General AC Drive **G100**

3-phase 200~240V 0.4~7.5kW (0.5~10HP)
3-phase 380~480V 0.4~7.5kW (0.5~10HP)

LSIS

Contents

General Drive G100

new

The G100 is the solution for general drives applications because of its high performance sensorless operation, premium quality and high reliability.

Great Reliability

- Meets UL 61800-5-1
- Military (MIL 217Plus) design based methodology
- Enhanced materials and manufacturing processes

Great Performance

- Enhanced motor control-sensorless & V/F performance
- User-friendly-easy tuning sensorless control
- Suitable for most applications

User Friendly

- Easy to install, use and maintain
- Various options

Great Reliability

G100 is designed to meet global standards through upgraded design, materials and manufacturing improving its endurance for harsh environments.

UL 61800-5-1*1) Design

Satisfied the new UL certification

*1) After February 2020 all of system, product have to satisfy new UL certification

Robust Design

Construction of the air flow design minimizes exposure of critical components (IGBT, PCB, etc.) from outside contaminants.

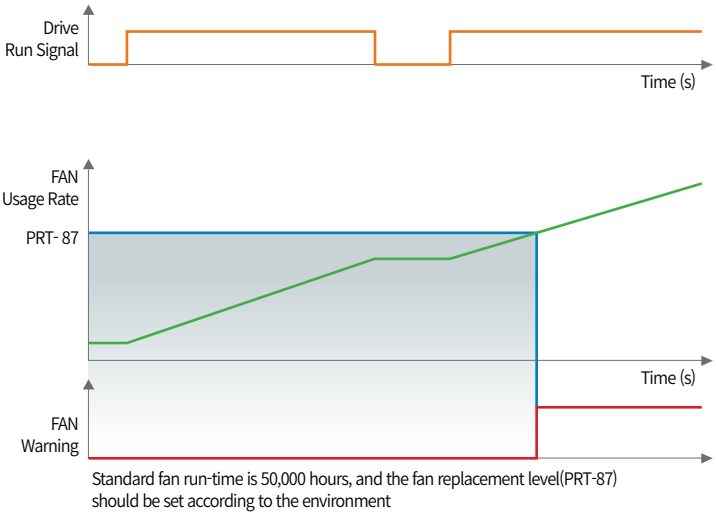
Built-in EMC Filter

Embedded C3 EMC filter to meet EN618000-3 standards and provide noise reduction



Fan Lifecycle Diagnosis

Display fan replacement warning message with digital output or keypad



Standard fan run-time is 50,000 hours, and the fan replacement level(PRT-87) should be set according to the environment

MIL217Plus based Design

- Reliability design basis tool (PSA, Fr-FMEA, FTA, RBD, PBS)
- Improved circuit robustness through strict quality margins

Category	G100
Estimated Life Cycle	240,455 hrs(27 yrs) (Accelerated life test result : 295,951 hrs)
Reliablity Test Method	MTTF
Standard	MIL-HDBK-217F RIAC HDBK 217Plus
Ambient Temperature	30°C (86°F)

Material Design

- Enhanced thermal resistance and intensity through upgraded materials
- Increased thickness to prevent damage

Great Performance

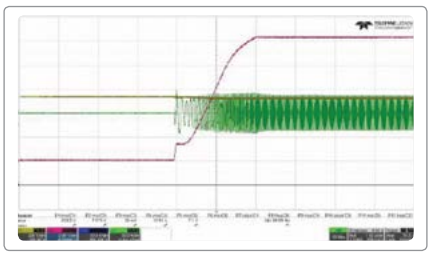
The G100 has an advanced sensorless vector mode along with a highly adaptable V/F mode making it one of the most versatile drives on the market.

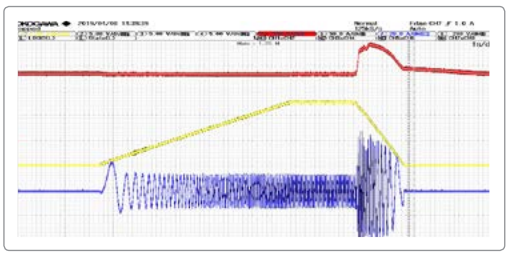
Application Adaptability

Dual ratings enable use in most applications

V/F Accelerate and Decelerate Function

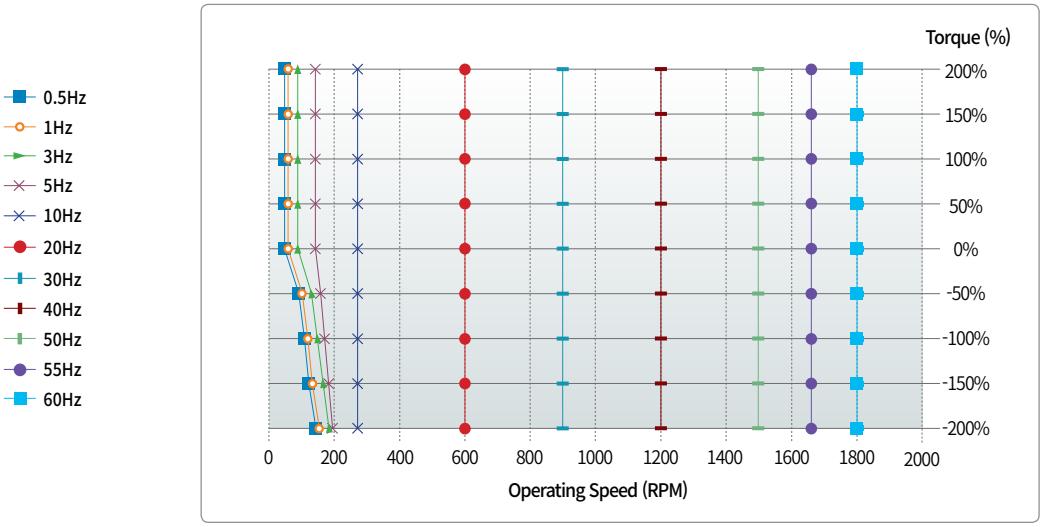
Applied ATB & Flux braking function





Sensorless Performance

- Low speed/High torque
- Tight speed regulation +/- 1%
- 0.5Hz 200% peak torque

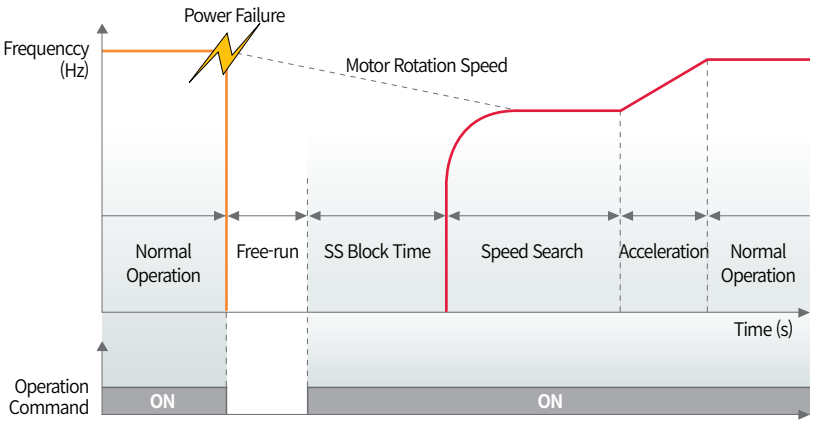


KEB (Kinetic Energy Buffering)

- KEB for a stable system stop in case of power loss or failure.
- Select KEB operation function for different speeds and purposes

Flying Start

Select optimal flying start operation for different applications



User-friendly Design

G100 is convenient to install, control, perform maintenance and many other functions.

❶ Built-in Potentiometer

Easy operation with built-in potentiometer

❷ Remote Keypad

Copy parameter (Read/Write) using remote keypads

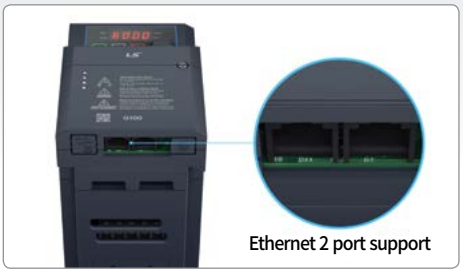
❷ Smart Copier

Copy parameter (Read/Write) and download firmware without supplying power to drive

❷ Fieldbus Options

Provides various communication options with simple mounting structure

- Dual Port EtherNet/IP
- Profibus-DP
- CANopen



❷ PC Tools (DriveView 9)

New version of PC tool

❷❼ Easy Modbus Communication Connection

2 type of connection of Modbus communication

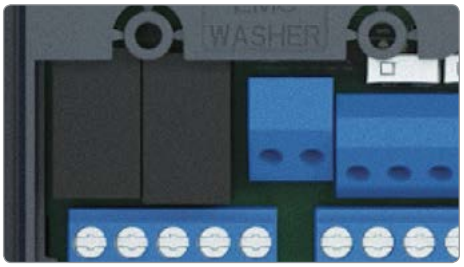
- RJ45 Port
- I/O (S+, S-)

❸ QR Code

View manuals and various information from the QR code printed on the front cover.

❹ Built-in 2 Relay

Cost efficient and easy to compose system with two embedded relays.



❺ DIN rail Mount (Below 4kW)

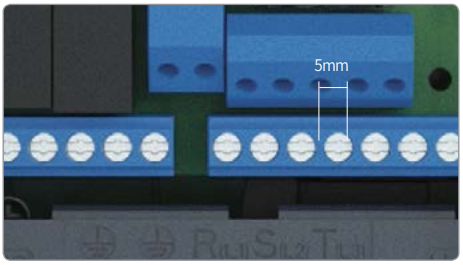
Install using DIN rails (Side-by-side)

❻ Fan Replacement

Simple cooling fan replacement procedure

❼ I/O Terminal (5mm)

Easy wiring with 5mm I/O pitch



❽ Operation Group

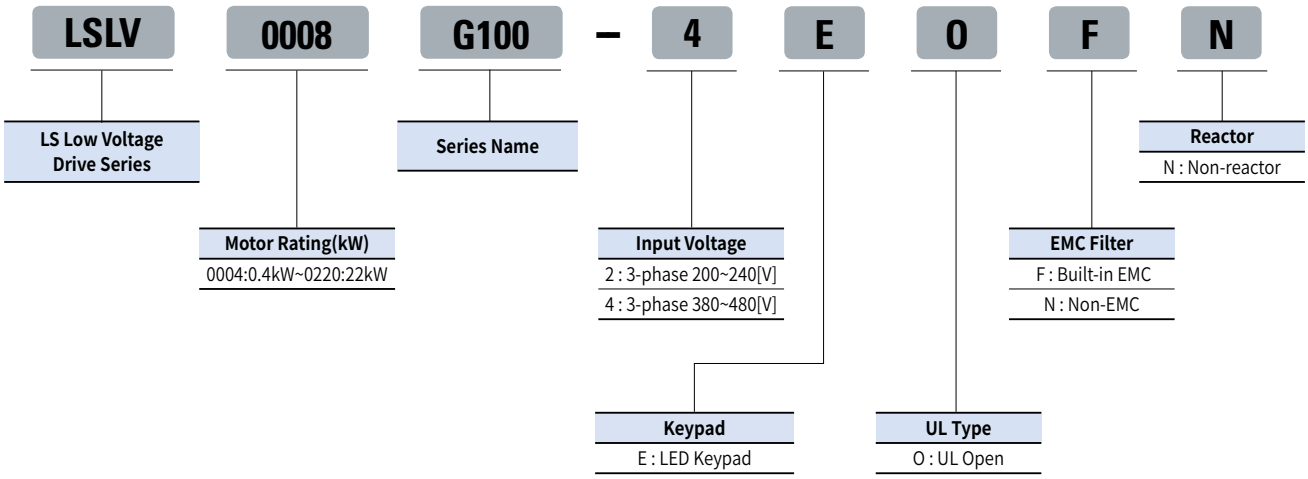
- Access commonly used parameters in the operation group
- Identical Parameter group structure for all 100 series

❽ 100 Series Parameter Group Configuration Applied

Model & Type

Motor rating	3-Phase 200V	3-Phase 400V
0.4 kW	LSLV0004G100-2EONN	LSLV0004G100-4EO(F)N
0.75 kW	LSLV0008G100-2EONN	LSLV0008G100-4EO(F)N
1.5 kW	LSLV0015G100-2EONN	LSLV0015G100-4EO(F)N
2.2 kW	LSLV0022G100-2EONN	LSLV0022G100-4EO(F)N
4.0 kW	LSLV0040G100-2EONN	LSLV0040G100-4EO(F)N
5.5 kW	LSLV0055G100-2EONN	LSLV0055G100-4EO(F)N
7.5 kW	LSLV0075G100-2EONN	LSLV0075G100-4EO(F)N
11 kW		
15 kW		
18.5 kW		
22 kW		

※ (F): Built-in EMC or Non-EMC type
※ 200V/400V 11~22kW TBA



Specifications

3-Phase 200V Class (0.4~7.5kW)

□□□□ G100-2			0004	0008	0015	0022	0040	0055	0075
Motor Rating	Heavy Duty (HD)	(HP)	0.5	1.0	2.0	3.0	5.4	7.5	10
		(kW)	0.4	0.75	1.5	2.2	4.0	5.5	7.5
	Normal Duty (ND)	(HP)	1.0	2.0	3.0	5.4	7.5	10	15
		(kW)	0.75	1.5	2.2	4.0	5.5	7.5	11
Output Rating	Capacity [kVA]	Heavy Duty (HD)	1.0	1.9	3.0	4.2	6.5	9.1	12.2
		Normal Duty (ND)	1.2	2.3	3.8	4.6	6.9	11.4	15.2
	Rated Current (3-Phase Input) [A]	Heavy Duty (HD)	2.5	5.0	8.0	11.0	17.0	24.0	32.0
		Normal Duty (ND)	3.1	6.0	9.6	12.0	18.0	30.0	40.0
	Rated Current (1-Phase Input) [A]	Heavy Duty (HD)	1.5	2.8	4.6	6.1	9.3	12.8	17.4
		Normal Duty (ND)	2.0	3.6	5.9	6.7	9.8	16.3	22.0
	Frequency [Hz]		0~400Hz (IM sensorless: 0~120Hz)						
	Voltage [V]		3-Phase 200~240V						
Input Rating	Voltage [V]		3-Phase 200~240VAC (-15%~+10%)						
	Frequency [Hz]		50~60Hz (±5%)						
	Rated Current [A]	Heavy Duty (HD)	2.2	4.9	8.4	11.8	18.5	25.8	34.9
		Normal Duty (ND)	3.0	6.3	10.8	13.1	19.4	32.7	44.2
Weight [kg]			1.04	1.06	1.36	1.4	1.89	3.08	3.21

3-Phase 400V Class (0.4~7.5kW)

□□□□ G100-4			0004	0008	0015	0022	0040	0055	0075
Motor Rating	Heavy Duty (HD)	(HP)	0.5	1.0	2.0	3.0	5.4	7.5	10
		(kW)	0.4	0.75	1.5	2.2	4.0	5.5	7.5
	Normal Duty (ND)	(HP)	1.0	2.0	3.0	5.4	7.5	10	15
		(kW)	0.75	1.5	2.2	4.0	5.5	7.5	11
Output Rating	Capacity [kVA]	Heavy Duty (HD)	1.0	1.9	3.0	4.2	6.5	9.1	12.2
		Normal Duty (ND)	1.5	2.4	3.9	5.3	7.6	12.2	17.5
	Rated Current (3-Phase Input) [A]	Heavy Duty (HD)	1.3	2.5	4.0	5.5	9.0	12.0	16.0
		Normal Duty (ND)	2.0	3.1	5.1	6.9	10.0	16.0	23.0
	Rated Current (1-Phase Input) [A]	Heavy Duty (HD)	0.7	1.4	2.1	2.8	4.9	6.4	8.7
		Normal Duty (ND)	1.3	1.9	2.8	3.6	5.4	8.7	12.6
	Frequency [Hz]		0~400Hz (IM sensorless: 0~120Hz)						
	Voltage [V]		3-Phase 380~480V						
Input Rating	Voltage [V]		3-Phase 380~480VAC (-15%~+10%)						
	Frequency [Hz]		50~60Hz (±5%)						
	Rated Current [A]	Heavy Duty (HD)	1.1	2.4	4.2	5.9	9.8	12.9	17.5
		Normal Duty (ND)	2.0	3.3	5.5	7.5	10.8	17.5	25.4
Weight [kg]			1.02 (1.04)	1.06 (1.08)	1.4 (1.44)	1.42 (1.46)	1.92 (1.98)	3.08 (3.24)	3.12 (3.28)

- Maximum applicable capacity is indicated in case of using a 4-pole standard motor
- For the rated capacity, 200 and 400V class input capacities are based on 220 and 440V, respectively.
- The rated output current is limited based on the carrier frequency set at Cn.04.
- The output voltage becomes 20-40 % lower during no-load operations to protect the inverter from the impact of the motor closing and opening (0.4-4.0 kW models only).

Specifications

Control

Control Method	V/F, Slip Compensation, Sensorless Vector
Frequency Setting Resolution	Digital command: 0.01Hz Analog command: 0.06Hz(maximum frequency: 60 Hz)
Frequency Accuracy	1% of the maximum output frequency
V/F Pattern	Linear, squared, user V/F
Overload Capacity	HD: 150% 1 minute, ND: 120% 1minute
Torque Boost	Manual/Automatic torque boost

Operation

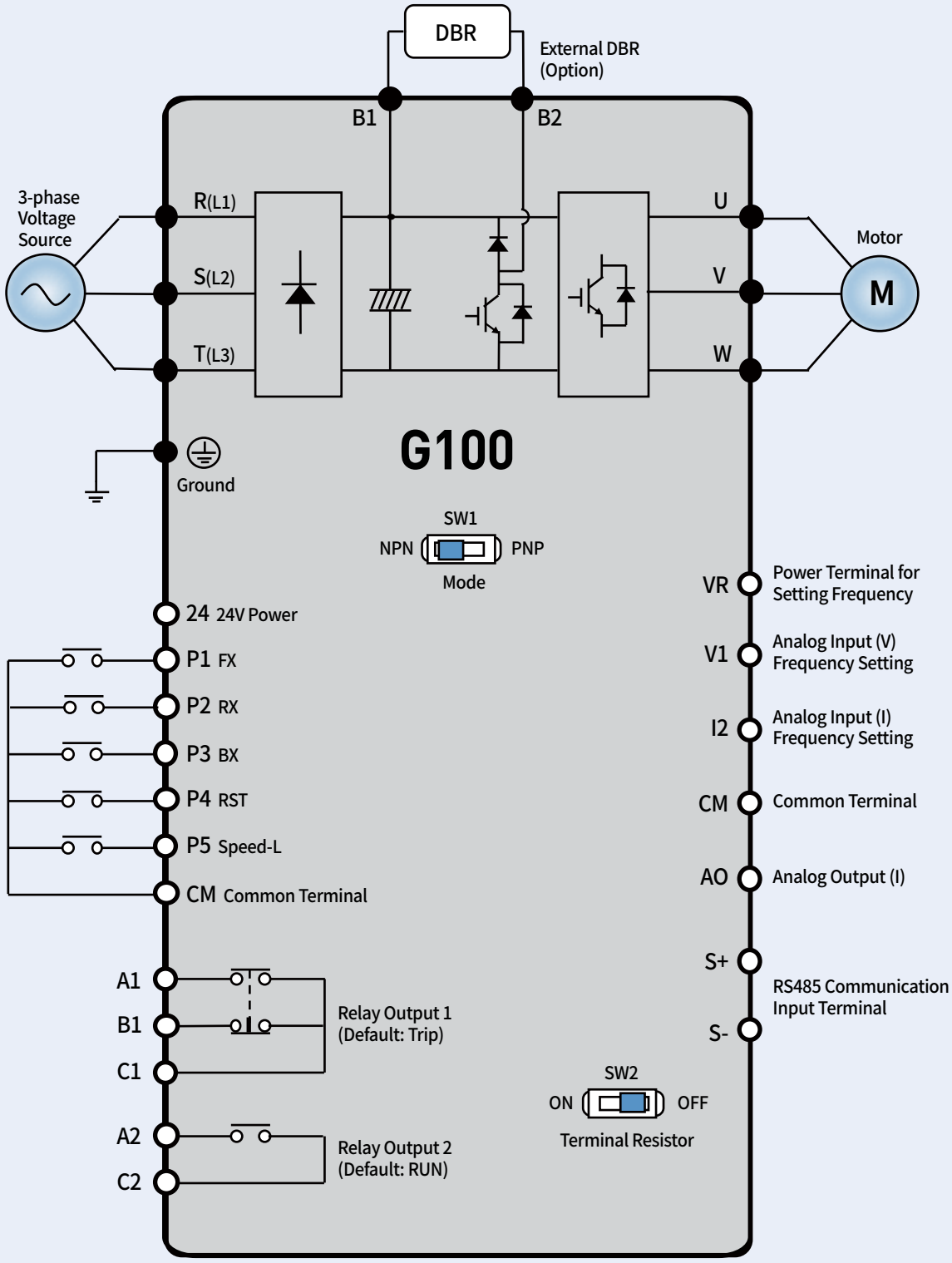
Operation Mode		Select key pad, terminal strip, or communication operation	
Frequency Setting		Analog: -10~10[V], 0~10[V], 4~20[mA] Digital: Keypad	
Operation Function		PID control, 3-wire operation, Frequency limit, Second function, Anti-forward and reverse direction rotation, Commercial transition, Speed search, Power braking, Leakage reduction, Up-down operation, DC braking, Frequency jump, Slip compensation, Automatic restart, Automatic tuning, Energy buffering, Flux braking, Fire mode	
Input	Multi-Function Terminal (5 Points)	NPN (Sink) / PNP (Source) Selectable	
		Function: Forward run, Reverse run, Reset, External trip, Emergency stop, Jog operation, Multi-step frequency-high, middle, low, Multi-step acceleration/ deceleration-high, middle, low, DC braking at stop, 2nd motor select, Frequency up/down, 3-wire operation, Change into normal operation during PID operation, Change into main body operation during option operation, Analog command frequency fixing, Acceleration/deceleration stop etc. Selectable	
	Analog Input	V1: -10~10V, I2 4~20mA	
Output	Multi-function Relay Terminal	Fault output and drive operation status output	(N.O., N.C.) less than AC 250V 1A, less than DC 30V 1A
	Analog Output	0~12Vdc: Frequency, Output current, Output voltage, DC stage voltage etc. selectable	

Protective Function

Trip	Over current trip, external signal trip, ARM short current fault trip, over heat trip, input imaging trip, ground trip, motor over heat trip, I/O board link trip, no motor trip, parameter writing trip, emergency stop trip, command loss trip, external memory error, CPU watchdog trip, motor light load trip	Over voltage trip, temperature sensor trip, inverter over heat, option trip, output image trip, inverter overload trip, fan trip, pre-PID operation failure external brake trip, low voltage trip during operation, low voltage trip, analog input error, motor overload trip, over torque trip, under torque trip
Alarm	Command loss trip warning, overload warning, light load warning, inverter overload warning, fan operation warning, braking resistance braking rate warning, rotor time constant tuning error, inverter pre-overheat warning, over torque warning, under torque warning	
Momentary Power Loss	HD below 15ms (ND below 8ms): Continuous operation (To be within rated input voltage, rated output) HD above 15ms (ND above 8ms): Automatic restart operation enable	

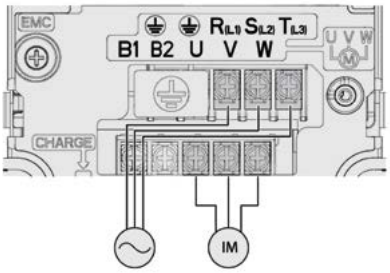
Environment

Cooling Type	Forced fan cooling structure
Protection Degree	IP20/UL Open (Default), UL Enclosed type 1 (Option)
Ambient Temperature	Ambient temperature under the condition of no ice or frost. HD: -10~50°C(14~122°F) / ND: -10~40°C(14~104°F) [However, recommended to use load below 80% when using at 50°C under light load]
Humidity	Relative humidity below 95% RH (no dew formation)
Storage Temperature	-20~65°C(-4~149°F)
Location	No corrosive gas, flammable gas, oil mist and dust etc. indoors (Pollution degree 2 environment)
Altitude, Vibration	Below 1,000m (From 1000 to 4000m, the rated input voltage and rated output current of the drive must be derated by 1% for every 100m.), below 9.8m/sec2 (1G)
Pressure	70~106kPa

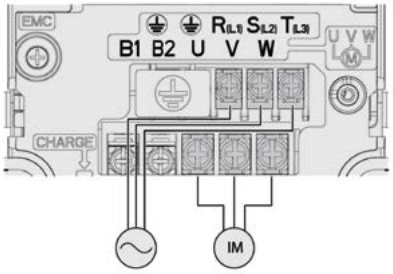

DBR
External DBR
(Option)
B1
B2
3-phase
Voltage
Source
R(L1)
S(L2)
T(L3)
U
V
W
Motor
M
G100
Ground
SW1
NPN
PNP
Mode
24 24V Power
P1 FX
P2 RX
P3 BX
P4 RST
P5 Speed-L
CM Common Terminal
A1
B1
C1
Relay Output 1
(Default: Trip)
A2
C2
Relay Output 2
(Default: RUN)
SW2
ON
OFF
Terminal Resistor
VR
Power Terminal for
Setting Frequency
V1
Analog Input (V)
Frequency Setting
I2
Analog Input (I)
Frequency Setting
CM
Common Terminal
AO
Analog Output (I)
S+
S-
RS485 Communication
Input Terminal

Power Terminal

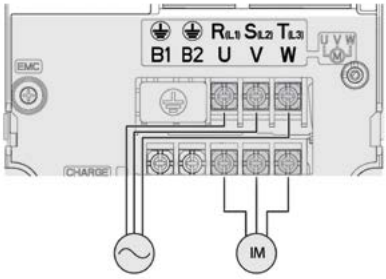
0.4/0.75kW



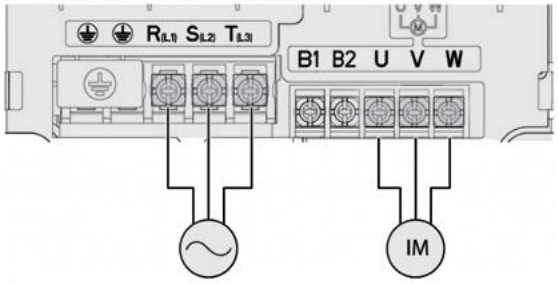
1.5/2.2kW



4kW



5.5/7.5kW

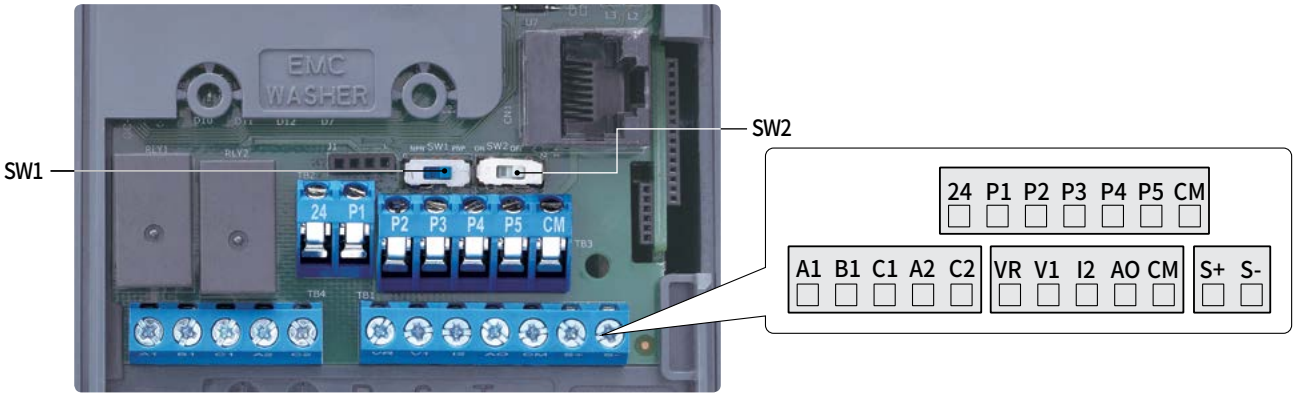


Terminal Labels	Name	Description
⏚	Ground terminal	Connect earth grounding.
R(L1)/S(L2)/T(L3)	AC power input terminal	Mains supply AC power connections.
B1/B2	Brake resistor terminals	Brake resistor wiring connection.
U/V/W	Motor output terminals	3-phase induction motor wiring connections.

Capacity (kW)		Terminal Screw Size	Rated Screw Torque (Kgf·cm/Nm)
3-Phase 200V Class	0.4	R/S/T, U/V/W : M3	R/S/T, U/V/W : 5.1/0.5
	0.75		
	1.5	R/S/T, U/V/W : M4	R/S/T, U/V/W : 12.1/1.2
	2.2		
	4	R/S/T, U/V/W : M4	R/S/T, U/V/W : 18.4/1.8
	5.5	R/S/T, U/V/W : M4	R/S/T : 24.0/2.4 U/V/W : 15.0/1.5
	7.5		
3-Phase 400V Class	0.4	R/S/T, U/V/W : M3.5	R/S/T, U/V/W : 10.3/1.0
	0.75		
	1.5		
	2.2		
	4	R/S/T, U/V/W : M4	R/S/T, U/V/W : 18.4/1.8
	5.5	R/S/T, U/V/W : M4	R/S/T : 14.3/1.4 U/V/W : 18.4/1.8
	7.5		

• Only use the specified torque on the screw heads otherwise damage could occur. Loose screws can cause overheating and damage.
• Use copper wires with 600V, 75°C specification.

Control Terminal

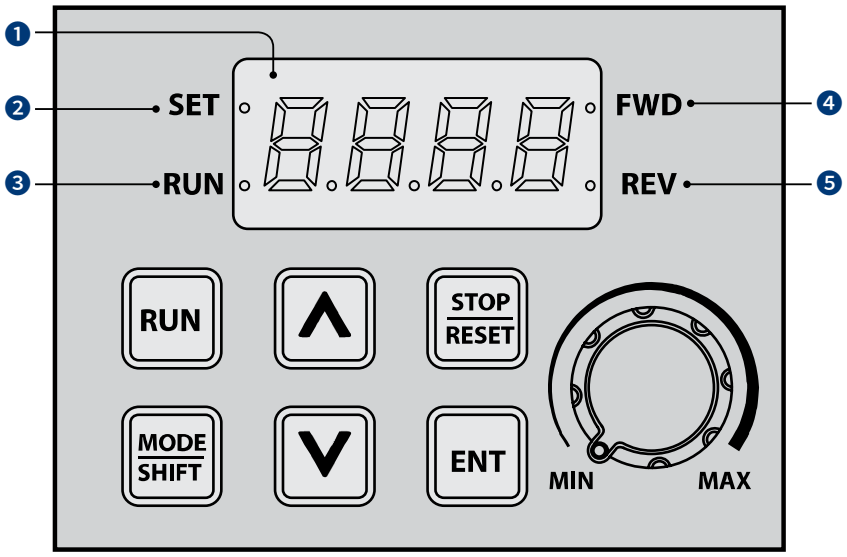


Terminals	Terminal Screw Size	Screw Torque (Kgf·cm/Nm)
P1~P5/CM/VR/V1/I2/AO/24/S+/S-	M2	2.2~2.5/0.22~0.25
A1/B1/C1, A2/C2	M2.6	4.0/0.4

• Only use the specified torque on the screw heads otherwise damage could occur.
Loose screws can cause overheating and damage.

Category	Terminal Labels	Name	Description
Multi-function Terminal Configuration	P1~P5	Multi-function Input 1-5	Configurable for multi-function input terminals. Factory default terminals and setup are as follows. • P1: Fx • P2: Rx • P3: BX • P4: RST • P5: Speed-L
	CM	Sequence common terminal	Common terminal for analog terminal inputs and outputs.
Analog Input	VR	Potentiometer frequency reference input	Used to setup or modify a frequency reference via analog voltage or current input. • Maximum voltage output: 12 V • Maximum current output: 100mA • Potentiometer: 1/5 kΩ
	V1	Voltage input for frequency reference input	Used to setup or modify a frequency reference via analog voltage input terminal. • Unipolar: 0–10V (12V Max.) • Bipolar: -10–10V (±12V Max.)
	I2	Current input for frequency reference input terminal	Used to setup or modify a frequency reference via current input terminal. • Input current: 4-20 mA • Maximum Input current: 24mA • Input resistance: 249 Ω
Analog Output	AO	Voltage output terminal	Used to send inverter output information to external devices: Output frequency, output current, output voltage, or a DC voltage. • Output voltage: 0–10 V • Maximum output voltage/Current: 12 V, 10 mA • Factory default output: Frequency
	24	External 24V power source	Maximum current output: 100mA
	A1/C1/B1	Fault signal output 1	Sends out alarm signals when the inverter's safety features are activated (AC 250V 1A, DC 30V 1A). • Fault condition: A1 and C1 contacts are connected (B1 and C1 open connection) • Normal operation: B1 and C1 contacts are connected (A1 and C1 open connection)
	A2/C2	Fault signal output 2	Sends out alarm signals when the inverter's safety features are activated (AC 250V 1A, DC 30V 1A). • Fault condition: A2 and C2 contacts are open connection • Normal operation: A2 and C2 contacts are connected
RS-485 Communication	S+/S-	RS-485 signal line	Used to send or receive RS-485 signals.

Keypad Functions



No.	Name	Function
1	7-Segment Display	Displays current operational status and parameter information.
2	SET Indicator	LED flashes during parameter configuration and when the ESC key operates as the multi-function key.
3	RUN Indicator	LED turns on (Steady) during an operation, and flashes during acceleration or deceleration.
4	FWD Indicator	LED turns on (Steady) during forward operation.
5	REV Indicator	LED turns on (Steady) during reverse operation.

Key	Name	Function
RUN	[RUN] Key	Used to run the inverter (Inputs a RUN command).
STOP RESET	[STOP/RESET] Key	STOP: Stops the inverter. RESET: Resets the inverter if a fault or failure occurs.
▲ ▼	[▲] Key, [▼] Key	Switches between codes, or increases or decreases parameter values.
MODE SHIFT	[MODE/SHIFT] Key	Moves between groups or moves to the digit on the left when setting the parameter. Press the MODE/SHIFT key once again on the maximum number of digits to move to the minimum number of digits.
ENT	[ENTER] Key	Switches from the selected state of parameter to the input state. Edits parameter and apply change. Accesses the operation information screen during failure on the failure screen.
▲ + ▼ MODE SHIFT + ▼ MODE SHIFT + ▲	[ESC]	ESC to the initial display.
MIN MAX	[VOLUME]	Used to set the operation frequency.

Group	Keypad Display	Description
Operation	-	Configures basic parameters for inverter operation.
Drive		Configures parameters for basic operations. These include jog operation, motor capacity evaluation, torque boost, and other keypad related parameters.
Basic		Configures basic operation parameters. These parameters include motor parameters and multi-step frequency parameters.
Advanced		Configures acceleration or deceleration patterns, frequency limits, etc.
Control		Configures sensorless vector-related features.
Input Terminal		Configures input terminal-related features, including digital multi-functional inputs and analog inputs.
Output Terminal		Configures output terminal-related features such as relays and analog outputs.
Communication		Configures communication features for RS-485 or other communication options.
Application		Configures functions related to PID control.
Protection		Configures motor and inverter protection features
Motor 2 (Secondary Motor)		Configures secondary motor related features. The secondary motor (M2) group appears on the keypad only when one of the multi-function input terminals (In.65–In.69) has been set to 26 (Secondary motor).