs until elevator stops and, at this time, elevator cannot run.
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=1 DZU (Upper leveling sensor) MI=2 DZD (Lower leveling sensor) MI=3 FL1 (Upper door zone sensor) MI=4 FL2 (Lower door zone sensor) MI=61 SX1 (Door zone signal)	
Reset Method		Make all door zone sensors OFF or switch to the manual mode	

Code#	KPC-CC01 Display	Fault Name	Description
F135		Load exceeds 150%	Fault occurs when 150% (Forklift overload switch) is ON under non-manual mode
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=111 150% (Forklift overload switch)	
Reset Method		Resets automatically when 150% (Forklift overload switch) is OFF for 10 seconds	

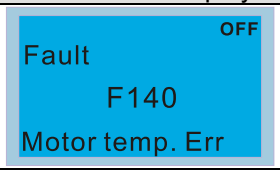
Code#	KPC-CC01 Display	Fault Name	Description
F136		FX (MPSCC) feedback ON error	Fault occurs when FXNO (N.O. contact of MPSCC (Motor Phase Short Circuit Contactor)) is not OFF after FX (Motor Phase Short Circuit Contactor (PM)) deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MO=6 FX (Motor Phase Short Circuit Contactor (PM)) MI=63 FXNO (N.O. contact of MPSCC (Motor Phase Short Circuit Contactor))	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

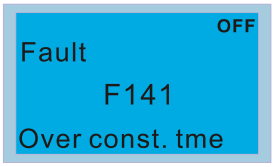
Code#	KPC-CC01 Display	Fault Name	Description
F137		Safety hatch high voltage error	Fault occurs when there is an error in the safety hatch signal for the elevator system (high voltage)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=15 SFH (Safety hatch high voltage)	
Reset Method		Resets automatically once the signal is normal	

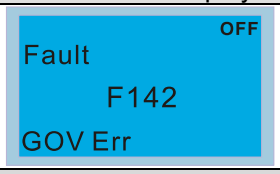
Code#	KPC-CC01 Display	Fault Name	Description
F138		Upward operation at stop exceeds	Fault occurs when elevator exceeds the leveling sensor position while running upward until it stops at certain floor
Action and Reset			
Action		Acts immediately	
Related Parameters		N/A	
Reset Method		Resets automatically	

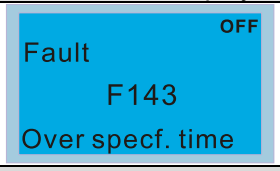
Code#	KPC-CC01 Display	Fault Name	Description
F139		Downward operation at stop exceeds	Fault occurs when elevator exceeds the leveling sensor position while running downward until it stops at certain floor
Action and Reset			
Action		Acts immediately	

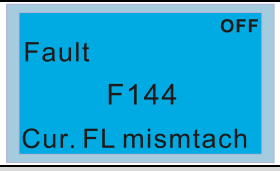
Related Parameters	N/A
Reset Method	Resets automatically

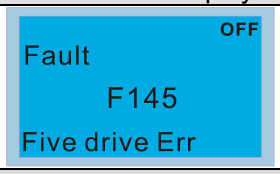
Code#	KPC-CC01 Display	Fault Name	Description
F140		Motor temperature error	Fault occurs when there is an error in motor temperature
Action and Reset			
Action	Acts immediately		
Related Parameters	MI=50 MTS (Motor temperature overheat)		
Reset Method	Resets automatically once the signal is normal		

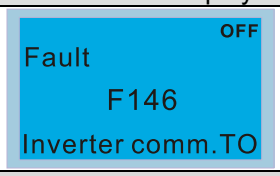
Code#	KPC-CC01 Display	Fault Name	Description
F141		Exceeds the constant running time	Fault occurs when the time that the elevator runs continuously with any speed in any status exceeds Pr.03-24 setting value. If the fault occurs in manual mode, release the upward and downward operation buttons to make the elevator continue to run. Otherwise, the elevator resets automatically after it stops urgently for five seconds. But if the number of fault occurred is larger than Pr.03-23 within one hour, it will not reset automatically.
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.03-23 (Number of Fault Reset), Pr.03-24 (Constant Running Protection Time)		
Reset Method	Switch to the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

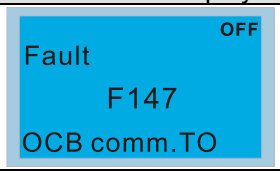
Code#	KPC-CC01 Display	Fault Name	Description
F142		Governor error	Fault occurs when governor activates
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=55 GOV (Governor)		
Reset Method	Resets automatically once the signal is normal		

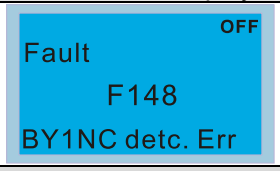
Code#	KPC-CC01 Display	Fault Name	Description
F143		Exceeds specified floor running time	Fault occurs when the elevator runs at high speed, and does not pass through or arrives at the specified floor within Pr.03-25 setting time
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.03-25 (Specified Floor Protection Time)		
Reset Method	Switch to the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

Code#	KPC-CC01 Display	Fault Name	Description
F144		Mismatched current floor	Fault occurs when the floor for the host controller and that for the drive is not identical as elevator stops
Action and Reset			
Action		Acts immediately	
Related Parameters		N/A	
Reset Method		Returns to the top floor automatically, or resets automatically after adjusting floor when returning to the top floor, or switch to the manual mode	

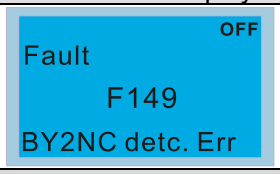
Code#	KPC-CC01 Display	Fault Name	Description
F145		The number of times for drive error occurred has reached five	Fault occurs when the number of times that drive error occur within one hour has reached five
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

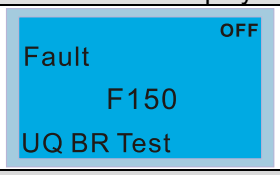
Code#	KPC-CC01 Display	Fault Name	Description
F146		Drive communication time-out	Fault occurs when communication is not successfully connected with the drive within Pr.02-13 setting time
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.02-13 (CAN0 Communication Time-out)	
Reset Method		Resets automatically once communication is normal	

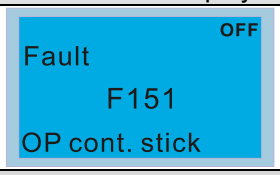
Code#	KPC-CC01 Display	Fault Name	Description
F147		Communication between IED-S and cartop board	Fault occurs when communication between IED-S and cartop board is not successfully connected within Pr.02-19 setting time. Error is not detected when in control panel manual mode.
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.02-19 (CAN2 Communication Time-out)	
Reset Method		Resets automatically once the fault is cleared	

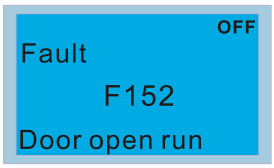
Code#	KPC-CC01 Display	Fault Name	Description
F148		BY1NC ON detection error	Fault occurs when BY1NC (Brake-1 contactor detection) signal is not OFF after brake contactor activates (ON)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=27 BY1NC (N.C. contact of Brake-1 contactor)	

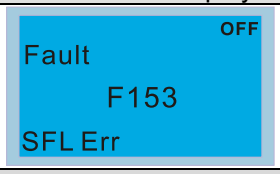
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)

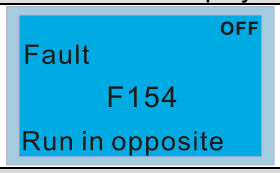
Code#	KPC-CC01 Display	Fault Name	Description
F149		BY2NC ON detection error	Fault occurs when BY2NC (Brake-2 contactor detection) signal is not OFF after brake contactor activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=28 BY2NC (N.C. contact of Brake-2 contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

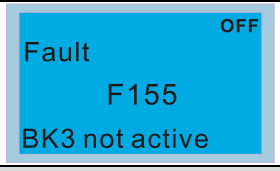
Code#	KPC-CC01 Display	Fault Name	Description
F150		Unqualified braking force test	Fault occurs when the breaking force test is unqualified, or when switching the manual/auto mode to auto mode before the braking force test is qualified.
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.03-60–Pr.03-67 (parameters relate to braking force test)		
Reset Method	1. When the braking force test is unqualified: Switch to the inspection mode to press both the upward and downward operation buttons simultaneously for more than five seconds, or switch to the inspection mode to press the external reset device, or switch to the inspection mode to press the RESET key on the digital keypad. 2. When switching the manual/auto mode to auto mode before the braking force test is qualified: Switch the manual/auto mode to manual mode.		

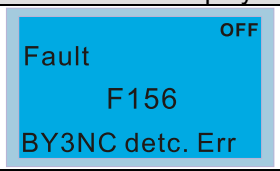
Code#	KPC-CC01 Display	Fault Name	Description
F151		Operation contactor sticking	Fault occurs when SWNC operation contactor detection signal is not ON after SW operation contactor deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=26 SWNC (N.C. contact of operation contactor)		
Reset Method	Resets automatically once the SWNC operation contactor detection signal changes to ON		

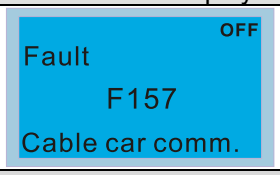
Code#	KPC-CC01 Display	Fault Name	Description
F152		Runs with door open	Detection is valid only when not in the manual mode or not in door unlock board test mode. There are two detection conditions: 1. Fault occurs when both the gate safety hatch and layer door safety hatch signals are OFF, and the door zone signal changes from ON to OFF. 2. Both the gate safety hatch and layer door safety hatch signals use their own relays to connect multi-function terminals (MI=20 GSNC (N.C contact of gate safety hatch contactor)) and MI=23 DSNC (N.C. contact of layer door safety hatch contactor)). Fault occurs when their signals are both OFF and they are not in the manual mode for more than 30 seconds and not in the door zone.
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-59 (Door Unlock Board Test)	
Reset Method		Press the external reset device, press the RESET key on the digital keypad, power-on again, or switch to the inspection mode to press both the upward and downward operation buttons simultaneously for more than five seconds (choose either)	

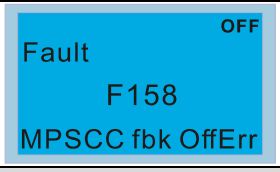
Code#	KPC-CC01 Display	Fault Name	Description
F153		Safety hatch low voltage error	Fault occurs when there is an error in the safety hatch signal for the elevator system (low voltage)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=16 SFL (Safety hatch low voltage)	
Reset Method		Resets automatically once the signal is normal	

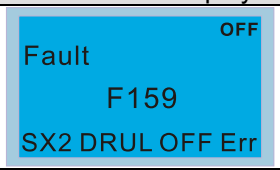
Code#	KPC-CC01 Display	Fault Name	Description
F154		Runs in an opposite direction	Fault occurs when the elevator running direction is opposite to the encoder direction.
Action and Reset			
Action		Three seconds	
Related Parameters		Pr.03-22 (Reverse Pulse Logic) or Pr.13-02 (Drive Output Direction)	
Reset Method		When the elevator is in stop status, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

Code#	KPC-CC01 Display	Fault Name	Description
F155		BK3 is not active	Fault occurs when BK3 (Brake-3 travel switch) signal is not active after brake contactor activates (ON)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=32 BK3 (Brake-3 travel switch)	
Reset Method		Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

Code#	KPC-CC01 Display	Fault Name	Description
F156		BY3NC ON detection error	Fault occurs when BY3NC (Brake-3 contactor detection) signal is not OFF after brake contactor activates (ON)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=29 BY3NC (N.C. contact of Brake-3 contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

Code#	KPC-CC01 Display	Fault Name	Description
F157		Traveling cable insertion car communication	Fault occurs when a communication error occurs between IED-S and cartop board for elevator mounted with TCIN traveling cable and with TCIN signal ON while elevator is in stop status
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=25 TCIN (Traveling cable insertion)		
Reset Method	Resets automatically once the fault is cleared		

Code#	KPC-CC01 Display	Fault Name	Description
F158		MPSCC feedback OFF error	Fault occurs when there is MPSCC (Motor Phase Short Circuit Contactor) signal feedback error
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=63 FXNO (N.O. contact of MPSCC (Motor Phase Short Circuit Contactor))		
Reset Method	When the elevator is in stop status, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

Code#	KPC-CC01 Display	Fault Name	Description
F159		SX2 door unlock OFF detection error	Fault occurs when SX2 door unlock detection signal is not ON after SY door unlock output activates (ON)
Action and Reset			
Action	The function of “re-leveling after door open” and “door pre-open at stop” are cancelled		
Related Parameters	MI=62 SX2 (Door unlock output feedback)		
Reset Method	Press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

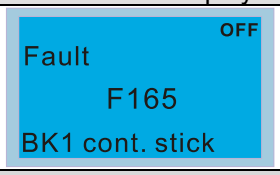
Code#	KPC-CC01 Display	Fault Name	Description
F160	OFF Fault F160 STO relay stick	STO relay sticking	Fault occurs when both STO1 and STO2, drive's safety control circuit terminals, remain activated with E24 after SW operation contactor deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		Set Pr.06-49 (STO Latch Selection)=1, 2 or 3 in the VFD-ED user manual	
Reset Method		Press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

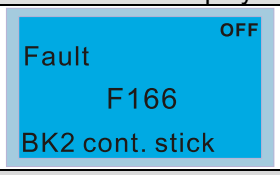
Code#	KPC-CC01 Display	Fault Name	Description
F161	OFF Fault F161 STO OFF Err	STO OFF error	Fault occurs when both STO1 and STO2, drive's safety control circuit terminals, are not activated with E24 after SW operation contactor activates (ON)
Action and Reset			
Action		Stops urgently	
Related Parameters		Set Pr.06-49 (STO Latch Selection)=1, 2 or 3 in the VFD-ED user manual	
Reset Method		Resets automatically after ten seconds	

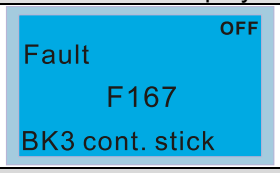
Code#	KPC-CC01 Display	Fault Name	Description
F162	OFF Fault F162 BK1 not reset	BK1 is not reset	Fault occurs when BK1 (Brake-1 travel switch) signal is not reset after brake contactor deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=30 BK1 (Brake-1 travel switch)	
Reset Method		Resets automatically once brake-1 travel switch signal is reset	

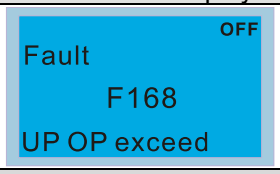
Code#	KPC-CC01 Display	Fault Name	Description
F163	OFF Fault F163 BK2 not reset	BK2 is not reset	Fault occurs when BK2 (Brake-2 travel switch) signal is not reset after brake contactor deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=31 BK2 (Brake-2 travel switch)	
Reset Method		Resets automatically once brake-2 travel switch signal is reset	

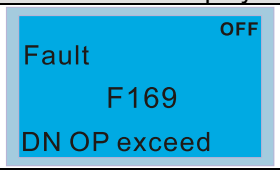
Code#	KPC-CC01 Display	Fault Name	Description
F164	OFF Fault F164 BK3 not reset	BK3 is not reset	Fault occurs when BK3 (Brake-3 travel switch) signal is not reset after brake contactor deactivates (OFF)
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=32 BK3 (Brake-3 travel switch)	
Reset Method		Resets automatically once brake-3 travel switch signal is reset	

Code#	KPC-CC01 Display	Fault Name	Description
F165		BK1 contactor sticking	Fault occurs when BY1NC (Brake-1 contactor detection) signal is not ON after brake contactor deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=27 BY1NC (N.C. contact of Brake-1 contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

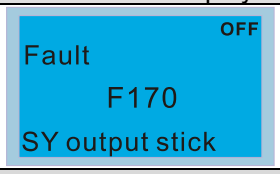
Code#	KPC-CC01 Display	Fault Name	Description
F166		BK2 contactor sticking	Fault occurs when BY2NC (Brake-2 contactor detection) signal is not ON after brake contactor deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=28 BY2NC (N.C. contact of Brake-2 contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

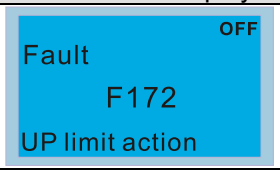
Code#	KPC-CC01 Display	Fault Name	Description
F167		BK3 contactor sticking	Fault occurs when BY3NC (Brake-3 contactor detection) signal is not ON after brake contactor deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=29 BY3NC (N.C. contact of Brake-3 contactor)		
Reset Method	Press the upward or downward operation button for the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

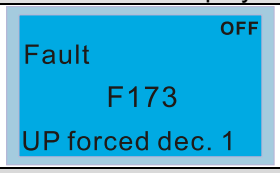
Code#	KPC-CC01 Display	Fault Name	Description
F168		Upward operation exceeds	Fault occurs when the elevator runs upward and stops, and then leaves the DZD lower leveling switch
Action and Reset			
Action	Stops urgently		
Related Parameters	N/A		
Reset Method	Resets automatically after three seconds		

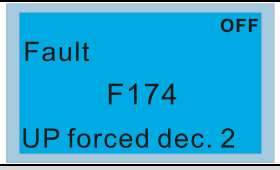
Code#	KPC-CC01 Display	Fault Name	Description
F169		Downward operation exceeds	Fault occurs when the elevator runs downward and stops, and then leaves the DZU upper leveling switch

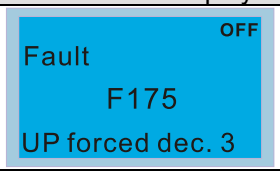
Action and Reset	
Action	Stops urgently
Related Parameters	N/A
Reset Method	Resets automatically after three seconds

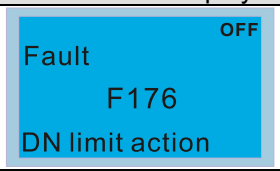
Code#	KPC-CC01 Display	Fault Name	Description
F170		SY door unlock output sticking	Fault occurs when SX2 door unlock detection signal is not OFF after SY door unlock output deactivates (OFF)
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=62 SX2 (Door unlock output feedback)		
Reset Method	Switch to the manual mode to press both the upward and downward operation buttons simultaneously for more than five seconds, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

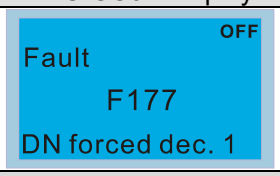
Code#	KPC-CC01 Display	Fault Name	Description
F172		Upward limit action	Fault occurs when neither the first one upward forced deceleration switch nor the lower leveling sensor (DZD) activates after upward limit switch activates
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=33 LSU (Upper limit switch)		
Reset Method	Resets automatically when no fault is identified		

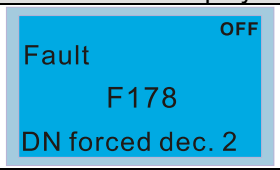
Code#	KPC-CC01 Display	Fault Name	Description
F173		Upward forced deceleration 1	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the first one upward forced deceleration switch activates during upward running
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.03-16 (Position Difference Protection)		
Reset Method	Resets automatically after five seconds		

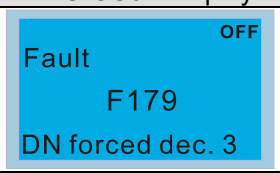
Code#	KPC-CC01 Display	Fault Name	Description
F174		Upward forced deceleration 2	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the second one upward forced deceleration switch activates during upward running
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.03-16 (Position Difference Protection)		
Reset Method	Resets automatically after five seconds		

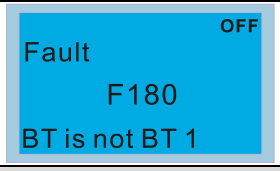
Code#	KPC-CC01 Display	Fault Name	Description
F175		Upward forced deceleration 3	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the third one upward forced deceleration switch activates during upward running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-16 (Position Difference Protection)	
Reset Method		Resets automatically after five seconds	

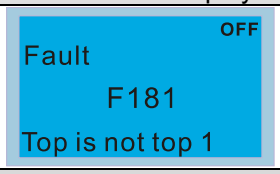
Code#	KPC-CC01 Display	Fault Name	Description
F176		Downward limit action	Fault occurs when neither the first one downward forced deceleration switch nor the upper leveling sensor (DZU) activates after downward limit switch activates
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=34 LSD (Lower limit switch)	
Reset Method		Resets automatically when no fault is identified	

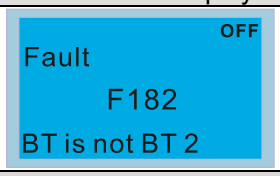
Code#	KPC-CC01 Display	Fault Name	Description
F177		Downward forced deceleration 1	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the first one downward forced deceleration switch activates during downward running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-16 (Position Difference Protection)	
Reset Method		Resets automatically after five seconds	

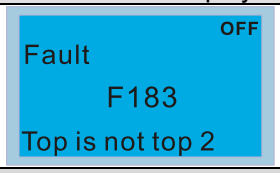
Code#	KPC-CC01 Display	Fault Name	Description
F178		Downward forced deceleration 2	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the second one downward forced deceleration switch activates during downward running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-16 (Position Difference Protection)	
Reset Method		Resets automatically after five seconds	

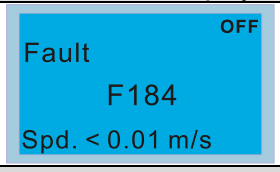
Code#	KPC-CC01 Display	Fault Name	Description
F179		Downward forced deceleration 3	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the third one downward forced deceleration switch activates during downward running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-16 (Position Difference Protection)	
Reset Method		Resets automatically after five seconds	

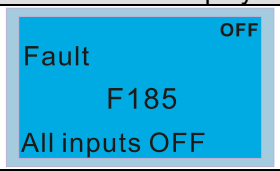
Code#	KPC-CC01 Display	Fault Name	Description
F180		Not at the bottom floor as displayed	Fault occurs when the elevator is not at the bottom floor, though the floor displays it is at the bottom floor
Action and Reset			
Action		The elevator runs automatically to the bottom floor with speed at returning to the main landing for adjustment after closing the door.	
Related Parameters		N/A	
Reset Method		Resets automatically	

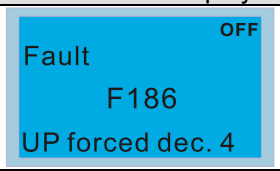
Code#	KPC-CC01 Display	Fault Name	Description
F181		Not at the top floor as displayed	Fault occurs when the elevator is not at the top floor, though the floor displays it is at the top floor
Action and Reset			
Action		The elevator runs automatically to the top floor with speed at returning to the main landing for adjustment after closing the door.	
Related Parameters		N/A	
Reset Method		Resets automatically	

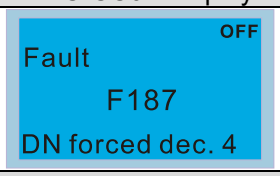
Code#	KPC-CC01 Display	Fault Name	Description
F182		At the bottom floor but not as displayed	Fault occurs when the elevator is currently at the bottom floor, but the floor displays it is not at the bottom floor
Action and Reset			
Action		The floor automatically adjusts as the bottom floor	
Related Parameters		N/A	
Reset Method		Resets automatically	

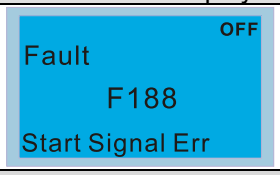
Code#	KPC-CC01 Display	Fault Name	Description
F183		At the top floor but not as displayed	Fault occurs when the elevator is currently at the top floor, but the floor displays it is not at the top floor
Action and Reset			
Action		The floor automatically adjusts as the top floor	
Related Parameters		N/A	
Reset Method		Resets automatically	

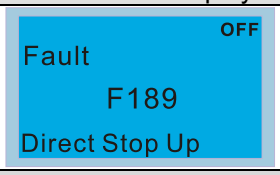
Code#	KPC-CC01 Display	Fault Name	Description
F184		Speed is slower than 0.01 m/s	Fault occurs when speed is slower than 0.01 m/s for more than five seconds while not in the operations of manual mode, hoistway auto-tuning, or returning to top and bottom floor for position adjustment.
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after five seconds	

Code#	KPC-CC01 Display	Fault Name	Description
F185		All inputs are OFF	Fault occurs when all IED-S low-voltage and high-voltage inputs are detected as OFF
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after five seconds	

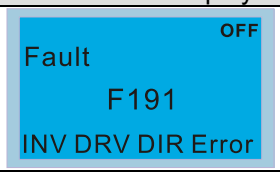
Code#	KPC-CC01 Display	Fault Name	Description
F186		Upward forced deceleration 4	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the fourth one upward forced deceleration switch activates during upward running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-16 (Position Difference Protection)	
Reset Method		Resets automatically after five seconds	

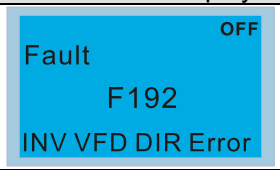
Code#	KPC-CC01 Display	Fault Name	Description
F187		Downward forced deceleration 4	Fault occurs when the difference between the position and hoistway auto-tuning is larger than Pr.03-16 setting value after the fourth one downward forced deceleration switch activates during downward running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.03-16 (Position Difference Protection)	
Reset Method		Resets automatically after five seconds	

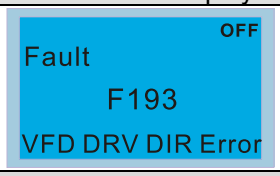
Code#	KPC-CC01 Display	Fault Name	Description
F188		Starting signal abnormally disappears	Fault occurs when starting signal is OFF within two seconds as elevator runs direct docking
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after 60 seconds	

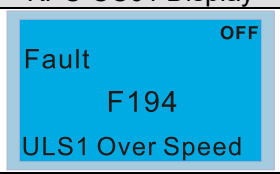
Code#	KPC-CC01 Display	Fault Name	Description
F189		Upward target error in direct docking	Fault occurs when target floor is lower than current floor after giving an upward command as elevator runs direct docking
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after 60 seconds	

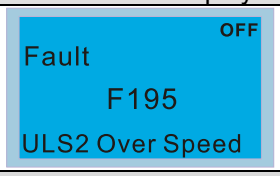
Code#	KPC-CC01 Display	Fault Name	Description
F190		Downward target error in direct docking	Fault occurs when target floor is higher than current floor after giving a downward command as elevator runs direct docking
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after 60 seconds	

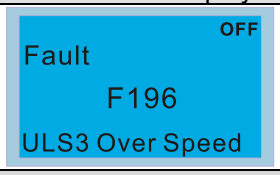
Code#	KPC-CC01 Display	Fault Name	Description
F191		INV DRV DIR error	Fault occurs when desired running direction is opposite to direction fed back by the drive
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after 60 seconds	

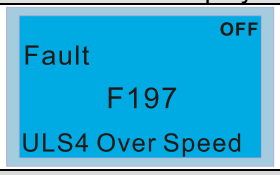
Code#	KPC-CC01 Display	Fault Name	Description
F192		INV VFD DIR error	Fault occurs when desired running direction is opposite to direction gives to the drive
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after 60 seconds	

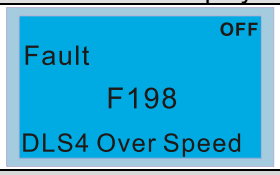
Code#	KPC-CC01 Display	Fault Name	Description
F193		VFD DRV DIR error	Fault occurs when direction gives to the drive is opposite to direction fed back by the drive
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after 60 seconds	

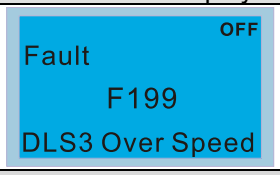
Code#	KPC-CC01 Display	Fault Name	Description
F194		ULS1 over-speed	Fault occurs when speed is larger than Pr.03-37 (ULS1 Over-speed Protection) after ULS1 (First one upward forced deceleration) activates during upward running
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=35 ULS1 (First one upward forced deceleration) Pr.03-37 (ULS1 Over-speed Protection)	
Reset Method		Resets automatically after 60 seconds	

Code#	KPC-CC01 Display	Fault Name	Description
F195		ULS2 over-speed	Fault occurs when speed is larger than Pr.03-39 (ULS2 Over-speed Protection) after ULS2 (Second one upward forced deceleration) activates during upward running
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=36 ULS2 (Second one upward forced deceleration) Pr.03-39 (ULS2 Over-speed Protection)	
Reset Method		Resets automatically after 60 seconds	

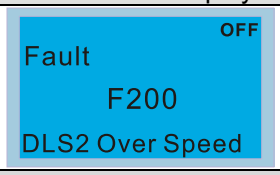
Code#	KPC-CC01 Display	Fault Name	Description
F196		ULS3 over-speed	Fault occurs when speed is larger than Pr.03-41 (ULS3 Over-speed Protection) after ULS3 (Third one upward forced deceleration) activates during upward running
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=37 ULS3 (Third one upward forced deceleration) Pr.03-41 (ULS3 Over-speed Protection)	
Reset Method		Resets automatically after 60 seconds	

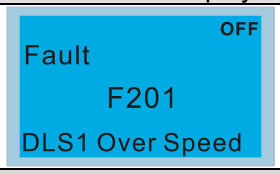
Code#	KPC-CC01 Display	Fault Name	Description
F197		ULS4 over-speed	Fault occurs when speed is larger than Pr.03-43 (ULS4 Over-speed Protection) after ULS4 (Fourth one upward forced deceleration) activates during upward running
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=65 ULS4 (Fourth one upward forced deceleration) Pr.03-43 (ULS4 Over-speed Protection)	
Reset Method		Resets automatically after 60 seconds	

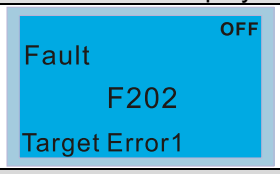
Code#	KPC-CC01 Display	Fault Name	Description
F198		DLS4 over-speed	Fault occurs when speed is larger than Pr.03-44 (DLS4 Over-speed Protection) after DLS4 (Fourth one downward forced deceleration) activates during downward running
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=66 DLS4 (Fourth one downward forced deceleration) Pr.03-44 (DLS4 Over-speed Protection)	
Reset Method		Resets automatically after 60 seconds	

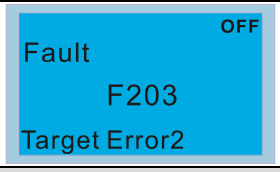
Code#	KPC-CC01 Display	Fault Name	Description
F199		DLS3 over-speed	Fault occurs when speed is larger than Pr.03-42 (DLS3 Over-speed Protection) after DLS3 (Third one downward forced deceleration) activates during downward running
Action and Reset			
Action		Stops urgently	

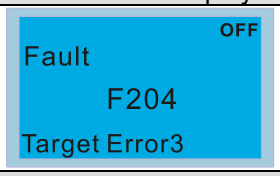
Related Parameters	MI=40 DLS3 (Third one downward forced deceleration) Pr.03-42 (DLS3 Over-speed Protection)
Reset Method	Resets automatically after 60 seconds

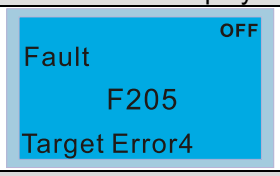
Code#	KPC-CC01 Display	Fault Name	Description
F200		DLS2 over-speed	Fault occurs when speed is larger than Pr.03-40 (DLS2 Over-speed Protection) after DLS2 (Second one downward forced deceleration) activates during downward running
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=39 DLS2 (Second one downward forced deceleration) Pr.03-40 (DLS2 Over-speed Protection)		
Reset Method	Resets automatically after 60 seconds		

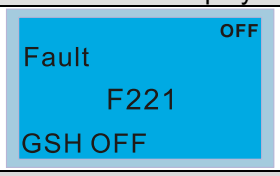
Code#	KPC-CC01 Display	Fault Name	Description
F201		DLS1 over-speed	Fault occurs when speed is larger than Pr.03-38 (DLS1 Over-speed Protection) after DLS1 (First one downward forced deceleration) activates during downward running
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=38 DLS1 (First one downward forced deceleration) Pr.03-38 (DLS1 Over-speed Protection)		
Reset Method	Resets automatically after 60 seconds		

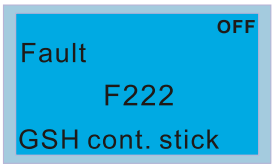
Code#	KPC-CC01 Display	Fault Name	Description
F202		Target error 1	Fault occurs when target floor is larger than highest floor during upward direct docking running
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.00-18 (Target Floor), Pr.03-01 (Highest Physical Floor)		
Reset Method	Resets automatically after 60 seconds		

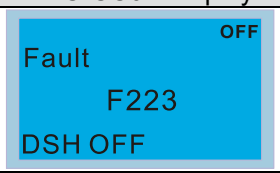
Code#	KPC-CC01 Display	Fault Name	Description
F203		Target error 2	Fault occurs when target floor is lower than nearest stop floor during upward direct docking running
Action and Reset			
Action	Stops urgently		
Related Parameters	Pr.00-18 (Target Floor), Pr.00-35 (Nearest Stop Floor)		
Reset Method	Resets automatically after 60 seconds		

Code#	KPC-CC01 Display	Fault Name	Description
F204		Target error 3	Fault occurs when target floor is larger than lowest floor during downward direct docking running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.00-18 (Target Floor), Pr.03-02 (Lowest Physical Floor)	
Reset Method		Resets automatically after 60 seconds	

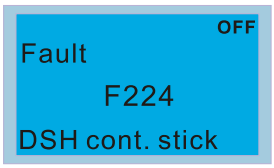
Code#	KPC-CC01 Display	Fault Name	Description
F205		Target error 4	Fault occurs when target floor is larger than nearest stop floor during downward direct docking running
Action and Reset			
Action		Stops urgently	
Related Parameters		Pr.00-18 (Target Floor), Pr.00-35 (Nearest Stop Floor)	
Reset Method		Resets automatically after 60 seconds	

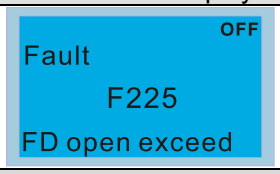
Code#	KPC-CC01 Display	Fault Name	Description
F221		GSH (Gate safety hatch high voltage) is OFF	Fault occurs when GSH (Gate safety hatch high voltage) signal is OFF in non-door zone
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=18 GSH (Gate safety hatch high voltage)	
Reset Method		Resets automatically once the fault is cleared	

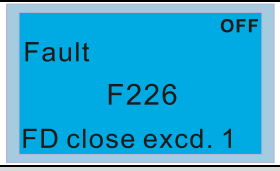
Code#	KPC-CC01 Display	Fault Name	Description
F222		GSH (Gate safety hatch high voltage) contact sticking	Fault occurs when either of the following conditions happen: 1. The door opens in the door zone, layer door signal is OFF, but GSH (Gate safety hatch high voltage) contact remains ON. 2. The door opens in the door zone, the door has started to reach its open position, but GSH (Gate safety hatch high voltage) contact remains ON.
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=18 GSH (Gate safety hatch high voltage), MI=21 DSH (Layer door safety hatch high voltage), MI=22 DSL (Layer door safety hatch low voltage), MI=100 OLT1 (Front door reaches its open position), MI=101 OLT2 (Rear door reaches it open position)	
Reset Method		Switch to the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)	

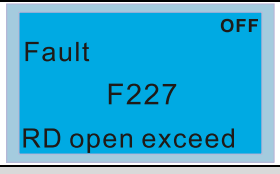
Code#	KPC-CC01 Display	Fault Name	Description
F223		DSH (Layer door safety hatch high voltage) is OFF	Fault occurs when DSH (Layer door safety hatch high voltage) signal is OFF in non-door zone

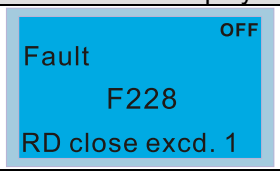
Action and Reset	
Action	Stops urgently
Related Parameters	MI=21 DSH (Layer door safety hatch high voltage)
Reset Method	Resets automatically once the fault is cleared

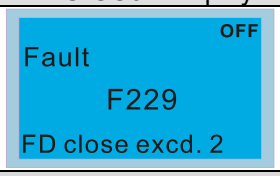
Code#	KPC-CC01 Display	Fault Name	Description
F224		DSH (Layer door safety hatch high voltage) contact sticking	Fault occurs when either of the following conditions happen: 1. The door opens in the door zone, gate signal is OFF, but DSH (Layer door safety hatch high voltage) contact remains ON. 2. The door opens in the door zone, the door has started to reach its open position, but DSH (Layer door safety hatch high voltage) contact remains ON.
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=18 GSH (Gate safety hatch high voltage), MI=19 GSL (Gate safety hatch low voltage), MI=21 DSH (Layer door safety hatch high voltage), MI=100 OLT1 (Front door reaches its open position), MI=101 OLT2 (Rear door reaches it open position)		
Reset Method	Switch to the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

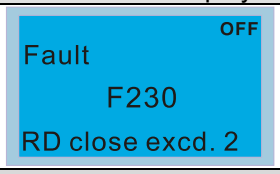
Code#	KPC-CC01 Display	Fault Name	Description
F225		Front door open time exceeds	Fault occurs when IED-S does not receive any front door open limit signal after the front door opens and exceeds Pr.05-14 setting time
Action and Reset			
Action	The front door stops opening and closes		
Related Parameters	Pr.05-14 (Door Open Time Protection)		
Reset Method	Resets automatically		

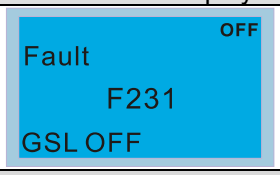
Code#	KPC-CC01 Display	Fault Name	Description
F226		Front door close time exceeds	Fault occurs when the elevator door does not close after the front door closes and exceeds Pr.05-15 setting time
Action and Reset			
Action	The front door stops closing and opens		
Related Parameters	Pr.05-15 (Door Close Time Protection)		
Reset Method	Resets automatically		

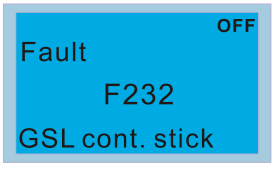
Code#	KPC-CC01 Display	Fault Name	Description
F227		Rear door open time exceeds	Fault occurs when IED-S does not receive any rear door open limit signal after the rear door opens and exceeds Pr.05-14 setting time
Action and Reset			
Action	The rear door stops opening and closes		
Related Parameters	Pr.05-14 (Door Open Time Protection)		
Reset Method	Resets automatically		

Code#	KPC-CC01 Display	Fault Name	Description
F228		Rear door close time exceeds	Fault occurs when the elevator door does not close after the rear door closes and exceeds Pr.05-15 setting time
Action and Reset			
Action		The rear door stops closing and opens	
Related Parameters		Pr.05-15 (Door Close Time Protection)	
Reset Method		Resets automatically	

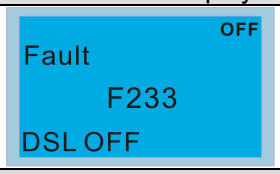
Code#	KPC-CC01 Display	Fault Name	Description
F229		Front door close times exceed	Fault occurs when the number of times that F226 (front door close time exceeds) occurs is larger than Pr.05-16 (Number of Times for Door Close Protection) in one hour
Action and Reset			
Action		The front door stops closing and opens. The front door remains open and does not close automatically. The front door close button flashes quickly.	
Related Parameters		Pr.05-15 (Door Close Time Protection), Pr.05-16 (Number of Times for Door Close Protection)	
Reset Method		Press the close button of the front door	

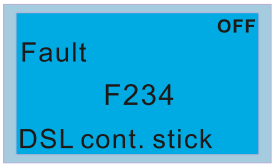
Code#	KPC-CC01 Display	Fault Name	Description
F230		Rear door close times exceed	Fault occurs when the number of times that F228 (rear door close time exceeds) occurs is larger than Pr.05-16 (Number of Times for Door Close Protection) in one hour
Action and Reset			
Action		The rear door stops closing and opens. The rear door remains open and does not close automatically. The rear door close button flashes quickly.	
Related Parameters		Pr.05-15 (Door Close Time Protection), Pr.05-16 (Number of Times for Door Close Protection)	
Reset Method		Press the close button of the rear door	

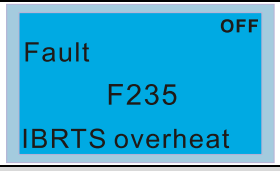
Code#	KPC-CC01 Display	Fault Name	Description
F231		GSL (Gate safety hatch low voltage) is OFF	Fault occurs when GSL (Gate safety hatch low voltage) signal is OFF in non-door zone
Action and Reset			
Action		Stops urgently	
Related Parameters		MI=19 GSL (Gate safety hatch low voltage)	
Reset Method		Resets automatically once the fault is cleared	

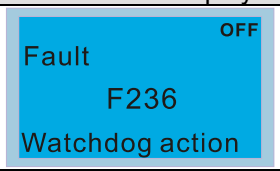
Code#	KPC-CC01 Display	Fault Name	Description
F232		GSL (Gate safety hatch low voltage) contact sticking	Fault occurs when either of the following conditions happen: 1. The door opens in the door zone, layer door signal is OFF, but GSL (Gate safety hatch low voltage) contact remains ON. 2. The door opens in the door zone, the door has started to reach its open position, but GSL (Gate safety hatch low voltage) contact remains ON.
Action and Reset			

Action	Stops urgently
Related Parameters	MI=19 GSL (Gate safety hatch low voltage), MI=21 DSH (Layer door safety hatch high voltage), MI=22 DSL (Layer door safety hatch low voltage) MI=100 OLT1 (Front door reaches its open position), MI=101 OLT2 (Rear door reaches it open position)
Reset Method	Switch to the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)

Code#	KPC-CC01 Display	Fault Name	Description
F233		DSL (Layer door safety hatch low voltage) is OFF	Fault occurs when DSL (Layer door safety hatch low voltage) signal is OFF in non-door zone
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=22 DSL (Layer door safety hatch low voltage)		
Reset Method	Resets automatically once the fault is cleared		

Code#	KPC-CC01 Display	Fault Name	Description
F234		DSL (Layer door safety hatch low voltage) contact sticking	Fault occurs when either of the following conditions happen: 1. The door opens in the door zone, gate signal is OFF, but DSL (Layer door safety hatch low voltage) contact remains ON. 2. The door opens in the door zone, the door has started to reach its open position, but DSL (Layer door safety hatch low voltage) contact remains ON.
Action and Reset			
Action	Stops urgently		
Related Parameters	MI=18 GSH (Gate safety hatch high voltage), MI=19 GSL (Gate safety hatch low voltage), MI=22 DSL (Layer door safety hatch low voltage), MI=100 OLT1 (Front door reaches its open position), MI=101 OLT2 (Rear door reaches it open position)		
Reset Method	Switch to the manual mode, press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

Code#	KPC-CC01 Display	Fault Name	Description
F235		Discharge resistance temperature is too high	Fault occurs when IBRTS (Drive's discharge resistance temperature switch) detects temperature is too high
Action and Reset			
Action	The elevator stops at the nearest floor within 20 seconds. Otherwise, the elevator stops urgently. After stopping, BU (brake unit contactor) is OFF, and the elevator stops running.		
Related Parameters	MI=58 IBRTS (Drive's discharge resistance temperature switch) MO=7 BU (Contactor of brake unit)		
Reset Method	Press the RESET key on the digital keypad, press the external reset device, or power-on again (choose either)		

Code#	KPC-CC01 Display	Fault Name	Description
F236		Watchdog action	This fault will be recorded when CPU reset again due to watchdog time-out.
Action and Reset			
Action		Stops urgently	
Related Parameters		N/A	
Reset Method		Resets automatically after ten seconds	

Chapter 15 IED-S Safe Torque Off Function

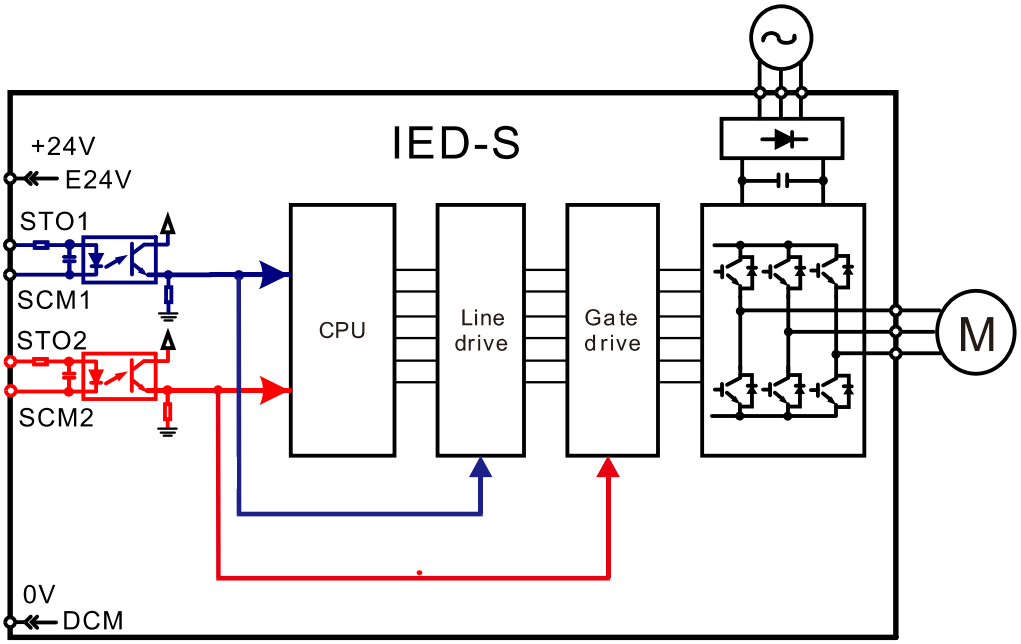
15-1 Failure Rate of IED-S' Safety Function

Item	Definition	Standard	Performance
SFF	Safe Failure Fraction	IEC61508	Channel 1: 80.08% Channel 2: 68.91%
HFT (Type A subsystem)	Hardware Fault Tolerance	IEC61508	1
SIL	Safety Integrity Level	IEC61508	SIL 2
		IEC62061	SILCL 2
PFH	Average frequency of dangerous failure [h-1]	IEC61508	9.56×10^{-10}
PFD_{av}	Probability of Dangerous Failure on Demand	IEC61508	4.18×10^{-6}
Category	Category	ISO13849-1	Category 3
PL	Performance level	ISO13849-1	d
$MTTF_d$	Mean time to dangerous failure	ISO13849-1	High
DC	Diagnostic coverage	ISO13849-1	Low

15-2 Circuit Diagram

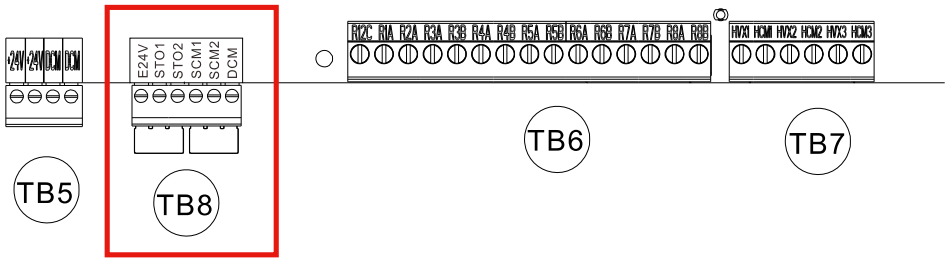
15-2-1 Safety Control Circuit

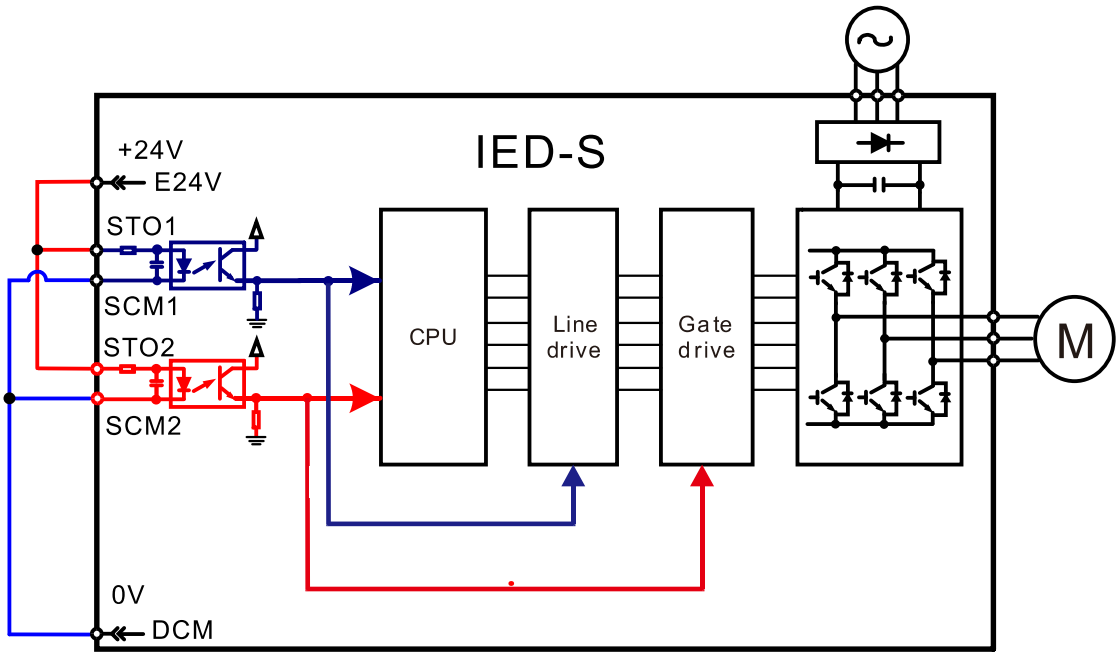
The following diagram shows IED-S' internal safety control circuit.



15-2-2 Safety Control Circuit Terminals

Terminal socket TB8 in the diagram below shows the default for terminals E24V-STO1-STO2 and terminals SCM1-SCM2-DCM in the IED-S' safety control circuit, which are short-circuited when they are delivered from the factory.





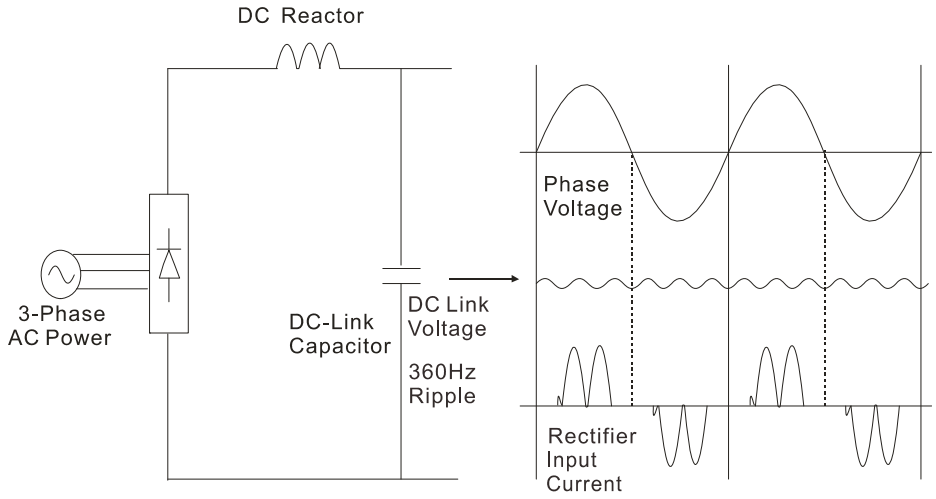
15-2-3 IED-S' Control Circuit Wiring Diagram

See wiring diagram 10 Input Contacts of Main Control Board for the Control Panel in Chapter 3 Wiring.

Appendix A. Single-phase Application

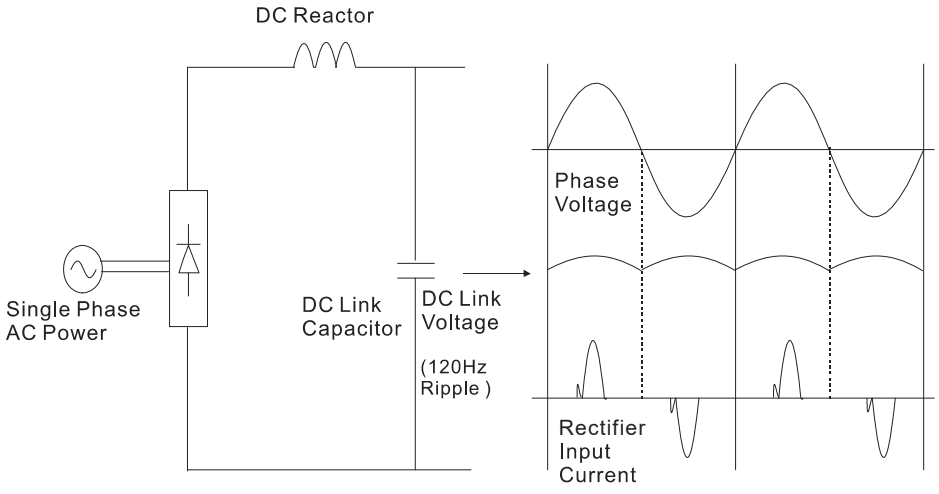
A.1 Introduction to the Application of Drives and Single-phase Power System

When applying single-phase power system to three-phase drives, you must consider the following restrictions. Standard pulse-width modulation (PWM) drives use 6-pulse diode rectifiers, which enables simple structure and low cost. The 360Hz ripple DC bus used in the 6-pulse rectifier unit can be used with the three-phase 60Hz, as shown in Figure A.1-1. However, under the single-phase power input, the ripple of DC bus becomes 120Hz, which means the DC bus circuit of the drive needs to provide equivalent power due to higher voltage. Moreover, comparing the single-phase input current and harmonics with three-phase input, the distortion of the single-phase input current is 90% THD and the three-phase input is about 40%, as shown in Figure A.1-2. Therefore, when using single-phase input, it is necessary to reduce the rated capacity of the three-phase drive to avoid over-voltage of the rectifier and DC components.



About 40% I-THD

Figure A.1-1



About 90% I-THD

Figure A.1-2

A.2 Key Points to Consider when Using the Three-phase Drive for Single-phase Power Input

DELTA IED-S drives have been tested and UL certified for the application of single-phase power input under proper reduced rated capacity. To ensure operational safety and service life, pay attention to the precautions in this document to connect the motor and load correctly.

When using the three-phase drive with single-phase power input, ensure the power input is from the R-S (L1-L2) terminal. Due to the increase in DC bus ripple voltage and current, it is necessary to reduce the rated output current and horsepower of the drive. In addition, approximately doubled current is generated at the diode rectifier bridge when input current passes through the second phase, so reducing ratings in drives becomes a consideration. The reasons for the increase in single-phase input current lie in the conversion of three-phase current to single-phase current (√ 3) and the decrease in overall power factor. Because of the increase in harmonic distortion of input current, the overall input power factor is lower than that in three-phase input current. If the overall power factor is 0.7, a typical value for single-phase power input, it is recommended to install a reactor. If the power factor is 0.9, also a typical value for three-phase power input, it is also recommended to install a reactor. Note that if you use single-phase power input without installing reactors, 100% input current distortion may occur.

When using single-phase input power for IED-S, set output rated current as follows:

1. Reduce output rated current to 50% if no AC reactors are installed
2. Reduce output rated current to 55% if 3% AC reactor is installed
3. Reduce output rated current to 60% if 5% AC reactor is installed

Table A.2-1: Applicable drives for IED-S with motors
Table A.2-2: Applicable drives for IED-S with motors when 3% AC reactor is installed at drive power input
Table A.2-3: Applicable drives for IED-S with motors when 5% AC reactor is installed at drive power input

IED-S 230V					
Motor (kW)	Input Phase	Drive's Input Rated Current	Drive's Output Rated Current	Applicable Drives (kW)	Line Fuse
2.2	R-S (L1-L2)	26.4	12	5.5	JJN-50
3.7	R-S (L1-L2)	37.4	17	7.5	JJN-80

Table A.2-1

3% AC Reactor is Installed for IED-S 230V								
Motor (kW)	Input Phase	Drive's Input Rated Current	Drive's Output Rated Current	Applicable Drives (kW)	3% Reactors (mH)	Reactor Saturation Current (Arms)	Reactors (Delta P/N)	Line Fuse
2.2	R-S (L1-L2)	20.9	12	5.5	0.441	43.2	N/A	JJN-50
3.7	R-S (L1-L2)	32.3	17	7.5	0.32	55.8	DR033AP320	JJN-80

Table A.2-2

5% AC Reactor is Installed for IED-S 230V							
Motor (kW)	Input Phase	Drive's Input Rated Current	Drive's Output Rated Current	Applicable Drives (kW)	3% Reactors (mH)	Reactor Saturation Current (Arms)	Line Fuse
2.2	R-S (L1-L2)	20.9	12	5.5	0.735	43.2	JJN-50
3.7	R-S (L1-L2)	32.3	17	7.5	0.534	55.8	JJN-80

Table A.2-3

A.3 Input Frequency and Voltage Tolerance

Drive's rated current values, as Tables A.2-1–A.2-3 show, are based on 60 Hz single-phase input. When using frequency other than 60 Hz, the input frequency should be further examined by the drive's manufacturer. The voltage for single-phase input power supply should be 220 V_{AC}, with -10–5% tolerance to motor's maximum voltage. A tolerance of -10–5% voltage is allowed between standard products and three-phase power input, so pay extra attention when entering tolerance values if you apply single-phase for drives. Because single-phase input average DC bus voltage is lower than the equivalent three-phase input, the maximum output voltage (motor voltage) will be lower than the single-phase input.

The input voltage should not be lower than 228V_{AC} for 230V model to ensure 207V_{AC} voltage is generated for motors. Thus, if motor torque at basic speed under full-load is required, maintain input voltage in a stable status. If you need to obtain the rated horsepower, you can try to use more transformers.

You can use Table A.2-1 to help select applicable drives for 220V_{AC} motors. The additional reactor sets the standard for limiting the DC bus ripple and improves the input power factors of all models. For single-phase power input, the more DC bus ripple, the larger the drive's overload capacity. Therefore, it is necessary to fully understand the overload requirements of all applications. Before using single-phase applications, you must obtain relevant data from the motor's nameplate such as horsepower (HP) and full-load amperage (FLA).The drive you use should meet or exceed the HP and FLA requirements listed on the motor's nameplate.

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Appendix B. Revision History

Firmware Version	Manual Version	Change Description	Issued Date
V1.10	01	Newly established	March, 2021

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