

INSTALLATION MANUAL

SYSDRIVE 3G3EV-A□□□□-CUE

(Standard/Multi-function Model)

Ⓒ Ⓔ (EC Directives Models)

Thank you for purchasing the compact, low-noise, and easy-to-use SYSDRIVE 3G3EV-series Inverter (UL/CUL and EC Directives Models). This installation manual describes installation and wiring methods for the SYSDRIVE 3G3EV-A□□□(M)-CUE (UL/CUL and EC Directives Models). Read this manual thoroughly along with the User's Manual of the Inverter (Standard Model (I011) or Multi-function Model (I013)) and handle and operate the product with care.

このたびは、超小型低騒音簡易インバータSYSDRIVE形3G3EVシリーズ（EC指令対応機種）をお買い求めいただきまして、誠にありがとうございます。

この設置マニュアルは、汎用インバータSYSDRIVE形3G3EV-A□□□(M)-CUE（EC指令対応機種）の設置および配線について記載しています。

ご使用の際には、必ずインバータ本体の取扱説明書（カタログ番号：標準タイプI011、多機能タイプI013）と併せてお読みいただき、機能・性能を十分ご理解のうえ、正しくご使用ください。

（日本国内でご使用の場合は、和文の取扱説明書もご利用ください。）

設置マニュアル : SCCY-306

取扱説明書 標準タイプ : SBCY-526

取扱説明書 多機能タイプ : SBCY-528

1. To ensure safe and proper use of the OMRON Inverters, please read this INSTALLATION MANUAL (Cat. No. I521-E1) to gain sufficient knowledge of the devices, safety information, and precautions before actual use.
2. The products are illustrated without covers and shieldings for closer look in this INSTALLATION MANUAL. For actual use of the products, make sure to use the covers and shieldings as specified.
3. This INSTALLATION MANUAL and other related user's manuals are to be delivered to the actual end users of the products.
4. Please keep this manual close at hand for future reference.
5. If the product has been left unused for a long time, please inquire at our sales representative.

NOTICE

1. This manual describes the functions of the product and relations with other products. You should assume that anything not described in this manual is not possible.
2. Although care has been given in documenting the product, please contact your OMRON representative if you have any suggestions on improving this manual.
3. The product contains potentially dangerous parts under the cover. Do not attempt to open the cover under any circumstances. Doing so may result in injury or death and may damage the product. Never attempt to repair or disassemble the product.
4. We recommend that you add the following precautions to any instruction manuals you prepare for the system into which the product is being installed.
 - Precautions on the dangers of high-voltage equipment.
 - Precautions on touching the terminals of the product even after power has been turned off. (These terminals are live even with the power turned off.)
5. Specifications and functions may be changed without notice in order to improve product performance.

Items to Check Before Unpacking


Check the following items before removing the product from the package:


- Has the correct product been delivered (i.e., the correct model number and specifications)?
- Has the product been damaged in shipping?
- Are any screws or bolts loose?


Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

 **DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Additionally, there may be severe property damage.

 **WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

 **Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

OMRON Product References

All OMRON products are capitalized in this manual. The word “Unit” is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation “Ch,” which appears in some displays and on some OMRON products, often means “word” and is abbreviated “Wd” in documentation in this sense.

The abbreviation “PC” means Programmable Controller and is not used as an abbreviation for anything else.

Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

Note Indicates information of particular interest for efficient and convenient operation of the product.

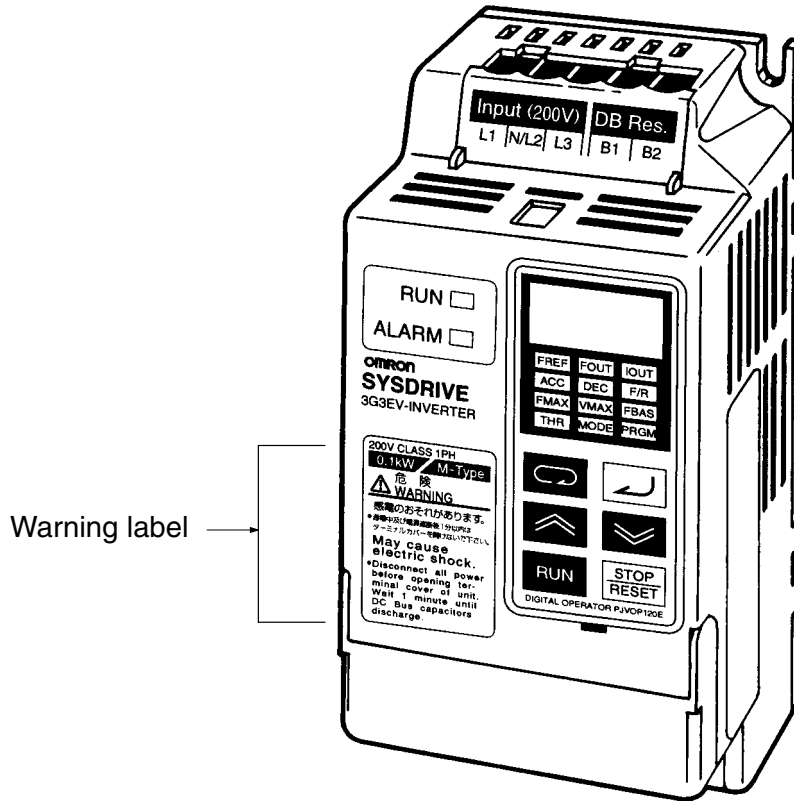
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No patent liability is assumed with respect to the use of the information contained herein. Moreover, because OMRON is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, OMRON assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.

Warning Label

A warning label is attached to the product as shown in the following illustration. Be sure to observe the precautionary items specified on the label.



Contents of Warning Label

200V CLASS 1PH
0.1kW / M-Type
危険 WARNING
 感電のおそれがあります
 感電のおそれがあります
 通電中及び電源遮断後1分以内はターミナルカバーを開けないで下さい。
May cause electric shock.
 •Disconnect all power before opening terminal cover of unit.
 Wait 1 minute until DC Bus capacitors discharge.

400V CLASS 3PH
0.37kW / M-Type
危険 WARNING
 感電のおそれがあります
 感電のおそれがあります
 通電中及び電源遮断後1分以内はターミナルカバーを開けないで下さい。
 電源の中性点を接地して下さい。
May cause electric shock.
 •Disconnect all power before opening terminal cover of unit.
 Wait 1 minute until DC Bus capacitors discharge.
 •Make sure to ground the supply neutral.

Read and Understand this Manual

Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

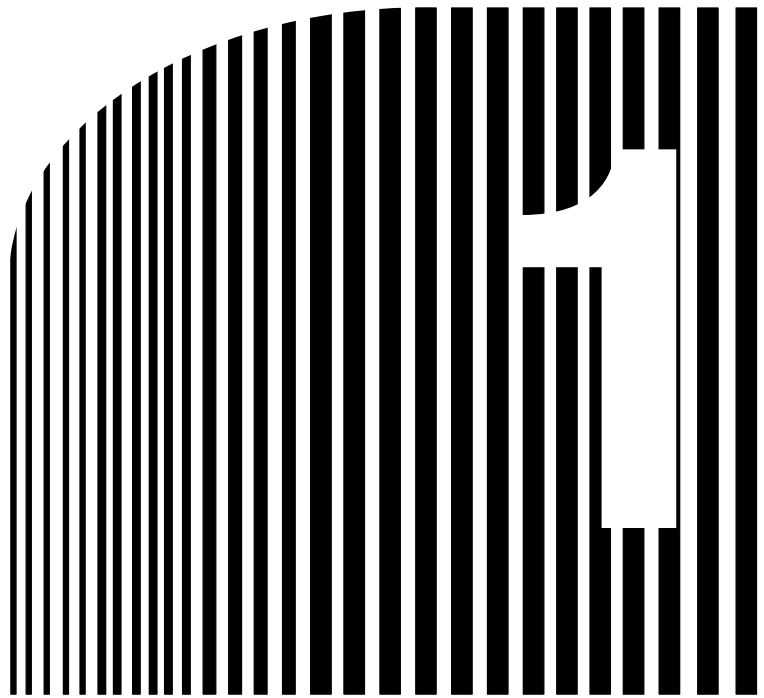
Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

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Chapter 1

• Getting Started •

- 1-1 Items to be Checked when Unpacking
- 1-2 Precautions

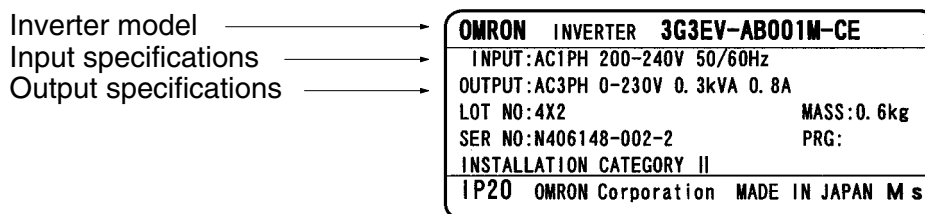
1-1 Items to be Checked when Unpacking

■ Checking the Product

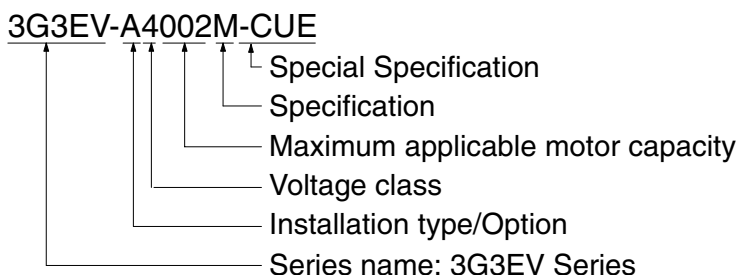
On delivery, always check that the delivered product is the SYSDRIVE 3G3EV Inverter that you ordered.

Should you find any problems with the product, immediately contact your nearest local sales representative.

● Checking the Nameplate



● Checking the Model



Specifications

Blank	Standard model
M	Multi-function model

Voltage Class

2	Three-phase 200-VAC input
B	Single/Three-phase 200-VAC input
4	Three-phase 400-VAC input

Maximum Applicable Motor Capacity

001	0.1 kW
002	0.2 (0.37) kW
004	0.4 (0.55) kW
007	0.75 (1.1) kW
015	1.5 kW

Installation Type/Option

A	Panel mounting
P	Option

Note The figures in parentheses indicate capacities for 400-VAC class models.

Special Specification

-CUE	UL/CUL and EC Directives Models
------	---------------------------------

● Checking for Damage

Check the overall appearance and check for damage or scratches resulting from transportation.

■ Checking Accessories

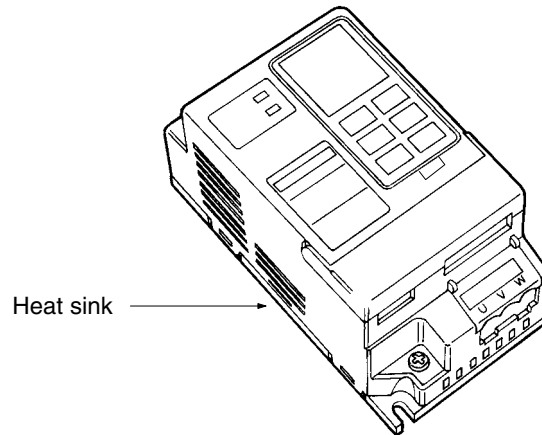
Note that this manual and the User's Manual are the accessories provided with the 3G3EV (Multi-function Model). Set screws and other necessary parts must be prepared by customers.

1-2 Precautions

To ensure safe operation of the 3G3EV, note the following items:

■ Always Hold the Heat Sink During Removal

When moving the 3G3EV, always hold the heat sink (aluminum portion on the rear of the Unit).



■ Watch Out for Residual Voltage On Charged Portions

After the power is turned off, residual voltage remains in the capacitor inside the Inverter. Therefore, touching terminals immediately after turning the power off may cause an electrical shock.

If an inspection or some other task is to be performed, always wait at least one minute from the time all indicators on the front panel go off.

(Note that this warning is applicable whenever you perform any task after turning the main circuit off.)

■ Do Not Remove the Digital Operator When the Main Circuit is Still On.

Always turn the main circuit off before removing the Digital Operator.

Removing the Digital Operator with the main circuit ON may cause an electrical shock and damage the equipment.

■ Do Not Modify Wiring or Check Signals When the Main Circuit is ON

Always turn the main circuit off before modifying wiring or checking signals.

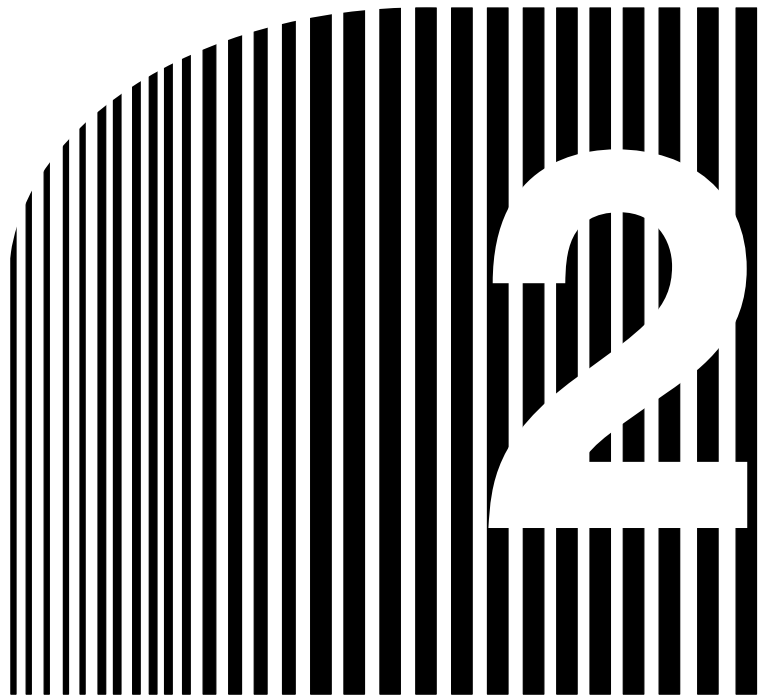
Touching terminals while the main circuit is on may cause an electrical shock and damage the equipment.

■ Do Not Conduct a Dielectric Strength Test

Because the 3G3EV Inverter is an electronic control unit using semiconductor, never conduct a dielectric strength test or an insulation resistance test for the control circuit.

■ Modify Constant Settings Correctly

Always modify the constant settings according to the procedures described in this manual and the User's Manual.



Chapter 2

• Overview •

2-1 Features

2-2 Nomenclature

2-1 Features

■ 3G3EV-series Models (EC Directives Models)

Standard and multi-function 3G3EV-series Inverters of EC Directives Models are available.

The maximum applicable motor capacities for the 200-VAC class are 0.1 to 1.5 kW (5 models) and 0.2 to 1.5 kW (4 models) for the 400-VAC class.

Type	Voltage class	Enclosure rating	Max. applicable motor capacity	Model
Standard	200-VAC input (three-phase)	Enclosed panel mounted	0.1 kW	3G3EV-A2001-CUE
			0.2 kW	3G3EV-A2002-CUE
			0.4 kW	3G3EV-A2004-CUE
			0.75 kW	3G3EV-A2007-CUE
			1.5 kW	3G3EV-A2015-CUE
	200-VAC input (single/three-phase)	Enclosed panel mounted	0.1 kW	3G3EV-AB001-CUE
			0.2 kW	3G3EV-AB002-CUE
			0.4 kW	3G3EV-AB004-CUE
			0.75 kW	3G3EV-AB007-CUE
			1.5 kW	3G3EV-AB015-CUE
	400-VAC input (three-phase)	Enclosed panel mounted	0.2 (0.37) kW	3G3EV-A4002-CUE
			0.4 (0.55) kW	3G3EV-A4004-CUE
			0.75 (1.1) kW	3G3EV-A4007-CUE
			1.5 kW	3G3EV-A4015-CUE
	Multi-function	200-VAC input (three-phase)	Enclosed panel mounted	0.1 kW
0.2 kW				3G3EV-A2002M-CUE
0.4 kW				3G3EV-A2004M-CUE
0.75 kW				3G3EV-A2007M-CUE
1.5 kW				3G3EV-A2015M-CUE
200-VAC input (single/three-phase)		Enclosed panel mounted	0.1 kW	3G3EV-AB001M-CUE
			0.2 kW	3G3EV-AB002M-CUE
			0.4 kW	3G3EV-AB004M-CUE
			0.75 kW	3G3EV-AB007M-CUE
			1.5 kW	3G3EV-AB015M-CUE
400-VAC input (three-phase)		Enclosed panel mounted	0.2 (0.37) kW	3G3EV-A4002M-CUE
			0.4 (0.55) kW	3G3EV-A4004M-CUE
			0.75 (1.1) kW	3G3EV-A4007M-CUE
			1.5 kW	3G3EV-A4015M-CUE

Note Model numbers with a suffix of “-CUE” indicate models approved by UL. (Approval has not been obtained for models with a model number suffix of “-CE.”)

■ LVD and EMC Directives

The SYSDRIVE EC Directives Models conform to the LVD (prEN50178) and the EMC (EN50081-2, EN50082-2) Directives.

However, when the product is built into a unit, the connected switches, optional items, or motors may not satisfy these Directives. In such a case, either use components that meet the Directives or take appropriate countermeasures such as providing surge killers or other noise prevention devices.

■ Required Conditions

There are several conditions that must be satisfied for this Inverter to conform to the LVD and EMC Directives. To satisfy the Directives, meet the instructions in this manual for the following installation conditions.

- Installation of noise filters and clamp core.
- Shield braided cables must be used for input and output cables.
Limitations on the lengths of cables.
- Installation of recommended fuses on the input side.

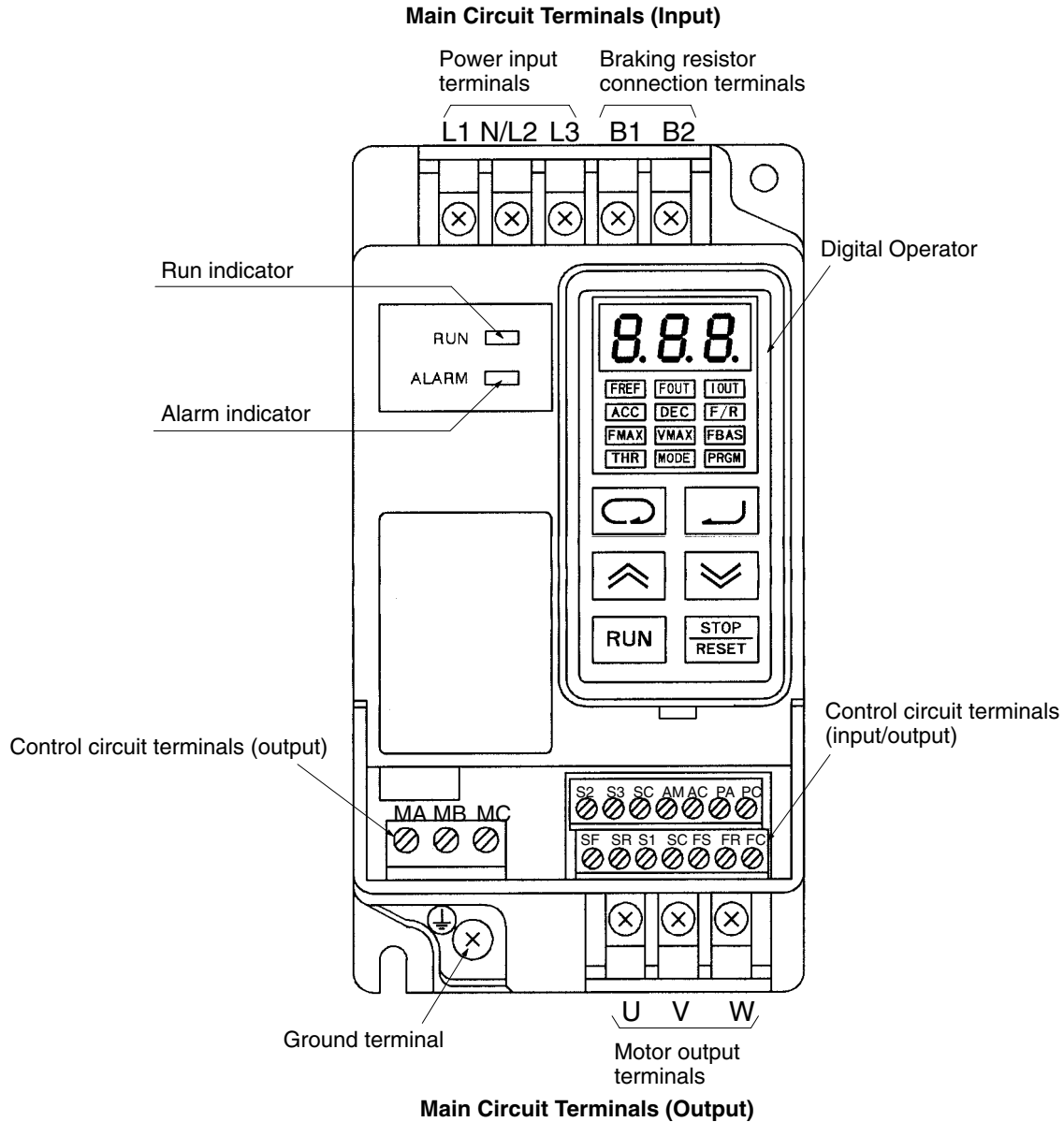
■ Other Functions

This manual describes installation and wiring methods for conforming to the LVD and EMC Directives. Refer to the User's Manual for detailed information on the functions of the Inverter.

- 3G3EV-series Standard Model:
SYSDRIVE 3G3EV Compact Low-noise Inverter (I011-E1)
- 3G3EV-series Multi-function Model:
SYSDRIVE 3G3EV Compact Low-noise Inverter (I013-E1)

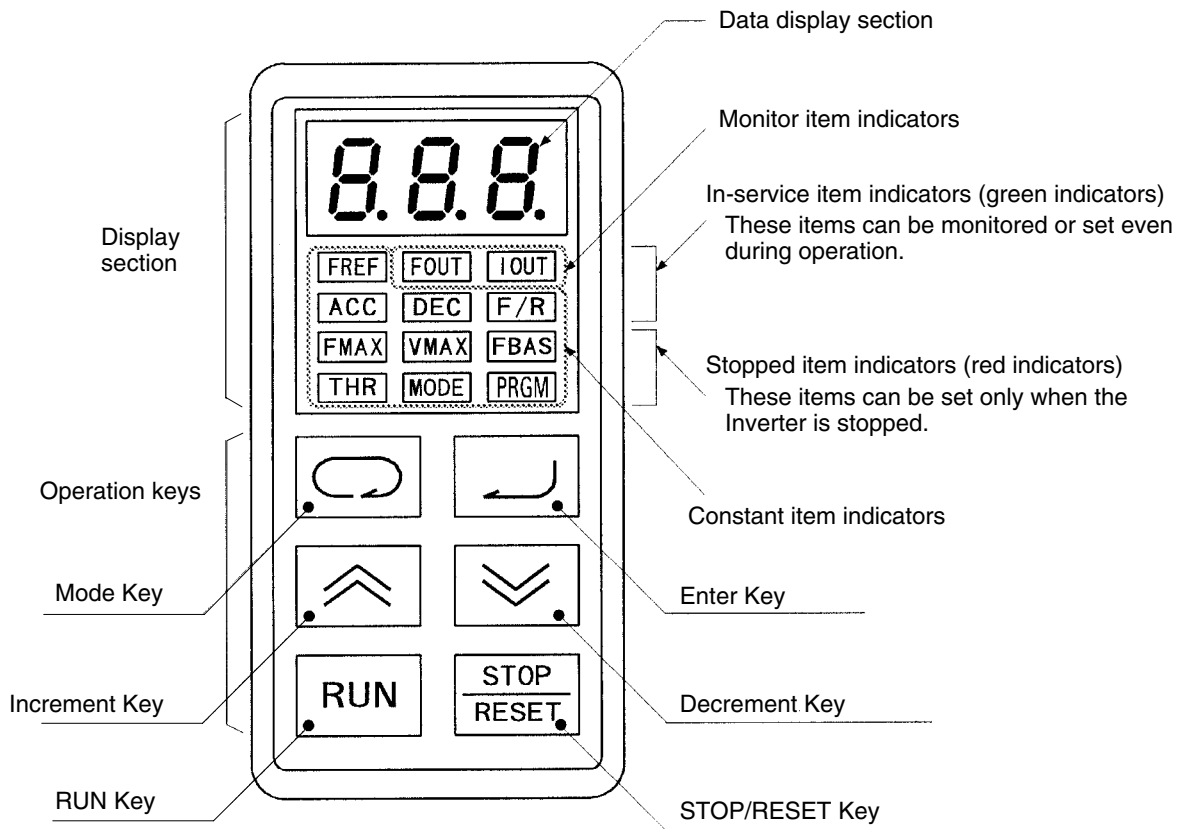
2-2 Nomenclature

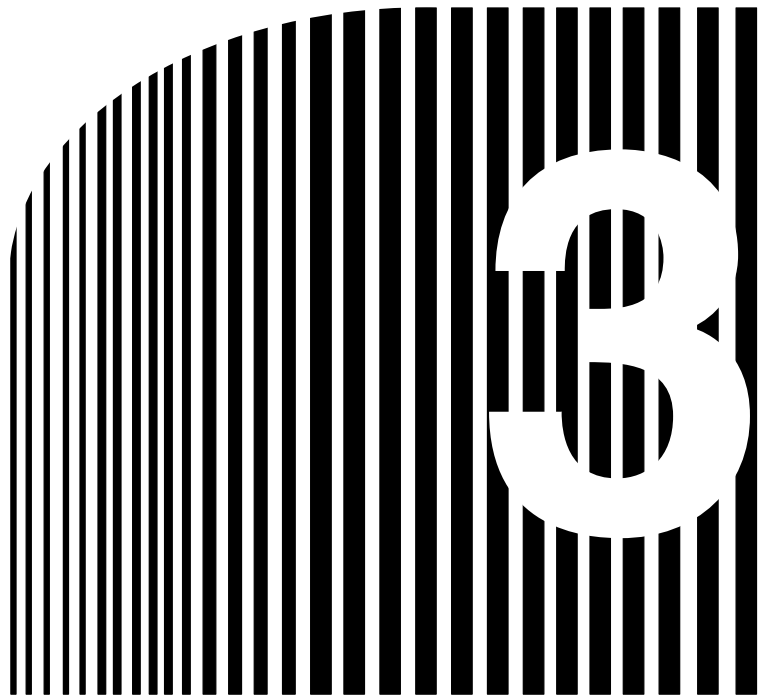
■ Main Unit



Note This diagram shows the Inverter with all terminal block covers removed. The standard Inverters are not provided with the upper terminal block (S2 to PC).

■ Digital Operator





Chapter 3

• Design •

3-1 Installation

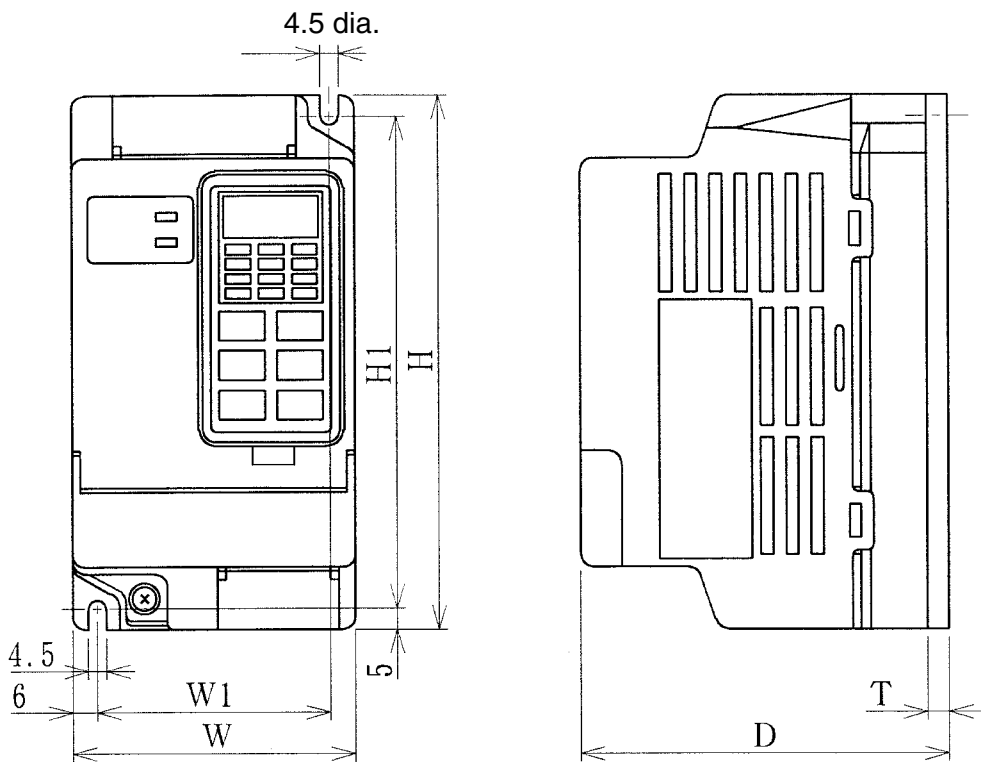
3-2 Wiring

3-1 Installation

3-1-1 Outside/Mounting Dimensions

Note All dimensions are in millimeters.

- **3G3EV-A2001(M)-CUE to 3G3EV-A2004(M)-CUE (0.1 to 0.4 kW):
Three-phase 200-VAC Input**
- **3G3EV-AB001(M)-CUE to 3G3EV-AB002(M)-CUE (0.1 to 0.2 kW):
Single/Three-phase 200-VAC Input**



Note 1. For the 3G3EV-A2001(M)-CUE, 3G3EV-A2002(M)-CUE, and 3G3EV-AB001(M)-CUE, a U-shaped notch (4.5 mm wide) is provided instead of the upper mounting hole (4.5 mm in diameter).

Note 2. Install the Inverter with two M4 bolts.

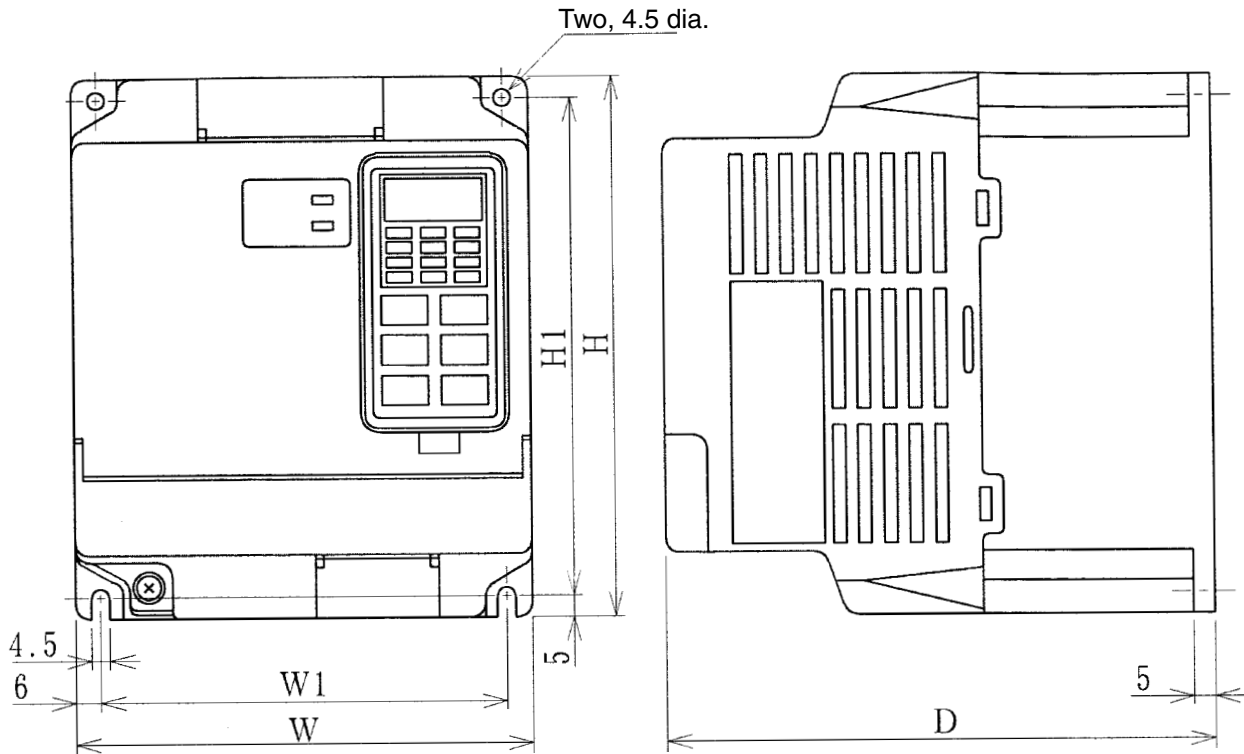
● **Three-phase 200-VAC Input Model**

3G3EV model	Output	W	H	D	W1	H1	T	Weight (kg)
A2001(M)-CUE	0.1 kW	68	128	75	56	118	3	Approx. 0.5
A2002(M)-CUE	0.2 kW			88			3	Approx. 0.6
A2004(M)-CUE	0.4 kW			110			5	Approx. 0.9

● Single/Three-phase 200-VAC Input Model

3G3EV model	Output	W	H	D	W1	H1	T	Weight (kg)
AB001(M)-CUE	0.1 kW	68	128	75	56	118	3	Approx. 0.5
AB002(M)-CUE	0.2 kW			108			3	Approx. 0.6

- 3G3EV-A2007(M)-CUE to 3G3EV-A2015(M)-CUE (0.75 to 1.5 kW):
Three-phase 200-VAC Input
- 3G3EV-AB004(M)-CUE to 3G3EV-AB015(M)-CUE (0.4 to 1.5 kW):
Single/Three-phase 200-VAC Input
- 3G3EV-A4002(M)-CUE to 3G3EV-A4015(M)-CUE (0.2 to 1.5 kW):
Three-phase 400-VAC Input



Note Install the Inverter with four M4 bolts.

● Three-phase 200-VAC Input Model

3G3EV model	Output	W	H	D	W1	H1	Weight (kg)
A2007(M)-CUE	0.75 kW	108	128	130	96	118	Approx. 1.3
A2015(M)-CUE	1.5 kW			155			Approx. 1.5

● Single/Three-phase 200-VAC Input Model

3G3EV model	Output	W	H	D	W1	H1	Weight (kg)
AB004(M)-CUE	0.4 kW	108	128	130	96	118	Approx. 1.3
AB007(M)-CUE	0.75 kW						Approx. 1.3
AB015(M)-CUE	1.5 kW	130		170	118		Approx. 2.0

• **Three-phase 400-VAC Input Model**

3G3EV model	Output	W	H	D	W1	H1	Weight (kg)
A4002(M)-CUE	0.2 kW	108	128	92	96	118	Approx. 1.0
A4004(M)-CUE	0.4 kW			110			Approx. 1.0
A4007(M)-CUE	0.75 kW			140			Approx. 1.5
A4015(M)-CUE	1.5 kW	130		170	118		Approx. 2.0

3-1-2 Installation Conditions

■ **Installation Site**

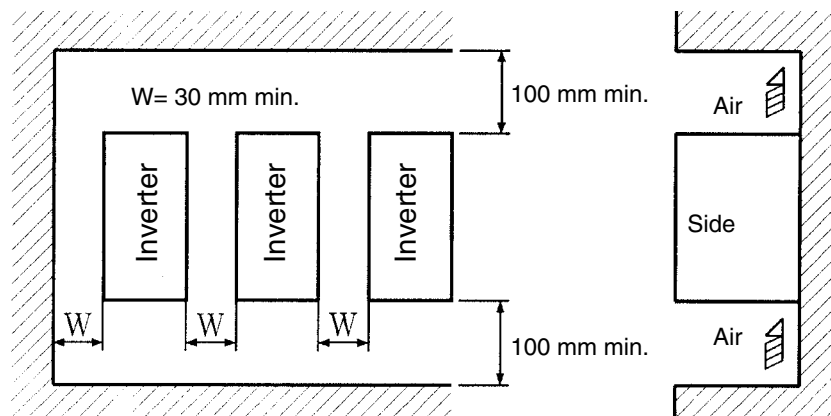
- Install the Inverter under the following conditions:
 - Ambient temperature for operation: -10°C to 50°C
 - Humidity: 90% RH or less (non-condensing)
- Install the Inverter in a clean location free from oil mist and dust. Alternatively, install it in a totally enclosed panel that is completely shielded from suspended dust.
- When installing or operating the Inverter, always take special care so that metal powder, oil, water, or other foreign matter do not get in the Inverter.
- Do not install the Inverter on inflammables such as wood.

■ **Direction of Installation**

- Install the Inverter on a vertical surface so that the characters on the nameplate are oriented upward.

■ **Installation Space**

- When installing the Inverter, always provide the following installation space to allow normal heat dissipation from the Inverter:



■ Ambient Temperature Control











- To enhance operation reliability, the Inverter should be installed in an environment free from extreme temperature rises.
- If the Inverter is installed in an enclosed environment such as a box, use a cooling fan or air conditioner to maintain the internal air temperature below 50°C.
- The surface temperature of the Inverter may reach 30°C higher than the ambient temperature. Therefore, keep all thermally susceptible devices and wires away from the Inverter.

■ Protecting the Inverter from Foreign Matter during Installation

- Place a cover over the Inverter to shield it from metal powder produced by drilling during installation.
(Upon completion of installation, always remove the cover from the Inverter. Otherwise, ventilation will be affected, causing the invert to overheat.)

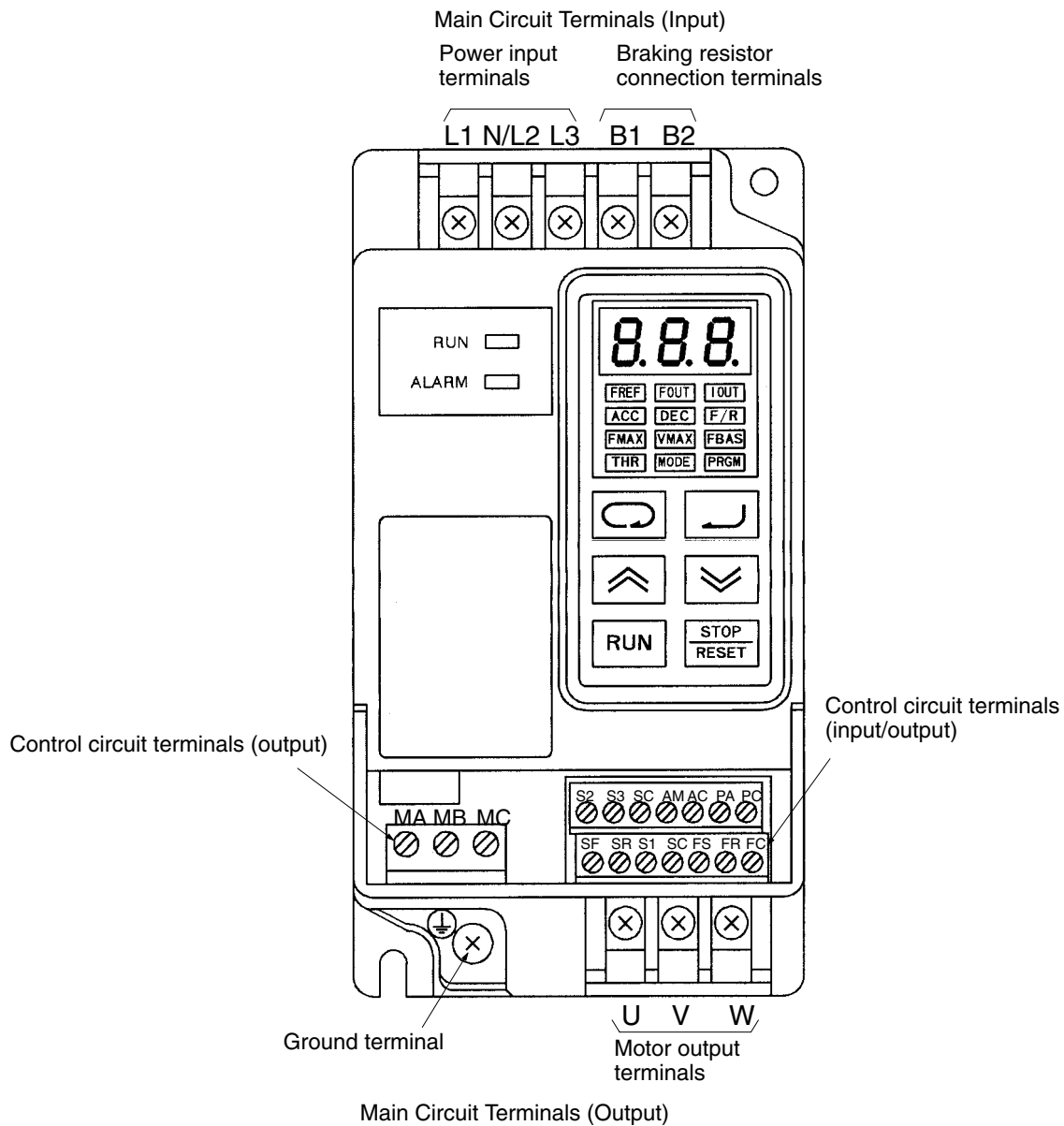
3-2 Wiring

■ Cautions and Warnings

-  **WARNING** Be sure that the power supply is turned OFF before wiring. Wait for at least one minute after turning off the power supply. Otherwise, an electric shock may occur.
-  **WARNING** Wiring must be performed by authorized persons specialized in electrical work. Otherwise, an electric shock or fire may occur.
-  **WARNING** Be sure to check for proper operation after wiring the emergency stop circuit. Otherwise, physical injury may occur.
-  **WARNING** Be sure to ground the ground terminal. Otherwise, an electric shock or fire may occur.
-  **WARNING** Be sure to connect the ground to the supply neutral for 400-VAC-class Inverters. Otherwise, an electric shock or equipment damage may occur.
-  **WARNING** Be sure to confirm that the rated voltage of the Inverter coincides with the voltage of the AC power supply. Otherwise, a fire, injury, or equipment trouble may occur.
-  **WARNING** When connecting the braking resistor or Braking Resistor Unit, be sure to follow the instructions specified in the Installation Manual. Otherwise, a fire may occur.
-  **WARNING** Be sure to wire correctly. Otherwise, injury or equipment damage may occur.
-  **WARNING** Be sure to firmly tighten the screws on the terminal block. Otherwise, a fire, injury, or equipment damage may occur.
-  **Caution** Do not connect the AC power to the output terminal U, V, or W. Otherwise, equipment damage or trouble may occur.

3-2-1 Terminal Blocks

■ Name of Each Terminal Block



Note This diagram shows an Inverter with all terminal block covers removed. The standard Inverters are not provided with the S2 to PC terminal block.


■ Main Circuit Terminals

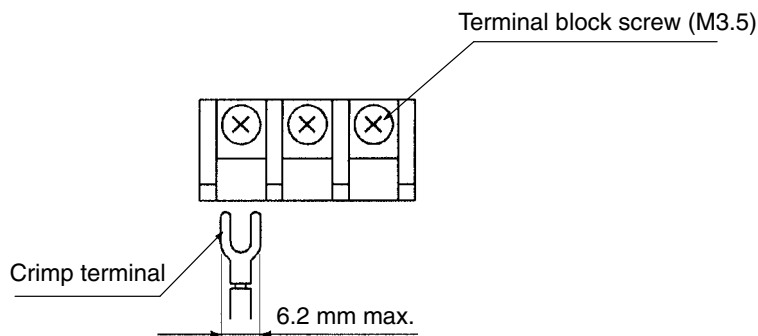
● Input Terminals (Top Section)

Terminal symbol	Name and description
L1 N/L2 L3	Power input terminals AB: Single-phase 200 to 240 VAC, 50/60 Hz Three-phase 200 to 230 VAC, 50/60 Hz A4: Three-phase 380 to 460 VAC, 50/60 Hz Note: Single-phase power must be input between terminals L1 to N/L2
B1 B2	Braking resistor connection terminals (see note) Terminals for connecting an optional braking resistor

Note Before shipping, a resin plate is attached to each braking resistor connection terminal to prevent incorrect wiring.
 When connecting a braking resistor, always remove the resin plates with a pair of long-nose pliers.

● Output Terminals (Bottom Section)

Terminal symbol	Name and description
U V W	Motor output terminals Three-phase power output terminals for operating the motor. (Never connect an AC power supply to these terminals.) AB□: Three-phase 200 to 230 VAC A4□: Three-phase 380 to 460 VAC Note: Depends on the input voltage.
	Ground terminal Always use a grounding terminal with a ground resistance of followings, 100 Ω or less of 200-VAC class 10 Ω or less of 400-VAC class (Connect also to the power supply neutral to conform to the EC Directives.) Be sure to connect a grounding line to the FG terminal and also connect directly to the FG terminal of the motor.



■ Control Circuit Terminals

● Input Terminals (On Right-hand Side)

No external power supply is required because a built-in power supply is provided.

Terminal symbol	Name and description	Interface
SF	Forward/Stop (see note 3) The motor will rotate in the forward direction when the signal on this terminal is turned ON. The motor will stop rotating when the signal is turned OFF.	
SR	Reverse/Stop (see note 3) The motor will rotate in the reversed direction when the signal on this terminal is turned ON. The motor will stop rotating when the signal is turned OFF.	
S1 to S3	Multi-function input (see notes 1, 3)	
SC	Sequence input common Input terminal common for SF to S3	
FS	Frequency reference power supply Output voltage: 12 VDC Permissible current: 20 mA	
FR	Frequency reference input (see note 2) 0 to 10 VDC	
FC	Frequency reference common	

Note 1. Functions are set with constants n06 to n08. Only n06: S1 is, however, available to the standard model.

Refer to the following for factory settings:

- S1: Fault reset (n06=1)
- S2: External fault (input to contact a) (n07=2)
- S3: Multi-step speed command (n08=4)

Note 2. The FR terminal will function as a 4- to 20-mA input terminal with the setting of the internal switch 1 (SW1) and n02 for operation mode selection.

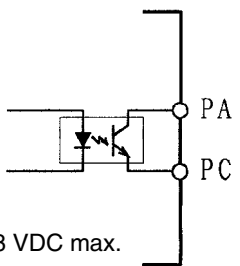
Note 3. The sequential input method will change with the setting of the internal switch 2 (SW2).

● Output Terminals (On Left-hand Side)

Terminal symbol	Name and description	Interface
MA	Multi-function contact output (contact a) (see note)	
MB	Multi-function contact output (contact b) (see note)	
MC	Multi-function contact output (common)	

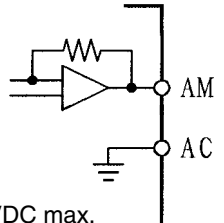
Note Constant No. 09 (n09) is used to set the function. This constant is factory set to “during running.”

● Output Terminals (On Right-hand Side)

Terminal symbol	Name and description	Interface
PA	Multi-function photocoupler output (see note)	 <p>50 mA at 48 VDC max.</p>
PC	Multi-function photocoupler output (common)	

Note Constant No. 10 (n10) is used to set this function. This constant is factory-set to “fault.” The standard model does not have multi-function photocoupler output.

● Analog Output Terminals (On Right-hand Side)

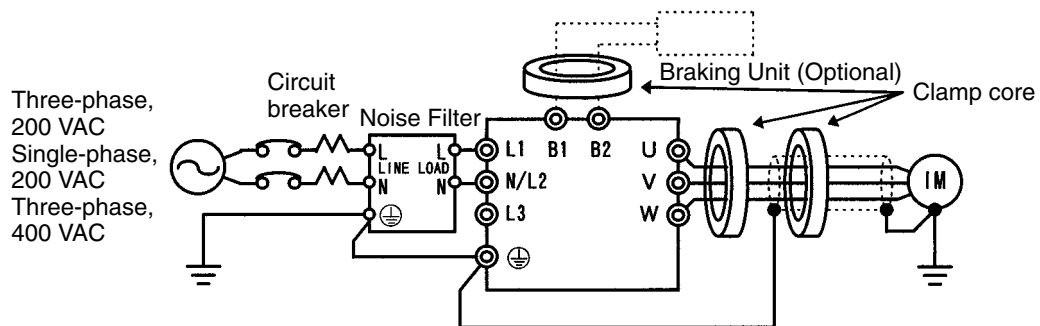
Terminal symbol	Name and description	Interface
AM	Multi-function analog output (see note)	 <p>2 mA at 0 to +10 VDC max.</p>
AC	Multi-function analog output (common)	

Note Constant No. 44 (n44) is used to set this function and constant No. 45 (n45) is used to set the multiplying factor, which are factory-set to “output frequency” and “3V at maximum frequency” respectively.

The standard model does not have analog output.

■ Standard Connection Diagram

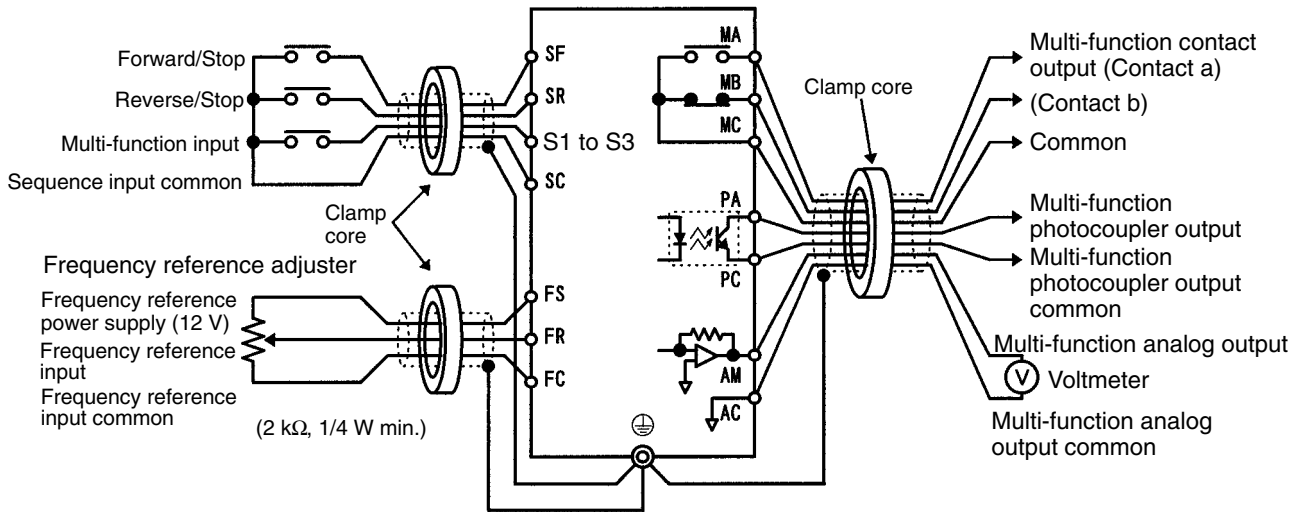
● Main Circuit Terminal Connections



Note 1. Three-phase 200 VAC (400 VAC) can be input to L1, L2, and L3.

Note 2. For the 400-VAC-class Inverter, be sure to ground the supply neutral.

● Control Circuit Terminal Connections



Note 1. The standard model does not have the S2, S3, PA, PC, AM, or AC terminal.

Note 2. The sequence input and the sequence output can be wired with a single shielded cable.

3-2-2 Wiring Around the Main Circuit

System reliability and noise resistance are affected by the wiring method used. Therefore, always follow the instructions given below when connecting the Inverter to peripheral devices and other parts.

■ Wire Size

For the main circuit and ground, always use 600-V polyvinyl chloride (PVC) cables.

If the cable is long and may cause voltage drops, increase the wire size according to the cable length.

Model	Terminal symbol	Terminal screw	Wire size (mm ²)
3G3EV-A2001(M)-CUE	R S T B1 B2	M3.5	0.75 to 2
3G3EV-AB001(M)-CUE	U V W ⏚		
3G3EV-A2002(M)-CUE	R S T B1 B2	M3.5	0.75 to 2
3G3EV-AB002(M)-CUE	U V W ⏚		
3G3EV-A4002(M)-CUE			
3G3EV-A2004(M)-CUE	R S T B1 B2	M3.5	0.75 to 2
3G3EV-AB004(M)-CUE	U V W ⏚		
3G3EV-A4004(M)-CUE			
3G3EV-A2007(M)-CUE	R S T B1 B2	M3.5	0.75 to 2
3G3EV-AB007(M)-CUE	U V W ⏚		
3G3EV-A4007(M)-CUE			
3G3EV-A2015(M)-CUE	R S T B1 B2	M3.5	1.25 to 2
3G3EV-AB015(M)-CUE	U V W ⏚		
3G3EV-A4015(M)-CUE			0.75 to 2

Note Tighten the M3.5 terminal screw to the torque of 0.8 N • m.

Determining the Wire Size

Determine the wire size for the main circuit so that line voltage drop is within 2% of the rated voltage.

Line voltage drop V_D is calculated as follows:

$$V_D (V) = \sqrt{3} \times \text{wire resistance } (\Omega/\text{km}) \times \text{wire length (m)} \times \text{amperage (A)} \times 10^{-3}$$

■ **Conformance to EMC Directives**

● **Wiring Power Supply**

Install the Inverter and Noise Filter on ground plates.

Be sure to wire the Inverter through a dedicated Noise Filter.

Reduce the length of the ground wire as much as possible and connect the ground wire to the ground securely.

Reduce length of the cable between the Inverter and the Noise Filter as much as possible. The cable length must not exceed 400 mm.

Three-phase 200-VAC Noise Filter

Inverter	Single-phase Noise Filter (Soshin Electric)	
Model 3G3EV-	Model 3G3EV-	Rated current (A)
A2001(M)-CUE	PNF3006A-YN	6
A2002(M)-CUE		
A2004(M)-CUE		
A2007(M)-CUE	PNF3010A-YN	10
A2015(M)-CUE		

Single-phase 200-VAC Noise Filter

Inverter	Single-phase Noise Filter (Soshin Electric)			
Model 3G3EV-	Model 3G3EV-	Rated current (A)	Weight (kg)	Dimensions
AB001(M)-CUE	PNF2003A-YN	3	Approx. 0.5	66 × 117 × 67
AB002(M)-CUE				
AB004(M)-CUE	PNF2010A-YN	10	Approx. 0.6	66 × 117 × 67
AB007(M)-CUE				
AB015(M)-CUE	PNF2020A-YN	20	Approx. 1.0	74 × 128 × 72

Single-phase 200-VAC Noise Filter

Inverter	Single-phase Noise Filter (Soshin Electric)			
Model 3G3EV-	Model 3G3EV-	Rated current (A)	Weight (kg)	Dimensions
A4002(M)-CUE	PNF3007C-YN	7	Approx. 1.0	108 × 128 × 75
A4004(M)-CUE				
A4007(M)-CUE				
A4015(M)-CUE				

● **Wiring between Inverter and Motor**

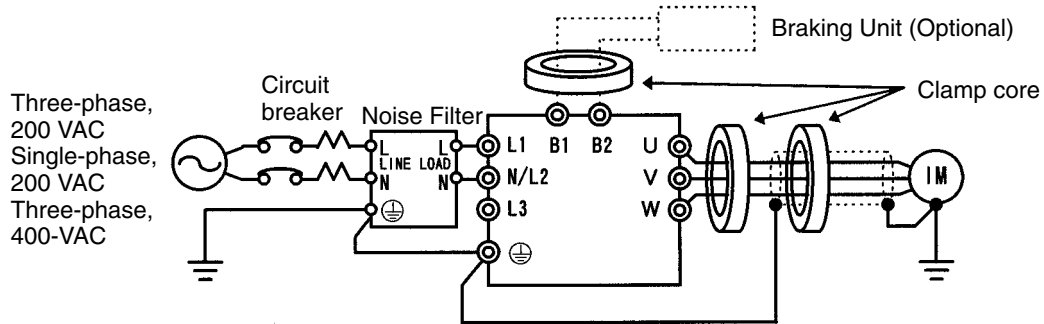
Be sure to use a shield braided cable to connect the Inverter and motor. Reduce the length of the cable as much as possible and ground the shield on the Inverter side and motor side. The cable length must not exceed 20 m. Furthermore, attach a clamp core close to the Inverter’s output terminals and the shield of the Inverter side.

Recommended Clamp Core

Product name	Model	Manufacturer
Clamp filter	ZCAT3035-1330	TDK

● **Wiring Control Circuit Cable**

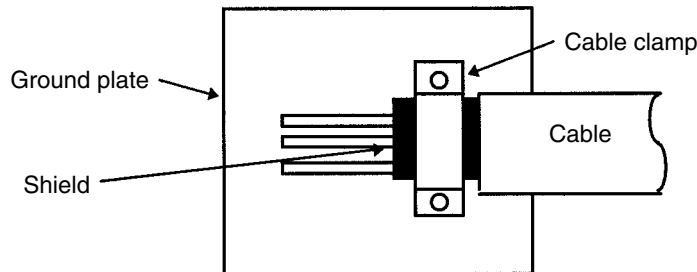
Be sure to use a shield braided cable for the control circuit and ground the shield on the inverter side at one point. Further more, attach a clamp core close to the Inverter.



Note For the 400-VAC-class Inverter, be sure to ground the supply neutral.

● **Grounding the Braided Shield**

It is recommended that a cable clamp be attached to the braided shield for grounding, which allows the secure grounding of the braided shield.



■ **Conformance to LVD**

Be sure to insert a molded-case circuit breaker (MCCB) into the power line connected to the Inverter for short-circuit protection. A single MCCB is required by each Inverter.

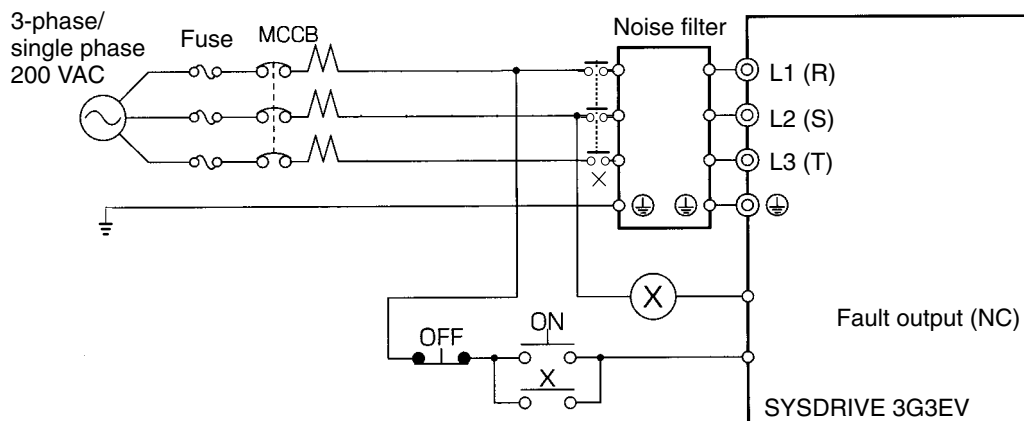
The frequency reference power supply (FS) is basic isolation. Its insulation needs to be reinforced when connecting to a peripheral device.

Inverter	MCCB	
Model 3G3EV-	Rated current (A)	Type
A2001(M)-CUE	5	NF30 model (Mitsubishi Electric)
A2002(M)-CUE	5	
A2004(M)-CUE	5	
A2007(M)-CUE	10	
A2015(M)-CUE	20	
AB001(M)-CUE	5	NF30 model (Mitsubishi Electric)
AB002(M)-CUE	5	
AB004(M)-CUE	10	
AB007(M)-CUE	20	
AB015(M)-CUE	20	
A4002(M)-CUE	5	NF30 model (Mitsubishi Electric)
A4004(M)-CUE	5	
A4007(M)-CUE	5	
A4015(M)-CUE	10	

■ **Wiring on the Input Side of Main Circuit**

● **Safe Power Supply Sequence**

If a single MCCB is shared by more than one Inverter or other equipment, refer to the following and provide a sequence that will turn off the power when abnormal output results.



● Installing a Ground Fault Interrupter

Inverter outputs use high-speed switching, so high-frequency leakage current is generated. In general, a leakage current of approximately 100 mA will occur for each Inverter (when the power cable is 1 m), and approximately 5 mA for each additional meter of power cable. Therefore, at the power supply input area, use a special-purpose breaker for Inverters, which detects only the leakage current in the frequency range that is hazardous to humans and excludes high-frequency leakage current.

Countermeasures taken for the EMC tend to increase the leakage current, therefore careful attention must be paid in selecting a breaker.

- For the special-purpose breaker for Inverters, choose a ground fault interrupter with a sensitivity amperage of at least 10 mA per Inverter.
- When using a general leakage breaker, choose a ground fault interrupter with a sensitivity amperage of 200 mA or more per Inverter and with an operating time of 0.1 s or more.

● Installing a Magnetic Contactor

This Inverter can be used without a magnetic contactor (MC) on the power supply side.

If the power supply for the main circuit is to be shut off because of the sequence, a magnetic contactor can be used instead of a molded-case circuit breaker.

However, when a magnetic contactor is installed on the primary side of the main circuit to forcibly stop a load, note that regenerative braking does not work and the load coasts to a stop.

- A load can be started and stopped by opening and closing the magnetic contactor on the primary side. Note, however, that frequently opening and closing the magnetic contactor may cause the Inverter to break down.
- When the Inverter is operated with a Digital Operator, automatic operation cannot be performed after recovery from a power interruption.

● Connecting Input Power Supply to the Terminal Block

Because the phase sequence of input power supply is irrelevant to the phase sequence (L1, L2/N, L3) of the terminal block, input power supply can be connected to any terminal on the terminal block.

● Installing an AC Reactor

It is recommended that an AC reactor be inserted in the input power supply side to suppress harmonics.

If the Inverter is connected to a large-capacity power transformer (600 kW or more) or the phase advance capacitor is switched, an excessive peak current may flow through the input power circuit, causing the converter unit to break down. To prevent this, install an optional AC reactor on the input side of the Inverter. This also improves the power factor on the power supply side.

● Installing a Surge Absorber

Always use a surge absorber or diode for the inductive loads to be connected to the Inverter. These inductive loads include magnetic contactors, electromagnetic relays, solenoid valves, solenoids, and magnetic brakes.

● Wiring of Braking Resistor/Braking Resistor Unit

When using an Inverter for loads with a large inertia or for vertical axis loads, regenerative energy will be fed back.

If the regenerative energy exceeds the Inverter capacity, overvoltage will be detected in the main circuit. In such a case, use a Braking Resistor or Braking Resistor Unit.

Note Be sure to create a sequence that will turn OFF the Inverter power supply when resistor overheating occurs. When using a Braking Resistor, be sure to install a thermal relay to detect resistor overheating. When using a Braking Resistor Unit, use an error output contact. Otherwise, a fire may occur.

Model 3G3EV-	Model 3G3IV-		Minimum connected resistance
	Braking Resistor (Duty Cycle 3%ED)	Braking Resistor Unit (Duty Cycle 10%ED)	
A2001(M)-CUE	PERF150WJ401 (400 Ω)	---	200 Ω
A2002(M)-CUE			
A2004(M)-CUE	PERF150WJ201 (200 Ω)	PLKEB20P7 (200 Ω 70 W)	80 Ω
A2007(M)-CUE			
A2015(M)-CUE	PERF150WJ101 (100 Ω)	PLKEB21P5 (100 Ω 260 W)	60 Ω
AB001(M)-CUE	PERF150WJ401 (400 Ω)	---	200 Ω
AB002(M)-CUE			
AB004(M)-CUE	PERF150WJ201 (200 Ω)	PLKEB20P7 (200 Ω 70 W)	80 Ω
AB007(M)-CUE			
AB015(M)-CUE	PERF150WJ101 (100 Ω)	PLKEB21P5 (100 Ω 260 W)	60 Ω
A4002(M)-CUE	PERF150WJ751 (750 Ω)	PLKEB40P7 (750 Ω 70 W)	750 Ω
A4004(M)-CUE			510 Ω
A4007(M)-CUE			
A4015(M)-CUE	PERF150WJ401 (400 Ω)	PLKEB41P5 (400 Ω 260 W)	240 Ω


Note Do not use a Resistor whose resistance is below the minimum connected resistance. Otherwise, the Inverter will be damaged.

■ Wiring on the Output Side of Main Circuit


● Connecting the Terminal Block to the Load

Connect output terminals U, V, and W to motor lead wires U, V, and W, respectively.

● Never Connect Power Supply to Output Terminals

 **Caution** Never connect a power supply to output terminals L1, N/L2, and L3. If voltage is applied to the output terminals, the internal mechanism of the Inverter will be damaged.

● Never Short or Ground the Output Terminals

 **Caution** If the output terminals are touched with bare hands or the output wires come into contact with the Inverter casing, an electric shock or grounding will occur. This is extremely hazardous. Also, be careful not to short the output wires.

● Do Not Use a Phase Advance Capacitor or LC/RC Noise Filter

Never connect a phase advance capacitor or LC/RC Noise Filter to the output circuit. Doing so may result in damage to the Inverter or cause other parts to burn.

• Do Not Use an Electromagnetic Switch

Do not connect an electromagnetic switch or magnetic contactor to the output circuit. If a load is connected to the Inverter during operation, an inrush current will actuate the overcurrent protective circuit in the Inverter.

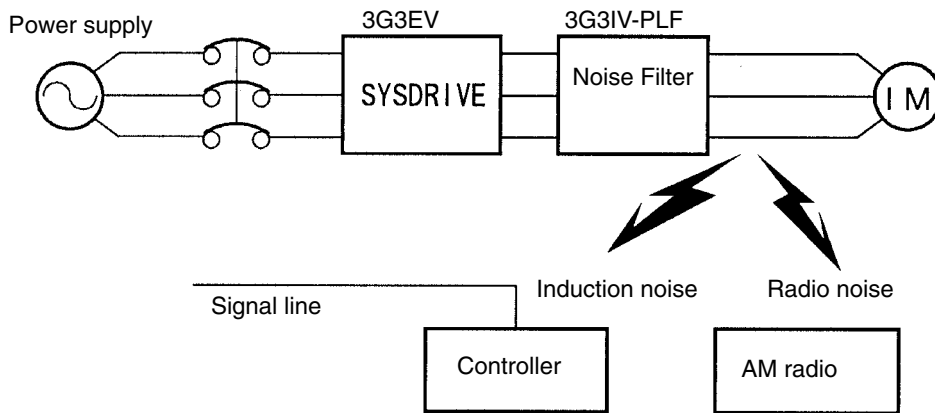
• Installing a Thermal Relay

This Inverter has an electronic thermal protection function to protect the motor from overheating. If, however, more than one motor is operated with one Inverter or a multipolar motor is used, always install a thermal relay (THR) between the Inverter and the motor and set to “0.0” (no thermal protection) for constant No. 31 (“THR” indicator).

In this case, program the sequence so that the magnetic contactor on the input side of the main circuit is turned off by the contact of the thermal relay.

• Installing a Noise Filter on the Output Side

Connect a Noise Filter to the output side of the Inverter to reduce radio noise and induction noise.



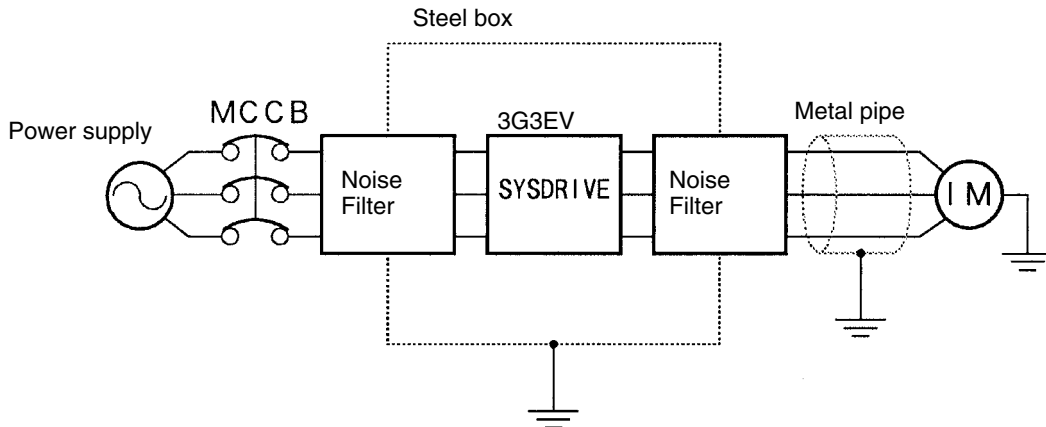
Induction Noise: Electromagnetic induction generates noise on the signal line, causing the controller to malfunction.

Radio Noise: Electromagnetic waves from the Inverter and cables cause the broadcasting radio receiver to make noise.

• How to Prevent Radio Noise

Radio noise is generated from the Inverter as well as the input and output lines. To reduce radio noise, install Noise Filters on both input and output sides, and also install the Inverter in a totally enclosed steel box.

The cable between the Inverter and the motor should be as short as possible.



● **Cable Length between Inverter and Motor**

If the cable between the Inverter and the motor is long, the high-frequency leakage current will increase, causing the Inverter output current to increase as well. This may affect peripheral devices. To prevent this, adjust the carrier frequency (set in n37) as shown in the table below.

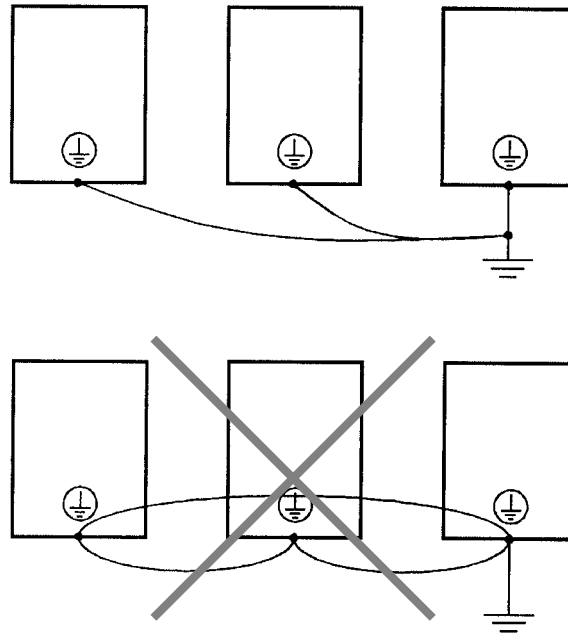
Cable length between Inverter and motor	20 m max.	100 m max.
Carrier frequency (n37)	10 kHz max. (1, 2, 3, 4)	5 kHz max. (1, 2)

Note When the cable length between Inverter and motor exceeds 20 m, the system must be confirmed for conformity to the EMC Directives.

■ **Ground Wiring**

- Always use a ground terminal with the following ground resistance.
 200-VAC Class: 100 Ω or less
 400-VAC Class: 10 Ω or less
 Also connect to the power supply neutral.
- Do not share the ground wire with other devices such as a welder or power tool.
- Always use a ground wire that complies with technical standards on electrical equipment. Route the ground wire so that the total length is as short as possible.

- When using more than one Inverter, be careful not to loop the ground wire.



3-2-3 Wiring Control Circuit Terminals

The control signal line must be 50 m or less and must be separated from the power line. Use batch shielded cable for sequence input. If frequency references are input externally, use a twisted-pair shielded line.

■ Wiring Sequence Input/Output Terminals

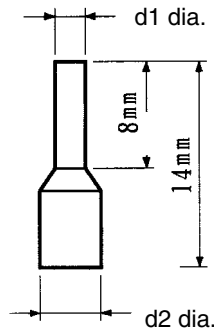
Wire the sequence input terminals (SF, SR, S1 to S3, and SC), multi-function contact output terminals (MA, MB, and MC), and multi-function photocoupler output terminals (PA and PC) as described below.

● Wires to be Used

Wire type	Wire size	Wire to be used
Single wire	0.5 to 1.25 mm ²	Polyethylene-shielded cable
Stranded wire	0.5 to 0.75 mm ²	

● **Solderless Terminals for Control Circuit Terminals**

The use of solderless terminals for the control circuit terminals is recommended because solderless terminals are easy to connect securely.



Wire thickness	Model	d1	d2	Manufacturer	Terminal
0.5 mm ²	A1 0.5-8WH	1.00	2.60	Phoenix Contact	SF, SR, S1 to S3, SC, FS, FR, FC
0.7 mm ²	A1 0.75-8GY	1.20	2.80		MA, MB, MC
1 mm ²	A1 1-8RD	1.40	3.00		

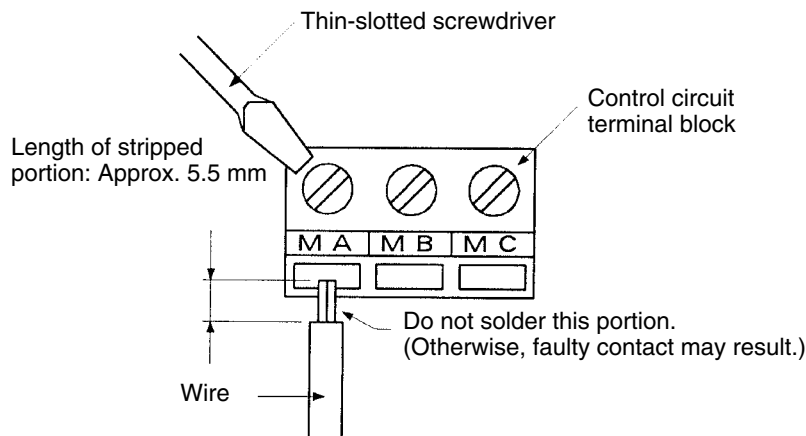
● **Wiring Method**

● Wire each terminal as follows:

- a) Loosen the terminal screw with a thin-slotted screwdriver.
- b) Insert the wire from underneath the terminal block.
- c) Tighten the terminal screw firmly.

● Always separate the control signal line from the main circuit cables and other power cables.

● Insulate the shielded sections with insulation tape, etc., from other signal lines or equipment and ground on the Inverter side.



■ Wiring Frequency Reference Input Terminals

If frequency references are input using a D/A Unit (digital-to-analog converter) or external power supply, wire the frequency reference input terminals (FR and FC) as described below.

● Wires to be Used

Always use twisted-pair shielded wires to prevent malfunctions due to noise.

Wire type	Wire size	Wire to be used
Single wire	0.5 to 1.25 mm ²	Polyethylene-insulated cable for instrumentation (with shield)
Stranded wire	0.5 to 1.25 mm ²	

● Wiring Method

- The wiring procedure is the same as for sequence input/output terminals, described previously.
- Always separate the cables from the main circuit cables and other power cables.
- Connect the shield to the ground terminal of the Inverter. Do not connect to the controller.
- Insulate the shield with tape to prevent it from coming into contact with other signal lines and devices.

■ Tightening Torque of Control Circuit Terminals

Tighten the control circuit terminals to the torque of 0.5 N • m which is the same torque as for the M3 screws.

Note 1. Applying a torque of greater than 0.5 N • m may damage the terminal block.

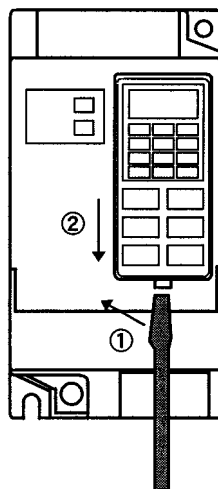
Note 2. If the tightening torque is insufficient, wires may be disconnected.

■ Selection of Frequency Reference or Sequential Input

⚠ Caution Do not touch the terminals of the Inverter within one minute after the Inverter is turned off, otherwise an electric shock may be received.

Mounting or Dismounting the Digital Operator

1. To dismount the Digital Operator, insert a flat-blade screwdriver into the groove on the bottom of the Digital Operator and lift the Digital Operator.
2. After the connector is removed, hold the lower part of the Digital Operator and slide the Digital Operator downwards.



To mount the Digital Operator, connect the upper part of the Digital Operator first, and press the Digital Operator until the internal connector is securely connected.

● **Selecting Frequency Reference Input (Current Input)**

1. Change of Constant

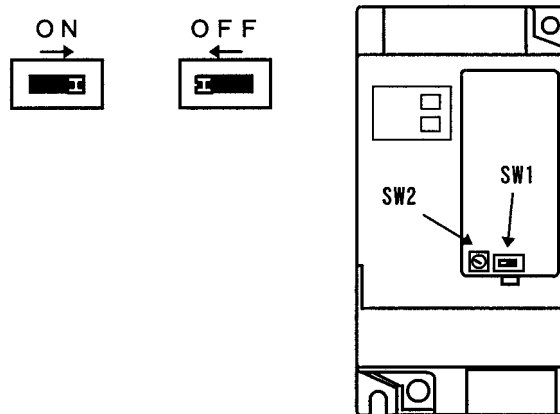
Set constant n02 for operation mode selection to 4 or 5.

n02 = 4: The Inverter is operated with the Digital Operator while frequency references are provided as terminal input (current input).

n02 = 5: The Inverter is operated and frequency references are provided through terminals (current input).

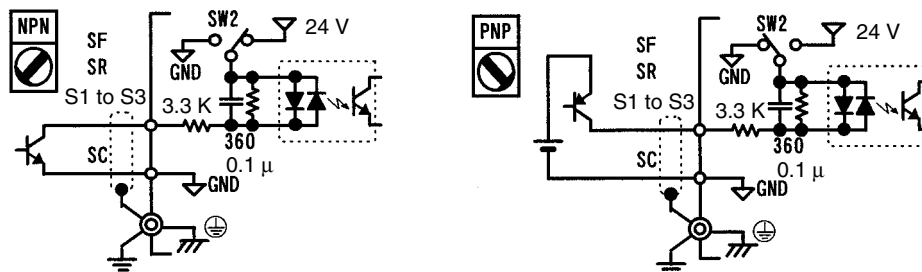
2. SW1 Selector

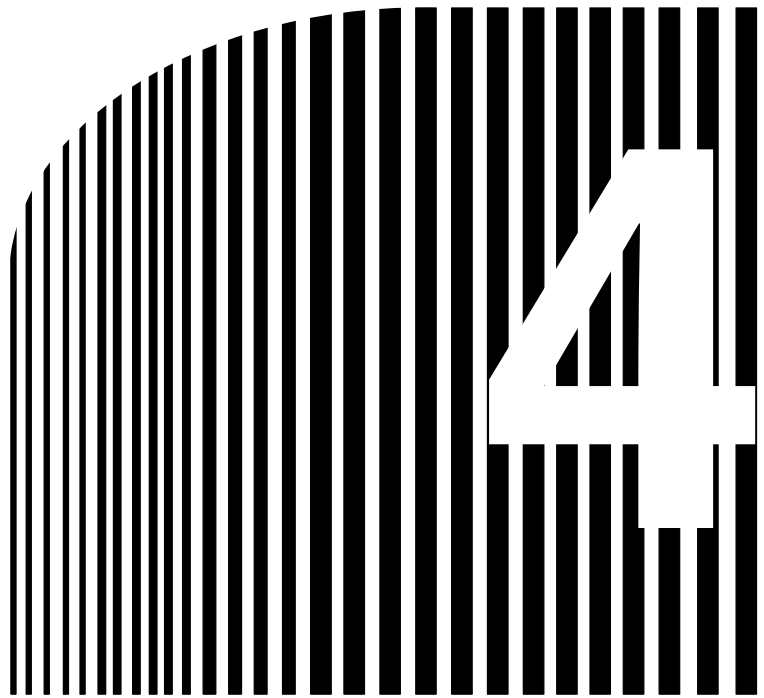
Set SW1 to ON by sliding SW1 to the right to operate the Inverter with current input.



Sequential Input Selection (NPN/PNP Transistor)

Select NPN or PNP transistor input with SW2.





Chapter 4

• Specifications •

- 4-1 Specifications of Main Unit
- 4-2 Specifications of Noise Filter

4-1 Specifications of Main Unit

■ Ratings

Model 3G3EV-			A2001(M)-CUE	A2002(M)-CUE	A2004(M)-CUE	A2007(M)-CUE	A2015(M)-CUE
Three phase, 200 VAC	Power supply	Rated voltage and frequency	Three-phase, 200 to 230 VAC, 50/60 Hz				
		Allowable voltage fluctuation	-15% to 10 %				
		Allowable frequency fluctuation	±5%				
	Heating value (W)	11.9	18.8	33.2	51.7	71.6	
	Weight (kg)	0.5	0.6	0.9	1.3	1.5	
Maximum applicable motor capacity (kW)			0.1	0.2	0.4	0.75	1.5
Output specifications	Rated output capacity (kVA)		0.3	0.6	1.1	1.9	2.7
	Rated output current (A)		0.8	1.5	3.0	5.0	7.0
	Rated output voltage		Three-phase, 200 to 230 VAC (Corresponds to the input voltage)				
	Maximum output frequency		400 Hz (Parameter setting)				
Cooling method			Self-cooling				

Model 3G3EV-			AB001(M)-CUE	AB002(M)-CUE	AB004(M)-CUE	AB007(M)-CUE	AB015(M)-CUE
Single phase/ Three phase, 200 VAC	Power supply	Rated voltage and frequency	Single-phase/Three-phase, 200 to 240 VAC, 50/60 Hz				
		Allowable voltage fluctuation	-15% to 10 %				
		Allowable frequency fluctuation	±5%				
	Heating value (W)	12.6	20.3	25.3	55.3	78.4	
	Weight (kg)	0.5	0.6	1.3	1.3	2.0	
Maximum applicable motor capacity (kW)			0.1	0.2	0.4	0.75	1.5
Output specifications	Rated output capacity (kVA)		0.3	0.6	1.1	1.9	2.7
	Rated output current (A)		0.8	1.5	3.0	5.0	7.0
	Rated output voltage		Three-phase, 200 to 230 VAC (Corresponds to the input voltage)				
	Maximum output frequency		400 Hz (Parameter setting)				
Cooling method			Self-cooling				

Note Model numbers with a suffix of “-CUE” indicate models approved by UL. (Approval has not been obtained for models with a model number suffix of “-CE.”)

Model 3G3EV-			---	A4002(M)- CUE	A4004(M)- CUE	A4007(M)- CUE	A4015(M)- CUE
Three phase, 400 VAC	Power supply	Rated voltage and frequency	Three-phase, 380 to 460 VAC, 50/60 Hz				
		Allowable voltage fluctuation	-15% to 10 %				
		Allowable frequency fluctuation	±5%				
	Heating value (W)		---	25.5	34.7	56.0	78.5
	Weight (kg)			1.0	1.0	1.5	2.0
Maximum applicable motor capacity (kW)				0.2 (0.37)	0.4 (0.55)	0.75 (1.1)	1.5 (1.5)
Output specifications	Rated output capacity (kVA)			0.9	1.4	2.6	3.7
	Rated output current (A)			1.2	1.8	3.4	4.8
	Rated output voltage		Three-phase, 380 to 460 VAC (Corresponds to the input voltage)				
	Maximum output frequency		400 Hz (Parameter setting)				
Cooling method			Self-cooling				

■ General Specifications

Installation type	Enclosed wall-mounted type (IP20)
Installation site	Indoor (free from corrosive gases and dust)
Ambient temperature for operation	-10° to 50°C
Humidity	90% or less (no-condensing)
Ambient temperature for storage	-20° to 60°C
Altitude	1,000 m max.
Vibration resistance	Less than 20 Hz: 1G {9.8 m/s ² } or less 20 to 50 Hz: 0.2G {1.96 m/s ² } or less
Cable length between Inverter and motor	20 m max. (When the cable length exceeds 20 m, the system must be confirmed for conformity to the EMC Directives.)
Applicable standards	prEN50178, EN50081, EN50082 (with RFI filter and shielded cable) UL/CUL standards

■ Control Characteristics

Control method	Sine-wave PWM method (automatic torque boost)
Frequency control range	0.5 to 400 Hz (standard model: 1.5 to 400 Hz)
Frequency accuracy (temperature fluctuation)	Digital command: ±0.01% (-10°C to 50°C) Analog command: ±1% (25 ±10°C)
Frequency setting resolution	Digital command: 0.1 Hz (less than 100 Hz), 1 Hz (100 Hz or more) Analog command: 0.06 Hz (60 Hz)
Frequency output resolution	0.1 Hz (operation resolution)
Overload resistance	1 minute or less when 150% of rated output current is received
Frequency setting signal	0 to 10 VDC (20 kΩ) or 4 to 20 mA (250 Ω) Note This setting can be switched using the internal DIP switch.
Acceleration/Deceleration time	0.0 to 999 seconds (acceleration and deceleration times are set separately)
Braking torque (continuous regenerative braking)	Approximately 20% Note 125% to 220% when braking resistor is externally installed.
Voltage/Frequency characteristics	Simple V/f pattern setting

■ Protection Functions

Motor protection	Electronic thermal protection
Instantaneous overcurrent protection	When 250% of the rated output amperage is exceeded
Overload protection	When 150% of the rated output amperage is exceeded for one minute
Overvoltage protection	Stops the system when DC voltage of the main circuit exceeds approximately 410 V (400-VAC class: 820 V)
Voltage drop protection	3G3EV-A2□: Stops the system when voltage drops below approximately 200 VDC 3G3EV-AB□: Stops the system when voltage drops below approximately 160 VDC 3G3EV-A4□: Stops the system when voltage drops below approximately 400 VDC
Protection from instantaneous power interruption	Stops the system when a power interruption lasts for 15 ms or more. Operation can be continued by setting constant No. 36 as follows: • Operation is continued if a power interruption only lasts for approximately 0.5 second or less. • Operation is continued unconditionally.
Radiation fin overheat protection	Detects a fin temperature of 110 ±10°C
Ground protection	Overcurrent level protection

■ Operation Specifications

<p>Control input</p>	<p>Three photocoupler input terminals (24 VDC, 8 mA)</p> <ul style="list-style-type: none"> • Forward/stop [SF] • Reverse/stop [SR] • Multi-function input [S1] (set in constant No. 06) • Multi-function input [S2] (set in constant No. 07) • Multi-function input [S3] (set in constant No. 08) <p>Note When 3-wire sequence mode (constant No. 01 = “9”) is selected, the terminals become as follows:</p> <ul style="list-style-type: none"> • Run command [SF] • Stop command [SR] • Forward/reverse rotation command [S1] <p>Note The standard Inverters are not provided with S2 and S3 terminals.</p>
<p>Control output</p>	<p>One analog input terminal (0 to 10 VDC or 4 to 20 mA)</p> <ul style="list-style-type: none"> • Frequency reference input [Between FC and FR] <p>One SPDT relay contact output terminal [MA, MB] (30 VDC and 1A; 250 VAC and 1A)</p> <ul style="list-style-type: none"> • Multi-function contact output (set in constant No. 09) <p>One photocoupler input terminal [PA] (48 VDC, 50 mA)</p> <ul style="list-style-type: none"> • Multi-function photocoupler output (set in constant No. 10) <p>Note The standard Inverters are not provided with the multi-function photocoupler output.</p>
<p>Analog output</p>	<p>One analog voltage output [AM] (0 to 10 VDC, 2 mA)</p> <ul style="list-style-type: none"> • Multi-functional analog output (Constant No. 44 is used to set the function and constant No. 45 is used to set the multiplying factor.) <p>The output frequency or output current can be monitored. The Inverter is factory-set to output frequency monitoring.</p> <p>Note The standard Inverters are not provided with the multi-function analog output.</p>

4-2 Specifications of Noise Filter

Three-phase 200-VAC Noise Filter

Inverter		Single-phase Noise Filter (Soshin Electric)			
Model 3G3EV-	Inverter capacity (kVA)	Model 3G3EV-	Rated voltage (V)	Rated current (A)	Weight (kg)
A2001(M)-CUE	0.3	PNF3006A-YN	250 VAC	6	Approx. 0.8
A2002(M)-CUE	0.6				
A2004(M)-CUE	1.1				
A2007(M)-CUE	1.9	PNF3010A-YN	10		
A2015(M)-CUE	2.7				

Single-phase 200-VAC Noise Filter

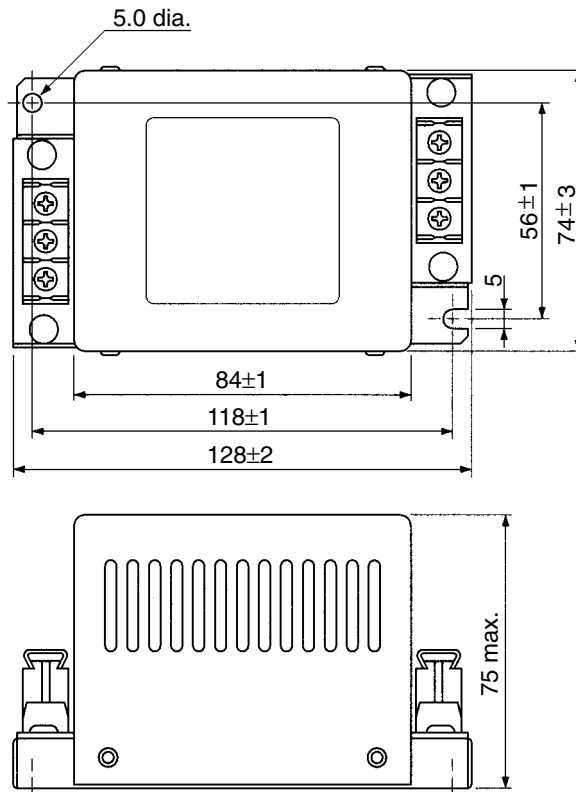
Inverter		Single-phase Noise Filter (Soshin Electric)			
Model 3G3EV-	Inverter capacity (kVA)	Model 3G3EV-	Rated voltage (V)	Rated current (A)	Weight (kg)
AB001(M)-CUE	0.3	PNF2003A-YN	250 VAC	3	Approx. 0.5
AB002(M)-CUE	0.6				
AB004(M)-CUE	1.1	PNF2010A-YN		10	Approx. 0.6
AB007(M)-CUE	1.9				
AB015(M)-CUE	2.7				

Three-phase 400-VAC Noise Filter

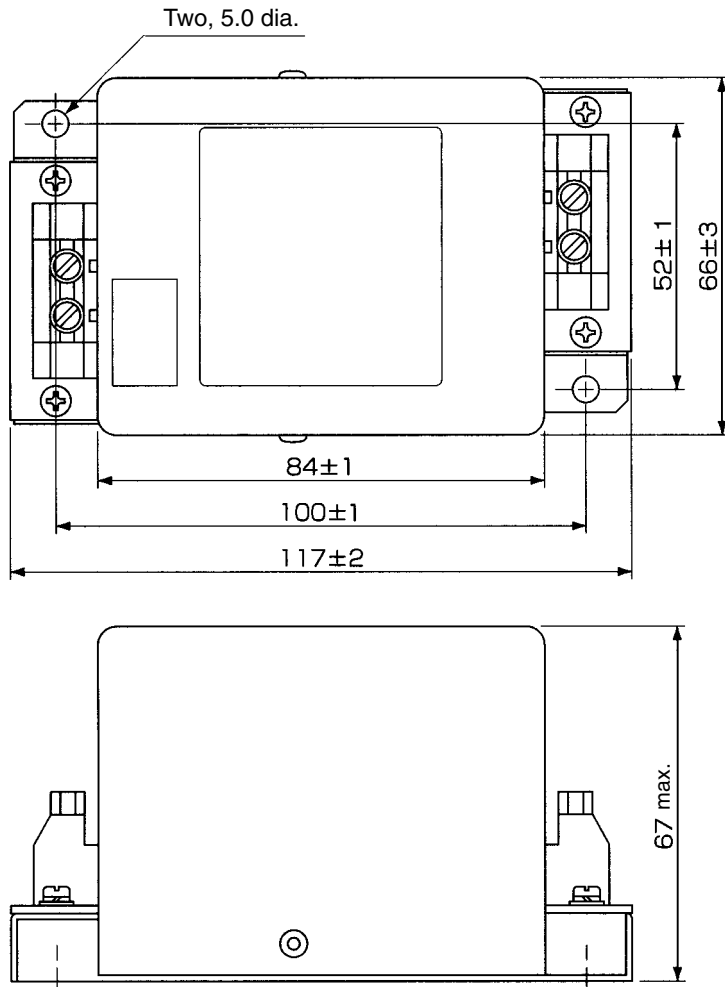
Inverter		Single-phase Noise Filter (Soshin Electric)			
Model 3G3EV-	Inverter capacity (kVA)	Model 3G3EV-	Rated voltage (V)	Rated current (A)	Weight (kg)
A4002(M)-CUE	0.9	PNF3007C-YN	460 VAC	7	Approx. 1.0
A4004(M)-CUE	1.4				
A4007(M)-CUE	2.6				
A4015(M)-CUE	3.7				

■ Dimensions

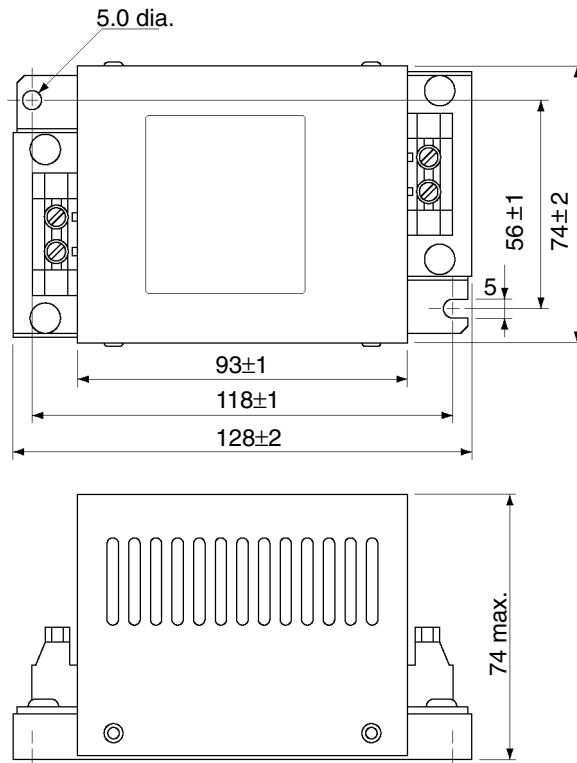
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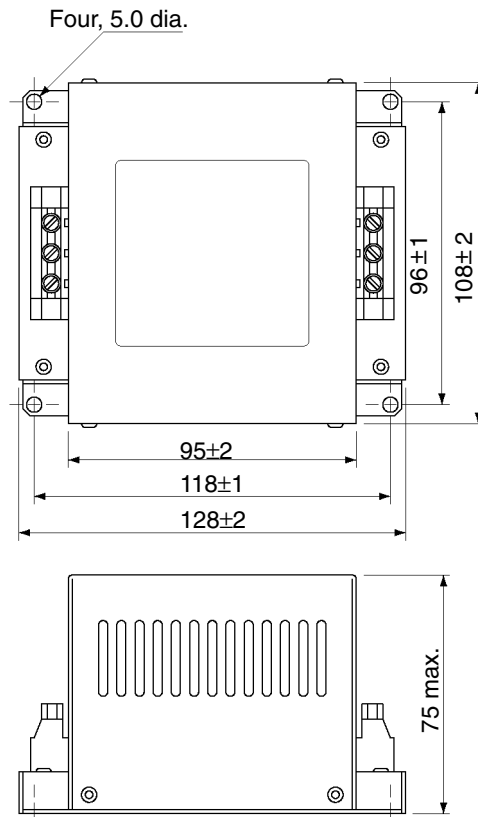
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● 3G3EV-PNF2020A-YN



● 3G3EV-PNF3007C-YN



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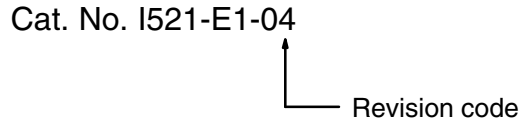
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Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.



The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
1	April 1997	Original production
2	November 1997	<p>Information on new models added throughout the manual.</p> <p>Page 1-2: Model number description changed.</p> <p>Page 2-2: Table of available models changed. Note in <i>Required Conditions</i> corrected.</p> <p>Page 3-3: Three-phase 400-VAC input models added.</p> <p>Page 3-5: Warning to connect the ground to the supply neutral added for the 400-VAC models.</p> <p>Page 3-7: Descriptions of terminals changed.</p> <p>Page 3-8: Information added above the table for the input terminals.</p> <p>Pages 3-9, 3-11: Changes to the diagram made to include the 400-VAC models. Note added also.</p> <p>Page 3-10: Information added to the frequency reference input of the control circuit diagram. Wire size table changed. Note added also.</p> <p>Page 3-11: Information added to the beginning of <i>Wiring Power Supply</i>. Noise filter table changed.</p> <p>Page 3-12: LVD conformance table changed.</p> <p>Page 3-13: Braking Resistor Unit information removed from <i>Installing a Magnetic Contactor</i>. Information added to <i>Installing an AC Reactor</i>. A section on wiring a Braking Resistor/Braking Resistor Unit has been added.</p> <p>Page 3-15: Ground resistance information added to <i>Ground Wiring</i>.</p> <p>Page 3-18: A section on the tightening torque of control circuit terminals added.</p> <p>Page 4-2: Ratings changed.</p> <p>Page 4-3: Information on 400-VAC models added to the overvoltage and voltage drop descriptions in <i>Protection Functions</i>.</p> <p>Page 4-5: Noise Filter tables changed. New Noise Filter dimensions added.</p>
3	November 1998	<p>Models with the special specification “-CE” have been removed throughout the manual. Information on new three-phase, 200-VAC models added throughout the manual.</p> <p>Page 2-3, 3-7, 3-11, 4-6: Note on the unavailability of noise filter that conforms to EC Directives removed.</p> <p>Page 4-3: Applicable standards added to <i>General Specifications</i>.</p> <p>Page 4-7: 3G3EV-PNF3006A-YN/-PNF3010A-YN dimensions added.</p>
04	September 2005	<p>Following changes made to front matter.</p> <p>General precautionary notes added to the first page.</p> <p>Notice: Information on general precautions notation added.</p> <p>Read and Understand this Manual: Information on liability and warranty added.</p>