NICE1000
Elevator Integrated Controller

Setup Manual –Brief Version 1.4

Content

1. Safety Information and Precautions 

In this manual, the notices are graded based on the degree of danger:

DANGER indicates that failure to comply with the notice will result in severe personal injury or even death.

WARNING indicates that failure to comply with the notice will result in potential risk of severe personal injury or even death.

CAUTION indicates that failure to comply with the notice will result in minor or moderate personal injury or equipment damage.

In addition, **NOTE** appearing in other chapters indicates that an unintended result or situation may occur if the notice is not complied with. The notices in this manual you have to observe are aimed at guaranteeing your personal safety, as well as to prevent damage to the controller or the parts connected to it. Read this manual carefully so that you have a thorough understanding and perform all operations by following the notices in this chapter. Monarch will assume no liability or responsibility for any injury or loss caused by improper operation.

1.1 Safety Precautions

USE STAGE	SAFETY GRADE	PRECAUTIONS
Warning	**WARNING**	• This controller has hazardous high voltage and the controlled motor is a dangerous rotating device. Failure to comply with the notices may result in personal injury or damage to the property. • Transportation, installation, operation and maintenance of the controller can be performed only by qualified personnel after they get familiar with the safety information in this manual. This is the prerequisite of safe and stable running of the equipment. • Do not open the front cover or touch the power terminals on the main circuit within 10 minutes after the controller is powered off. The capacitor on the DC circuit still has residual high voltage even after power-off. Failure to comply will result in electric shock.
During Installation	**DANGER**	• Do not install the equipment if you find water seepage, component missing or damage upon unpacking. • Do not install the equipment if the packing list does not conform to the product you received. • Install the equipment on incombustible objects such as metal, and keep it away from combustible materials. Failure to comply may result in a fire.

	WARNING 	• Do not loosen the fixed screws of the components, especially the screws with red mark. • Do not install the controller on vibrating parts. Failure to comply may result in damage to the equipment or unexpected accidents
	CAUTION 	• Handle the equipment with care during transportation to prevent damage to the equipment. • Do not drop wire end or screw into the controller. Failure to comply will result in damage to the controller. • Do not use the equipment with damaged or missing components. Failure to comply will result in personal injury. • Do not touch the components with your hands. Failure to comply will result in static electricity damage. • Install the controller in places free of vibration and direct sunlight.
At Wiring	**DANGER** 	• Wiring must be performed only by qualified personnel under instructions described in this manual. Failure to comply may result in unexpected accidents. • A circuit breaker must be used to isolate the power supply and the controller. Failure to comply may result in a fire. • Ensure that the power supply is cut off before wiring. Failure to comply may result in electric shock. • Tie the controller to ground properly by standard. Failure to comply may result in electric shock
	WARNING 	• Never connect the power cables to the output terminals (U,V, W) of the controller. Pay attention to the marks of the wiring terminals and ensure correct wiring. Failure to comply will result in damage to the controller. • Never connect the braking resistor between the DC bus terminals (+) and (-). Failure to comply may result in a fire.
	CAUTION 	• Ensure that the cabling satisfies the EMC requirements and the regional safety standard. Use wire sizes recommended in the manual. Failure to comply may result in accidents. • Use a shielded cable for the encoder, and ensure that the shield is reliably grounded at one end. • Use a twisted cable with twisted distance of 20−30 mm as the communication cable, and ensure that the shield is reliably grounded.
During running	**DANGER** 	• All peripheral devices must be connected properly according to the circuit wiring instructions provided in this manual. Failure to comply will result in accidents. • Cover the controller properly before power-on to prevent electric shock. • Do not open the controller's cover after power-on. Failure to comply may result in electric shock. • Do not touch the controller and peripheral circuits with wet hand. Failure to comply may result in electric shock. • Do not touch any I/O terminal of the controller. Failure to comply may result in electric shock. • The controller performs safety detection on external strong power circuits automatically at the beginning of power-on. Do not touch the U, V, W terminals of the controller or the motor terminals at

		the moment. Failure to comply may result in electric shock. • Do not touch the fan or the discharging resistor to check the temperature. Failure to comply will result in personal burnt. • Signal detection must be performed only by qualified personnel during operation. Failure to comply will result in personal injury or damage to the controller.
	WARNING 	• Do not touch the rotating part of the motor during the motor auto-tuning or running. Failure to comply will result in accidents. • Check that the following requirements are met • The voltage class of the power supply is consistent with the rated voltage class of the controller. • The input terminals (R, S, T) and output terminals (U, V, W) are properly connected. • No short-circuit exists in the peripheral circuit. • The wiring is secured. Failure to comply will result in damage to the controller.
	CAUTION 	• For synchronous motor, ensure that motor auto-tuning is performed successfully. Perform trial running before resuming the steel rope so as to make the motor run properly. • Avoid objects falling into the controller when it is running. Failure to comply will result in damage to the controller. • Do not perform the voltage resistance test on any part of the controller because such test has been done in the factory. Failure to comply will result in accidents. • Do not change the default settings of the controller. Failure to comply will result in damage to the controller. • Do not start/stop the controller by opening or closing the contactor. Failure to comply will result in damage to the controller. Failure to comply will result in damage to the controller.
During maintenance	**DANGER** 	• Do not repair or maintain the controller at power-on. Failure to comply will result in electric shock. • Repair or maintain the controller when its voltage is lower than 36 VAC, about two minutes after the controller is powered off. Otherwise, the residual voltage in the capacitor may result in personal injury. • Do not allow unqualified personnel to repair or maintain the controller. Failure to comply will result in personal injury or damage to the controller.
	WARNING 	• Repair or maintenance of the controller may be performed only by the centre authorized by Monarch or qualified personnel. Failure to comply will result in personal injury or damage to the controller. • Power supply must be cut off before repair or maintenance of the controller.
	CAUTION 	Set the parameters again after the controller is replaced. All the pluggable components must be plugged or removed only after power-off. Strictly obey the laws and regulations and repair and maintain the elevator

		equipment periodically. Only timely troubleshooting can ensure the safety of passengers.
Disposal	**CAUTION** 	The packaging materials, screws and terminal blocks can be re-used and it is suggested that you keep them well for future use.
	WARNING 	The electrolytic capacitors on the main circuits and PCB may explode when they are burnt. Poisonous gas is generated when the plastic parts are burnt. Treat them as ordinary industrial waste.

1.2 General Precautions

1. Motor insulation test

Perform the insulation test when the motor is used for the first time, or when it is reused after being stored for a long time, or in a regular check-up, in order to prevent the poor insulation of motor windings from damaging the controller. The motor must be disconnected from the controller during the insulation test. A 500-V mega-Ohm meter is recommended for the test. Ensure that the insulation resistance is not less than 5 MΩ.

2. Thermal protection of the motor

If the rated capacity of the motor selected does not match that of the controller, especially when the rated power of the controller is greater than that of the motor, adjust the motor protection parameters on the operation panel of the controller or install a thermal relay for the motor circuit for protection.

3. Motor heat and noise

The output of the controller is pulse width modulation (PWM) wave with certain harmonic wave, and therefore, the motor temperature rise, noise, and vibration are slightly greater than those at running with the power frequency (50 Hz).

4. Voltage-sensitive device or capacitor on the output side of the controller

The controller outputs PWM waves, and therefore, do not install the capacitor for improving power factor or lightning protection voltage-sensitive resistor on the output side of the controller. Otherwise, the controller may suffer transient overcurrent or even be damaged.

5. Contactor on the input and output sides of the controller

When a contactor is installed between the input side of the controller and the power supply, the controller must not be started or stopped by opening or closing the contactor. When a contactor is installed between the output side of the controller and the motor, do not open or close the contactor when the controller has output. Otherwise, modules inside the controller may be damaged.

6. Use outside the rated voltage

The controller must not be used outside the allowable voltage range specified in this manual. Otherwise, components inside the controller may be damaged. If required, use a corresponding voltage step-up or step-down device.

7. Surge suppressor

The controller has a built-in voltage dependent resistor (VDR) for suppressing the surge voltage generated when the inductive loads (electromagnetic contactor, electromagnetic relay, solenoid valve, electromagnetic coil and electromagnetic brake) around the controller are switched on or off. If the inductive loads generate very high surge voltage, use a surge suppressor for the inductive load or also use a diode.

Note

Do not connect the surge suppressor on the output side of the controller.

8. Altitude and de-rating

In places where the altitude is above 1000 m and the cooling effect reduces due to thin air, it is necessary to de-rate the controller. Contact Monarch for technical support.

9. Adaptable motor

The controller is adaptable to squirrel-cage asynchronous motor or AC PMSM. Select a proper controller according to motor nameplate. The default parameters configured inside the controller are squirrel-cage asynchronous motor parameters. It is still necessary to perform motor auto-tuning or modify the default values based on actual conditions. Otherwise, the running effect and protection performance will be affected. For PMSM, motor auto-tuning must be performed.

10. Precautions on selecting residual-current circuit breaker (RCCB)

Tripping may be caused if an improper RCCB is selected when the controller drives the motor. This is because the output wave of the controller has high harmonics and the motor cable and the cable connecting the controller and the motor produce leakage current, which is much larger than the current when the motor runs at power frequency (50 Hz). Thus, it is necessary to determine the proper RCCB sensitivity based on the general leakage current of the cables and the motor. The leakage current is dependent on the motor capacity, cable length, insulation class and wiring method. Generally, the leakage current on the output side of the controller is three times of the current when the motor runs at power frequency (50 Hz).

1.3 Protective Functions

Adopting different protective functions for different levels of faults, the NICE1000 provides the elevator running system with full abnormality protection. For detailed solutions to the faults, Faults of the controller are classified as follows:

1. Speed abnormal

The controller monitors the encoder feedback speed and output torque. Once the feedback speed exceeds the limit or the deviation between the torque limit and the speed feedback is too large, the controller performs protection immediately, reports an alarm and prohibits running.

2. Drive control abnormal

The related faults include drive overcurrent, overvoltage/under voltage, power input/ output phase loss, overload, and storage abnormality. If such a fault occurs, the controller performs protection immediately, stops output, applies the brake and prohibits running.

3. Encoder abnormal

The related faults include encoder phase loss, direction reversing, wire-breaking, and pulse interference. If such a fault occurs, the controller performs protection immediately to avoid unexpected accidents. If pulse interference is large, the controller reports an alarm immediately. If pulse interference is small, the controller performs position correction every time it receives a levelling signal and clears the accumulative error.

4. Levelling sensor abnormal

The related faults include sensor failure or sensor stuck. The controller judges whether a fault occurs based on the levelling signal change. If the levelling signal does not change within the set time, the system reports an alarm.

5. Floor data abnormal

The system stores the floor information through the shaft auto-tuning. If the floor data is abnormal, the system prompts the fault information at the first-time running. During actual running, the controller continuously compares position information input by Dis with the stored floor data. If the deviation is large, the system reports an alarm.

Note:-

This commissioning setup manual is to be referred along with the NICE1000 Electrical Drawing and User Manual.

2. NICE1000 Product Details:

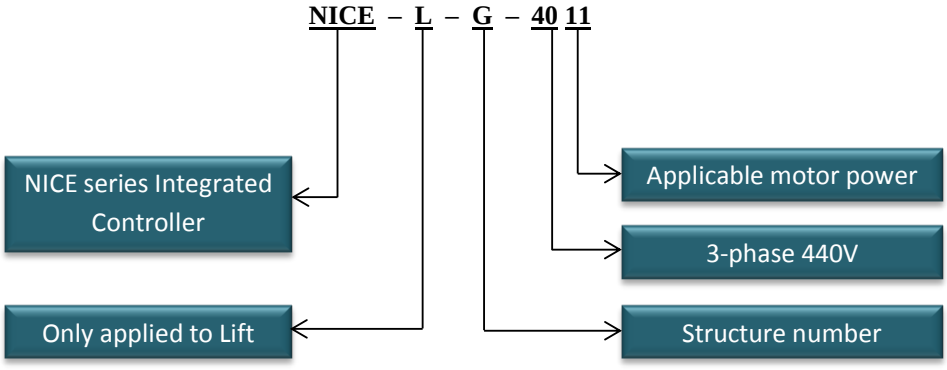
- NICE 1000 is an Integrated Elevator Controller.
- Adapts complete parallel modes for signal transfer and combines the advantage of high stability, easy using, free of debugging.
- NICE1000 is suitable for speed up to 1m/sec.
- Standard NICE1000 supports the full selective application for 6 floors
- With Expansion board it can support up to 9 Floors full selective application.

Separate NICE 1000 Integrated Controller models are available for both Synchronous and Asynchronous Lift Hoist Motor. As it is a closed loop system, feedback device (Motor Shaft Encoder) is must for the function.

2.1 NICE 1000 Product Information:

Name Designation Rules & Nameplate: Applies to both Asynchronous/Synchronous Motor.

Name Designation Rules:
For example,



Structure number '**G**' represents for **Asynchronous** motor (Induction motor)
'V' represents for **Synchronous** motor

Nameplate:

For example

Asynchronous motor Nameplate:

Model	NICE-L-G-4005
Power	5.5KW
INPUT	3PH AC380V 14.8A 50HZ/60HZ
OUTPUT	3PH AC380V 13A 0~90HZ
S/N	
Suzhou MONARCH Control Technology Co., Ltd.,	

Synchronous Motor Nameplate:

Model	NICE-L-V-4005
Power	5.5KW
INPUT	3PH AC380V 14.8A 50HZ/60HZ
OUTPUT	3PH AC380V 13A 0~90HZ
S/N	
Suzhou MONARCH Control Technology Co., Ltd.,	

2.2 Dynamic Brake Resistor (DBR) for NICE 1000:

External DBR is to be connected between **PB** and **+** terminals in NICE1000

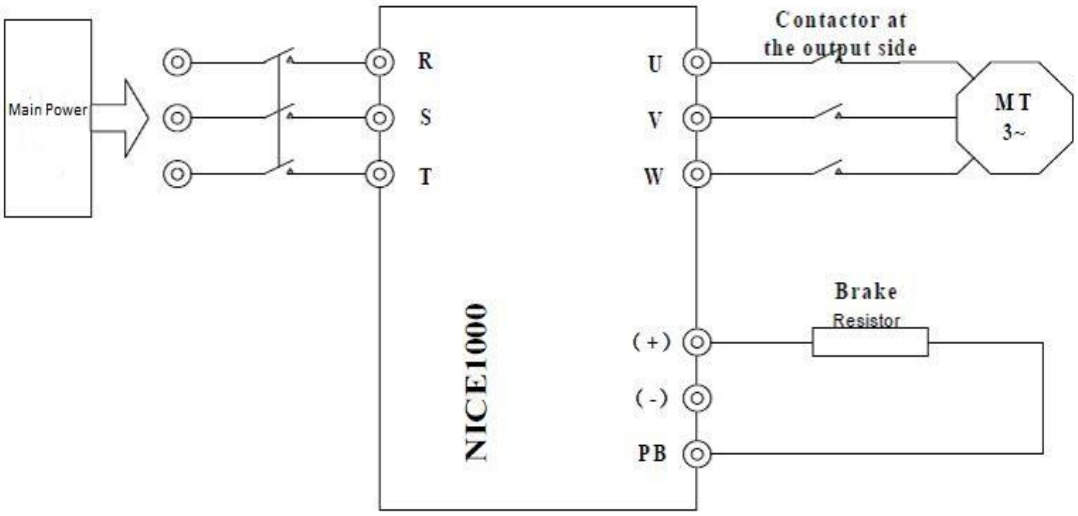
System Model	Average Power of the Braking Resistor(W)	Maximum Resistance (Ω)	Minimum Resistance (Ω)
NICE-L-G/V-2002	1100	130	95
NICE-L-G/V-2003	1600	90	80
NICE-L-G/V-4002	650	230	150
NICE-L-G/V-4003	1100	135	100
NICE-L-G/V-4005	1600	90	80
NICE-L-G/V-4007	2500	65	50
NICE-L-G/V-4011	3500	45	35
NICE-L-G/V-4015	4500	30	25
NICE-L-G/V-4018	5500	25	20
NICE-L-G/V-4022	6500	22	17
NICE-L-G/V-4030	9000	16	11

2.3 Electrical Wiring of NICE 1000

Electrical wiring includes Power terminal, DBR, Main Control Board wirings, Extend board (If present) and PG card (for Feedback device, Encoder) wirings

2.3.1 Power Terminal Connection and Terminal Function:

a) Power Circuit:



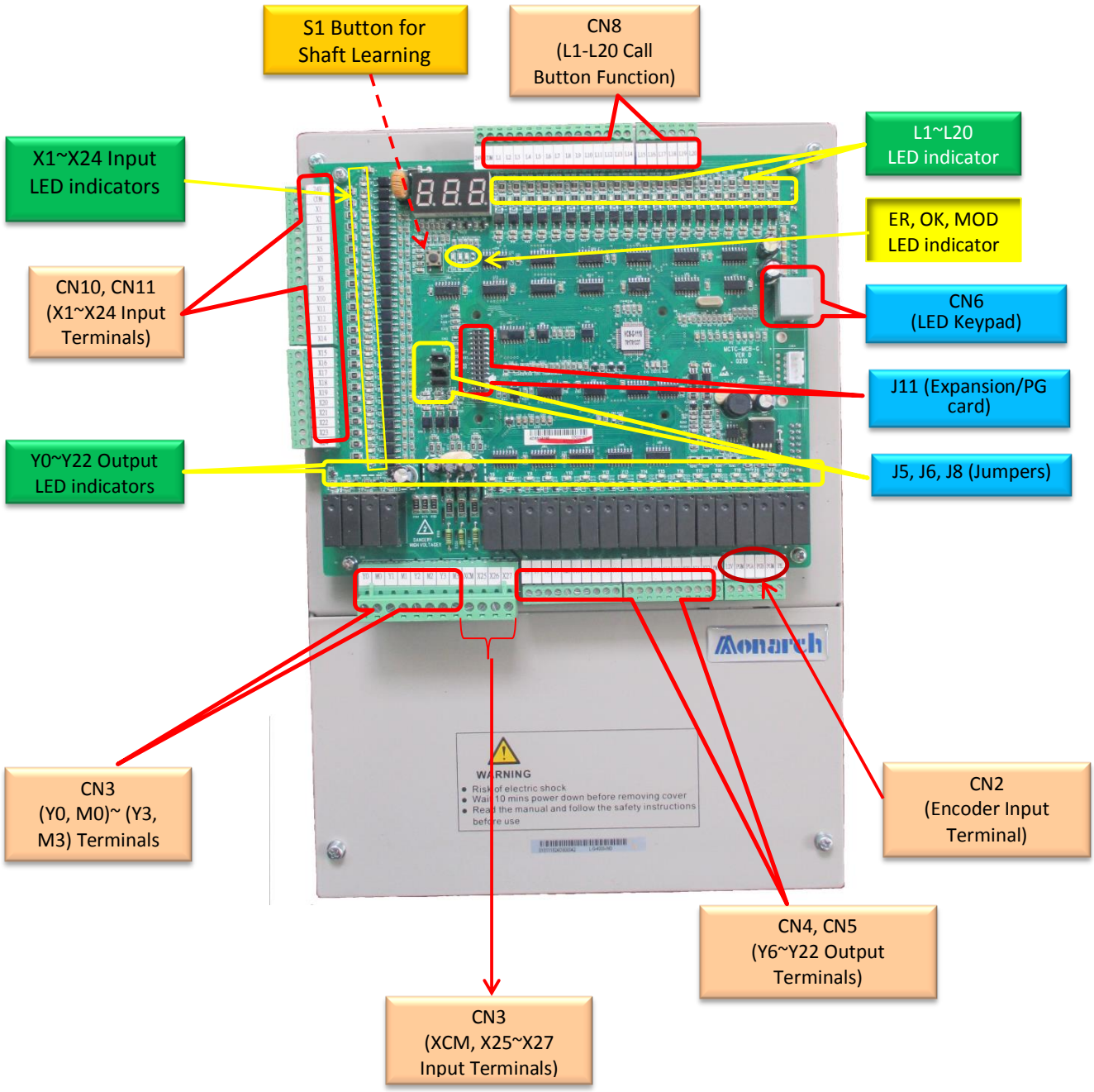
b) Terminal Function:

Terminal	Name	Description
R,S,T	3-Phase power input terminal	Input 3-phase AC415V
(+), (-)	Positive and Negative terminals of DC bus	-
(+), PB	Terminal for brake resistor	To connect External Brake Resistor
U,V,W	Controller Output Power Terminal	To connect the 3 phase hoist Motor
PE	Grounding Terminal	To be connected with Earth Bus bar

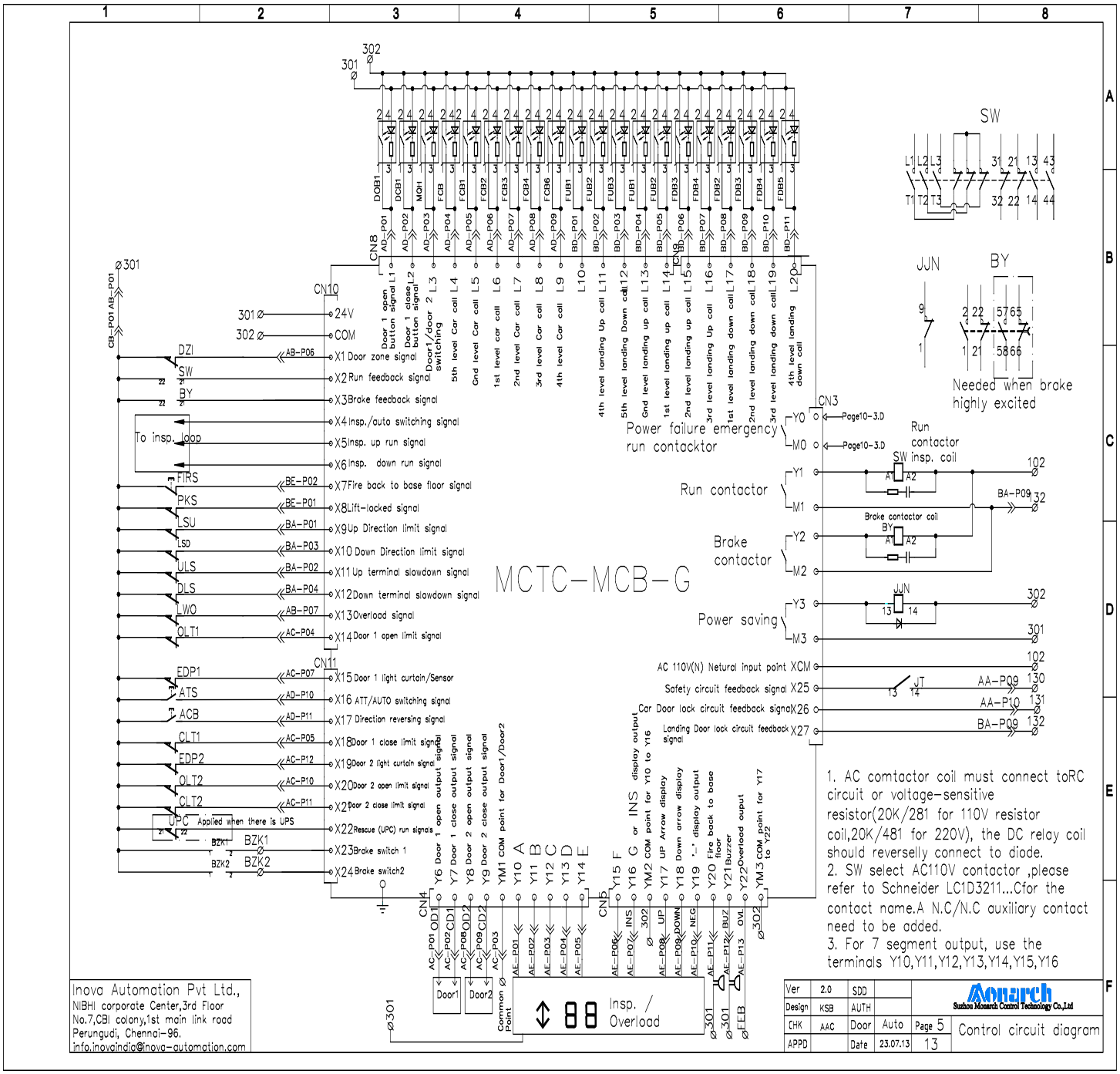
- ❖ Controller output cables of U, V and W should be routed in separate metal pipe with Grounding and apart from the Control circuit cables and Encoder cable.
- ❖ If the cables between the motor and controller are too long, Electrical resonance may occur which make the NICE controller go into protective status.
- ❖ Grounding terminal must be connected to proper Earth point; the grounding cable should be thick and short. The recommended grounding cable should be Yellow-Green cable above 4sq.mm with multi strand copper cores.
- ❖ Grounding resistance should be less than 4Ω. Don't share the earth with neutral line of the main supply.

2.3.2 MCTC-MCB-A main control panel wiring instruction

a) Main Control Board Details:



Terminal Details of NICE 1000's Main Control Board (MCB)



Terminal functions of NICE 1000's Main Control Board (MCB)

Version : 1.4
Date of issue : 03-07-14

b) Indicator light instruction of MCB:

Terminal	Name	Instruction
ER	Error Indicator	When error occurs, ER indicator LED lit (Red)
OK	OK indicator	When system ok, OK indicator Lit (Green)
MOD	MODBUS communication indicator	When expansion board MODBUS communication is good, indicator lit (Green)
X1~X27	Input signal indicator	When corresponding external input is given, the corresponding indicator glows (Green)
L1~L20	Button signal collective/feedback indicator	When call button input is given and responding the signal output, indicator lit(Green)
Y0~Y3, Y6~Y22	Output signal Indicator	When system gives output signal, indicator lit (Green)

c) Power connection Instruction for Connector CN8 and CN10:

Terminal	Name	Description
24V	External DC24V Input	Provide MCTC-MCB-A Main Control Board and MCTC-KZ-B Expansion Board with DC24V, for input and output circuit
COM		

d) Plug-in connector CN10, CN11 and CN3 Details:

Terminal	Name	Description
X1~X24	24 V dc Digital signal input function selection	Digital terminal function is decided by Parameter F5-01~F5-24
XCM	External power input	Shared contact by safety circuit and lock feedback circuit, can bear the voltage ranging from AC95V~AC125V
X25~X27	110V ac Safety and Lock feedback input	Safety circuit and lock feedback circuit can bear the voltage ranging from AC95V~AC125V. Terminal function is decided by Parameter F5-25~F5-27
Y0~Y3	Relay output	The relay outputs 5A, 250VAC or 5A, 30VDC. Terminal function is decided by Parameter F7-00~F7-03
M0~M3	Relay output (Y0~Y3) shared contact	M0~M3 are shared contact of corresponding to Y0~Y3

e) Plug-in connector CN4 and CN5 Details:

Terminal	Name	Description
Y6~Y22	Relay output	The relay outputs 5A, 250VAC or 5A, 30VDC and its terminal function is decided by the Parameter F7-06~F7-22
YM1~YM3	Relay output shared contact	YM1 is the shared contact for Y6~Y9, YM2 is the shared contact for Y10~Y16 and YM3 is the shared contact for Y17~Y22

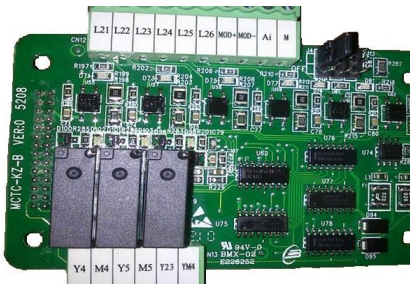
f) Plug-in connector CN8 and CN9 details

Terminal	Name	Description
L1~L20	Call Button function	Button input signal connection and button light output for call registration

2.3.3 MCTC-KZ-B Expansion Board Details:

The Expansion Board mainly is used for floor input call button expansion, relay out expansion, analogue weighing expansion and MODBUS communication expansion.

a) Appearance of Expansion board



The Expansion board is placed on the connector J11 of Main Control Board (MCB)

b) Connector CN12 and CN13, indicator and Jumper details of Expansion board

Terminal	Name	Description
L21~L26	Expansion call button function selection and corresponding indicators	Expansion call button input signal connection and call button registration light output
MOD+,MOD-	MODBUS communication signal	Used for MODBUS communication
Ai, M	Analog weighing input signal	0~10V analog weighing input, M is shared contact
Y4,Y5 and Y23	Additional Relay outputs with output indicators	The relay outputs 5A, 250VAC or 5A, 30VDC and corresponding function code is decided by F7-04~F7-05 and F7-23
M4,M5 and YM4	Relay output shared contacts	M4 is shared contact of Y4 and M5 is the shared contact of Y5 and YM4 is the shared contact

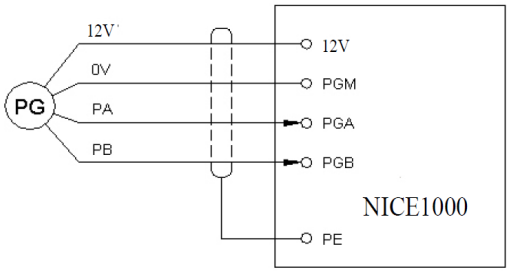
2.3.4 Motor shaft Feedback device (Encoder) wiring details

a) Following steps should be followed in encoder wiring:

- PG wire should be laid separately in pipe and metal enclose should be grounded and keep distance from the control circuit and driver circuit
- PG wire should be shield wire and shield layer should connect to PE near controller. In order to avoid being disturbed, only one side of the PG Grounding wire should be connected to the ground

b) Encoder Wiring Details:

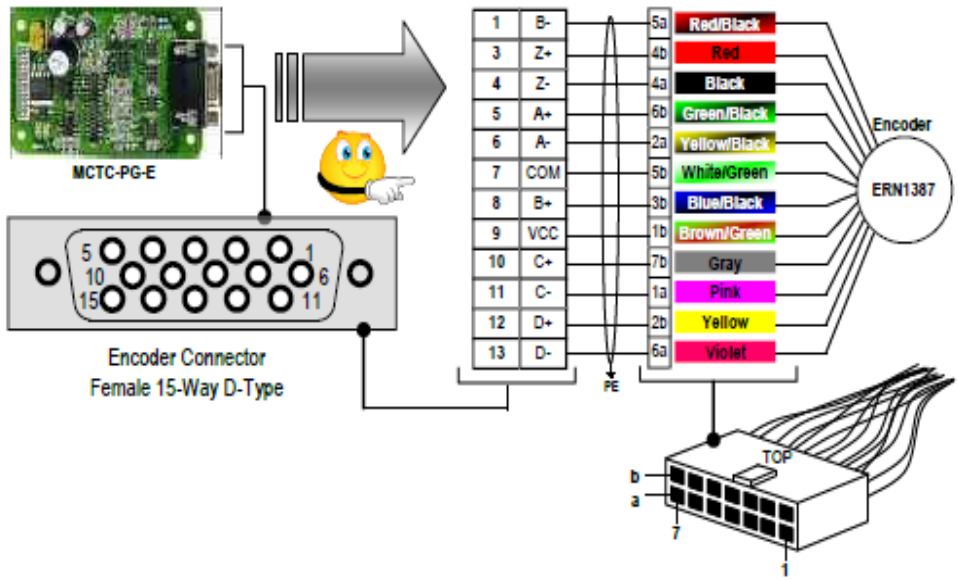
1. Encoder connection for increment Push-Pull and Plough collector outputs
   MCTC-MCB-G equipped with push-pull encoder trans-connection card, the encoder connection is as follows



Connector CN2 in MCTC-MCB-A of NICE1000

2. Encoder Type Sin/Cos encoder wiring details

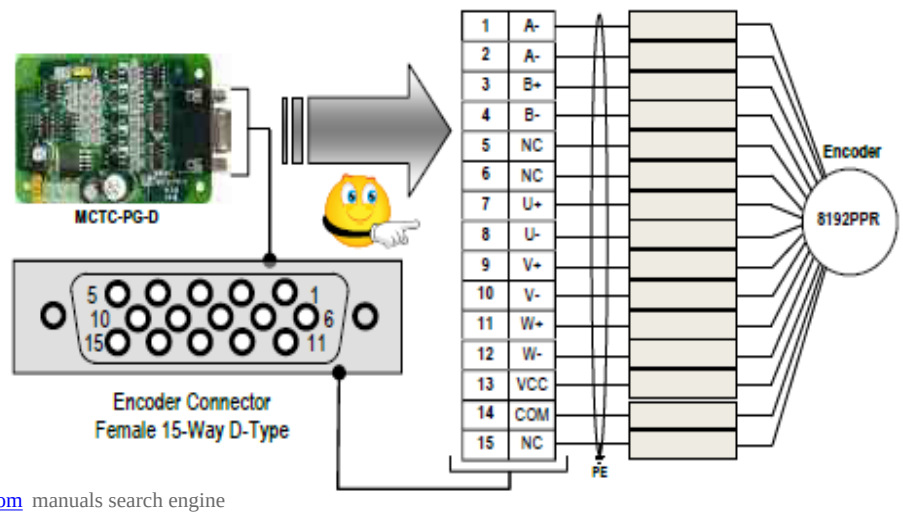
2.1.1. Encoder connection for ERN 1387:



HEIDENHAIN ERN1387 (Sin/Cos) ENCODER 14-PIN DESCRIPTION

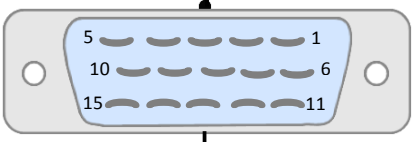
1a	2a	3a	4a	5a	6a	7a	1b	2b	3b	4b	5b	6b	7b
C-	A-	0V Thermistor	R-	B-	D-	Up Thermistor	VCC	D+	B+	R+	0V	A+	C+
Pink	Yellow/Black	White	Black	Red/Black	Violet	Blue	Brown/Green	Yellow	Blue/Black	Red	White/Green	Green/Black	Grey

2.1.2. Encoder connection for quadrature incremental with commutation 8192 PPR:



2.2 Encoder Pin connections for ECN 413/1313 with MCTC-PG-F1 card

'D' Type
15Pin Connector



Pin Solder side

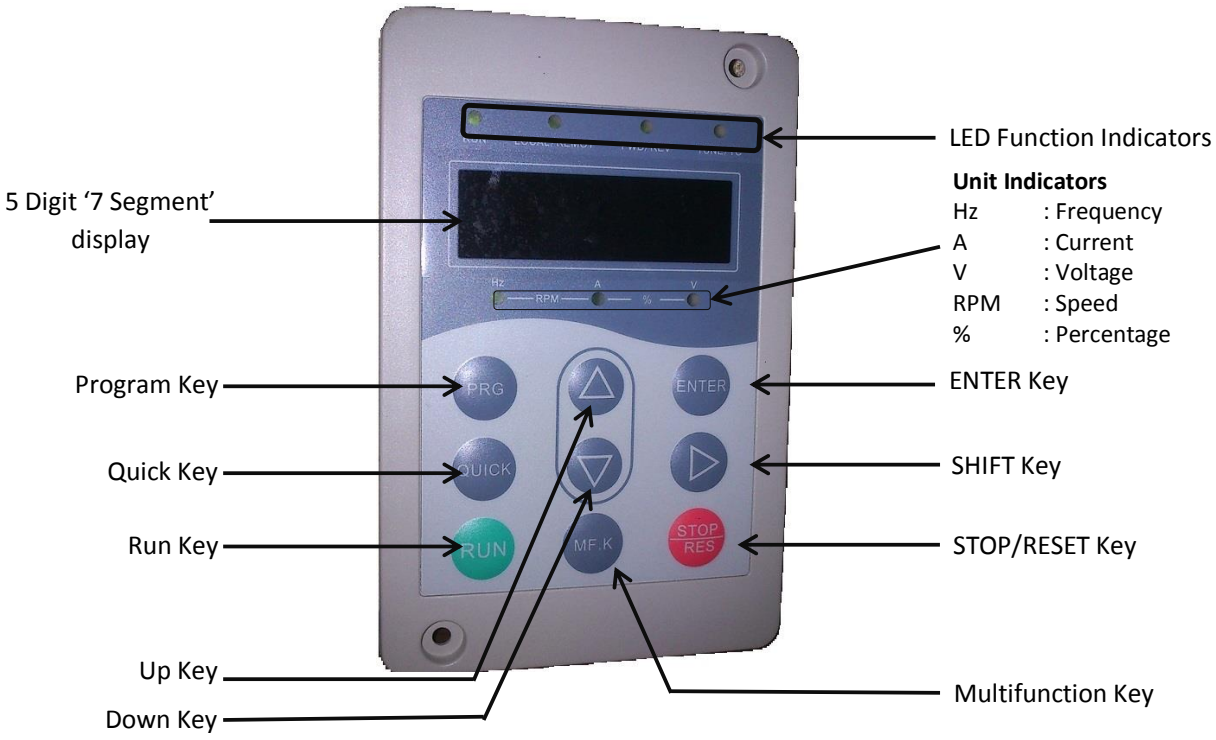
1	B-	Red/Black
5	A+	Green/Black
6	A-	Yellow/Black
7	GND	White/Green
7	GND	White
8	B+	Blue/Black
9	M5V	Brown/Green
10	CLK+	Violet
11	CLK-	Yellow
12	DATA+	Grey
13	DATA-	Pink
15	U5V	Blue

Synchronous Machine

ECN413
/1313

Version : 1.4
Date of issue : 03-07-14

3. Operating LED keypad for NICE 1000 system:-



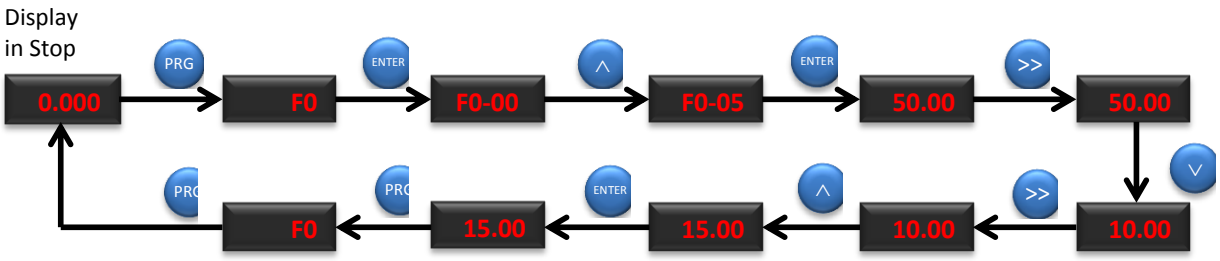
Key	Name	Function
PRG	Program Key	Enter or Exit the program menu
ENTER	Enter Key	Enter the menu level and confirm the changed parameter value
∧	Up/Increase Key	Increase the data and the function code
∨	Down/Decrease Key	Decrease the data and the function code
>>	Shift Key	Shifts the cursor to the right when in edit mode Scroll the displaying parameters circularly when the Drive is in active operation
RUN	Run Key	Enable user to starts the Drive operation when in keypad control mode
STOP	Stop/Reset Key	Enable user to stop the Drive operation when in keypad control mode Used to reset a setting or fault
QUICK	Quick Key	Enter and EXIT quick function menu
MF.K	Multi-function Key	Display and error trip code Clear error trip code

3.1 Viewing and operation instruction of Function Code using operating Keypad:-

NICE 1000 adopt three level menu to conduct the parameter setting.

Three level menu include:
Function Parameter Group (First Level)
Function Code (Second Level)
Function Code Setting (Third Level)
Operation procedures are as follows

Example: Change function code F0-06 from 50.00Hz to 15.00Hz



In the three level menu, if the parameter has no flash bit, it means the function code can't be changed and the possible reasons are

- The actually detected parameter value and running record parameter value
- Some Function code parameter value can't be modified while the NICE 1000 is running

3.2 Groups of function parameters

Press PRG button and then ∧ or ∨ button, display will show the first level menu, which are group of function. They are

F0→ Basic Parameter

F1→ Motor Parameter

F3→ Running Control Parameter

F4→ Floor Parameter

F5→ Terminal Input Parameter

F6→ Elevator Basic Parameter

F7→ Terminal Output Parameter

F8→ Build-up function Parameter

F9→ Time Parameter

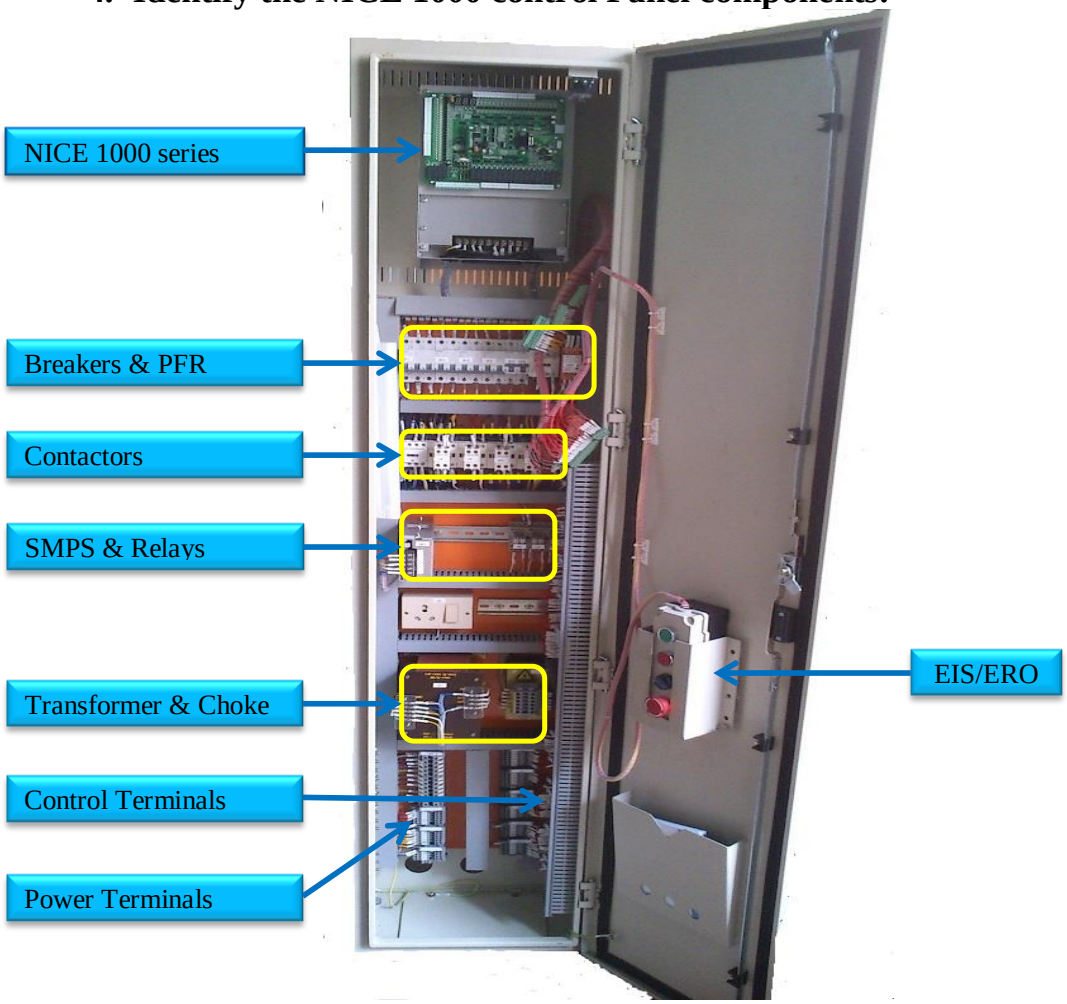
FA→ Keyboard setting Parameter

FB→ Door Function Parameter

FF→ Factory Parameter

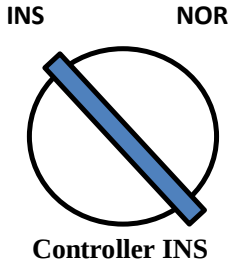
FP→ User Parameter

4. Identify the NICE 1000 control Panel components:



4.1 Switch off all the control panel breakers to avoid an unexpected controller power up

4.2 Select the 'Controller INS ' selector switch to inspection mode



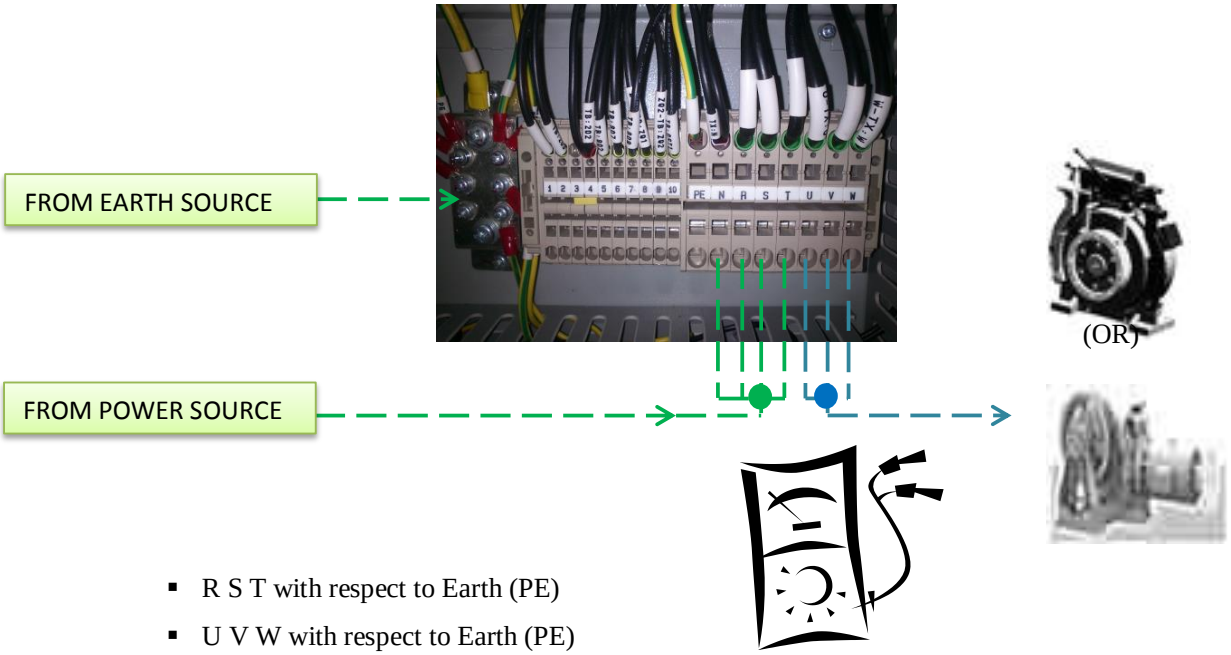
Controller INS

4.3 Control Panel and Field Wiring verification:

4.3.1 Check all Field Wiring (Machine Room, Controller, Hoist-way, Car top, COP and LOP) are connected as per the given Electrical Drawing

4.3.2 Check controller wiring and field wiring for loose connection.

4.3.3 Check control panel wiring for short circuit using Multi meter (Field and control panel wiring)



- R S T with respect to Earth (PE)
- U V W with respect to Earth (PE)
- ±24VDC with respect to Earth (PE)
- Encoder power supply with respect to Earth (PE)
- Safety circuit and Door Lock circuit with respect to Earth (PE)
- All other Field Control circuit with respect to Earth(PE)

4.3.4 Check Controller power terminal U V W are correctly connected corresponds to the Motor U V W terminal.

4.3.5 Check the Machine Brake wiring is done correctly as per the requirement

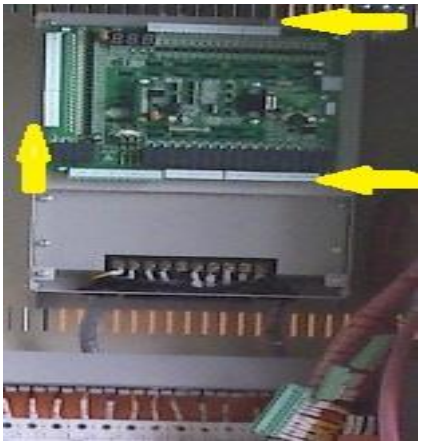
4.3.6 Confirm that the main power supply source MCCB is OFF. Now Connect the Controller Power terminal R S T to the main power supply source.

4.4 Connect the Encoder wires to the NICE 1000 system; for connection wiring, follow the earlier mentioned steps (2.3.4) for Geared/Gearless machine.

5. Initial Start Up procedure:

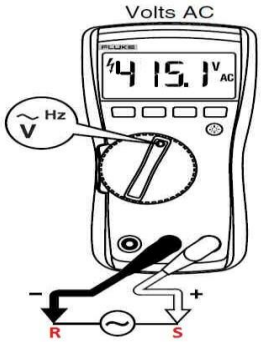
5.1 Verification of different voltage level sources:-

5.1.1 Before Control Panel Power Up, Disconnect all the Control Terminal wiring which are connected to MCTC-MCB-G of NICE 1000



5.1.2 Switch on the main power supply Circuit Breaker; check the incoming voltage level between R vs S, S vs T, T vs R and R S T with respect to N at Lift Control Panel using Multi meter

MULTIMETER



5.1.3 Make sure that the Incoming Voltage level satisfies the specification

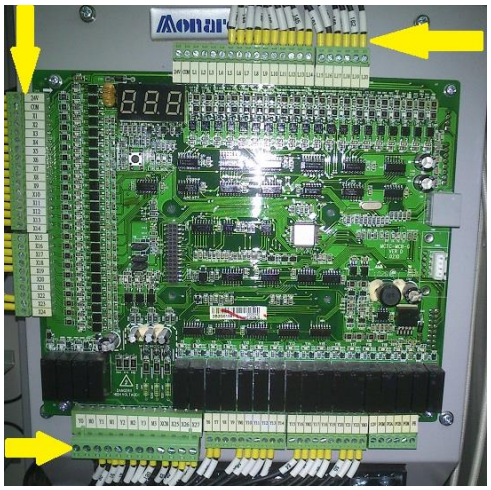
5.1.4 Turn ON the Control Panel Circuit Breakers one by one and check the voltage level simultaneously; Make sure that the voltage levels are within specified limits (Refer Electrical Drawing)

5.1.5 Verify that the following voltage levels are OK and within the limit

- 240VAC Level
- ±24VDC Level
- 110VAC Level
- ±110VDC Level (If present)

5.1.6 After confirming the correct voltage level, switch OFF the Control Panel Circuit Breakers

5.1.7 Connect the Control terminal wiring on MCTC-MCB-G of NICE 1000



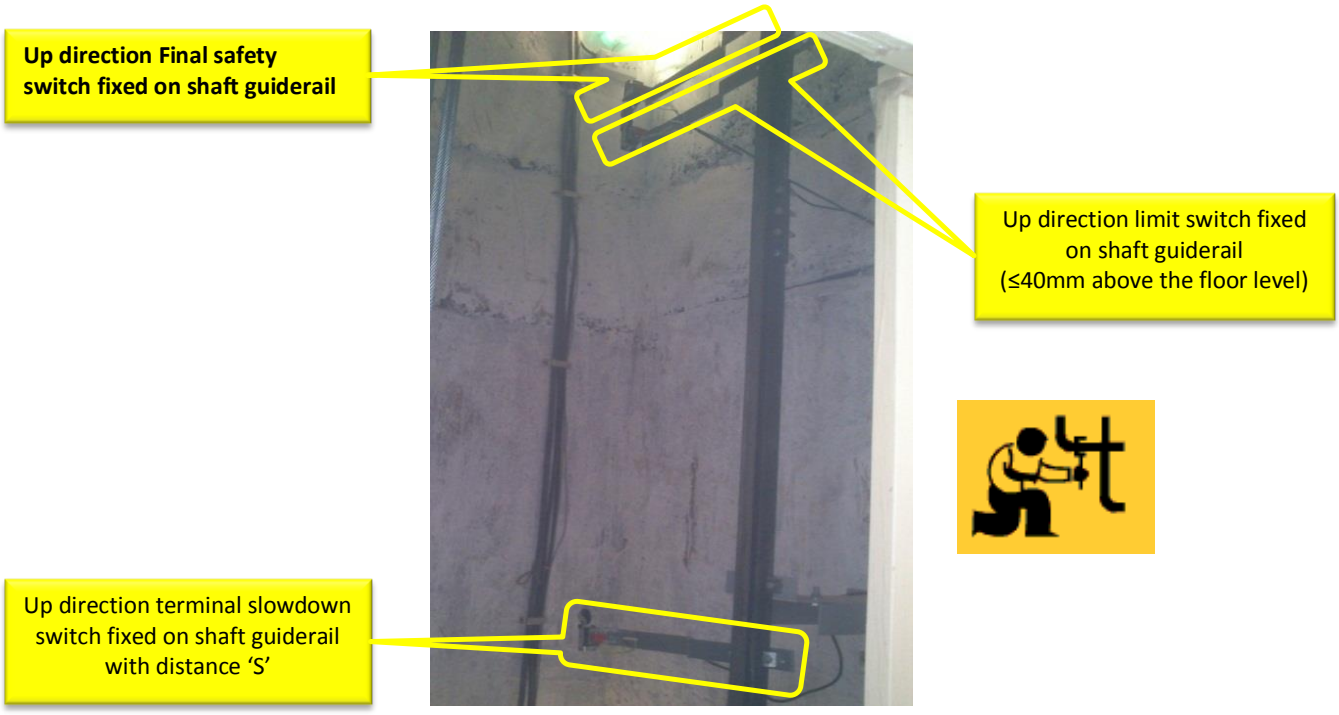
- **Connected the Safety circuit wiring to the field as per the Electrical drawing. Safety circuit terminal starts from 101 and ends at 132 terminal**

- **Connected the wiring for Up/Down terminal floor Limit and slowdown switches**

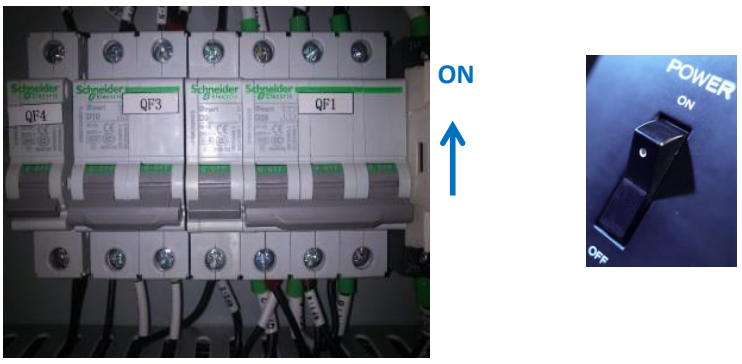
- The distance for terminal floor slowdown should be 1300mm~L/2 from the floor level and the distance for terminal floor direction limit switches should be 30 to40 mm above the floor level in top terminal/ below the floor level in bottom terminal
  L→Terminal floor height

- For terminal slowdown, it can be calculated as follow
  Slowdown distance (S) > (F0-04 * F0-04) / (2 * F3-08)
  (Default: S=1500mm for 1mps)

Terminal floor switches mounting position:



5.1.8 Verify the connection and Elevator control Panel Earthing once again before power ON. Now TURN ON the control panel Circuit Breakers



5.2 Input and Output functional sequence of MCTC-MCB-G of NICE 1000

- After switching ON the controller MCBs, the Safety Contactor **(SC),** Door Lock Contactor **(DLC)** and **JT** relay will get **ON** if Safety Circuit is properly closed
- Once **SC contactor ON**, the three phase power supply will be given to the Main NICE drive**(Note: If SC is OFF, then there would not be any display on Drive on board Display)**
- **Input terminal points X1~X24** of MCB located left side of the Board are **Positive Logic Signal Inputs** which needs **+24VDC positive** power supply for enabling and disabling the any given input signal
- **High Voltage Input terminal Points (X25~X27)** of MCB which located bottom side of the Board are Active High Inputs which needs **Phase (P)** of **110VAC** power supply for enabling and disabling the safety circuit function.

- The **110VAC voltage safety points (X25~X27**) are **very significant and most priority** inputs in the NICE1000 Lift controller
- **Err41** will be displayed if the Safety circuit feedback **LED X25 is OFF**. The safety circuit wiring should be followed as per the NICE1000 Electrical drawing.
- **Err35 will be displayed on every power ON** until the Learn Run/Shaft Tuning is done. **Err35 will not affect the Inspection Run**
- For PMSM Gearless machine, **Err20** will be displayed if Machine Encoder is not connected with suitable PG-E card on NICE unit, Encoder Parameter is not set properly (F1-00=0) and also if the encoder signal wiring sequence is wrong/improper
- If all the power supply connections and field wirings are ok, then the corresponding Green LED's on the Main Control Board (Located above the Drive) will glow.

5.3 Software version verification

Parameter FA-04 is for software version

Software	Synchronous Machine (Gearless)	Asynchronous Machine (Geared)
Latest version for Auto door Cum Manual Door	7.0170	70170

5.4 Sequence for Input terminal functions while Initial Lift start-Up

Type of Input	Input Terminal	LED status	Parameter Value	Contact Type	Remarks
Running Contactor Feedback (SW)	**X2**	**ON**	F5-02=104	NC	If **X2 LED off**, then the drive gives **Err36**
Brake Contactor Feedback (BY)	**X3**	**ON**	F5-03=105	NC	If **X2 LED off**, then the drive gives **Err37**
Inspection mode input signal	**X4**	**OFF**	F5-04=109	NC	**OFF→Inspection mode ON→Normal Mode**
Inspection mode UP signal	**X5**	**OFF**	F5-05=10	NO	For UP direction command in INS mode
Inspection mode DOWN signal	**X6**	**OFF**	F5-06=11	NO	For DOWN direction command in INS mode
UP direction limit signal	**X9**	**ON**	F5-09=115	NC	**UP and Down Limit and Slow down Switches must be connected for Inspection run and for motor tuning**
Down direction limit signal	**X10**	**ON**	F5-10=116	NC	
Up terminal slowdown signal	**X11**	**ON**	F5-11=117	NC	
Down terminal slowdown signal	**X12**	**ON**	F5-12=118	NC	
FX-Shorting Contactor Feedback signal	**X19**	**ON**	F5-19=	NC	Applicable for high power PMSM Gearless machine. **Err29 if X19** LED is OFF
RCR- Manual Door Retiring Cam Contactor Feedback signal	**X20**	**ON**	F5-20=143	NC	Applicable for Manual Door only
ARD function-UPC contactor Feedback Signal	**X22**	**ON**	F5-22=133		Applicable for only
Safety Circuit feedback signal (110VAC Input)	**X25**	**ON**	F5-25=01	NO	If all the field safety circuits are not ok and **X25 LED is OFF**, then the display shows **Err41**
Door lock safety circuit feedback signal1(Car Door) (110VAC Input)	**X26**	**ON**	F5-26=02	NO	If Car door is safely closed, then X26 LED gets **ON**
Door lock safety circuit feedback signal2(Landing Door) (110VAC Input)	**X27**	**ON**	F5-27=03	NO	If All landing doors are safely closed, then X27 LED gets **ON**

5.5 NICE 1000 Parameter Adjustment :-

Connect the Operation LED Keypad as shown in below figure

5.5.1 Take down the motor parameter and encoder details; enter the following actual Parameter value in NICE1000 using LED keypad.

Description	Parameter	Set actual value	Remarks
Motor Parameter Details			
Rated Power (KW)	F1-01		Enter the correct Motor nameplate value in to the corresponding Drive Parameter
Rated Voltage (V)	F1-02		
Rated Current (I)	F1-03		
Rated Frequency (F)	F1-04		
Rated Speed (RPM)	F1-05		
Encoder Parameter Details			
Encoder Type Selection	F1-00	0→Syn 2→Asyn	Enter the correct Encoder details
Pulse Per Revolution (PPR)	F1-12		
Elevator Running Speed Parameter Details			
Rated speed of Elevator	F0-04	(Enter the Elevator Rated speed in m/s)	Enter the Rated speed of the elevator
Max speed of Elevator	F0-03	(Enter the required Max. speed in m/s)	Enter the Max speed of the Elevator (Limited by Rated speed setting F0-04)
Slow speed	F3-11		Used for Inspection speed

5.6 Motor Tuning process:-

Actual motor parameters (F1-01~F1-05) must be set before start the motor tuning process

5.6.1 For Asynchronous Motor (Geared Machine-Induction Motor):

	Tuning Selection	Default Value	Setting Range
F1-11	0→No tuning **1→Static Tuning** 3→Shaft Auto Learning	0	0, **1**, 3

Step 1: Set **F0-01=0**, now the control mode is selected to the operating LED keypad control

Step 2: Make the NICE1000 Drive output contactor (SW) permanently ON or bypass the output contactor which makes the NICE 1000 U V W terminals directly connected to Machine Motor's U V W terminals

Step 3: Verify the parameter **(F1-01~F1-05)** values are correctly set to the actual motor nameplate

Step 4: Set the parameter **F1-11=1** and press 

button , operating LED keypad display shows 'TUNE', then press 

button on Keypad. Now the tuning process starts and NICE 1000 calculate the following parameters during the tuning process

F1-06→Stator Resistance
F1-07→Rotor Resistance
F1-08→Leakage Inductance
F1-09→Mutual Inductance
F1-10→No-Load Excitation Current

Once the tuning process is over then the operating LED keypad displays the normal status

Step 5 : After successful motor tuning, set back the F0-01=1(Elevator Logic Control)

5.6.2 For Synchronous Motor(Gearless Machine-PMSM):

	Tuning selection	Default Value	Setting Range
F1-11	0→No Tuning 1→Tuning with Load 2→Tuning without Load	0	0, 1, 2, 3

5.6.2.1 Tuning with Load on Hoist Motor

Caution: On-Load tuning is to be carried out by well-trained Engineer & very carefully. Tuning should not be carried out by keeping the Lift in terminal floors

Step 1: On –load tuning will be conducted on Inspection mode, all the input and Output functional Sequence should be consider (Refer Content 5.4 & 5.6.3)

Step 2: Maintain **balanced load on Car and CWT** side and locate the **Elevator car in midway** of the Shaft and Make sure the **free movement of Car and CWT in the guide rail**

Step 3: Verify the parameter **(F1-01~F1-05)** values that are correctly set to the actual motor nameplate

Step 4: Set the parameter **F1-00=0** according to the actual encoder mounted on Motor shaft, Set the value 0: Sin/Cos and **F1-12=2048** PPR for Sin/Cos Encoder

Step 5: For Inspection speed setting, use parameter F3-11=0.250mps. **Please refer content of 5.2 (Page-18) for MCB's LED sequence for Inspection operation**

Step 6: Select the parameter **F1-11=1** and press 

button, now operating LED keypad shows '**TUNE**'

Step 7: Using the control panel **Inspection button**, press **UP/DOWN button**, now the Synchronous motor **runs few (One & two)rotation**. During tuning process, **keep pressing the UP/DOWN button until the Tuning gets finished**. NICE 1000 system calculate the following parameters

F1-06→Encoder initialized angle
F1-08→Wiring connection
F1-09→ADC sampling delay
F1-10→Selection check of encoder's signal

Once tuning process is over, '**TUNE'** display goes off and LED keypad displays the Inspection Reference speed value.

Step 8: Follow the above tuning process more than 3 times and verify the parameter F1-06 value that the Error tolerance is within the range of ±5%

5.6.2.2 Tuning without Load on Hoist Motor :

Step 1: Separate the load from the motor (remove ropes from hoist machine)

Step 2: Set F0-01=0, now the control mode is selected to the operating LED keypad control

Step 3: Make sure that the machine Brake is powered ON for free movement of Machine rotor

Step 4: Verify the motor parameter **(F1-01~F1-05)** values are correctly set as per the actual motor Nameplate and Encoder details **(F1-00=0 & F1-12=2048)**

Step 5: Select parameter F1-11=2 and press 

button, operating LED keypad display shows 'TUNE'
Then press 

button on Keypad. Now the tuning process starts and NICE 1000 calculate the following parameters during the tuning process, F1-06, F1-07, F1-08, F1-09 and F1-10.
Once tuning process is over, **'TUNE'** display goes off and LED keypad displays to normal status.

Step 6: Follow the above tuning process more than 3 times and verify the parameter F1-06 value that the error tolerance is within the range of ±5%

5.6.3 Tabular Column for Functional Output sequence of the NICE1000

Function	Gearless Machine (PMSM motor)	Geared/Gearless Machine (Induction/PMSM motor)	Remarks
Inspection Mode	**X4 OFF**	**X4 OFF**	**X4 OFF** for **Inspection** Mode **X4 ON** for **Normal** Mode
INS Up button Command	**X5 ON**	**X5 ON**	**If X5 is not ON while UP button pressed, then the lift will not give any output**
INS Down Button Command	**X6 ON**	**X6 ON**	**If X6 is not ON while Down button pressed, then the lift will not give any output**
RCR Contactor	**Y22 ON** **X22 OFF**	**Y3 ON** **X22 OFF**	**Applicable only for Manual Door**
FX-Shorting Contactor	**Y3 ON** **X22 OFF**	**Not Applicable**	**Applicable for all PMSM Gearless machine. Improper operation leads to Err29. Check corresponding parameter setting**
SW-Drive Output Contactor	**Y1 ON** **X2 OFF**	**Y1 ON** **X2 OFF**	**Improper operation sequence leads to Err36. Check corresponding parameter setting and wiring**
BY-Brake Contactor	**Y2 ON** **X3 OFF**	**Y2 ON** **X3 OFF**	**Improper operation sequence leads to Err37. Check corresponding parameter setting and wiring**

5.6.4 Error in tuning process:

Error Code	Fault Details	Remedies
Err20	Encoder Fault	➢ Check the Encoder Parameter F1-00=0 & F1-12=2048 ➢ Check the Motor name plate parameter ➢ Thoroughly check the Encoder signal wiring, pin configuration, Encoder cable and its pin soldering at D-Type connector ➢ Check the Brake operation while tuning mode starts ➢ Check the free movement of machine when brake opened ➢ Check the Car and CWT free movement(If necessary apply guide rail oil) ➢ Reduce the speed loop gain F2-00 & F2-03 ➢ Keep F2-02=0.5HZ & F2-05=1.5HZ for machine having less than 20HZ frequency
Err16	Encoder Fault	
Err33	Lift speed abnormal Fault	
Err19	Tuning Over time fault	➢ Thoroughly check the Encoder signal wiring, pin configuration, Encoder cable and its pin soldering at D-Type connector (Especially Z+ and Z- signal issue)
Err02	Over Current Fault	➢ Output terminal Short (U V W) ➢ Check the Brake operation while tuning mode starts ➢ Check the free movement of machine when brake enabled

5.7 Inspection Running:

- Now the Lift is ready for Inspection running. **Please refer content of 5.2 (Page-18) for MCB's LED sequence for Inspection operation**
- Make sure that the **all safety switches are connected and functioning** properly
- Make sure that the **Up & Down terminal Limit and terminal slowdown switches** are wired up and located in the right position as given in the manual
- Use the UP and DOWN Button in the Inspection board on controller/Car-Top to run the lift in Inspection speed.
- Check the direction of the lift running. **X5 LED** in the Main Control Board (MCB) glows when **UP button** is pressed. During this time, lift should run in **UP direction** and for **DOWN button**, **X6 LED glows** and lift runs in **Down direction**.
- If the **running direction is wrong**, then modify the parameter **F2-10(1↔2, 0↔3)**
- If **Err20** comes after some distance travelled in Inspection mode, then modify the parameter **F2-10 (0↔2, 1↔3).** (For **Geared lift, interchange PG-A and PG-B** wires)
- If the system gives **Err20 and the direction of running is also wrong**, then modify the **F2-10 (0↔1, 2↔3)**

6. Normal/High Speed operation

6.1 Elevator Shaft Learning Process:

Ensure that the hoist-way top and bottom **slowdown terminal, Direction Limits switches** and **floor level magnetic plates or flags** are installed correctly before performing shaft self-learn.

Floor level switch cutting plates/flags (Door Zone):

Step 1:

- Run the lift in Inspection mode and check the encoder pulse parameter F4-03 for pulse variation.
- **Pulse value** should **increase** when the lift runs in **UP direction** and **decrease** when the lift runs in **Down direction**
- If **pulse variation is reverse**, then modify the parameter **F2-10 (0↔2, 1↔3).**
- Make sure that the all required mechanical installation and field wiring are completed. Take the lift to bottom terminal floor level using control panel Inspection in inspection speed.
- Observe the X1~X24 input terminal LEDs for proper operation of **Floor/Door zone(X1 LED)** and **Up/Down terminal Limit and slowdown switches(X09,X10,X11 & X12 LEDs)**
- Locate the lift car in bottom most floor level, Down terminal Slowdown switch gets operated **(X12 'OFF')** and Floor level/Door Zone Switch (F5-01=003) gets operated **(X1 'ON')**

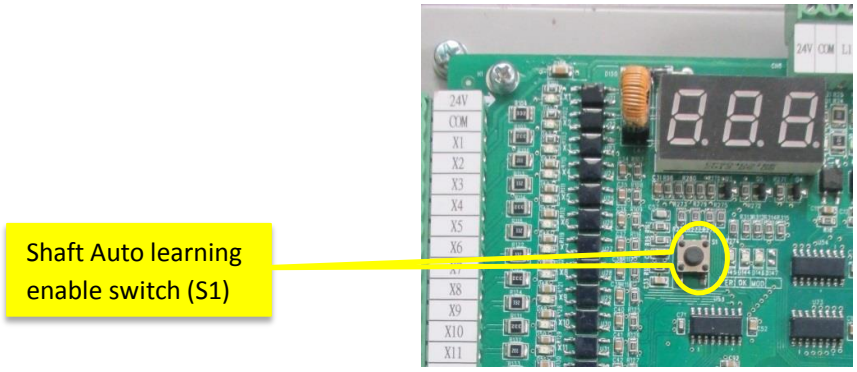
Step 2: Set the following parameters

Description	Parameter code	Default Value	New Value	Remarks
Highest Floor	F6-00	5		Enter the total number of floor (no. of opening)
Lowest Floor	F6-01	1	1	

Step 3: Now select the parameter **F1-11=3(Shaft auto learning mode)** and **Enter**

or

Keep Pressing '**S1'** button located on MCTC-MCB of NICE 1000 for minimum 3secs



- **Lift starts** to run with **Inspection speed towards up terminal floor**.
- On detection every Floor Level/Door zone cam, the floor counting will increase
- On detection of up terminal floor level/Door zone switch signal, Lift stops and Shaft learning gets completed
- During auto learn, NICE 1000 system measures the shaft travel distance using Encoder feedback
- Counts the number of floors using Floor level/Door zone switch signal and stores counted encoder pulses in the form of bits in F4 Floor parameters.
- On completion of auto shaft learning without any Error, operating LED keypad displays the normal status.

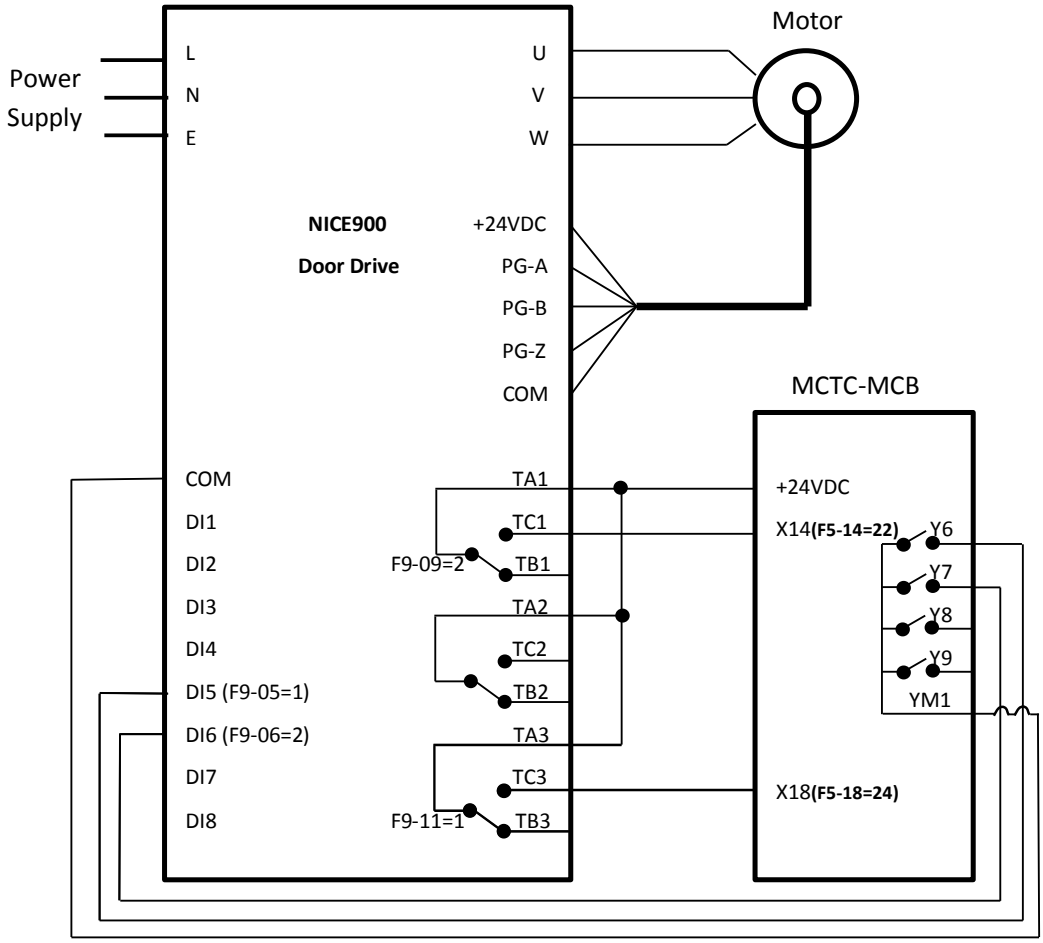
(Note: If Err35 comes during shaft learning, follow the instruction of Step 1 of Content 6.1)

6.2 Proceed for Door operator commissioning:-

6.2.1 For Auto Door

- NICE 1000 system is capable for double side door operator system (Front and Back Doors)
- Door Open Limit and Door Close Limit switches feedbacks are mandatory for NICE 1000 system function (to be connected to X14 and X18 Default input terminals for Front door)

Field Wiring Diagram suitable for NICE 900 Door Drive with NICE1000 Controller



- If the third party door drive system is used, follow the door drive commissioning instruction and commission the door drive along with NICE1000 input and output interconnections as shown in above model wiring diagram
- Follow the commissioning procedure provided by door operator system supplier
- Once door operator function is completed successfully, Elevator is ready for Normal operation with rated speed

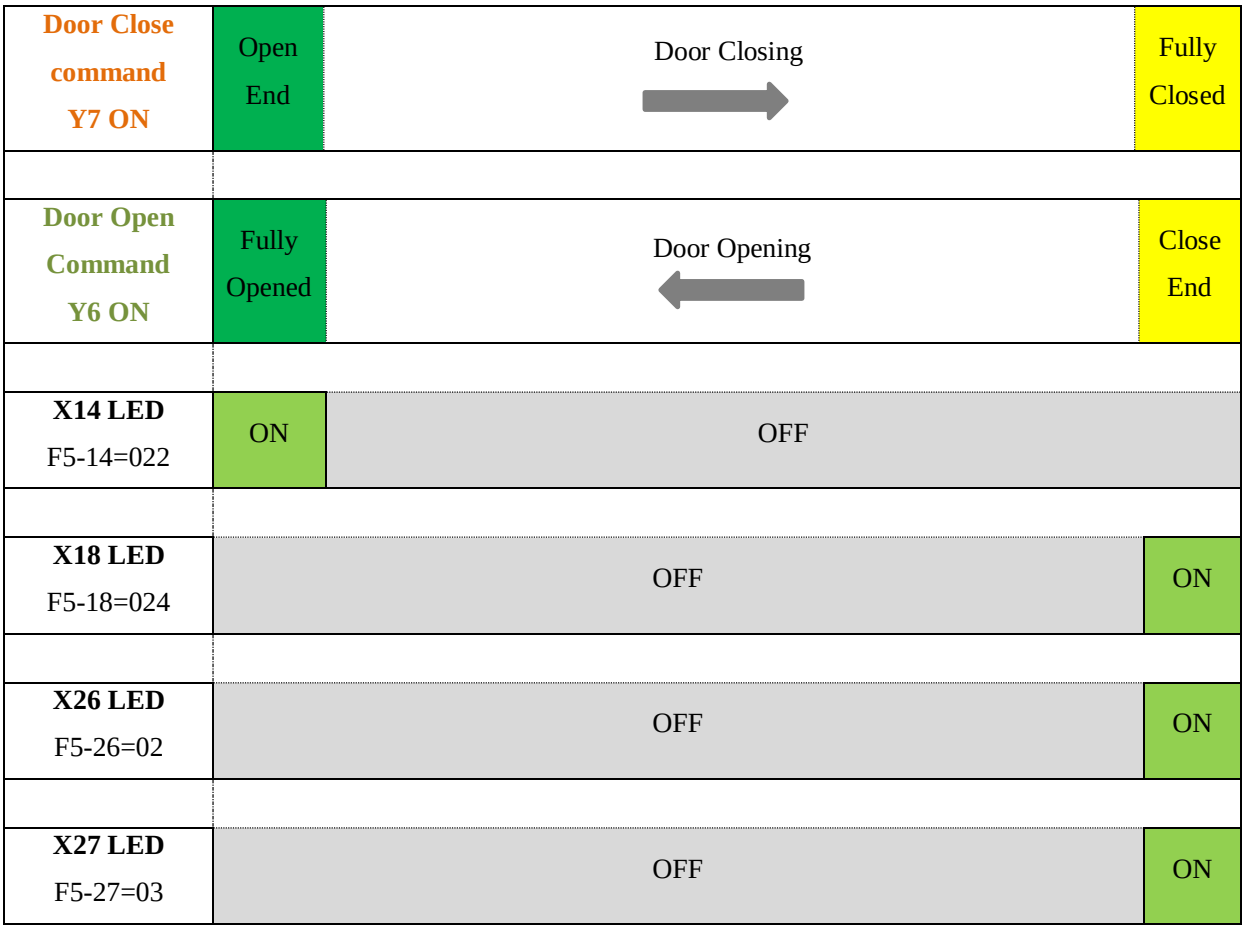
➢ After completion of Door operator commissioning and NICE1000 shaft learning process, Lift is ready for normal operation. Now the lift car will be located in top most floor terminal level and the corresponding input terminal sequence will be seen in the NICE1000 Main Control Board LEDs as shown in the below table

Functional Command Sequence at Main Control Board (MCB) on NICE unit

Door Close Command (Y7 relay gets ON)				
	Door Fully opened	Door In between	Door Fully Closed	Remark
DOL DCL	**X14→ON** X18→OFF	X14→OFF X18→OFF	X14→OFF **X18→ON**	Improper Sequence can lead to Err53
Car Door Safety Landing Door Safety	X26→OFF X27→OFF	X26→OFF X27→OFF	**X26→ON** **X27→ON**	
Door Open Command (Y6 relay gets ON)				
Feed Back Signal	Door Fully Closed	Door In between	Door Fully opened	Remark
DOL DCL	X14→OFF **X18→ON**	X14→OFF X18→OFF	**X14→ON** X18→OFF	Improper Sequence can lead to Err53
Car Door Safety Landing Door Safety	**X26→ON** **X27→ON**	X26→OFF X27→OFF	X26→OFF X27→OFF	

Door Fully Closed | **Door in between** | **Door Fully Opened**

Door Operation Timing Diagram



Note:

Improper sequence of Door open Limit (X14), Door Close Limit (X18), Car safety (X26) and Landing safety (X27) can lead to the Err53 and stops the Elevator function.

6.2.2 For Manual Door Setup Procedure

- Please refer NICE1000 Manual door ver2.0 Electrical Drawing and NICE100 User Manual
- Verify the software version for NICE1000 Integrated controller. The suitable software version is given in the below table
- Enable the bit11 of FE-14 for manual door Function as follow

Select 

and Press enter; now the display will show 

The first two digits represent the bit number and the last single digit to enable or disable the corresponding selected bit number.

Using UP/DOWN key on the keypad, select 

& Enable the bit 

Parameter	Default	Value to be set	Function
F5-20	0	143	DRC contactor NC feedback enable function setting
F7-06	6	31	DRC contactor Function enable setting
F6-11	201	0	Disabling the auto door DO function
F6-12	202	0	Disabling the auto door DC function
F5-14	22	0	Disabling the auto door open limit function
F5-15	126	0	Disabling the auto door sensor function
F5-18	124	0	Disabling the auto door Close limit function
FB-12	3	5	Retiring Cam enable duration to verify landing door safety contact
FB-13	30	5	Retiring Cam disable duration to verify the landing door safety contact

- Adjust FB-03=5(Default) to modify Floor waiting time to attend the next registered call
- Door open Buzzer output terminal is Y21 in the Main Control Board (MCB)
- If the landing door is kept open after usage, NICE1000 tries for three times by giving the output to the DRC contactor until the landing door safety contact is closed (landing door close). During this period NICE1000 also gives door open buzzer output at Y21 terminal. If the landing door is not closed within the three time try, NICE1000 cancels all registered calls and goes to idle mode.

NOTE:

For earlier software version used (FA-04=30169), to enable manual door function, please enable bit 03 in FE-14.

Software versions prior to this (Ex. FA-04=30168, 30167) does not have manual door feature.

6.3 Normal operation & its signal verification

- Once the Door commissioning is completed, the lift is ready for normal operation
- **Turn ON the Inspection button into Normal mode**

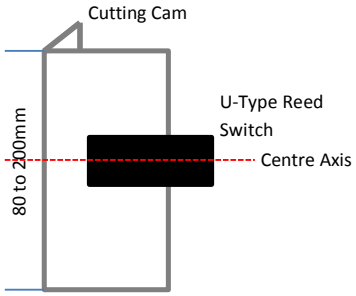
Input signal status of Main Control Board (MCB) while the lift at top terminal floor level with doors are closed in normal mode

Type of Input	Default Input Terminal	LED status	Default Parameter Value	Default Contact Type	Remarks
Door Zone Switch signal	X1	**ON**	F5-01=003	NO	
Running Contactor Feedback (SW)	X2	**ON**	F5-02=104	NC	
Brake Contactor Feedback (BY)	X3	**ON**	F5-03=105	NC	
Inspection mode input signal	X4	**ON**	F5-04=109	NC	**OFF→INS mode ON → Normal Mode**
Inspection mode UP signal	X5	**OFF**	F5-05=010	NO	For UP direction command in INS mode
Inspection mode DOWN signal	X6	**OFF**	F5-06=011	NO	For DOWN direction command in INS mode
UP direction limit signal	X9	**ON**	F5-09=115	NC	
Down direction limit signal	X10	**ON**	F5-10=116	NC	
Up terminal slowdown signal	X11	**OFF**	F5-11=117	NC	**As the Lift car is located at Top Most Floor where the UP terminal slowdown got activated**
Down terminal slowdown signal	X12	**ON**	F5-12=118	NC	
Over Load Feedback Signal	X13	**ON**	F5-13=119	NC	**If Load cell is not available, keep F5-13=0**
Door Open Limit feedback signal	X14	**OFF**	F5-14=022	NO	**If DO limit signal is 'NC' contact, keep F5-14=122**
Door IR sensor signal	X15	**ON**	F5-15=126	NC	**If Door IR sensor feedback is 'NO', keep F5-15=26**
Door Close Limit Feedback signal	X18	**OFF**	F5-18=024	N0	**If DC limit signal is 'NC' contact, keep F5-14=124**
Shorting Contactor Feedback (FX)	X19	**ON**	F5-19=107	NC	**Applicable for PMSM only**
Manual Door R/C contactor Feedback	X20	**ON**	F5-20=143	NC	**Applicable for Manual Door only**
UPC contactor Feed back	X22	**ON**	F5-22=133	NC	**Applicable for UPS ready ARD function**
Safety Circuit feedback signal	X25	**ON**	F5-25=01	NO	**If all the field safety circuits are ok, then the X25 LED gets ON**
Door lock safety circuit feedback signal 1	X26	**ON**	F5-26=02	NO	**If Car Door is safely closed, then X26 LED gets ON**
Door lock safety circuit feedback signal 1	X27	**ON**	F5-27=03	NO	**If All landing doors are safely closed, then X26 LED gets ON**

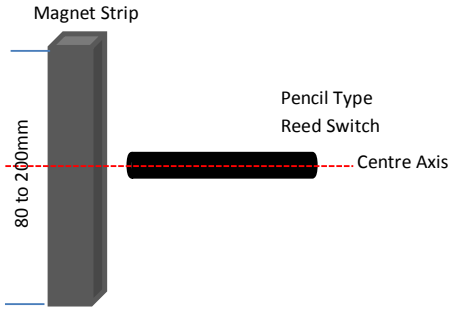
- If the Input Signal sequences are ok as per the requirement, then the lift can be run in normal speed.
- Select the Normal running speed using the parameter F0-03
- During Normal Operation, if Error53 comes, it is due to the improper door drive close and open limit feedback and also due to presence of landing door and car door safety by-pass

6.4 Floor Level Adjustment

- For **Floor Level Adjustment**, Confirm that the Floor level/Door zone cutting cam/magnet centre is matched with the centre of the switch when the **lift is in exact floor level**.



Cutting Fin/Cam type Door Zone Switch



Pencil type Switch with Magnet strip

- Maintain the same gap between Cutting Cam to Reed switch/ Magnet strip to Reed switch in every floor

- For further adjustment, use the **F4-00 = 30(default).** Increase this value bit by bit if the lift car stops before the floor level and vice versa.

- For example, lift car stops 10mm above the floor level in the landing while comes from bottom floor to this floor, then reduce the F4-00 = 20 (30-10)

6.5 Car & Landing Calls configuration:

- All Car and Landing calls can be given to the L1~L20 terminal in Main Control Board (MCB) of NICE1000

- Call Function input terminal L1~L20 of MCB can be programmed in F6-11~F6-30 using Keypad

- In NICE1000, Car functions are programmable and the default NICE1000 unit is programmed for 5 floor full collective function

- For better understanding, Two different configurations are given below

6 floors (G+5) Full collective configuration setting and its functional output terminal

Floor Call Details	Corresponding Parameter Setting	Call buttons Connection Terminal in MCB
Car Call Function		
Gnd (Bottom most) floor Car Call	F6-15=211(Default)	L5
1st Floor Car call	F6-16=212 (Default)	L6
2nd Floor Car call	F6-17=213 (Default)	L7
3rd Floor Car call	F6-18=214 (Default)	L8
4th Floor Car call	F6-19=215 (Default)	L9
5th Floor (Top most) Car call	F6-14=216	L4
UP direction Landing Call Function		
Gnd Floor Up landing Call	F6-23=221(Default)	L13
1st Floor Up landing Call	F6-24=222(Default)	L14
2nd Floor Up landing Call	F6-25=223(Default)	L15
3rd Floor Up landing Call	F6-26=224(Default)	L16
4th Floor Up landing Call	F6-20=225(Default)	L10
Down Direction Landing Call Function		
1st Floor Down landing Call	F6-27=232(Default)	L17
2nd Floor Down landing Call	F6-28=233(Default)	L18
3rd Floor Down landing Call	F6-29=234(Default)	L19
4th Floor Down landing Call	F6-30=235(Default)	L20
5th Floor Down landing Call	F6-21=236(Default)	L11

9 Floors (G+8) Down Collective configuration setting and its functional output terminal

Floor Call Details	Corresponding Parameter Setting	Call buttons Connection Terminal in MCB
Car Call Function		
Gnd (Bottom most) floor Car Call	F6-15=211(Default)	L5
1st Floor Car call	F6-16=212 (Default)	L6
2nd Floor Car call	F6-17=213 (Default)	L7
3rd Floor Car call	F6-18=214 (Default)	L8
4th Floor Car call	F6-19=215 (Default)	L9
5th Floor Car call	F6-20=216	L10
6th Floor Car Call	F6-21=217	L11
7th Floor Car Call	F6-22=218	L12
8th Floor Car Call	F6-23=219	L13
Landing Call Function		
Gnd Floor UP Landing call	F6-26=221	L16
1st Floor Down landing Call	F6-27=232(Default)	L17
2nd Floor Down landing Call	F6-28=233(Default)	L18
3rd Floor Down landing Call	F6-29=234(Default)	L19
4th Floor Down landing Call	F6-30=235(Default)	L20
5th Floor Down landing Call	F6-24=236(Default)	L14
6th Floor Down landing Call	F6-25=237(Default)	L15
7th Floor Down landing Call	F6-13=238(Default)	L3
8th Floor Down landing Call	F6-14=239(Default)	L4

7. Floor display Setting:-

- NICE 1000 Lift Integrated Controller can provide three different output functions for third party floor display.

  They are
  7 Segment output selection →FE-12=0
  Binary Code output selection→ FE-12=3
  BCD output selection → FE-12=1(Default)

- For **7 segment function**, set the following parameters

FE-12=0	F7-10=10	F7-11=11	F7-12=12	F7-13=13	F7-14=14	F7-15=15	F7-16=16

- To modify the **7 segment** floor display digit, use the following parameters FE-01 to FE-10 for landing level 1 to 10

Parameter	Setting Value	7segment display output
FE-xx	1900	To display '0'
FE-xx	1901	To display '1'
FE-xx	1902	To display '2'
FE-xx	1903	To display '3'
FE-xx	1904	To display '4'
FE-xx	1905	To display '5'
FE-xx	1906	To display '6'
FE-xx	1907	To display '7'
FE-xx	1908	To display '8'
FE-xx	1909	To display '9'
FE-xx	1911	To display 'b'
FE-xx	1912	To display 'G'
FE-xx	1913	To display 'H'
FE-xx	1914	To display 'L'
FE-xx	1915	To display 'n'
FE-xx	1916	To display 'P'

Example setting for b+G+4 landing lift (6 Floors)

Parameter	New Setting	Display Type
FE-01(basement Floor)	1911	To display 'b' for basement Floor
FE-02 (Ground Floor)	1912	To display 'G' for Ground Floor
FE-03 (First Floor)	1901	To display '1' for First Floor
FE-04 (Second Floor)	1902	To display '2' for Second Floor
FE-05 (Third Floor)	1903	To display '3' for Third Floor
FE-06 (Fourth Floor)	1904	To display '4' for Fourth Floor

- For Binary functional output, set the following parameter

  FE-12=3, F7-10=10, F7-11=11, F7-12=12 & F7-13=13

- Binary display output terminals
  Bit0→Y10

  Bit1→Y11

  Bit2→Y12

  Bit3→Y13

8. ARD function using UPS ready:-

- Confirm the ARD functional wiring is done as per the NICE1000 Electrical drawing to connect the Suitable rated UPS to the controller
- Set the following parameter to enable the ARD function

Parameter	Function	Remarks
F5-22=133	UPC contactor feedback function	
F7-00=32	UPC contactor enable function during power failure	UPC contactor used to connect the single phase UPS power supply to the Controller
F8-10=1	220VAC UPS function enable	
F8-09=0.050	ARD mode Elevator speed	Lesser speed will give Err30 Higher speed will drain UPS quickly
FB-07=3073	Bit 0=1 to enable the Auto Light Load direction selection in UPS mode running	Add '1' with the default value in FB-07 parameter

UPS Rating Selection for suitable Motor rating

UPS Power	Controller Power	Remarks
1 KVA(700-800W)	P ≤ 3.7KW	Given UPS rating is for reference and Selection of UPS rating must be considered with the other control panel and field equipment
1.6KVA(1150-1200W)	P ≤ 5.5KW	
2 KVA(1400-1600W)	P ≤ 7.5KW	
3 KVA(2100-2400W)	11KW ≤ P ≤ 15KW	

9. Load Weigh Function:-

NICE 1000 system capable of function with Digital and Analog Load weigh system. On selection of any one of the load weigh system, the corresponding parameter to be chosen.

Description	Code	Setting Range	Default Value	Remarks
Weighing Input Selection	F8-08	0→Invalid 1→Reserved 2→Analog Sampling	0	
Preset Torque Selection	F8-01	0→Pre-set torque invalid 1→Pre-set torque Valid 2→Automatic pre-torque compensation	0	Keep F8-01=2, if no load weigh system is used (Applicable for Synchronous Machine)

9.1 For Digital Load Weigh (Cell) system

- Digital output for Over Load from the Load Weigh system is connected to Input terminals X13 of Main Control Board (MCB)

- Digit output for Full Load from the Load weigh system can be used in NICE 1000 system by configuring anyone of the free Input terminals (X) of Main Control Board (MCB)

9.2 For Analog Load Weigh System

- Require Expansion board (MCTC-KZ-B); in which, terminals Ai & M are used for Load Weigh 0~10V analog input

10. Ride Comfort Fine Tuning:-

10.1 Starting Jerk:

For Rollback and Surge Forward issue, adjust following parameter

Description	Code	Default	Rollback	Surge Forward
Drive Gain Zero Servo Speed Loop KP	F8-03	0.60	Increase ↑	Decrease ↓
Brake Gain Zero servo speed Loop TI	F8-04	0.60	Increase ↑	Decrease ↓

10.2 Vibration While Starting:

Fine tune the speed loop gain using following parameters

Description	Code	Default	Remarks
Proportional gain 1 of Speed Loop (Kp_1)	F2-00	40	
Integrate time 1 of Speed Loop (Ki_1)	F2-01	0.60	
Switching Frequency 1	F2-02	2.00	
Proportional gain 2 of Speed Loop (Kp_2)	F2-03	35	
Integrate time 2 of Speed Loop (Ki_2)	F2-04	0.80	
Switching Frequency 2	F2-05	5.00	

10.3 Vibration or Jerk during running:

Fine tune the Current loop gain using following parameters

Description	Code	Default	Remarks
Proportional gain of Current loop	F2-06	60	
Integral gain of current loop	F2-07	30	

11. Fault codes – Causes – Remedies

Error information produced by NICE1000 can be divided into 5 sorts according to their influence to the system. Different fault has different disposal mode. And the respective relationship is listed as the following table.

FAULT SORT	RELEVANT DISPOSAL	REMARK
Level 1	Display fault code	Any kind of working condition will not be influenced
Level 2	Display fault code; Sever lift group control (parallel) system;	Can operate normal running
Level 3	Display fault code; Stop at the nearest landing when in distance control, then stop running; Stop running at once in other work condition.	After stop, the system will close off output at once, and close brake
Level 4	Display fault code; When in distance control, the system will close off output at once and close brake; after stop, low speed running (such as return levelling, inspection) is allowed	The elevator can run in low speed in condition of fault code
Level 5	fault Express fault code: The system blank off output at once, and close brake; Running forbidden	Running forbidden

11.1. FAULT CODE TABLE

Error on LED Display	Error on On- Board Display	Fault	Probable Causes	Remedy	Fault Sort
Err01	E01	Invert unit protection	1. The main circuit output is grounded or short circuited. 2. The connecting cable of the motor is too long. 3. The working temperature is too high. 4. The internal connections become loose.	1. Eliminate external faults. 2. Install a reactor or an output filter. 3. Check the air channel and the cooling fan. 4. Contact the agent or Monarch.	5
Err02	E02	Over-current during Acceleration	1. The main circuit output is grounded or short circuited. 2. Motor auto tuning is performed improperly. 3. The load is too heavy. 4. The encoder signal is incorrect. 5. The UPS running feedback signal is abnormal.	1. Check whether the RUN contactor at the controller output side is normal. 2. Check whether the power cable jacket is damaged, whether the power cable is possibly short circuited to ground and whether the cable is connected reliably. 3. Check the insulation of motor power terminals, and check whether the motor winding is short-circuited or grounded. 4. Check whether the shorting PMSM stator contactor causes controller output short circuit. 5. Check whether motor parameters comply with the nameplate. 6. Perform motor auto-tuning again. 7. Check whether the brake keeps released before the fault occurs and whether the brake is stuck mechanically. 8. Check whether the balance coefficient is correct. 9. Check whether the encoder wirings are correct. For asynchronous motor, perform SFVC and compare the current to judge whether the encoder works properly. 10. Check whether the encoder lines per revolution is set correctly, whether the encoder signal is interfered with, whether the encoder cable runs through the duct independently, whether the cable is too long and whether the shielding layer is grounded at one end. 11. Check whether the encoder is installed reliably, whether the	5
Err03 ;	E03	Over- current during deceleration	1. The main circuit output is grounded or short circuited. 2. Motor auto tuning is performed improperly. 3. The load is too heavy. 4. The deceleration rate is too short. 5. The encoder is seriously interfered with external noise.		5
Err04	E04	Over-current during constant speed	1. The main circuit output is grounded or short circuited. 2. Motor auto tuning is performed properly. 3. The load is too heavy. 4. The encoder is seriously interfered with external noise.		5

				rotating shaft is connected to the motor shaft reliably and whether the encoder is stable during normal-speed running. 12. Check whether UPS feedback is valid in the non- UPS running state E02). 13. Check whether the acceleration/deceleration rate is too high.	
Err05	E05	Over voltage during acceleration	1. The input voltage is too high. 2. The regeneration power of the motor is too high. 3. The braking resistance is too large, or the braking unit fails. 4 .The acceleration rate is too short.	1. Adjust the input voltage. Observe whether the bus voltage is normal and whether it rises too quickly during running. 2. Check for the balance coefficient. 3. Select a proper braking resistor and check whether the resistance is too large based on the recommended braking resistance table 4. Check whether the cable connecting the braking resistor is damaged, whether the cooper wire touches the ground and whether the connection is reliable.	5
Err06	E06	Over-voltage during deceleration	1. The input voltage is too high. 2. The braking resistance is too large, or the braking unit fails. 3. The deceleration rate is too short.		5
Err07	E07	Over-voltage at constant speed	1. The input voltage is too high. 2. The braking resistance is too large, or the braking unit fails.		5
Err08	E08	Controller power fault	1.Input voltage is too high 2.Drive control panel is abnormal	1.Adjust input voltage 2.Please contact with agent or factory	3
Err09	E09	Under - Voltage fault	1. Instantaneous power failure occurs on the input power supply. 2. The input voltage is too low. 3. The drive control board fails.	1. Eliminate external power supply faults and check whether the power fails during running. 2. Check whether the wiring of all power input cables is reliable. 3. Contact the agent or Monarch.	5
Err 10	E10	System overload	1. The brake circuit is abnormal. 2. The load is too heavy. 3. The encoder feedback signal is abnormal. 4. The motor parameters are incorrect. 5. A fault occurs on the motor power cables.	1. Check the brake circuit and power input. 2. Reduce the load. 3. Check whether the encoder feedback signal and setting are correct. Check whether initial angle of the encoder for the PMSM is correct. 4. Check the motor parameter setting and perform motor auto tuning. 5. Check the power cables of the motor (refer to the solution of E02)	4
Err 11	E11	Motor overload	1. FC-02 is set improperly. 2. The brake circuit is abnormal. 3. The load is too heavy.	1. Adjust the parameter (FC-02 can be set to the default value). 2. Refer to E10.	3
Err 12	E12	Input side phase failure	1. The power input is not symmetric.	1. Check whether the three phases of power supply are balanced and	4

			2. The drive control board fails.	whether the power voltage is normal. If not, adjust the power input. 2. Contact the agent or Monarch	
Err 13	E13	Output side Phase failure	1. The output wiring of the main circuit is loose. 2. The motor is damaged.	1. Check the wiring. 2. Check whether the contactor at the output side is normal. 3. Eliminate the motor fault	4
Err 14	E14	Module Overheated	1. The ambient temperature is too high. 2. The fan is damaged. 3. The air channel is blocked.	1. Lower the ambient temperature. 2. Clear the air channel. 3. Replace the damaged fan. 4. Check whether the installation clearance of the controller satisfies the requirement	5
Err 16	E16	Encoder Fault	1. The start-up position is incorrect. 2. The torque deviation is too large. 3. The speed deviation is too large.	1. Check the encoder circuit. 2. Turn off the output MCCB. 3. The current loop parameters are too small. 4. The zero-point position is incorrect. Perform motor auto tuning again. 5. Reduce the load	5
Err 17	E17	Encoder signal check abnormal	The deviation of real-time angle and reference angle of the 1387 encoder is too large.	1. Check whether the encoder is normal. 2. Check whether the encoder wiring is reliable and normal. 3. Check whether the PG card wiring is proper. 4. Check whether the main unit and control cabinet are grounded well	5
Err 18	E18	Current detection fault	Diver control Board is failed	Contact with agent or factory	5
Err 19	E19	Motor tuning fault	1. The motor cannot rotate properly. 2. The motor auto tuning times out. 3. The encoder for the PMSM fails.	1. Enter the motor parameters correctly. 2. Check the motor wiring and whether phase loss occurs on the contactor at the output side. 3. Check the feedback encoder wiring and ensure that PPR of the encoder is set properly. 4. Check whether the brake keeps released during no-load auto-tuning. 5. Check whether the inspection button is released before the PMSM with-load auto-tuning is finished.	5
Err 20	E20	Rotary encoder fault	1. Check whether the encoder model matches the motor. 2. The encoder wiring is incorrect.	1. Check whether F1-00 is set correctly. 2. Check the encoder wiring. 3. Check whether the encoder is	5

			3. The current keeps large during low speed running.	normal. 4. Check whether the encoder is stuck mechanically during running. 5. Check whether the brake keeps released during running.	
Err 21	E21	Synchronous encoder wiring fault	Error occurs to the wiring of synchronous encoder	Check the encoder wiring	5
Err 22	E22	Levelling signal abnormal	Levelling or door zone signal is stuck or breaks.	1. Check whether the levelling and door zone sensors work properly. 2. Check the installation verticality and depth of the levelling flags. 3. Check the input points of the MCB.	1
Err 23	E23	Short circuit fault to ground	The output is short circuited to ground.	Check the power cable or contact Monarch.	5
Err 25	E25	EEPROM failure	EEPROM of the MCB fails.	Contact the agent or Monarch.	5
Err 29	E29	PMSM U,V,W jump out contactor feedback abnormity	The shorting PMSM stator's output is inconsistent with the feedback.	1. Check whether the feedback contact (NO, NC) of the contactor is consistent with the parameter setting of the MCB. 2. Check whether the state of the MCB output indicator is consistent with the contactor action. 3. Check whether corresponding feedback contact acts after the contactor acts, and whether the corresponding feedback input point of the MCB acts correctly. 4. Check whether the shorting PMSM stator contactor is consistent with the MCB output feature. 5. Check the coil circuit of the shorting PMSM stator contactor.	5
Err 30	E30	Elevator position abnormity	1. The controller does not receive levelling signal within the time set in F9-02. 2. The up and down limit switches are met during the re-levelling process. 3. The levelling signal is not received when re-levelling times out.	1. Check whether the levelling sensor mal-acts in non-levelling zone. 2. Check whether the levelling signal cables are connected reliably and whether the signal copper wires may touch the ground or be short circuited with other signal cables. 3. Check whether the encoder is used properly.	4

Err31	E31	DPRAM abnormal	DPRAM reading and writing are abnormal.	Contact the agent or Monarch to replace the control board.	3
Err32	E32	CPU Abnormal	The CPU is abnormal.	1. Check jumpers J9 and J10 and check whether only the right two pins of J9 are shorted. 2. Contact the agent or Monarch to replace the control board	5
Err 33	E33	Elevator speed abnormity	1. The feedback speed is 1.15 times of the maximum running speed. 2. The speed is higher than 0.65 m/s in the inspection state. 3. The speed exceeds half of the rated speed during emergency running.	1. Check whether the encoder is used properly. 2. Check the setting of motor nameplate parameters. 3. Perform motor auto-tuning again. 4. Check inspection switch and signal cables.	5
Err 34	E34	Logic fault	Redundancy judgment and logic of the control board are abnormal.	Contact with agent or factory to replace control panel.	5
Err 35	E35	Shaft self-tuning data abnormity	1. The elevator is not at the bottom floor when shaft auto tuning is started. 2. No levelling signal is received within 45s while continuous running. 3. The distance between two floors is too small. 4. The maximum number of landing floors is inconsistent with the setting value. 5. The floor pulses change inversely. 6. The system is not in the inspection state when shaft auto tuning is performed. 7. Shaft auto-tuning is not performed upon power-on.	1. Upon power-on, E35 is reported when the flag height is detected to be 0 or the RUN contactor is detected to keep open. • Check whether the down slow-down switch is valid. • Check whether the current floor (F4-01) is set to 1, and whether F0-00 is set to 1. • Check whether the inspection switch is set to the inspection state. 2. E35 is reported when the first levelling position is reached. • Check whether F4-03 increases when the elevator runs up. If not, adjust F2-10. • Check whether the NC/NO setting of the levelling sensor is correct. • If the levelling sensor signal blinks, check whether the flag is installed properly. 3. E35 is reported during running. • Check whether the running times out: no levelling signal is received when the running time exceeds F9-02. • Check whether the super short floor function is enabled when the floor distance is less than 50 cm. • Check whether the setting of F6-00 (Top floor of the elevator) is smaller than the actual condition. 4. E35 is reported when the elevator arrives at the top floor. • Check whether the obtained	4

				top floor of the elevator and bottom floor of the elevator are consistent with the setting of F6-00 and F6-01 when the up slow-down signal is valid and the elevator reaches the door zone. • Check whether the obtained floor interval is less than 50 cm.	
Err 36	E36	Contact feedback abnormity	1. The RUN contactor feedback is valid when the elevator starts up. 2. The feedback signal is not received 2s after the output of the RUN contactor. 3. The running current of the elevator is less than 0.1 A after the output of both the RUN contactor and the brake contactor.	1. Check whether the feedback contact of the contactor acts properly. 2. Check whether the feedback contact (NO, NC) of the contactor is consistent with the MCB parameter setting. 3. Check whether the output cables UVW of the controller are connected properly. 4. Check whether the power supply of the controller's control circuit is normal.	5
Err 37	E37	Brake feedback abnormity	The output of the brake contactor is inconsistent with the feedback.	1. Check whether the brake coil and feedback contact are correct. 2. Confirm the signal feature (NO, NC) of the feedback contact. 3. Check whether the power supply of the brake coil's control circuit is normal.	5
Err 38	E38	Encoder Signal abnormity	1. There is no input of the encoder pulses when the elevator runs automatically. 2. The direction of the input encoder signal is incorrect when the elevator runs automatically. 3. F0-00 is set to 0 (SFVC) in distance control.	1. Check whether the encoder is used correctly. 2. Exchange phases A and B of the encoder. 3. Check the setting of F0-00, and change it to "CLVC". 4. Check whether the system and signal cables are grounded reliably. 5. Check whether cabling between the encoder and the PG card is normal.	5
Err 40	E40	Lift running time-out	The setting of the elevator running time is exceeded.	The elevator is used for a long time and needs maintenance.	4
Err 41	E41	Safety circuit off	The safety circuit signal breaks off.	1. Check the status of the safety circuit switches. 2. Check whether the external power supply is normal. 3. Check whether the safety circuit contactor acts properly. 4. Confirm the signal feature (NO, NC) of the feedback contact of the safety circuit contactor.	5
Err 42	E42	Door lock safety circuit cut in running	The door lock circuit feedback breaks off during the elevator running.	1. Check whether the landing door lock and the car door lock are in good contact.	5

				2. Check whether the door lock contactor acts properly. 3. Confirm the signal feature (NO, NC) of the feedback contact on the door lock contactor. 4. Check whether the external power supply is normal.	
Err 43	E43	Up limit signal off in running	The up limit signal breaks off when the elevator is running up.	1. Confirm the feature (NO, NC) of the up limit signal and down limit signal. 2. Check whether the up limit and down limit switches act properly. 3. The installation positions of limit switches are too close to the levelling flag. The limit switches will be touched at normal levelling.	4
Err 44	E44	Down limit signal off in running	The down limit signal breaks off when the elevator is running down.		4
Err 45	E45	Slow-down switch position abnormal	1. The installation positions of the slowdown switches do not satisfy the slow-down requirements. 2. The recorded slow-down switch position is greatly different from the actual position.	1. Ensure that the installation positions satisfy the requirements. 2. Check whether the slowdown switches act properly. 3. Set the NC/NO state of slowdown signal correctly.	4
Err 46	E46	Re-levelling abnormity	1. The re-levelling running speed exceeds 0.1 m/s. 2. The elevator is out of the door zone when re-levelling. 3. The feedback of the shorting door lock circuit contactor is abnormal.	1. Check the original and secondary wiring of the shorting door lock circuit relay. 2. Check whether the shorting door lock circuit contactor feedback function is enabled and whether the feedback signal is normal. 3. Check whether the encoder is used properly.	1
Err 47	E47	Shorting door lock circuit contactor failure	1. The feedback of the shorting door lock circuit fails. 2. The elevator runs at over speed or the running times out when the shorting door lock circuit contactor has output.	1. Confirm the signal feature (NO, NC) of the feedback contact on the shorting door lock circuit contactor. 2. Check whether the shorting door lock circuit contactor acts properly.	5
Err 48	E48	Door open fault	The consecutive times that the door does not open/close to the limit reaches the setting in FB-09.	1. Check whether the door machine system works properly. 2. Check whether the CTB is normal	5
Err 49	E49	Door close fault			5
Err 53	E53	Lock jump fault	1. The door lock and door open limit signals are valid simultaneously. 2. The landing door lock and the hall door lock are in different states.	1. Check whether the door lock circuit is normal. 2. Check whether the feedback contact of the door lock contactor acts properly. 3. Check whether the system receives the door open limit signal when the door lock signal is valid.	4

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Elevator Integrated Controller

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