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AC Variable Speed Drive

LSLV-G100 series **User's Manual**

0.4 – 22 kW (0.5 – 30 HP) [Three Phase 200V/400V]

⚠ Safety Instructions

- Read this manual carefully before installing, wiring, operating, servicing or inspecting this equipment.
- Keep this manual within easy reach for quick reference.

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LSLV-G100 / 2025.04

This operation manual is intended for users with basic knowledge of electricity and electric devices.
* LSLV- G100 is the official name for the G100 series inverters.
* Visit our website at https://www.ls-electric.com for the complete user manual.

1. Safety Information

1.1 Safety symbols in this manual

⚠ Danger	Indicates an imminently hazardous situation which, if not avoided, will result in severe injury or death.
⚠ Warning	Indicates a potentially hazardous situation which, if not avoided, could result in injury or death.
ⓘ Caution	Indicates a potentially hazardous situation that, if not avoided, could result in minor injury or property damage.

1.2 Safety information

⚠ Danger

- Never remove the product cover or touch the internal printed circuit board (PCB) or any contact points when the power is on. Also, do not start the product when the cover is open. This may cause an electrical shock due to the exposure of high voltage terminals or live parts.
- Even if the power is off, do not open the cover unless it is absolutely necessary like for the wiring operation or for regular inspection. Opening the cover may still cause an electrical shock even after the power is blocked because the product has been charged for a long period of time.
- Wait at least 10 minutes before opening the covers and exposing the terminal connections. Before starting work on the inverter, test the connections to ensure all DC voltage has been fully discharged. Otherwise, it may cause an electrical shock and result in personal injury or even death.

⚠ Warning

- Make sure to install ground connection between the equipment and the motor for safe use. Otherwise, it may cause an electrical shock and result in personal injury or even death.
- Do not turn on the power if the product is damaged or faulty. If you find that the product is faulty, disconnect the power supply and have the product professionally repaired.
- The inverter becomes hot during operation. Avoid touching the inverter until it has cooled to avoid burns. Avoid touching the inverter until it has cooled to avoid burns.
- Do not allow foreign objects, such as screws, metal chips, debris, water, or oil to get inside the inverter. Allowing foreign objects inside the inverter may cause the inverter to malfunction or result in a fire.
- Do not operate the switch with wet hands. Otherwise, it may cause an electrical shock and result in personal injury or even death.
- Check the information about the protection level for the circuits and devices.
  The connection terminals and parts below have electrical protection class 0. This means that the protection class of the circuit depends on basic insulation and there is a danger of electric shock if the basic insulation is not working properly. Therefore, take the same protective measures as handling the power line when connecting wires to the terminals or the device below, or when installing or using the devices.
  - Multi-function Input: P1-P8, CM
  - Analog Input/Output: VR, V1, V2, I2, AO, IO, CM
  - Digital Output: 24, A1/B1/C1, A2/C2, Q1/EG
  - Safety: SA/SB/SC
  - Communication: S+/ S-
  - Fan
- The protection level of this equipment (inverter) is electrical protective class 1.

ⓘ Caution

- Do not change the inside of the product at your own discretion. This may result in injury or damage to the product due to failure or malfunction. Also, products changed at your own discretion will be excluded from the product warranty.
- Do not use the inverter for single phase motor operation as it has been designed for three phase motor operation. Using a single phase motor may damage the motor.
- Do not place heavy objects on top of electric cables. Heavy objects may damage the cable and result in electric shock.

Note / Remarque

- Maximum allowed prospective short-circuit current at the input power connection is defined in IEC 60439-1 as 100 kA. Depending on the selected MCCB, the LSLV-G100 Series is suitable for use in circuits capable of delivering a maximum of 100 kA RMS symmetrical amperes at the drive's maximum rated voltage. The following table shows the recommended MCCB for RMS symmetrical amperes.
- Le courant maximum de court-circuit présumé autorisé au connecteur d'alimentation électrique est défini dans la norme IEC 60439-1 comme égal à 100 kA. Selon le MCCB sélectionné, la série LSLV-G100 peut être utilisée sur des circuits pouvant fournir un courant RMS symétrique de 100 kA maximum en ampères à la tension nominale maximale du variateur. Le tableau suivant indique le MCCB recommandé selon le courant RMS symétrique en ampères.

Working Voltage	UTE100E	UTE100H	UTS150L
240V(50/60Hz)	50 kA	100 kA	150 kA
480V(50/60Hz)	25 kA	65 kA	100 kA

2. Preparing the Installation

2.1 Product Identification

	LSLV 0022 G100 – 2EOFN(T)						
Motor capacity	0004-0.4kW	0008-0.8kW	0015-1.5kW	0022-2.2kW	0040-4.0kW	0055-5.5kW	0075-7.5kW
	0110-11kW	0150-15kW	0185-18.5kW	0220-22kW			
Series name	G100, G100C – Compact type(0.4-4.0kW)						
Input voltage	2 – 3 phase 200V – 240V, 4 – 3 phase 380 –480V						
Keypad	E – LED Keypad						
UL Type	O – UL Open Type						
EMC Filter	N – Non Built-in EMC Filter, F – Built-in EMC Filter						
Reactor	N – Non-Reactor						
Safety	Blank – Non-Safety, T – Safety						

2.2 Installation Considerations

Items	Description
Ambient Temperature 1)	Heavy load: -10-50°C, Normal load: -10-40°C
Ambient Humidity	Less than 95% relative humidity (no condensation)
Storage Temperature	-20-65°C
Environmental Factors	An environment free from corrosive or flammable gases, oil residue, or dust
Altitude/Vibration	Maximum 3,280 ft(1,000m) above sea level for standard operation. From 1000 to 4000m, the rated input voltage and rated output current of the drive must be derated by 1% for every 100m,/less than 1G (9.8m/sec2)
Air Pressure	70–106 kPa

1) The ambient temperature is the temperature measured at a point 2" (5 cm) from the surface of the inverter.

ⓘ Caution

- Do not allow the ambient temperature to exceed the allowable range while operating the inverter.

2.3 Selecting the Installation Site

- The location must be free from vibration, and the inverter must be installed on a wall that can support the inverter's weight.
- The inverter can become very hot during operation. Install the inverter on a surface that is fire-resistant or flame-retardant and with sufficient clearance around the inverter to allow air to circulate. The illustrations below detail the required installation clearances.
- Make sure that sufficient air circulation is provided around the product. When installing the product inside the panel, carefully consider the position of the product's cooling fan and the ventilation louver. The product must be placed for the cooling fan to discharge heat satisfactorily during the operation.
- If you are installing multiple inverters in one location, arrange them side-by-side and remove the top covers. The top covers MUST be removed for side-by-side installations. Use a flat head screwdriver to remove the top covers.
- If you are installing multiple inverters, of different ratings, provide sufficient clearance to meet the clearance specifications of the larger inverter.

Note

- Select a wall or panel suitable to support the installation and check the inverter's mounting bracket dimensions.

ⓘ Caution

- Do not transport the inverter by lifting with the inverter's covers or plastic surfaces. The inverter may tip over if covers break, causing injuries or damage to the product. Always support the inverter using the metal frames when moving it.
- Use a transport method that is suitable for the weight of the product. Some high capacity inverters can be too heavy for one person to carry. Use an adequate number of people and transport tool to safely move the product.
- Do not install the inverter on the floor or mount it sideways against a wall. The inverter must be installed vertically, on a wall or inside a panel, with its rear flat on the mounting surface.

2.4 Cable Selection and Cable Wiring

■ Ground Cable and Power Cable Specification (*G100C)

Load(kW)		Ground		Power I/O (mm²)		Power I/O(AWG)		Terminal Size
		mm2	AWG	R/S/T	U/V/W	R/S/T	U/V/W	
3-Phase 200V	0.4/0.75/1.5/2.2	4	12	2.5	2.5	14	14	M3(M3.5*)
	4	4	12	4	4	12	12	M4(M3.5*)
	5.5	6	10	6	6	10	10	M4
	7.5	6	10	10	10	8	8	M4
	11	16	6	16	16	6	6	M5
	15	16	6	25	25	4	4	M5
	18.5	25	4	35	35	2	2	M6
	22	25	4	35	35	2	2	M6
3-Phase 400V	0.4/7.5/1.5/2.2/4	2.5	14	2.5	2.5	14	14	M3.5
	5.5	4	12	4	2.5	12	14	M4
	7.5	4	12	4	4	12	12	M4
	11	10	8	6	6	10	10	M4
	15	10	8	16	10	6	8	M5
	18.5	16	6	16	10	6	8	M5
	22	16	6	25	16	4	6	M5

Note

- 200 V products require Class 3 grounding. Resistance to ground must be < 100Ω.
- 400 V products require Special Class 3 grounding. Resistance to ground must be < 10 Ω.

⚠ Warning

- Make sure to install ground connection between the equipment and the motor for safe use. Otherwise it may cause an electrical shock and result in personal injury or even death.

ⓘ Caution

- Apply rated torques to the terminal screws. Loose screws may cause short circuits and malfunctions. Tightening the screw too much may damage the terminals and cause short circuits and malfunctions.
- Use copper wires only with 600V, 75℃ rating for the power terminal wiring, and 300V, 75℃ rating for the control terminal wiring.
- Do not connect two wires to one terminal when wiring the power.
- Power supply wirings must be connected to the R, S, and T terminals. Connecting them to the U, V, W terminals causes internal damages to the inverter. Motor should be connected to the U, V, and W Terminals. Arrangement of the phase sequence is not necessary.

ⓘ Attention

- Appliquer des couples de marche aux vis des bornes. Des vis desserrées peuvent provoquer des courts-circuits et des dysfonctionnements. Ne pas trop serrer la vis, car cela risqué d'endommager les bornes et de provoquer des courts-circuits et des dysfonctionnements. Utiliser uniquement des fils de cuivre avec une valeur nominale de 600 V, 75 °C pour le câblage de la borne d'alimentation, tune valeur nominale de 300 V, 75 °C pour le câblage de la borne de commande.
- Ne jamais connecter deux câbles à une borne lors du câblage de l'alimentation.
- Les câblages de l'alimentation électrique doivent être connectés aux bornes R, S et T. Leur connexion aux bornes U, V et W provoque des dommages internes à l'onduleur. Le moteur doit être raccordé aux bornes U, V et W. L'arrangement de l'ordre de phase n'est pas nécessaire.

■ Signal (Control) Cable Specifications

Terminal / Signal Cable	Without Crimp Terminal Connectors (Bare wire)		With Crimp Terminal Connectors (Bootlace Ferrule)	
	mm²	AWG	mm²	AWG
P1–P8, CM, SA/SB/SC, VR, V1, V2, I2, AO, IO, 24, A1/B1/C1, A2/C2, Q1/EG, S+/S-	0.8	18	0.5	20

■ Cable Wiring

- Install the ground connection as specified. Complete the cable connections by connecting an appropriately rated cable to the terminals on the power and control terminal blocks.

ⓘ Caution

- Install the inverter before carrying out wiring connections.
- Ensure that no small metal debris, such as wire cut-offs, remain inside the inverter. Metal debris in the inverter may cause inverter failure.
- Tighten terminal screws to their specified torque. Loose terminal block screws may allow the cables to disconnect and cause short circuit or inverter failure.
- Do not place heavy objects on top of electric cables. Heavy objects may damage the cable and result in electric shock.
- The power supply system for this equipment (inverter) is a grounded system (TT, TN). The inverter is not suitable for corner-earthed systems.
- The equipment may generate direct current in the protective ground wire. When installing the residual current device (RCD) or residual current monitoring (RCM), only Type B RCDs and RCMs can be used.
- Use cables with the largest cross-sectional area, appropriate for power terminal wiring, to ensure that voltage drop does not exceed 2%.
- Use copper cables rated at 600V, 75℃ for power terminal wiring.
- Use copper cables rated at 300V, 75℃ for control terminal wiring.
- Separate control circuit wires from the main circuits and other high voltage circuits (200 V relay sequence circuit).
- Check for short circuits or wiring failure in the control circuit. They could cause system failure or device malfunction.
- Use shielded cables for control terminal wiring. Failure to do so may cause malfunction due to interference. When grounding is needed, use shielded twisted pair (STP) cables.
- If you need to re-wire the terminals due to wiring-related faults, ensure that the inverter keypad display is turned off and the charge lamp under the front cover is off before working on wiring connections. The inverter may hold a high voltage electric charge long after the power supply has been turned off.

2.5 Terminal Screw Specification

■ Input/Output Terminal Screw Specification (*G100C)

Product(kW)		Terminal screw Size	Screw Torque (Kgf·cm/Nm)
3-Phase 200V	0.4 / 0.75	R/S/T, U/V/W : M3 (M3.5*)	R/S/T, U/V/W : 5.1 / 0.5 (10.3 / 1.0*)
	1.5 / 2.2	R/S/T, U/V/W : M4 (M3.5*)	R/S/T, U/V/W : 12.1 / 1.2 (10.3 / 1.0*)
	4	R/S/T, U/V/W : M4	R/S/T, U/V/W : 18.4 / 1.8
	5.5 / 7.5	R/S/T, U/V/W : M4	R/S/T : 14.0/1.4, U/V/W : 15.0 / 1.5
	11/15	R/S/T, U/V/W : M5	R/S/T, U/V/W : 25.34/2.5
	18.5/22	R/S/T, U/V/W : M6	R/S/T, U/V/W : 30.5/3
3-Phase 400V	0.4 / 0.75/1.5/2.2	R/S/T, U/V/W : M3.5	R/S/T, U/V/W : 10.3 / 1.0
	4	R/S/T, U/V/W : M4	R/S/T, U/V/W : 18.4 / 1.8
	5.5 / 7.5	R/S/T, U/V/W : M4	R/S/T : 14.0/1.4, U/V/W : 18.4 / 1.8
	11/15/18.5/22	R/S/T, U/V/W : M5	R/S/T, U/V/W : 25.34/2.5

■ Control Circuit Terminal Screw Specification(G100/G100C)

Terminal	Terminal Screw Size	Screw Torque (Kgf·cm/Nm)
24, P1–P5, CM	M2.6	4/0.4
VR, V1, I2, AO, CM, S+ / S-, A1/B1/C1, A2/C2 , Q1/EG*	M2.6	5.2/0.5

*G100C series models support Q1/EG terminal as a substitute for A2/C2 terminal.

■ Control Circuit Terminal Screw Specification (G100 Safety)

Terminal	Terminal Screw Size	Screw Torque (Kgf·cm/Nm)
A1/B1/C1, A2/C2	M2.6	5.2/0.5
24, P1-P6, CM, SA/SB/SC	M2	2/0.2
P7-P8, AO, IO, VR, V1, I2, V2, CM, S+/S-	M2	2/0.2

ⓘ Caution

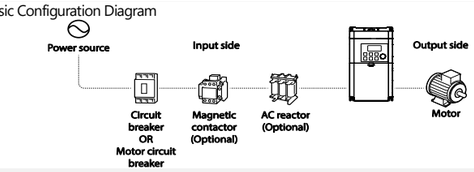
- Apply rated torques to the terminal screws. Loose screws may cause short circuits and malfunctions. Tightening the screw too much may damage the terminals and cause short circuits and malfunctions.

ⓘ Attention

- Appliquer des couples de marche aux vis des bornes. Des vis desserrées peuvent provoquer des courts-circuits et des dysfonctionnements.

3. Installing the Inverter

3.1 Basic Configuration Diagram



ⓘ Caution

- Note that the illustration on this user manual may represent the product with the cover open or the circuit breaker removed for explanation. When operating the inverter, make sure to follow the instructions of user manual after fully installing the necessary parts, such as the cover and circuit breaker.
- Do not start or stop the inverter with a magnetic contactor. This may cause damage to the inverter.
- If the inverter is damaged and loses control, the machine may cause a dangerous situation. Install an additional safety device such as an emergency brake to prevent these situations.
- High levels of current draw during power-on can affect the system. Ensure that correctly rated circuit breakers are installed to operate safely during power-on situations.
- Reactors can be installed to improve the power factor. Note that reactors may be installed within 30 ft (9.14 m) from the power source if the input power exceeds 10 times of inverter capacity.

3.2 Drive View9

- For the G100 series, you can set the parameters and monitor the inverter status using DriveView9 which is a PC software provided free of charge. In DriveView9, both Modbus-RTU and LS INV 485 protocols are available.

3.3 Peripheral Devices

■ Compatible Circuit Breaker, Leakage Breaker), Magnetic Contactor) Models (manufactured by LS ELECTRIC)

Inverter Capacity	Circuit Breaker		Leakage Breaker		Magnetic Contactor	
	Model	Rating [A]	Model	Rating [A]	Model	Rating [A]
0.4-2	UTE100•H•FTU•15•3P•UL	15	EBS33c	5	MC-6a	9
0.75-2				10	MC-9a, 9b	11
1.5-2				15	MC-18a, 18b	18
2.2-2	UTE100•H•FTU•20•3P•UL	20		20	MC-22b	22
4.0-2	UTE100•H•FTU•30•3P•UL	30		30	MC-32a	32
5.5-2	UTS150•H•FTU•50•3P•UL	50	EBS53c	50	MC-50a	55
7.5-2	UTS150•H•FTU•60•3P•UL	60	EBS63c	60	MC-65a	65
11-2	UTS150•H•FTU•80•3P•UL	80	EBS103C	100	MC-85a	85
15-2	UTS150•H•FTU•100•3P•UL	100	EBS103C	125	MC-130a	130
18.5-4	UTS150•H•FTU•125•3P•UL	125	EBS203C	150	MC-150a	150
22-4	UTS150•H•FTU•150•3P•UL	150	EBS203C	175	MC-185a	185
0.4-4	UTS150•L•MCP•3.2•3P•UL	3.2	EBS33c	5	MC-6a	7
0.75-4	UTS150•L•MCP•6.3•3P•UL	6.3			MC-6a	
1.5-4	UTS150•L•MCP•12•3P•UL	12		10	MC-9a, 9b	9
2.2-4					MC-12a, 12b	12
4.0-4	UTS150•L•MCP•20•3P•UL	20		20	MC-18a, 18b	18
5.5-4	UTS150•L•MCP•32•3P•UL	30		30	MC-22b	22
7.5-4					MC-32a	32
11-4	UTS150•L•FTU•50•3P•UL	50	EBS53c	50	MC-50a	50
15-4	UTS150•L•FTU•60•3P•UL	60	EBS63c	60	MC-65a	65
18.5-4	UTS150•L•FTU•70•3P•UL	70	EBS103c	75	MC-75a	75
22-4	UTS150•L•FTU•90•3P•UL	90	EBS103c	100	MC-85a	85

■ Fuse and Reactor Specifications

Inverter capacity		AC Input Fuse			AC Reactor	
		Model	Current [A]	Voltage[V]	Inductance(mH)	Current(A)
3-Phase 200V	0.4 / 0.75	DFJ-10[1)]	10	600	1.20	10
	1.5	DFJ-15	15		0.88	14
	2.2	DFJ-20	20		0.56	20
	4.0	DFJ-30	30		0.39	30
	5.5	DFJ-50	50		0.30	34
	7.5	DFJ-60	60		0.22	45
	11	DFJ-80	80		0.16	64
	15	DFJ-100	100		0.13	79
	18.5	DFJ-110	110		0.12	96
	22	DFJ-125	125		0.11	112
3-Phase 400V	0.4 / 0.75	DFJ-10	10		4.81	4.8
	1.5				3.23	7.5
	2.2	DFJ-15	15		2.34	10
	4.0	DFJ-20	20		1.22	15
	5.5	DFJ-30	30		1.12	19
	7.5	DFJ-35	35		0.78	27
	11	DFJ-50	50		0.59	35
	15	DFJ-60	60		0.46	44
	18.5	DFJ-70	70		0.40	52
	22	DFJ-100	100		0.30	68

Note1) DFJ is Class J/600V level model name of the Bussmann company.

ⓘ Caution

- Use Class CC, G, J, L, R or T UL Listed Input Fuse and UL Listed Breaker Only. See the table above For the Voltage and Current rating of the fuse and the breaker.

ⓘ Attention

- Utiliser UNIQUEMENT des fusibles d'entrée homologués de Classe CC, G, J, L, R ou T UL et des disjoncteurs UL. Se reporter au tableau ci-dessus pour la tension et le courant nominal des fusibless et des disjoncteurs.

■ Braking Resistor Specification

Product(kW)		Resistance(Ω)	Rated Capacity(W)	Product(kW)		Resistance(Ω)	Rated Capacity(W)
3-Phase 200V	0.4	300	100	3-Phase 400V	0.4	1,200	100
	0.75	150	150		0.75	600	150
	1.5	60	300		1.5	300	300
	2.2	50	400		2.2	200	400
	3.7	33	600		3.7	130	600
	4	33	600		4	130	600
	5.5	20	800		5.5	85	1,000
	7.5	15	1,200		7.5	60	1,200
	11	10	2,400		11	40	2,000
	15	8	2,400		15	30	2,400
	18.5	5	3,600		18.5	20	3,600
	22	5	3,600		22	20	3,600

• The standard for braking torque is 150 % and the working rate (%ED) is 5 %. If the working rate is 10 %, the rated capacity for braking resistance must be calculated at twice the standard.

3.4 Power Terminal Labels and Descriptions

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.

Note

- Do not use 3 core cables to connect a remotely located motor with the inverter.
- When you operating Brake resistor, the motor may vibrate under the Flux braking operation. In this case, please turn off the Flux braking (Pr.50).
- Make sure that the total cable length does not exceed 665 ft (202 m). For inverters < = 4.0 kW capacity, ensure that the total cable length does not exceed 165 ft (50 m).
- Long cable runs can cause reduced motor torque in low frequency applications due to voltage drop. Long cable runs also increase a circuit's susceptibility to stray capacitance and may trigger over-current protection devices or result in malfunction of equipment connected to the inverter. Voltage drop is calculated by using the following formula:
  Voltage Drop (V) = [√3 X cable resistance (mΩ/m) X cable length (m) X current (A)] / 1000
- Use cables with the largest possible cross-sectional area to ensure that voltage drop is minimized over long cable runs. Lowering the carrier frequency and installing a micro surge filter may also help to reduce voltage drop.

Distance	< 165 ft (50 m)	< 330 ft (100 m)	> 330 ft (100 m)
Allowed Carrier Frequency	< 15 kHz	< 5 kHz	< 2.5 kHz

⚠ Warning

- Do not connect power to the inverter until installation has been fully completed and the inverter is ready to be operated. Otherwise, it may cause an electrical shock and result in personal injury or even death.

ⓘ Caution

- Power supply cables must be connected to the R, S, and T terminals. Connecting power cables to other terminals will damage the inverter.
- Use insulated ring lugs when connecting cables to R/S/T and U/V/W terminals
- The inverter's power terminal connections can cause harmonics that may interfere with other communication devices located near to the inverter. To reduce interference the installation of noise filters or line filters may be required.
- Are advanced-phase capacitors, surge protection and electromagnetic interference filters installed correctly?
- To avoid circuit interruption or damaging connected equipment, do not install magnetic contactors on the output side of the inverter. Metal debris in the inverter may cause inverter failure.

3.5 Control Terminal Labels and Descriptions

■ Control Board Switches and Connector

Switch	Description
SW1	NPN/PNP mode selection switch
SW2	Terminating Resistor selection switch
SW3	I2/PTC selection switch
RJ-45 Connector	Connect to Remote I/O or smart copier, connect with RS-485 communication.

■ Input Terminal Labels and Descriptions

Function	Label	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 P6: Speed-M, P7 : Speed-H, P8: None
	P1-P8 (Safety Type)	Multi-function Input 1-8	
	CM	Common Sequence	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: 12V (G100C: 20mA) • Maximum Current Output: 100mA, • Potentiometer: 1-5kΩ
	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)
	V2 (Safety Type)		
	I2*	Current input for frequency reference input	Used to setup or modify a frequency reference via current input terminal. V Mode : • Input current: 4-20 mA, Maximum Input current: 24mA • Input resistance: 249 Ω
		PTC input (Safety Type)	PTC or PT1000 sensor is used

* For Safety Type, SW3 operates as I2 when set to the right and as PTC when set to the left

■ Output/Communication Terminal Labels and Descriptions

Function	Label	Name	Description
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: 12V, 10 mA • Factory default output: Output frequency
	IO (Safety Type)	Current Output terminal	Used to send inverter output information to external devices: output frequency, output current, output voltage, or a DC voltage. • Output current: 0-20 mA • Maximum output current: 24 mA • Factory default output: Output frequency
Digital Output	24	External 24 V power source	Maximum output current: 100 mA*
	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
	Q1/EG (G100C)	Open Collector	• The G100C provides an open-collector output terminal (Q1/EG) insted of a fault signal output2 terminal(A2/C2). • DC 24V, 100mA or less
RS-485 Communication	S+/S-	RS-485 signal line	Used to send or receive RS-485 signals.

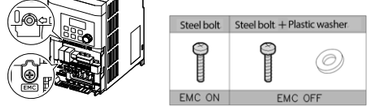
* When terminals SA and SB are connected to SC, the maximum output current of terminal 24 is 90mA.

■ Safety Function Input Terminal Labels and Descriptions

Function	Label	Name	Description
Safety Function	SA	Safety input A	In case of an emergency, the output is cut off based on the incoming input signal. • SA and SB connected to SC : Normal operation • SA or SB disconnected to SC : Output cut-off
	SB	Safety input B	
	SC	Safety input power	DC 24V, 10mA or less

3.6 Disabling the EMC Filter for Power Sources with Asymmetrical Grounding

• Before using the inverter, confirm the power supply's grounding system. Disable the EMC filter if the power source has an asymmetrical grounding connection. Check the location of the EMC filter on/off screw and attach the plastic washer to the screw under the control terminal block.



4. Learning to Perform Basic Operations

4.1 Operation Keys

• The following table lists the names and functioins of the keypad's operation keys.

Key	Name	Description
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	Switch between codes, or to increase or decrease 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.
MIN MAX	[Volume]	Used to set the operation frequency.

* Operates as ESC key if two keys out of [MODE/SHIFT] key, [▲] key and [▼] key are entered at the same time.
- Press ESC in the group navigation mode to go to the initial screen (the frequency display screen).
- Press ESC in the mode to change parameter to go to group navigation mode without saving.

4.2 Control Menu

• The control menu uses the following groups.

Group	Display	Description
Operation	-	Configures basic parameters for inverter operation.
Drive (**Dr**ive)	dr	Configures parameters for basic operations. These include jog operation, motor capacity evaluation, torque boost, and other keypad related parameters.
Basic (**Ba**sic)	bA	Configures basic operation parameters. These parameters include motor parameters and multi-step frequency parameters.
Advanced (**Ad**vanced)	Ad	Configures acceleration or deceleration patterns, frequency limits, etc.
Control (**Co**ntrol)	Cn	Configures sensorless vector-related features.
Input Terminal (**In**put)	In	Configures input terminal-related features, including digital multi-functional inputs and analog inputs.
Output Terminal (**Ou**tput)	OU	Configures output terminal-related features such as relays and analog outputs.
Communication (**Co**mmunication)	CM	Configures communication features for RS-485 or other communication options.
Application (**Ap**plication)	AP	Configures functions related to PID control.
Protection (**Pr**otection)	Pr	Configures motor and inverter protection features.
Secondary Motor (2nd **M**otor)	M2	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.72) has been set to 26 (Secondary motor).
User Sequence (**U**ser **S**equence)	US	Implement a simple sequence using a combination of different Function Blocks.
User Sequence Function (**U**ser Sequence **F**unction)	UF	

*The User Sequence feature can only be used with the G100 drive that has main firmware V3.2 and later.

4.3 Table of Functions in operation group

Code	Comm Address	Name	Keypad Display	Setting Range		Initial Value	Property*	V/F	SL
-	0h1D00	Target frequency	0.00	0-Maximum frequency (Hz)		0.00	O	O	O
-	0h1D01	Acceleration time	ACC	0.0–600.0(s)		5.0	O	O	O
-	0h1D02	Deceleration time	dEC	0.0–600.0(s)		10.0	O	O	O
-	0h1D03	Command Source	drv	0	Keypad	1: Fx/Rx-1	X	O	O
				1	Fx/Rx-1				
				2	Fx/Rx-2				
				3	Int 485				
				4	Fieldbus[1]				
				5	UserSeqLink				
-	0h1D04	Frequency reference source	Fr9	0	Keypad-1	0: Keypad-1	X	O	O
				1	Keypad-2				
				2	V1				
				3	V2				
				4	V0,Built-in Volume				
				5	I2				
				6	Int 485				
				8	Fieldbus[1]				
				9	UserSeqLink				
-	0h1D05	Multi-step speed frequency 1	St1	0.00-Maximum frequency (Hz)		10.00	O/7	O	O
-	0h1D06	Multi-step speed frequency 2	St2	0.00-Maximum frequency (Hz)		20.00	O/7	O	O
-	0h1D07	Multi-step speed frequency 3	St3	0.00-Maximum frequency (Hz)		30.00	O/7	O	O
-	0h1D08	Output current	Cur				-/7	O	O
-	0h1D09	Motor revolutions per minute	rPM				-/7	O	O
-	0h1D0A	Inverter DC voltage	dCL	-		-	-/7	O	O
-	0h1D0B	Inverter output voltage	vOL				-/7	O	O
-	0h1D0C	Out of order signal	nOn				-/7	O	O
-	0h1D0D	Select rotation direction	drC	F	Forward run	F	O/7	O	O
				r	Reverse run				

[1] Table of options are provided separately in the option manual.

5. Technical Specification

5.1 Input and Output Specification

• 3-phase 200V (0.4–22kW)

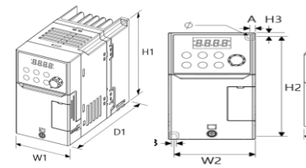
Model □□□□G100–2□□□□			0004	0008	0015	0022	0040	0055	0075	0110	0150	0185	0220
Applied motor	Heavy load	HP	0.5	1.0	2.0	3.0	5.0	7.5	10	15	20	25	30
		kW	0.4	0.75	1.5	2.2	4.0	5.5	7.5	11	15	18.5	22
	Normal load	HP	1.0	2.0	3.0	5.0	7.5	10	15	20	25	30	-
		kW	0.75	1.5	2.2	4.0	5.5	7.5	11	15	18.5	22	-
Rated output	Rated capacity (kVA)	Heavy load	1.0	1.9	3.0	4.2	6.5	9.1	12.2	17.9	22.9	28.6	33.5
		Normal load	1.2	2.3	3.7	4.6	6.9	11.4	15.2	21.3	26.7	31.2	-
	Rated current(A) [3-Phase input]	Heavy load	2.5	5.0	8.0	11.0	17.0	24.0	32.0	47	60	75	88
		Normal load	3.1	6.0	9.6	12.0	18.0	30.0	40.0	56	70	85	-
	Rated current(A) [60Hz, 1-Phase input]	Heavy load	1.5	2.8	4.6	6.1	9.3	12.8	17.4	26.8	34	41	48
		Normal load	2.0	3.6	5.9	6.7	9.8	16.3	22.0	31	38	45	-
	Rated current(A) [50Hz, 1-Phase input]	Heavy load	1.5	2.7	4.5	5.9	9.1	12.4	16.9	26	33.1	39.9	46.7
		Normal load	1.9	3.5	5.7	6.5	9.5	15.8	21.3	30	36.9	43.7	-
	Output frequency		0–400Hz(IM Sensorless: 0–120Hz)										
	Output voltage (V)		3-phase 200-240 V										
Rated input	Working voltage (V)		3-phase 200-240 VAC (-15% to +10%) / 1-phase 240 VAC (-5% to +10%)										
	Input frequency		50–60Hz(±5%)										
	Rated current [3-Phase input] (A)	Heavy load	2.2	4.9	8.4	11.8	18.5	25.8	34.9	53.2	68.4	85.5	101.6
		Normal load	3.0	6.3	10.8	13.1	19.4	32.7	44.2	63.8	79.8	94.6	-
Weight (kg) *(G100C)			1.04 *(0.81)	1.06 *(0.83)	1.36 *(1.1)	1.4 *(1.13)	1.89 *(1.78)	3.08	3.21	4.84	7.6	11.1	11.18

• 3-phase 400V (0.4–22kW)

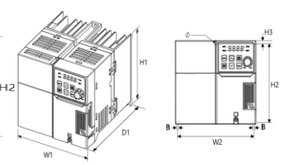
Model □□□□G100–4□□□□			0004	0008	0015	0022	0040	0055	0075	0110	0150	0185	0220
Applied motor	Heavy load	HP	0.5	1.0	2.0	3.0	5.0	7.5	10	15	20	25	30
		kW	0.4	0.75	1.5	2.2	4.0	5.5	7.5	11	15	18.5	22
	Normal load	HP	1.0	2.0	3.0	5.0	7.5	10	15	20	25	30	40
		kW	0.75	1.5	2.2	4.0	5.5	7.5	11	15	18.5	22	30
Rated output	Rated capacity (kVA)	Heavy load	1.0	1.9	3.0	4.2	6.5	9.1	12.2	17.5	23.6	29.0	34.3
		Normal load	1.5	2.4	3.9	5.3	7.6	12.2	17.5	23.6	29.0	34.3	46.5
	Rated current(A) [3-Phase input]	Heavy load	1.3	2.5	4.0	5.5	9.0	12.0	16.0	24	31	39	45
		Normal load	2.0	3.1	5.1	6.9	10.0	16.0	23.0	31	38	45	61
	Rated current(A) [60Hz, 1-Phase input]	Heavy load	0.7	1.4	2.1	2.8	4.9	6.4	8.7	15	18	23	27
		Normal load	1.3	1.9	2.8	3.6	5.4	8.7	12.6	18	23	27	35
	Rated current(A) [50Hz, 1-Phase input]	Heavy load	0.7	1.4	2.0	2.7	4.8	6.2	8.5	14.6	17.4	22.3	26.2
		Normal load	1.3	1.8	2.7	3.5	5.2	8.4	12.2	17.4	22.2	26.1	33.8
	Output frequency		0–400Hz(IM Sensorless: 0–120Hz)										
	Output voltage (V)		3-phase 380-480 V										
Rated input	Working voltage (V)		3-phase 380-480 VAC (-15% to +10%) / 1-phase 480 VAC (-5% to +10%)										
	Input frequency		50–60Hz(±5%)										
	Rated current(A) [3-Phase input]	Heavy load	1.1	2.4	4.2	5.9	9.8	12.9	17.5	27.2	35.3	44.5	51.9
		Normal load	2.0	3.3	5.5	7.5	10.8	17.5	25.4	35.3	43.3	51.9	70.8
Weight (kg) (Built-in EMC filter) *(G100C)			1.02 (1.04) *(0.82)	1.06 (1.08) *(0.85)	1.4 (1.44) *(1.14)	1.42 (1.46) *(1.14)	1.92 (1.98) *(1.77)	3.08 (3.24)	3.12 (3.28)	4.89 (5.04)	4.91 (5.06)	7.63 (7.96)	7.65 (7.98)

5.2 External Dimensions

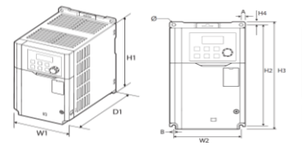
■ 0.4–2.2kW(G100C)



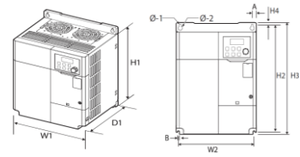
■ 4.0kW(G100C)



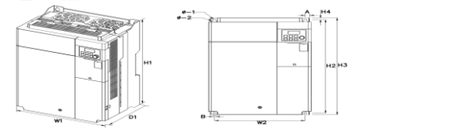
■ 0.4–4.0kW



■ 5.5–7.5kW



■ 11–22kW



Unit: mm(inches)

Items	W1	W2	H1	H2	H3	H4	D1	A	B	Φ
0004G100C-2 0004G100C-4	70 (2.76)	65.5 (2.58)	128 (5.04)	119 (4.69)	4.5 (0.18)	-	130 (5.11)	4.5 (0.18)	4.5 (0.18)	4.5 (0.18)
0008G100C-2 0008G100C-4	70 (2.76)	65.5 (2.58)	128 (5.04)	119 (4.69)	4.5 (0.18)	-	135 (5.31)	4.5 (0.18)	4.5 (0.18)	4.5 (0.18)
0015G100C-2/4 0022G100C-2/4	100 (3.93)	95.5 (3.76)	128 (5.04)	119 (4.69)	4.5 (0.18)		135 (5.31)	4.5 (0.18)	4.5 (0.18)	4.5 (0.18)
0040G100C-2/4	140 (5.51)	132 (5.20)	128 (5.04)	120.5 (4.74)	5 (0.20)		155 (6.10)	-	4.5 (0.18)	4.5 (0.18)
0004G100-2/4 0008G100-2/4	86.2 (3.39)	76.2 (3.00)	154 (6.06)	154 (6.06)	164 (6.46)	5 (0.20)	131.5 (5.18)	5 (0.20)	4.5 (0.18)	4.5 (0.18)
0015G100-2/4 0022G100-2/4	101 (3.98)	90 (3.54)	167 (6.57)	167 (6.57)	177 (6.97)	5 (0.20)	150.5 (5.93)	5.5 (0.22)	4.5 (0.18)	4.5 (0.18)
0040G100-2 0040G100-4	135 (5.31)	125 (4.92)	183 (7.20)	183 (7.20)	193 (7.60)	5 (0.20)	150.5 (5.93	5.0 (0.20)	4.5 (0.18)	4.5 (0.18)
0055G100-2/4 0075G100-2/4	180 (7.09)	Up side : 162(6.38) Down side : 170(6.70)	220 (8.66)	229.5 (9.04)	240 (9.45)	5.5 (0.22)	144 (5.67)	Up side : 9(0.35) Down side : 5(0.20)	4.5 (0.18)	Φ-1 : 4.5(0.18) Φ-2 : 9(0.35)
0110G100-2 0110G100-4 0150G100-4	180 (7.09)	157 (6.18)	290 (11.4)	273.7 (10.8)	290 (11.4)	11.3 (0.44)	173 (6.81)	8.5 (0.33)	4.5 (0.18)	Φ-1 : 4.5(0.18) Φ-2 : 8.5(0.33)
0150G100-2 0185G100-4 0220G100-4	220 (8.66)	193.8 (7.63)	345 (13.6)	331 (13.0)	345 (13.6)	8 (0.31)	187 (7.36)	10.1 (0.40)	5.5 (0.22)	Φ-1 : 5.5(0.22) Φ-2 : 11(0.43)
0185G100-2 0220G100-2	260 (10.2)	229.8 (9.05)	400 (15.7)	386 (15.2)	400 (15.7)	8 (0.31)	187 (7.36)	11.4 (0.45)	6.6 (0.26)	Φ-1 : 6.6(0.26) Φ-2 : 13.5(0.53)