Contents

Preface

Thank you four purchasing our GVX2000 series inverter. This product is used to drive a 3-phase electric motor at variable speed. As incorrect use of this product may result in personal injury and/or property damage, read all operating instructions before using.
As this manual does not cover the use of option cards, etc., refer to relevant manuals for option operations.

Safety Instructions

Read this manual carefully before installing, connecting (wiring), operating, servicing, or inspecting the inverter.
Familiarize yourself with all safety features before using the inverter.
In this manual, safety messages are classified as follows:

WARNING
Improper operation may result in serious personal injury or death.

CAUTION
Improper operation may result in slight to medium personal injury or property damage.

Situations more serious than those covered by CAUTION will depend on prevailing circumstances.
Always follow instructions.

Instructions on use

WARNING

1. This inverter is designed to drive a 3-phase induction motor and is not suitable for a single-phase motor or others,
   as fire may result.
2. This inverter may not be used (as is) as a component of a life-support system or other medical device directly affecting the personal welfare of the user.
3. This inverter is manufactured under strict quality control standards. However, safety equipment must be installed if the failure of this device may result in personal injury and/or property damage.
   There is a risk of accident.

Instructions on installation

WARNING

1. Mount this inverter on an incombustible material such as metal.
   There is a risk of fire.
2. Do not place combustible or flammable material near this inverter,
   as fire may result.

CAUTION

1. Do not hold or carry this inverter by the surface cover. Inverter may be dropped **causing injury.**
2. Ensure that the inverter and heat sink surfaces are kept free of foreign matter (lint, paper dust, small chips of wood or metal, and dust), **as fire or accident may result.**
3. Do not install or operate a damaged or hollowed inverter or an inverter with missing parts, **as electric shock or injury may occur.**

CAUTION

1. Confirm that the phases and rated voltage of this product match those of the AC power supply, **as injury may result.**
2. Do not connect the AC power supply to the output terminals (U, V, and W), because this will damage the inverter, **as injury may result.**
3. Do not connect a braking resistor directly to the DC terminals (P(+) and N(-)), **as fire may result.**
4. Ensure that the noise generated by the inverter, motor, or wiring does not adversely affect peripheral sensors and equipment, **as accident may result.**

Instructions on wiring

WARNING

1. Connect the inverter to power via a line-protection molded-case circuit breaker or Fuse, **as fire may result.**
2. Always connect a ground wire, **as electric shock or fire may result.**
3. A licensed specialist must perform the wiring works, **as electric shock may result.**
4. Turn off the power before starting the wiring work, **as electric shock may result.**
5. Wire the inverter after installation is complete, **as electric shock or injury may occur.**

Instructions on operation

WARNING

1. Be sure to install the surface cover before turning on the power (closed). Do not remove the cover while power to the inverter is turned on. **Electric shock may occur.**
2. Do not operate switches with wet hands, **as electric shock may result.**
3. When the retry function is selected, the inverter may restart automatically after tripping. (Design the machine to ensure personal safety in the event of restart). **Accident may result.**
4. When the torque limiting function is selected, operating conditions may differ from preset conditions (acceleration/deceleration time or speed). In this case, personal safety must be assured. **Accident may result.**
5. As the STOP key is effective only when a function setting has been established, install an emergency switch independently, and when an operation via the external signal terminal is selected, the STOP key on the keypad panel will be disabled. **Accident may result.**
6. As operations start suddenly if alarm is reset with a running signal input, confirm that no running signal is input before resetting alarm. **Accident may result.**
7. Do not touch inverter terminals when energized even if inverter has stopped. **Electric shock may result.**

CAUTION

1. Do not start or stop the inverter using the main circuit power. **Failure may result.**
2. Do not touch the heat sink or braking resistor because they become very hot. **Burns may result.**
3. As the inverter can set high speed operation easily, carefully check the performance of motor or machine before changing speed settings. **Injury may result.**
4. Do not use the inverter braking function for mechanical holding. **Injury may result.**

Instructions on maintenance, inspection, and replacement

WARNING

1. Wait a minimum of five minutes (25 kW or less) or ten minutes (30 kW or more) after power has been turned off (open) before starting inspection. (Also confirm that the charge lamp is off and that DC voltage between terminals P(+) and N(-) do not exceed 25 V). **Electrical shock may result.**
2. Only authorized personnel should perform maintenance, inspection, and replacement operations. (Take off metal jewelry such as watches and rings. Use insulated tools). **Electric shock or injury may result.**

Instructions on disposal

CAUTION

Treat as industrial waste when disposing it. **Injury may result.**

Other instructions

WARNING

Never modify the product.
Electric shock or injury may result.

Conformity to Low Voltage Directive in Europe

CAUTION

1. The contact capacity of alarm output for any fault (30 A, B, C) and relay signal output (Y5A, Y5C) is 0.5 A at 48 V DC.
2. The ground terminal ⏚G should be connected to the ground. Use a crimp terminal to connect a cable to the main circuit terminal or inverter ground terminal.
3. Where RCD (Residual-current protective device) is used for protection in case of direct or indirect contact, only RCD of type B is allowed on the supply side of this Inverter. Otherwise another protective measure shall be applied such as separation of the Inverter from the environment by double or reinforced insulation or isolation of Inverter and supply system by the transformer.
4. Use a single cable to connect the ⏚G inverter ground terminal. (Do not use two or more inverter ground terminals).
5. Use a molded-case circuit breaker (MCCB) and magnetic contactor (MC) that conform to EN or IEC standards.
6. Use the inverter connecting the power system which has earthed neutral-point. In case of non- earthed system (ex. IT-NET), the control interface of the inverter is basic insulation, thus do not connect SELV circuit from external controller directly. See Basic connection diagram (Fig. 2-3-1).
7. Use the inverter under over-voltage category III conditions and maintain Pollution degree 2 or better as specified in IEC664. To maintain Pollution degree 2 or better, install the inverter in the control panel (IP54 or higher level) having structure free from water, oil, carbon, dust, etc.
8. For the input-output wiring of the inverter, use cable (diameter and type) as specified in Appendix C in EN60204.
9. In case of external cooling system, cover the inverter rear side so that operator can not touch the main capacitor and braking resistor.
10. To ensure safety, install an optional AC reactor, DC reactor, or external braking resistor as follows:
    1) Install inside an IP4X cabinet or barrier if electrical parts are exposed.
    2) Install inside an IP2X cabinet or barrier if electrical parts are not exposed.

CAUTION FOR UL/cUL REQUIREMENTS

CAUTION

1. Hazard of electrical shock. Disconnect incoming power before working on this control.
2. Dangerous voltage exist until charge lights is off.

WARNING

1. Type1 "INDOOR USE ONLY"
2. More than one live circuit. See Basic connection diagram (Fig. 2-3-1).
3. Use class1 wire only.
4. Connect the wire cable to the terminal blocks, which are the input terminals L1, L2 and L3, the output terminals U, V and W, auxiliary control-power input terminals R0,T0,and the control terminals, with appropriate ring lug. Use a recommend tool according to the terminal maker when attaching ring lug.
5. Tightening torque and wire range for field wiring terminal are marked adjacent to the terminal or on the wiring diagram.
6. Connect the power supply to main power supply terminals (L1, L2 and L3) via the Molded-case circuit breaker (MCCB) or the earth leakage circuit breaker (ELCB) to apply the UL Listing Mark. See Basic connection diagram (Fig. 2-3-1).
7. In case of using auxiliary control-power input, connect it referring to Basic connection diagram (Fig. 2-3-1).

Inverter type	Required torque [lb-Inch] (N·m)		Recommended wire size (mm^2)					
GVX2000	Main terminal	Control	L1/R L2/S L3/T (⏚Ground)	U, V, W	P1, P(+)	P(+), DB, N(-)	R0, T0	Control
GVX2000-0.55-T	10.6 (1.2)	6.2 (0.7)	2.5 (2.5)	2.5	2.5	2.5	—	0.2 to 0.75
GVX2000-1.1-T								
GVX2000-2.2-T	15.9 (1.8)						2.5	
GVX2000-3.0-T								
GVX2000-5.5-T								
GVX2000-7.5-T	31.0 (3.5)		6 (6)					
GVX2000-11-T			10 (10)	4	4			
GVX2000-15-T	51.3 (5.8)			6	6			
GVX2000-18.5-T			16 (16)	10	10			
GVX2000-22-T			25 (16)					
GVX2000-25-T			25 (16)					
GVX2000-30-T	119 (13.5)		35 (25)	25	25		2.5 to 6	
GVX2000-37-T			50 (25)		35			
GVX2000-45-T			25 x 2 (25)	35	50			
GVX2000-55-T				50	70			
GVX2000-75-T				25 x 2	25 x 2	4		
GVX2000-90-T	239 (27)		75 (50)	95	50 x 2			
GVX2000-110-T			50 x 2 (50)	50 x 2	70 x 2	6		
GVX2000-132-T			50 x 2 (50)	70 x 2	70 x 2	10		
GVX2000-160-T	425 (48)		240 (120)	240	240			
GVX2000-200-T			120x2(120)	120 x 2	150 x 2	16		
GVX2000-220-T			120x2(120)	120 x 2	185 x 2	25		
GVX2000-280-T			185x2(185)	185 x 2	240 x 2			
GVX2000-315-T			240x2(240)	240 x 2	300 x 2	50		
GVX2000-400-T			300x2(300)	300 x 2	240 x 3	70		
GVX2000-450-T			240x3 (185 x 2)	240 x 3	300 x 3			
GVX2000-500-T			240x3 (185 x 2)	240 x 3	300 x 3			

- Use 60/75 °C copper wire only. Use the following power supply in the inverter

Inverter type	Maximum input voltage	Input source current
GVX2000-0.55-T to GVX2000-25-T	AC 480 V	Not more than 5,000 A
GVX2000-30-T to GVX2000-500-T		Not more than 20,000 A

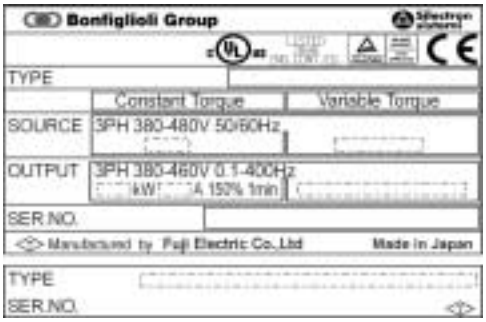
General instructions

Although figures in this manual may show the inverter with covers and safety screens removed for explanation purposes, do not operate the device until all such covers and screens have been replaced.

1 Before Using This Product

1-1 Receiving Inspections

Unpack and check the product as explained below. S
If you have any questions about the product, contact Bonfiglioli Riduttori div. Silectron Sistemi.



Ratings nameplate

1. Check the ratings nameplate to confirm that the delivered product is the ordered one.

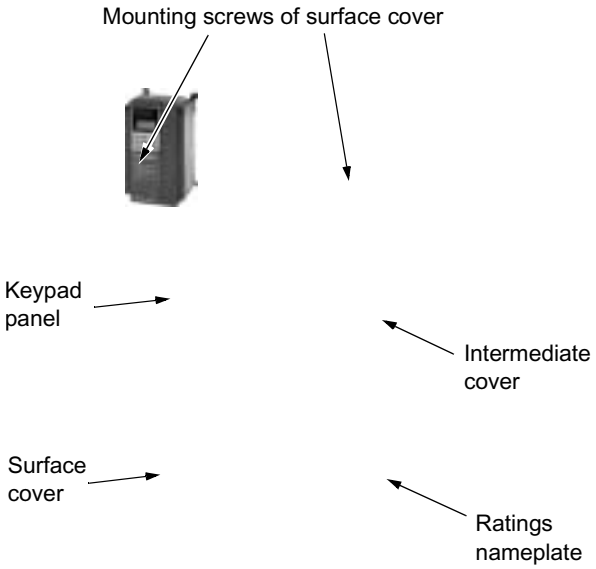
   TYPE: Inverter type
   GVX 2000 - 30 - T
   - T: Power supply voltage system: T → 400V 3-phase
   - 30: Nominal applied motor: 30 → 30 kW
   - 2000: Series name: 2000
   - GVX: Product type: GVX

   SOURCE: Power rating
   OUTPUT: Output rating
   WEIGHT: Weight (not indicated for products with 25 kW or less)

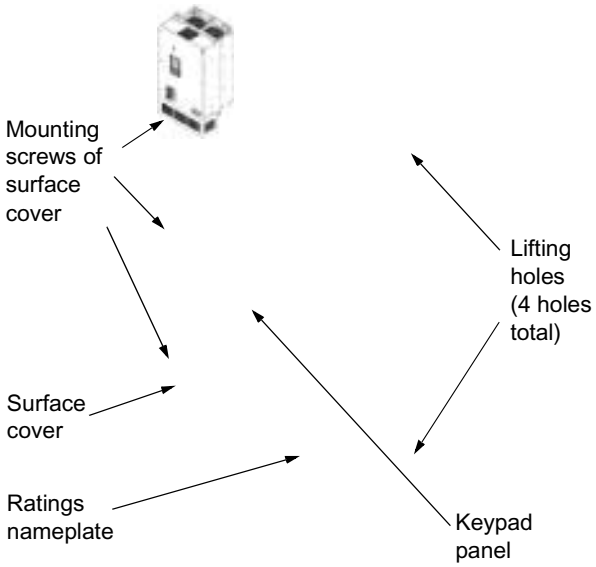
2. Check for damaged and/or missing parts upon delivery.

3. In addition to the inverter unit and this manual, the package contains rubber bushing (for products with 25 kW or less) and a terminating resistor (1/2 W, 120) for RS485 communication.
   The terminating resistors for products with 25 kW or less is packed in a sack.

1-2 Appearance



25 kW or less



30 kW or more

1-3 Handling the Product

1) Removing the surface cover
   For the inverter of 25 kW or less, loosen the mounting screws of the surface cover, then remove the cover by pulling the top (see Figure 1-3-1).

Figure 1-3-1 Removing the surface cover (for inverter of 25 kW or less)

For the inverter of 30 kW or more, remove the six mounting screws of the surface cover, then remove the surface cover.

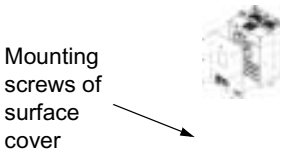


Figure 1-3-2 Removing the surface cover (for inverter of 30 kW or more)

2) Removing the keypad panel
After removing the surface cover as explained in 1), loosen the mounting screws of the keypad panel and remove as shown in Figure 1-3-3.

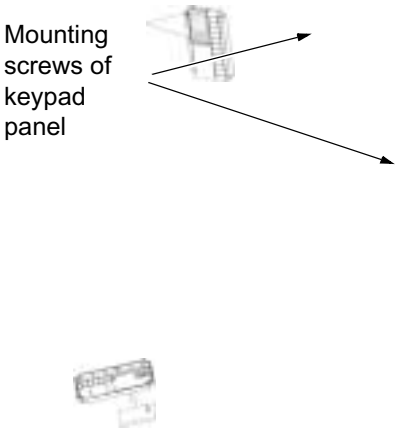


Figure 1-3-3 Removing the keypad panel

Loosen the mounting screws of the keypad panel and remove using the finger holds on the keypad panel case.

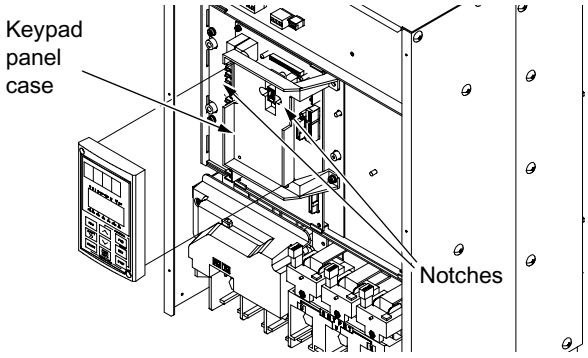


Figure1-3-4 Removing the keypad panel (for inverter of 30 kW or more)

1-4 Carrying

Carry the product by the main unit.
Do not carry the product while holding the cover or parts other than the main unit.
Use a crane or hoist to carry a product equipped with hanging holes.

1-5 Storage

Temporary storage
Temporary storage of this product must meet those conditions listed in Table 1-5-1.

Item	Specifications	
Ambient temperature	-10 to +50 °C	Condensation or freezing must not occur as a result of sudden temperature changes.
Storage/ Transport temperature	-25 to +65 °C	
Storage/ Transport Relative humidity	5 to 95 % Note 2)	
Atmosphere	Pollution degree 2	
Air pressure	Operation/storage: 86 to 106 kPa Transport: 70 to 106 kPa	

Table 1-5-1 Storage environment

Note 1: The storage temperature applies only to short periods such as transport.
Note 2: As a large change in temperature within this humidity range may result in condensation or freezing, do not store where such temperature changes may occur.

1. Do not place this product directly on a floor.
2. To store the product in an extreme environment, pack in vinyl sheet, etc.
3. If the product is stored in a high-humidity environment, insert a drying agent (e.g., silica gel) and pack the product in vinyl sheet.

Long-term storage

If the product is to be stored for an extended period after purchase, the method of storage depends primarily on storage location.

The general long-term storage method is as follows:

1. The above conditions for temporary storage must be satisfied.
   When the storage period exceeds three months, the upper limit of ambient temperature must be reduced to 30 °C to prevent the deterioration of the electrolytic capacitors.
2. Pack the product thoroughly to eliminate exposure to moisture and include a drying agent to ensure a relative humidity of about 70 % or less.
3. If the product is mounted on a unit or control panel and is left unused and exposed to the elements like moisture or dust (particularly on a construction site), remove the product and store in a suitable environment.
4. Electrolytic capacitors not provided with power for an extended period will deteriorate. Do not store electrolytic capacitors for one year or longer without providing power.