

# Goodrive20-LA Series

General Purpose Vector Control VFD



CE



# GD20-LA Series

## Product Overview

GD20-LA series is a micro type general vector inverter, specifically designed as a high performance 3-phase 220Vac VFD used in the small power market, using the leading international vector control algorithm with excellent product features. GD20-LA series is compatible with wall and rail installation by utilizing a smaller, compact, efficient design. GD20-LA series is widely used in textile machinery, food machinery, printing/packaging, fans and pumps, ceramic equipment, wood working equipment, conveying equipment, etc.



### Standard Features

- ◆ Optional STO function by purchasing GD20-EU control boards
- ◆ V/F (SVPWM) and Sensorless Vector (SVC)
- ◆ Asynchronous AC induction motors
- ◆ Advanced PID functions
- ◆ Mini design for smaller installation space and parallel/side-by-side installations
- ◆ High performance LED keypad with digital potentiometer
- ◆ LED external keypad kit optional
- ◆ Overload capability 200% 1s, 180% 10s, 150% 60s
- ◆ Multiple installation modes, wall and rail mount
- ◆ Embedded braking transistors
- ◆ Removable cooling fan for easy maintenance
- ◆ Multiple braking modes
- ◆ Continuous running in instant power loss
- ◆ Modbus RTU/RS485 built in (standard)
- ◆ Simple PLC supporting multiple run modes
- ◆ Multiple V/F curve settings
- ◆ Motor auto-tuning modes
- ◆ ≥11kW standard built-in DC reactors

### Comparison Table

MODEL		GD20-LA	GD20
<b>Voltage &amp; Capacity</b>		3Ø 220V: 0.4~22kW	1Ø 220V: 0.4~2.2kW 3Ø 220V: 0.75~7.5kW 3Ø 380V: 0.75~110kW
<b>Control Method</b>	V/F Control	Yes	
	Sensorless Vector Control	Yes	
<b>Input Terminal</b>	Multifunction Terminal	4 Inputs (S1~S4)	
	High Speed Pulse Input	1 Input (HDI)	
	Analog Input (Current) Analog Input (Voltage)	2 Inputs (0~10V, -10~+10V or 0~20mA)	
<b>Output Terminal</b>	Relay Output	2 Outputs	
	Open Collector Output	1 Y terminal ON-OFF Output	
	Analog Output	2 Outputs (0~10V or 0~20mA)	
<b>Enclosure Class</b>		IP20	
<b>Keypad</b>		LED 7-segment	
<b>Remote Cable</b>		2m, 3m, 5m, 10m (30m max)	
<b>Communications</b>		Modbus RTU/RS485 built-in (standard)	
<b>Cooling System</b>		Forced air cooling by fan	
<b>Free Software</b>		INVT Workshop (available at <a href="http://www.invt.com">www.invt.com</a> )	
<b>Ambient Temperature</b>		-10~50°C, if above 40°C, de-rate 1% for every additional 1°C	
<b>Ambient Humidity</b>		Relative humidity 95% RH or below (without any dew formation)	
<b>Storage Temperature</b>		-20 C ~65 C	
<b>Surrounding Environment</b>		Non-corrosive gas, flammable gas, oil residue and dust in a indoor environment	
<b>Altitude</b>		1,000m above sea level (From 1,000m or more, voltage/output current derating by 1% for every 100m elevation; up to 4,000m)	

# Technical Specifications

FUNCTIONS	SPECIFICATIONS	
<b>Power Input</b>	Input voltage (V)	AC 3PH 200~ 240V Rated Voltage: 220V AC 3PH 380~480V Rated Voltage: 460V
	Input frequency (Hz)	50Hz/60Hz, Allowed range: 47~63Hz
<b>Power Output</b>	Output voltage (V)	0~input voltage error <5%
	Output frequency (Hz)	0~400Hz standard, higher frequencies upon request
<b>Technical Control Features</b>	Control mode	V/F (SVPWM) and SVC
	Motor type	Asynchronous AC induction motors
	Speed ratio	1:100
	Speed control accuracy	±0.2% (SVC)
	Speed fluctuation	±0.3% (SVC)
	Torque response	(SVC)
	Torque control accuracy	10% (SVC)
	Starting torque	Asynchronous motor: 0.50Hz/150% (SVC)
<b>Running Control Features</b>	Overload capability	150% of rated current: 1 minute 180% of rated current: 10 seconds 200% of rated current: 1 second
	Frequency Setting	Digital setting, analog setting, pulse frequency setting, multi-step speed running setting, simple PLC setting, PID setting, MODBUS communication setting,
	Auto-adjustment of the voltage	Keep constant voltage automatically with grid voltage transients
	Fault protection	Provides more than 30 fault protection functions: overcurrent, overvoltage, undervoltage, overheating, phase loss and overload, etc.
<b>Peripheral Interface</b>	Restart after rotating speed tracking	Smooth starting of the rotating motor
	Analog input	1 (AI2) 0~10V/0~20mA and 1 (AI3) -10~10V
	Analog output	2 (AO1, AO2) 0~10V/0~20mA
	Digital input	4 common inputs, the maximum frequency: 1kHz 1 high speed input, the maximum frequency: 50kHz
	Digital output	1 Y terminal open collector output
<b>Others</b>	Relay output	2 programmable relay outputs: RO1A NO, RO1B NC, RO1C common terminal RO2A NO, RO2B NC, RO2C common terminal Contactor capacity: 3A/250VAC
	Mountable method	Wall and rail mountable
	Temperature of the running environment	-10~50°C, if above 40°C, de-rate 1% for every additional 1°C
	Protective degree	IP20 standard
	Free Software	INVT Workshop (available at <a href="http://www.invt.com">www.invt.com</a> )
	Cooling	Air-cooling
	Braking unit	Built-in braking transistors
	DC Reactor	≥ 11kW standard built-in DC reactors
	Braking resistor	Optional
	EMC filter	≥ 4kW standard built-in C3

# Model Designation

## GD20 - 1R5G - 2 - LA

①      ②      ③      ④

FUNCTION	NO.	DESCRIPTION	DETAILED CONTENT
Abbreviation	1	Product Abbreviation	<b>GD20</b> : Goodrive20 series
Power Range	2	Power Range	<b>1R5G</b> : 1.5kW, G: Constant torque
Voltage Degree	3	Voltage Degree	<b>2</b> : AC 3PH 200~240V Rated Voltage: 220V
Area	4	Sales Area	<b>LA</b> : For Latin America

# Products Models & Rated Power/Current

FRAME	MODEL	RATED OUTPUT POWER(kW)	RATED INPUT CURRENT(A)	RATED OUTPUT CURRENT(A)	PURCHASING CODE
1	GD20-0R4G-2-LA	0.4	3.7	2.5	12001-01943
	GD20-0R7G-2-LA	0.75	5	4.2	12001-01939
	GD20-1R5G-2-LA	1.5	7.7	7.5	12001-01937
	GD20-2R2G-2-LA	2.2	11	10	12001-01935
2	GD20-004G-2-LA	4	17	16	12001-01936
3	GD20-5R5G-2-LA	5.5	21	20	12001-01942
4	GD20-7R5G-2-LA	7.5	31	30	12001-01938
5	GD20-011G-2-LA	11	43	42	12001-01940
6	GD20-015G-2-LA	15	56	55	12001-01934
	GD20-018G-2-LA	18.5	71	70	12001-01933
	GD20-022G-2-LA	22	81	80	12001-01941



# Dimensional Drawings IP20

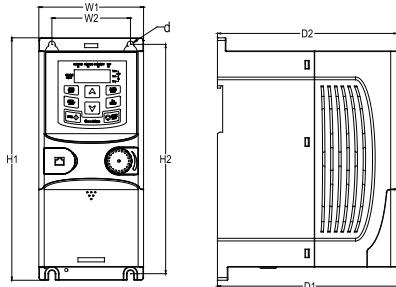


Figure 8-1 Wall mounting for 3PH 220V ( $\leq 2.2\text{kW}$ ) VFDs

VFD MODEL	W1	W2	H1	H2	D1	D2	WEIGHT (KG)	INSTALLATION HOLE DIAMETER (D)
<b>GD20-0R4G-2-LA</b>	80.0	60.0	185.0	175.0	140.5	137.3	1	Ø 5
<b>GD20-0R7G-2-LA</b>	80.0	60.0	185.0	175.0	140.5	137.3	1	Ø 5
<b>GD20-1R5G-2-LA</b>	80.0	60.0	185.0	175.0	140.5	137.3	1	Ø 5
<b>GD20-2R2G-2-LA</b>	80.0	60.0	185.0	175.0	140.5	137.3	1	Ø 5

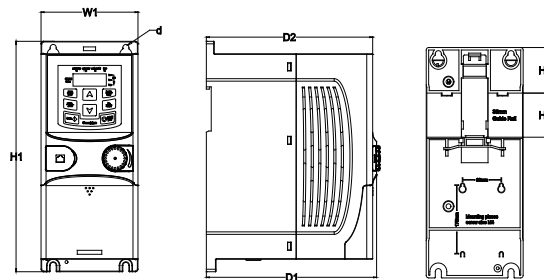


Figure 8-2 Rail mounting for 3PH 220V ( $\leq 2.2\text{kW}$ ) VFDs

VFD MODEL	W1	H1	H3	H4	D1	D2	WEIGHT (KG)	INSTALLATION HOLE DIAMETER (D)
<b>GD20-0R4G-2-LA</b>	80.0	185.0	35.4	36.6	140.5	137.3	1	Ø 5
<b>GD20-0R7G-2-LA</b>	80.0	185.0	35.4	36.6	140.5	137.3	1	Ø 5
<b>GD20-1R5G-2-LA</b>	80.0	185.0	35.4	36.6	140.5	137.3	1	Ø 5
<b>GD20-2R2G-2-LA</b>	80.0	185.0	35.4	36.6	140.5	137.3	1	Ø 5

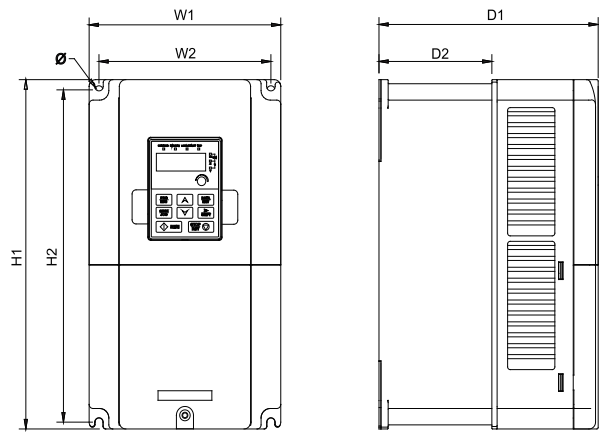


Figure 8-3 Wall mounting for 3PH 220V 4-22kW VFDs

VFD MODEL	W1	W2	H1	H2	D1	D2	WEIGHT (KG)	INSTALLATION HOLE DIAMETER (D)
GD20-004G-2-LA	126	115	186	175	171.5	84.8	3.5	Ø 5
GD20-5R5G-2-LA	146	131	256	243.5	167	86	4	Ø 6
GD20-7R5G-2-LA	170	151	320	303.5	196.3	115	6.3	Ø 6
GD20-011G-2-LA	200	185	340.6	328.6	184.6	105.8	9.8	Ø 6
GD20-015G-2-LA	250	230	400	380	202	120.3	16	Ø 6
GD20-018G-2-LA	250	230	400	380	202	120.3	16.1	Ø 6
GD20-022G-2-LA	250	230	400	380	202	120.3	16.1	Ø 6

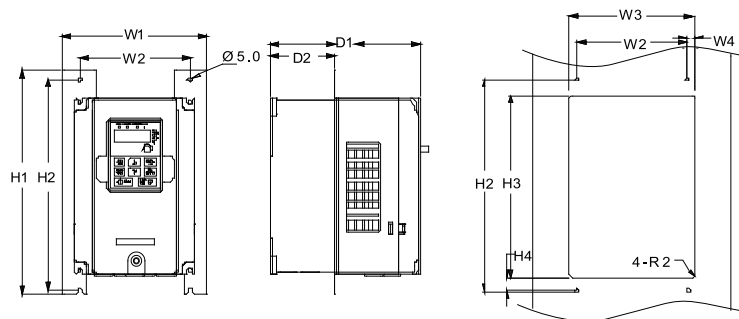
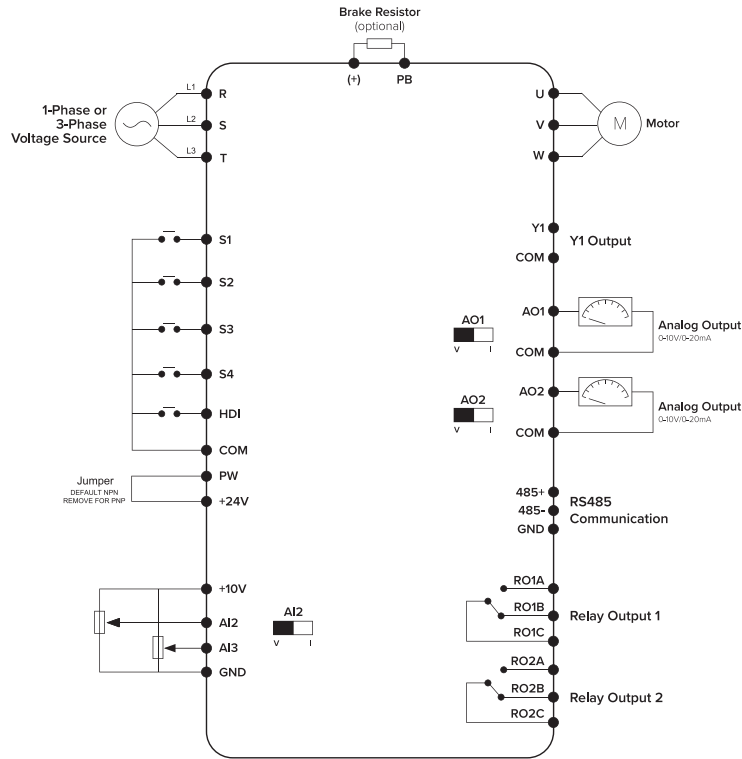


Figure 8-4 Flange mounting for 3PH 220V 4-22kW VFDs

VFD MODEL	W1	W2	W3	W4	H1	H2	H3	H4	D1	D2	WEIGHT (KG)	INSTALLATION HOLE DIAMETER (D)
GD20-004G-2-LA	150.2	115	130	7.5	234	220	190	13.5	171.5	82.8	3.5	Ø 5
GD20-5R5G-2-LA	170.2	131	150	9.5	292	276	260	6	167	84	4	Ø 6
GD20-7R5G-2-LA	191.2	151	174	11.5	370	351	324	12	196.3	113	6.3	Ø 6
GD20-011G-2-LA	266	250	224	13	371	250	350.6	20.3	184.6	103.8	9.8	Ø 6
GD20-015G-2-LA	316	300	274	13	430	300	410	55	202	118.3	16	Ø 6
GD20-018G-2-LA	316	300	274	13	430	300	410	55	202	118.3	16.1	Ø 6
GD20-022G-2-LA	316	300	274	13	430	300	410	55	202	118.3	16.1	Ø 6

# Control Circuit Wiring Diagram



## Terminals

### POWER TERMINALS DESCRIPTION

POWER TERMINALS	DESCRIPTION
<b>R, S, T (L1, L2, L3)</b>	Three phase AC input terminals which are generally connected with the power supply.
<b>PB, (+)</b>	External dynamic braking resistor terminal.
<b>U, V, W</b>	Three phase AC output terminals which are generally connected to the motor.
<b>PE</b>	Protective grounding terminal.

INPUT/OUTPUT	TYPE	QUANTITY	DESCRIPTION
<b>Input</b>	Digital input	4 (S1-S4)	1kHz, NPN and PNP
	High speed pulse input	1 (HDI)	50kHz, NPN and PNP
	Analog input	2 (AI2-AI3)	0~10V, 0~20mA, -10V~+10V
<b>Output</b>	ON-OFF output	1 (Y1)	Maximum output frequency: 1kHz
	Analog output	2 (AO1-AO2)	0~10V, 0~20mA
	Relay output	2 (RO1-RO2)	3A/250VAC, NO+NC

## ACCESSORIES

### Keypads And Extension Cables

MODEL	SERIES	DESCRIPTION
11022-00129	GD20	Accessory GD20 Led Copy Keypad
11022-00121	GD20	Accessory GD20 Led Keypad
61001-00090	GD20	Accessory GD20 Recessed Keypad Mounting Bracket
37005-00021	GD20	Accessory Keypad Extension Cable 2m Unshielded
37005-00022	GD20	Accessory Keypad Extension Cable 3m Shielded
37005-00060	GD20	Accessory Keypad Extension Cable 5m Shielded
37005-00072	GD20	Accessory Keypad Extension Cable 10m Shielded
37005-00061	GD20	Accessory Keypad Extension Cable 15m Shielded



### Reactors

MODEL	INPUT REACTOR	OUTPUT REACTOR
GD20-0R4G-2-LA	GDL-ACL0005-4CU	GDL-OCL0005-4CU
GD20-0R7G-2-LA	GDL-ACL0005-4CU	GDL-OCL0005-4CU
GD20-1R5G-2-LA	GDL-ACL0014-4CU	GDL-OCL0010-4CU
GD20-2R2G-2-LA	GDL-ACL0014-4CU	GDL-OCL0010-4CU
GD20-004G-2-LA	GDL-ACL0020-4CU	GDL-OCL0020-4CU
GD20-5R5G-2-LA	GDL-ACL0020-4CU	GDL-OCL0020-4CU
GD20-7R5G-2-LA	GDL-ACL0035-4AL	GDL-OCL0035-4AL
GD20-011G-2-LA	GDL-ACL0051-4AL	GDL-OCL0050-4AL
GD20-015G-2-LA	GDL-ACL0070-4AL	GDL-OCL0060-4AL
GD20-018G-2-LA	GDL-ACL0070-4AL	GDL-OCL0075-4AL
GD20-022G-2-LA	GDL-ACL0090-4AL	GDL-OCL0092-4AL



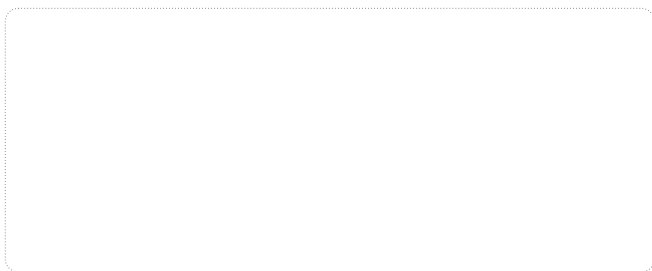
### Resistors

MODEL	MODEL OF BRAKING UNIT	BRAKE RESISTOR AT 100% OF BRAKING TORQUE ( $\Omega$ )	CONSUMED POWER OF BRAKING RESISTOR			MIN. ALLOWABLE BRAKING RESISTANCE ( $\Omega$ )
			10% BRAKING	50% BRAKING	80% BRAKING	
GD20-0R4G-2-LA	Embedded braking unit	361	0.06	0.3	0.48	131
GD20-0R7G-2-LA		192	0.11	0.56	0.9	93
GD20-1R5G-2-LA		96	0.23	1.1	1.8	44
GD20-2R2G-2-LA		65	0.33	1.7	2.64	44
GD20-004G-2-LA		36	0.6	3	4.8	33
GD20-5R5G-2-LA		26	0.75	4.13	6.6	25
GD20-7R5G-2-LA		19	1.13	5.63	9	13
GD20-011G-2-LA		13	1.6	8	12.8	8.8
GD20-015G-2-LA		9.6	2	11	18	6.4
GD20-018G-2-LA		8	3	14	22	6.4
GD20-022G-2-LA		6.5	3	17	26	6.4





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