

HITACHI INVERTER

J100U2 SERIES

INSTRUCTION MANUAL

Three phase input 200V/400V class

J100U2: USA version
(UL listed, CSA certified)

J100₂: Japanese version

After reading this manual, keep it at hand for future reference.

NB497X

Hitachi, Ltd.

Tokyo Japan

SAFETY

For the Best Results with L50 (J50) Series inverter, read this manual carefully before operating it, and follow the instructions exactly. Keep this manual handy for your quick reference.

Definitions and Symbols

A safety instruction (message) is given with a hazard alert symbol and a signal word; **WARNING** or **CAUTION**. Each signal word has the following meaning throughout this manual.



This is the "Safety Alert Symbol.." This symbol is used to call your attention to items or operations that could be dangerous to you or other persons operating this equipment. Read these messages and follow these instructions carefully.



WARNING

WARNING: personal danger

Warning notes indicate any condition or practice, which if not strictly observed, could result in personal injury or possible death.



CAUTION

CAUTION: Possible damage to equipment

Caution notes indicate any condition or practice, which if not strictly observed or corrected, could result in damage or destruction of the equipment.

NOTE

NOTE: Notes indicate an area or subject of special merit, emphasizing either the product's capabilities or common errors in operation or maintenance.

DANGER HIGH VOLTAGE



Motor control equipment and electronic controllers are connected to hazardous line voltages. When servicing drives and electronic controllers, there might be exposed components with cases or protrusions at or above line potential. Extreme care should be taken to protect against shock. Stand on an insulating pad and make it a habit to use only one hand when checking components. Always work with another person in case an emergency occurs. Disconnect power whenever possible before checking controllers or performing maintenance. Be sure equipment is properly grounded. Wear safety glasses whenever working on an electronic controllers or rotating electrical equipment.

PRECAUTIONS

⚠ WARNING: This equipment should be installed, adjusted and serviced by qualified electrical maintenance personnel familiar with the construction and operation of the equipment and the hazards involved. Failure to observe this precaution could result in bodily injury.

⚠ WARNING: The user is responsible for ensuring that all driven machinery, drive train mechanism not supplied by Hitachi, Ltd., and process line material are capable of safe operation at an applied frequency of 150% of the maximum selected frequency range to the AC motor. Failure to do so can result in destruction of equipment and injury to personnel should a single point failure occur.

⚠ WARNING: For protection, install an earth leakage breaker type with a high frequency circuit capable of large currents to avoid an unnecessary operation. The ground fault protection circuit is not designed to protect personal injury.

⚠ WARNING: Hazard of electrical shock. Disconnect incoming power before working on this control.

⚠ WARNING: Dangerous voltage exists until charge lamp is off.

⚠ WARNING: Separate motor overcurrent, overload and overheating protection is required to be provided in accordance with the safety codes required by jurisdictional authorities.

⚠ WARNING: Overspeed protection is not provided.

⚠ CAUTION: These instructions should be read and clearly understood before working on J100 series equipment.

⚠ CAUTION: Proper grounds, disconnecting devices and other safety devices and their location are the responsibility of the user and are not provided by Hitachi, Ltd.

⚠ CAUTION: Provide a motor thermal switch (relay) or overload detection device to protect the motor against overload.

⚠ CAUTION: Rotating shafts and above ground electrical potentials can be hazardous. Therefore, it is strongly recommended that all electrical work conform to the National Electrical Codes and local regulations. Installation, alignment and maintenance should be performed only by qualified personnel. Factory recommended test procedures, included in the instruction manual, should be followed. Always disconnect electrical power before working on the unit.

ADDITIONAL PRECAUTIONS

(for users of J100U2 series inverters)

Observe the following precautions in cases where the J100U2 series inverter is used as a device conforming to the UL standard:

- ▲ CAUTION: Install in a minimum 50 by 50 by 30 cm enclosure, with internal enclosure ambient maintained at maximum 40°C.
- ▲ CAUTION: Class 1 wiring rated minimum XXX V is to be used for all connections. (XXX=300 for LFU2, 600 for HFU2).
- ▲ CAUTION: External overload protection must be provided.
- ▲ CAUTION: Remove the protective top and bottom vent covers before operation if they are provided.
(Note that no vent covers come standard with the J100U2 series.)
- ▲ CAUTION: The inverter is suitable for use on a circuit capable of delivering not more than 5,000 rms symmetrical amperes, XXX V maximum. (XXX=230 for LFU2, 480 for HFU2 units)

Observe the following precautions in cases where the J100U2 series inverter is used as a device conforming to the CSA standard:

- ▲ WARNING: SEPARATE MOTOR OVERCURRENT, OVERLOAD AND OVERHEATING PROTECTION IS REQUIRED TO BE PROVIDED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, PART I.
- ▲ AVERTISSEMENT: LE MOTEUR DOIT ETRE MUNI D'UNE PROTECTION DISTINCTE CONTRE LES SURINTENSITES, LA SURCHARGE ET LA SURCHAUFFE, CONFORMEMENT AU CODE CANADIEN DE L'ELECTRICITE, PREMIERE PARTIE.
- ▲ WARNING: USE A NOISE FILTER FOR INPUT AND OUTPUT OF THE INVERTER.
- ▲ AVERTISSEMENT: UTILISE UN FILTRE ANTIPARASITE POUR L'ENTREE ET LA SORTIE DE L'INVERTISSEUR.
- ▲ CAUTION: FOR ALARM CIRCUIT; "WORKING VOLTAGE: MAX. 50 V"

Revision History Table

No.	Revision Contents	The Date of Issue	Operation Manual No.

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1. SAFETY PRECAUTIONS

⚠ WARNING: Read carefully the precautions on pages ii and iii, and follow them.

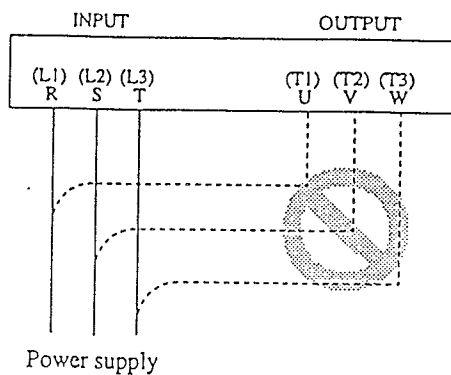
1.1 Input voltage

- Make sure that the input voltage is:
Three phase 200 to 220 V/50 Hz, 200 to 230 V/60 Hz
Three phase 380 to 415 V/50 Hz, 400 to 460 V/60 Hz
- Be sure to install an earth leakage breaker.
The ground fault protection is designed to detect current flowing to the ground upon power on. This function is to protect the inverter, not people. Install the earth leakage breaker to protect against the ground fault on wires between the inverter and the motor. (Use a breaker whose sensitive current level is raised in the high frequency area so as not to cause malfunction.)

1.2 Installation locations and surfaces

- Avoid installing this unit in locations which are subjected to high temperatures, high humidity, or dew condensation. Also avoid locations exposed to dust and dirt, corrosive gases, coolant mist. The installation location should be a well-ventilated room which is not exposed to direct sunlight.
- Be sure to install the unit on a perpendicular wall which is not subjected to vibrations.
- The installation wall should be made of steel sheeting or other nonflammable material.

1.3 Do not connect the power supply to the output, this will damage the inverter.

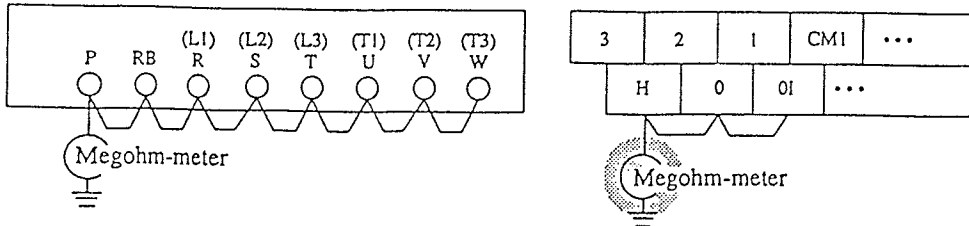


1.4 Do not touch the interior of the inverter or put rods or other objects inside it when power is applied. Such action can lead to electrocution and can cause malfunctions.

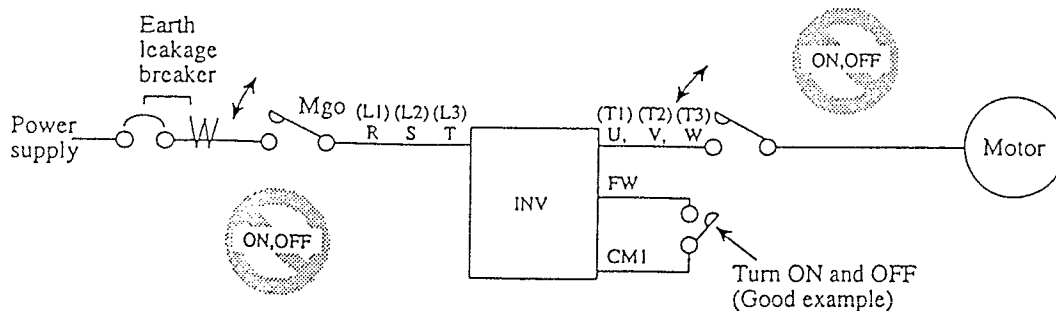
1.5 When operating a general-purpose motor at a high frequency exceeding 60 Hz, be sure to verify with the manufacturers the maximum rpm of the motor and machine.

- 1.6 Withstand voltage tests and insulation resistance tests (megger tests) are executed before the units are shipped, so that there is no need to conduct these tests before operation.

When conducting megger tests as a part of daily inspection, be sure that these tests are only executed between the main circuit and the ground. Do not execute megger tests on the control circuit.

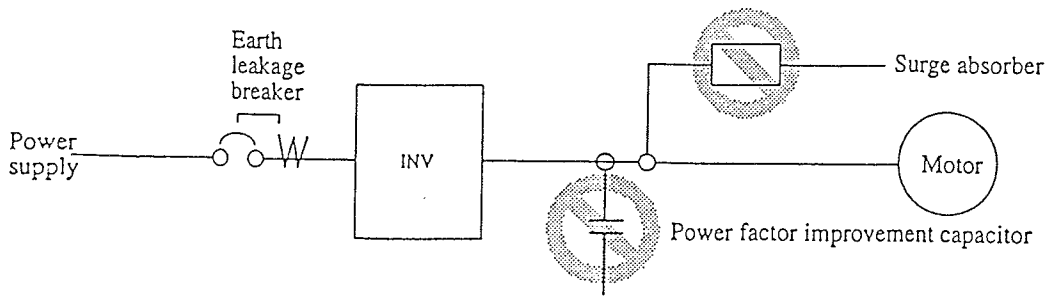


- 1.7 Do not attach or remove wiring or connectors when power is applied. Also, do not check signals during operation.
- 1.8 Do not stop operation by switching off the electromagnetic contactors on the primary or secondary sides of the inverter.



When there has been an instantaneous power failure, and if an operation instruction has been given, then the unit may restart operation after the power failure has ended. If there is a possibility that such an occurrence may harm humans, then install an electromagnetic contactor (Mgo) on the power supply side, so that the circuit does not allow automatic restarting after the power supply recovers. If the optional remote operator is used and the retry function has been selected, this will also cause automatic restarting when an operation instruction has been input, so please be careful.

- 1.9 Do not insert power factor improvement capacitors or surge absorbers between the output terminals of the inverter and the motor.



- 1.10 Be sure to ground the grounding terminal, G(\oplus).
- 1.11 Disconnect incoming power and confirm that the CHARGE lamp beside the control terminal no longer blinks before working on this inverter.
(Dangerous voltage exist when the lamp is lit or blinking.)
- 1.12 MOTOR TERMINAL SURGE VOLTAGE SUPPRESSION FILTER
(FOR THE 400 V CLASS)

In a system using an inverter of the voltage control PWM system, a surge voltage caused by the cable constants such as the cable length (especially when the distance between the motor and inverter is 10 m or more) and cabling method may occur at the motor terminal.

A dedicated filter of the 400 V class for suppressing this surge voltage is available, Please order one.

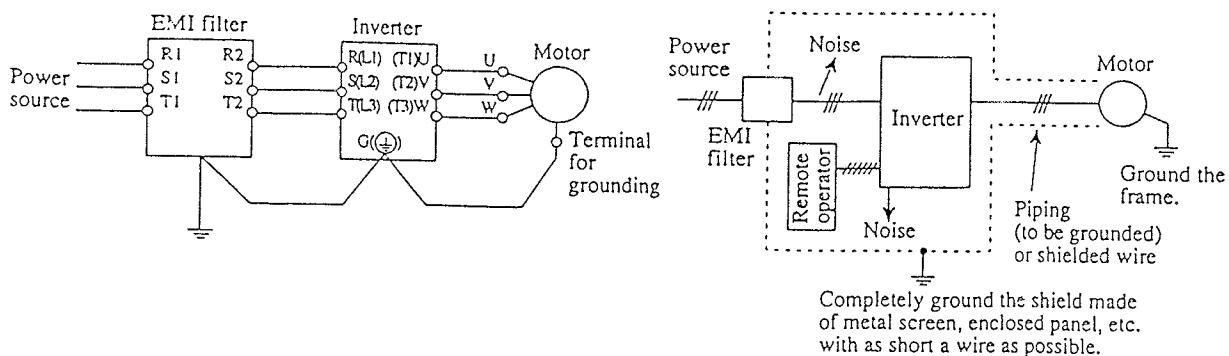
1.13 PROTECTION AGAINST NOISE INTERFERENCE FROM INVERTER

The inverter uses many semiconductor switching elements such as transistors and IGBTs. Thus, a radio set or measuring instrument located near the inverter is susceptible to noise interference.

To protect the instruments from erroneous operation due to noise interference, they should be installed well apart from the inverter. It is also effective to shield the whole inverter structure.

Addition of an EMI filter on the input side of the inverter also reduces the effect of noise from commercial power line on external devices.

Note that external dispersion of noise from the power line can be minimized by connecting an EMI filter on the primary side of inverter.



1.14 EFFECTS OF DISTRIBUTOR LINES ON INVERTERS

In the cases below involving a general-purpose inverter, a large peak current flows on the power supply side, sometimes destroying the converter module. Where such situations are foreseen, or the paired equipment must be highly reliable, install an AC reactor between the power supply and the inverter.

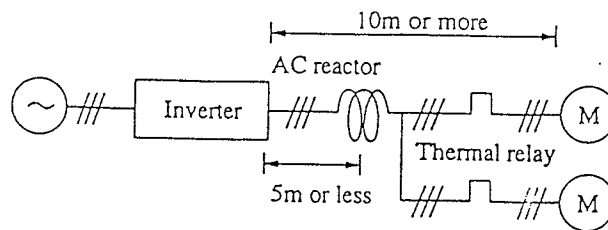
- (A) The unbalance factor of the power supply is 3% or higher.
- (B) The power supply capacity is at least 10 times greater than the inverter capacity (and the power supply capacity, 500 kVA or more).
- (C) Abrupt power supply changes are expected.

Examples:

- (1) Several inverters are interconnected with a short bus.
- (2) A thyristor converter and an inverter are interconnected with a short bus.
- (3) An installed phase advance capacitor opens and closes.

In cases (A), (B) or (C), we recommend installing an AC reactor of 3% (in a voltage drop at rated current) with respect to the supply voltage on the power supply side.

- 1.15 When occurring an EEPROM error ($\boxed{E} \boxed{B}$), be sure to confirm the setting value again.
- 1.16 When setting b contact to the reverse command ([RV] terminal), the inverter starts automatically. Do not set to b contact.
- 1.17 Do not short-circuit the control terminals H and L. The control board or control power supply may cause a failure.
- 1.18 Provide a thermal relay to protect the motor against overload.
 - (A) If the wiring distance between the inverter and motor is 10 m or less:
Increase the thermal relay setting to approximately 10% larger than the motor rated current.
 - (B) If the wiring distance between the inverter and motor exceeds 10 m.
Insert the AC reactor on the inverter output side (within 5 m of the inverter) and increase the thermal relay setting to approximately 10% larger than the motor rated current.



As shown, this is a case where two motors are connected to a single inverter.

2. INSPECTION UPON UNPACKING

Before installation and wiring, be sure to check the following:

- Make sure that there was no damage during transportation the unit.
- After unpacking the unit, make sure that the package contains one inverter and one operation manual
- Make sure that the product is the one you ordered by checking the specifications label on the front of the cover.

Model abbreviation

(The example is for the J100-007LFU2)

Maximum applicable motor (4P HP)

Input power supply

Input frequency

Phase

Output voltage

Phase

Manufacturing number and factory control symbol

HITACHI		E151754	L972667
Model: J100-007LFU2			
HP: 4			
Input/Entrée:		50Hz 200-220 V 3Ph max 6.6 A	Input current
		60Hz 200-230 V 3Ph max 6.6 A	
Output/Sortie:		max. 200-230 V 3Ph	5 A
MFG No. J1-07LFU2 A T123455		Date: 9505	Production year and month
Hitachi, Ltd. MADE IN JAPAN		NE15239-15	

Model abbreviation (The example is for the J100-007LF2)

Input power voltage

Input power frequency

Number of phases

Production year

HITACHI INVERTER		007LF2	
J100			
INPUT		OUTPUT	
VOLTS	200~220V/200~230V	VOLTS, MAX.	200~230V
FREQ.	50Hz 60Hz	CAPACITY, MAX.	0.75kW
PHASE	3 3	AMP'S	5.0A
DATE	1995	MFG. NO.	J100-007L2 51A
Hitachi, Ltd. Tokyo Japan		NE15401	

Output power voltage

Maximum permitted load or motor (4P, kW)

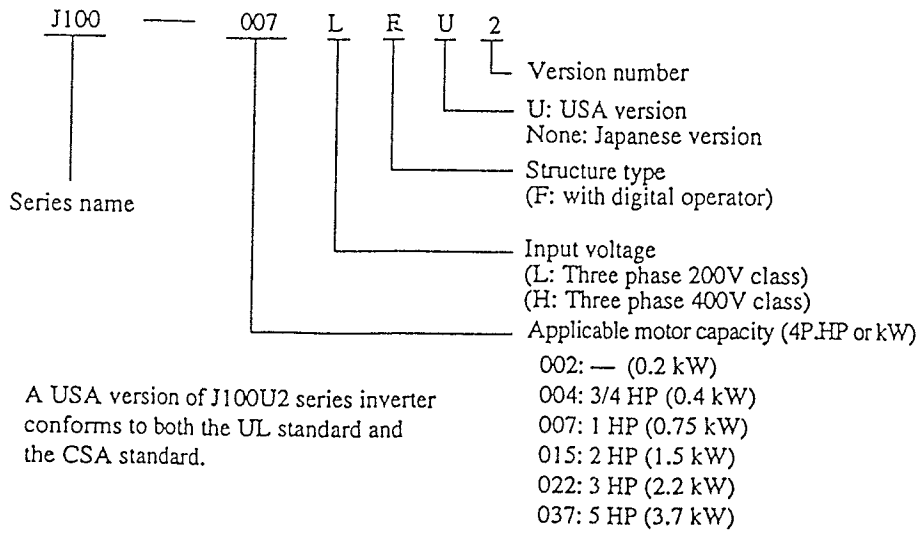
Rated output current

Manufacturing number and factory control symbol

Contents of Specifications Label

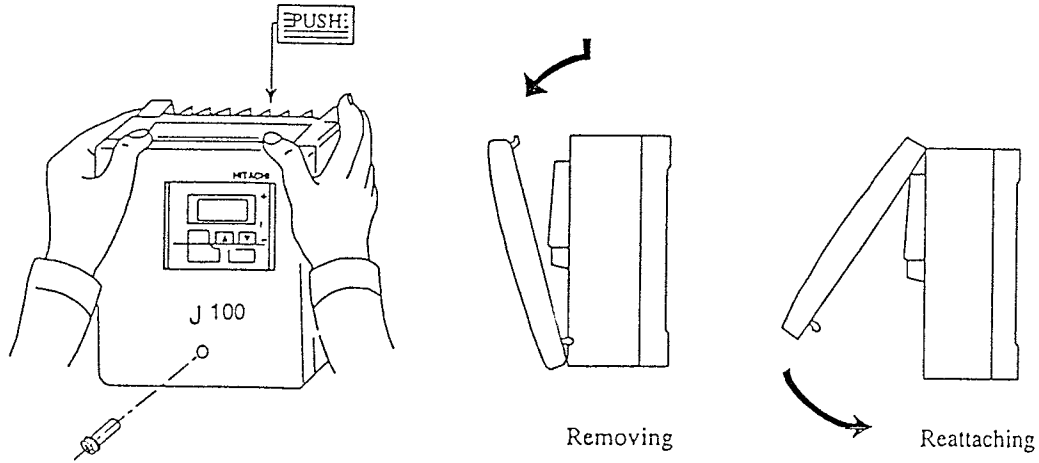
If you discover any problems, contact your sales agent immediately.

Description of Inverter Model

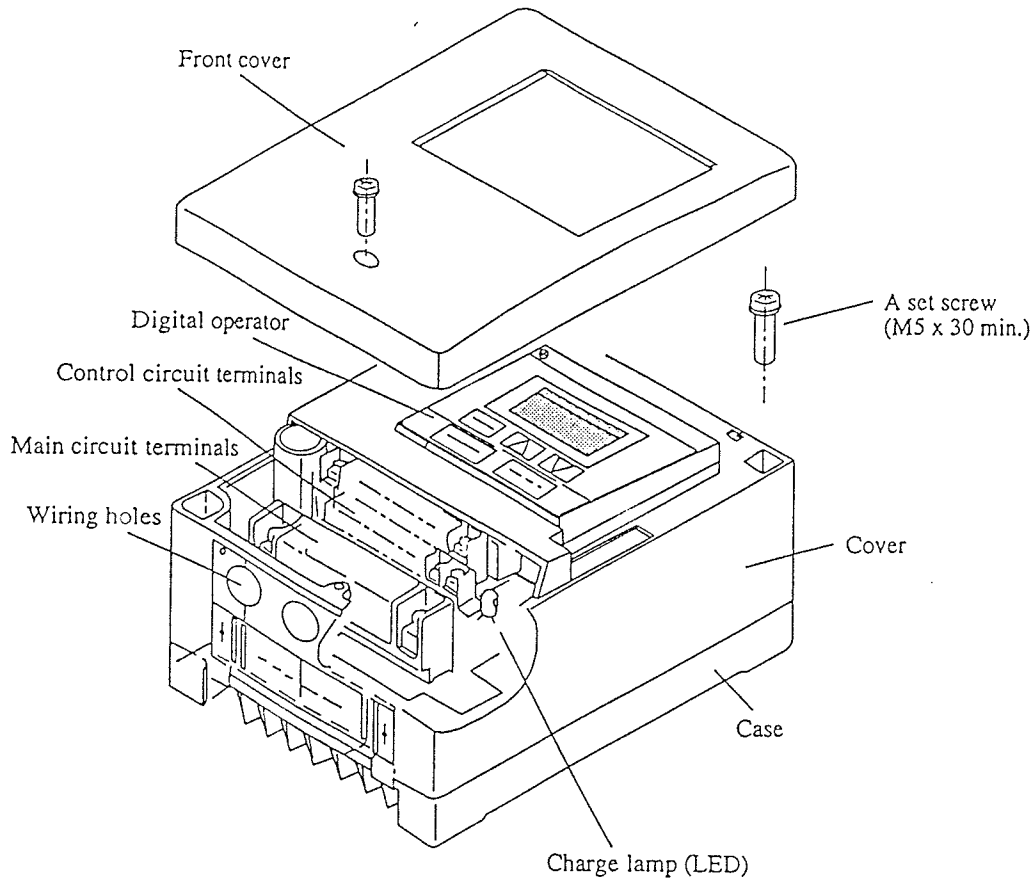


3. APPEARANCE AND NAMES OF PARTS

3.1 Removing and reattaching the front cover



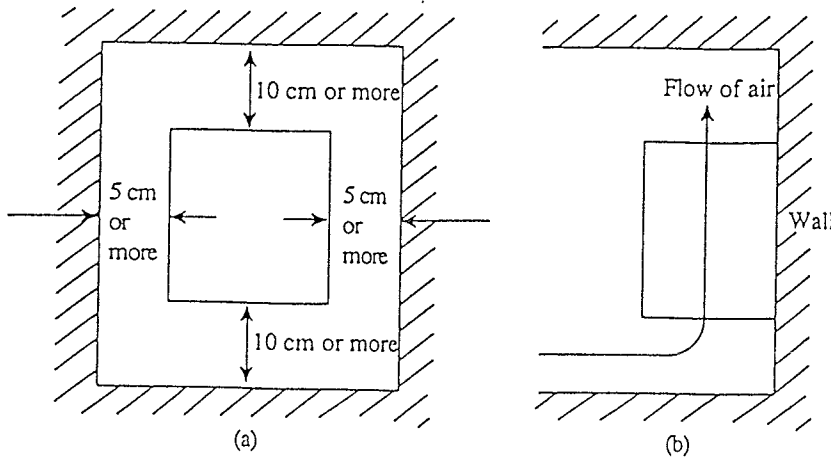
3.2 Names of parts



NOTE: The J100₂ series inverter has no set screws to fasten the front cover to its body and can be identified with the symbol "J100-A" printed on the cover.

4. INSTALLATION

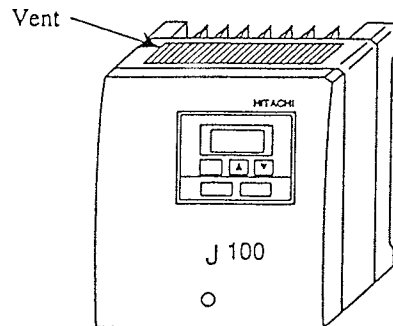
For cooling purposes, be sure that the inverter is installed vertically. In addition, be sure that it is separated from other components and walls. If foreign matter is introduced into the interior of the inverter, this may cause malfunctions, so make sure that no foreign matter can enter it.



NOTE: Install the inverter vertically.
Do not install it on the floor or horizontally.

Be sure that the wall surface is a nonflammable material, such as steel plate.

During wiring or other work, do not allow any wire scraps, welding fragments, iron scraps, dust, etc. to enter into the inverter, therefore be sure to cover the top of the inverter before working.



Be sure to check the ambient temperature (-10 to 40°C).

(Up to 50°C with the front cover removed, in the case of a Japanese version of J100₂ series inverter.)

The higher the ambient temperature inside the inverter, the shorter its life will be. If a heat generating unit is used near the inverter, try to keep it as far away as possible. Also, when installing the inverter in a box, be sure to carefully consider ventilation and the dimensions.

See the mounting dimension diagram for details (PAGE 12-6).

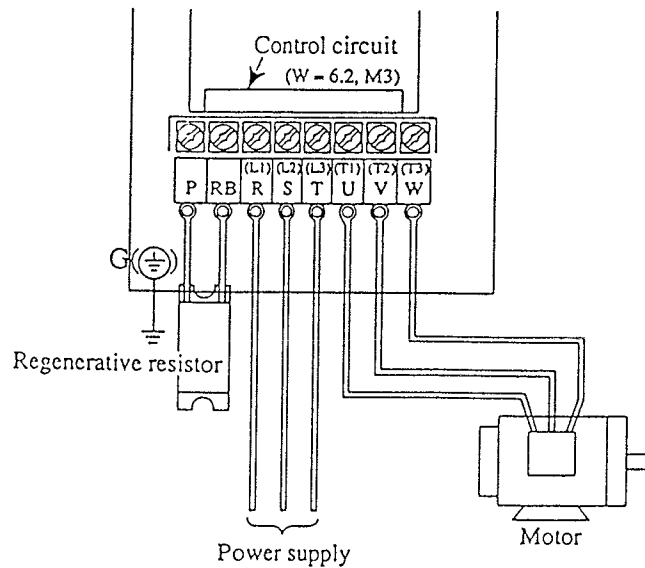
Be sure to install the inverter in the box for use.

▲ CAUTION: If the inverter is to be used as a device conforming to the UL standard, install in a minimum 50 by 50 by 30 cm enclosure, with internal enclosure ambient maintained at maximum 40°C.

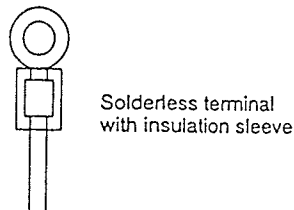
5. WIRING

The terminal board will be exposed when the front cover is removed. Wire the inverter in this state.

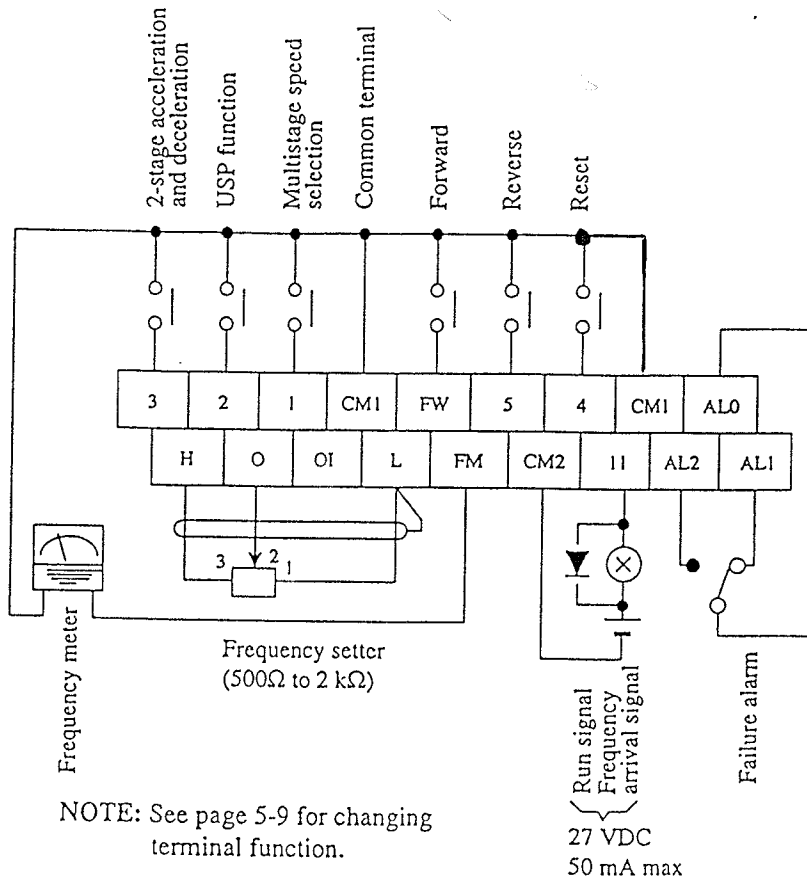
5.1 Wiring the power supply and motor



- The inverter will be damaged if the power supply is connected to the motor terminals U, V and W, so be sure not to make any mistakes.
- Because the terminals R(L1), S(L2), T(L3), U(T1), V(T2) and W(T3) are very close to one another, be sure to cover the solderless terminals with insulation sleeves.

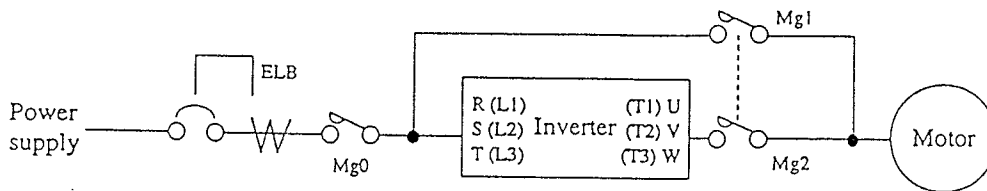


- If multiple motors are to be connected, be sure to provide a thermal relay to each motor.
- See the page 5-8 on the terminal dimensions.



Control circuit terminal diagram

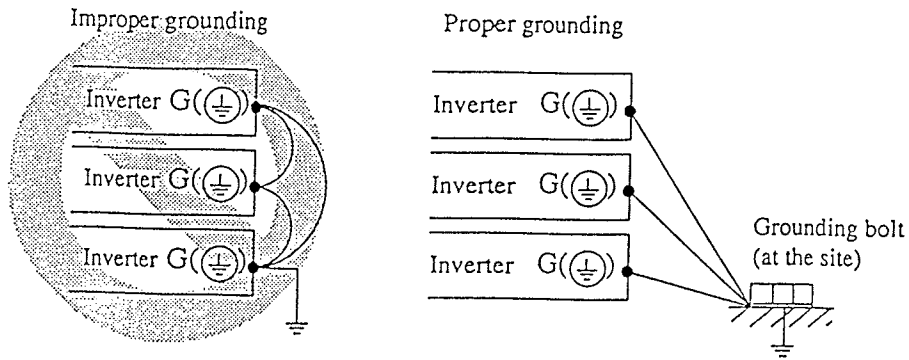
NOTE 1: When changing the power supply of the motor between the inverter and commercial power, be sure to install mechanically interlocked switches Mg1 and Mg2.



NOTE 2: Install an earth leakage breaker at the input of the inverter. (Select an earth leakage breaker whose sensitive current level is raised in high frequency range.)
When the cable between the inverter and motor is more than 10 m long, the thermal relay may malfunction due to high-frequency waves. To prevent this, install an AC reactor on the output side of the inverter or use a current sensor rather than a thermal relay.

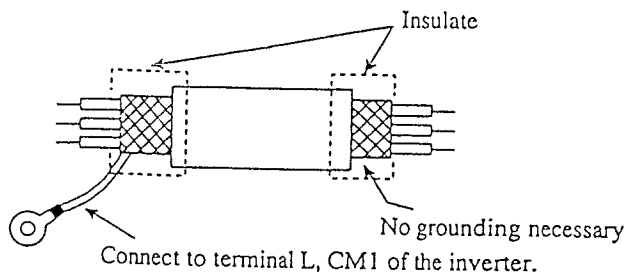
NOTE 3: Be sure that the specified grounding is carried out. Be sure to separate the unit's grounding pole from those of other heavy electric machinery, and avoid using common grounding poles.

If multiple inverters are used, make sure that the grounding connections do not create a loop.



NOTE 4: When a frequency arrival signal is used, be sure to install a surge absorbing diode in parallel with the relay. Otherwise, the surge voltage created when the relay goes ON or OFF may damage the AR output circuit.

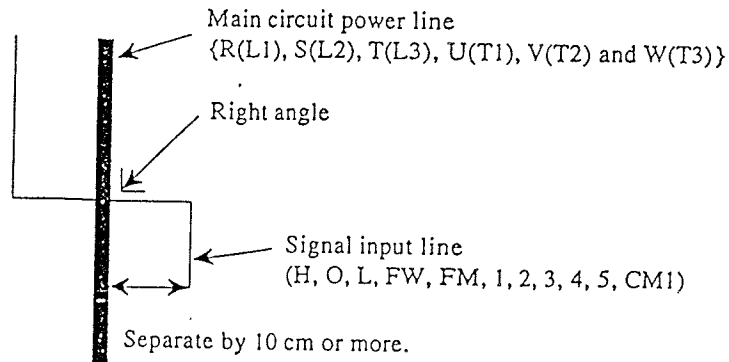
NOTE 5: Use a twisted and shielded wire for the signal line, and cut the shielded covering as shown in the diagram below. Make sure that the length of the signal line is 20 meters or less. If the line must be longer than 20 meters, please use a VX application control device RCD-A (remote control device) or CVD-E (insulated signal converter).



NOTE 6: When the frequency setting signal is turned on and off with a contact, use a relay which will not cause contact malfunctions, even with the extremely weak currents and voltages, such as crossbar twin contacts, etc.

NOTE 7: Use relays which do not have contact defects at 24 V DC, 3 mA for the other terminals.

NOTE 8: Separate the main circuit wiring from the relay control circuit wiring. If they must cross, be sure that they cross at a right angle.

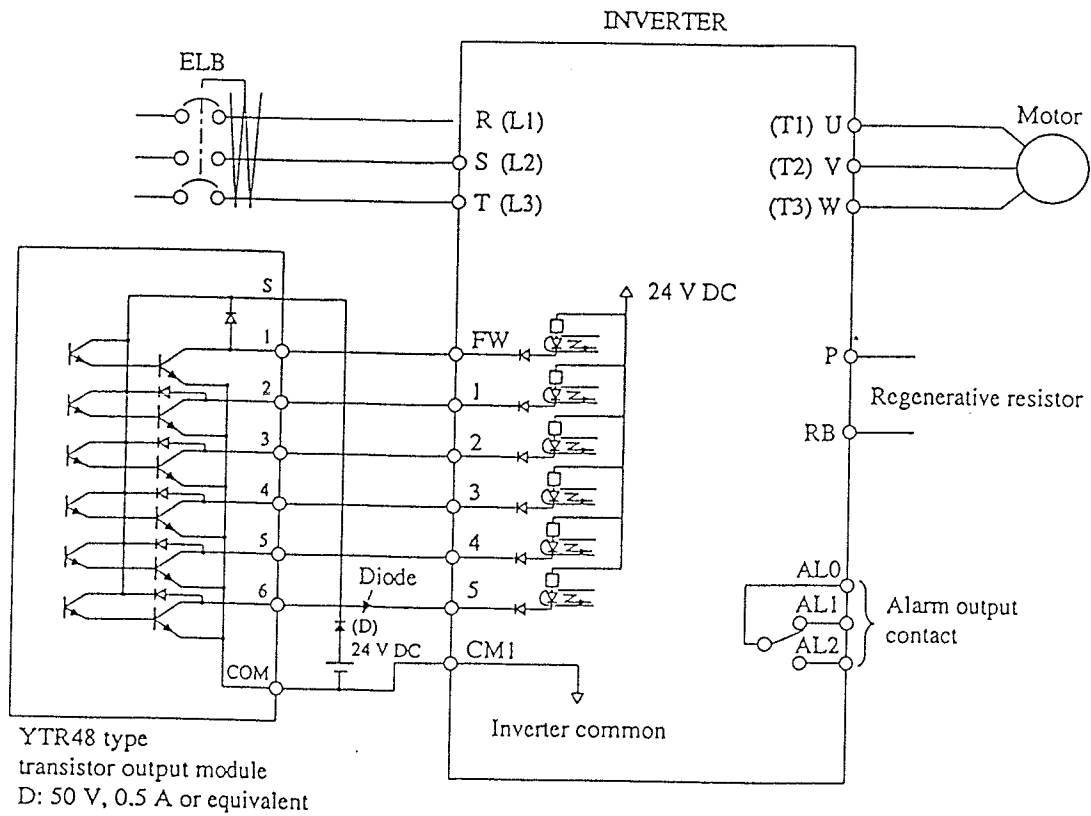


NOTE 9: Insulate frequency analog command input terminal L from the common terminal for peripheral devices such as the programmable controller.

NOTE10: Do not short-circuit the terminals H and L.
The control board or control power supply may cause a failure.

Precaution for connection to the programmable controller

When using the transistor output module of the programmable controller, connect a reverse current prevention diode (D) to the external equipment interface power source as shown in the drawing below.



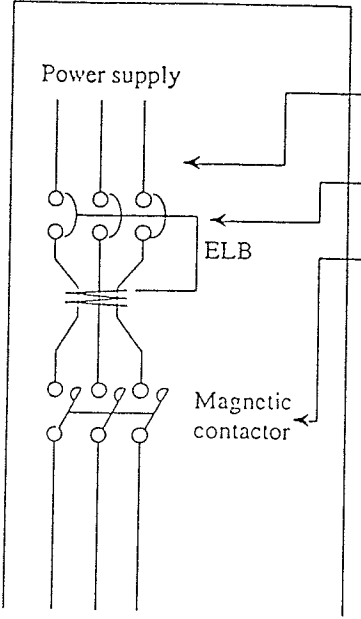
5.2 Wiring Equipment, Options

⚠ CAUTION: Provide the wiring equipment in accordance with the safety codes required by jurisdictional authorities.

The table below is an example selected out of the Hitachi's standard distribution equipment.

If specified in the standard or laws and regulations, follow their instructions.

⚠ CAUTION: Observe the precautions on page iii in cases where the J100U2 series inverter is used as a device conforming to the UL and/or the CSA standard.



Motor output HP (kW)	Inverter model	Wiring		Applicable equipment	
		Power lines	Signal lines	Earth leakage breaker (ELB)	Electromagnetic contactor
— (0.2)	J100-002LFU2 (J100-002LF2)	1.25 mm ²	(*) 0.75 mm ² Shielded wire	EX30 (5A)	H20
3/4 (0.4)	J100-004LFU2 (J100-004LF2)	1.25 mm ²		EX30 (10A)	H20
1 (0.75)	J100-007LFU2 (J100-007LF2)	2 mm ²		EX30 (10A)	H20
2 (1.5)	J100-015LFU2 (J100-015LF2)	2 mm ²		EX30 (15A)	H25
3 (2.2)	J100-022LFU2 (J100-022LF2)	2 mm ²		EX30 (20A)	H20
5 (3.7)	J100-037LFU2 (J100-037LF2)	3.5 mm ²		EX30 (30A)	H20
2 (1.5)	J100-015HFU2 (J100-015HF2)	2 mm ²		EX30 (10A)	H10C
3 (2.2)	J100-022HFU2 (J100-022HF2)	2 mm ²		EX30 (15A)	H20
5 (3.7)	J100-037HFU2 (J100-037HF2)	2 mm ²		EX30 (15A)	H20

NOTE 1: The applicable equipment is for a Hitachi standard four pole squirrel-cage motor.

NOTE 2: Be sure to consider the capacity of the circuit breaker to be used.

NOTE 3: Be sure to use bigger wires for power lines if the distance exceeds 20 m.

NOTE 4: Install an earth leakage breaker at the input.

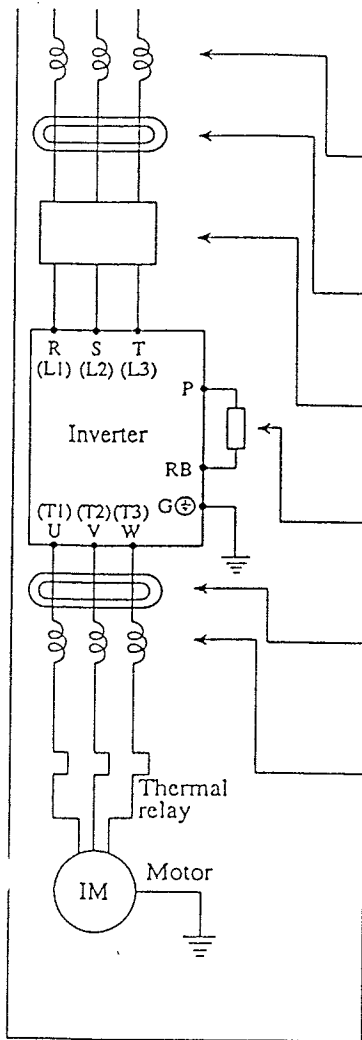
(*) Use 1.25 mm² wire for the alarm signal wire.

Classify the detective current of the earth leakage breaker depending on the total distance between the inverter and the motor.

ℓ	Detective current (mA)
100 m and less	30
300 m and less	100
600 m and less	200

NOTE 1: When using CV wire and metal tube, the leakage current is around 30 mA/km.

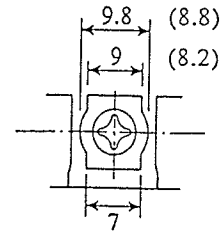
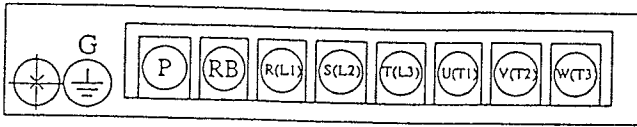
NOTE 2: When using CV wire and metal tube, the leakage current becomes eight times because IV wires have a high dielectric constant.



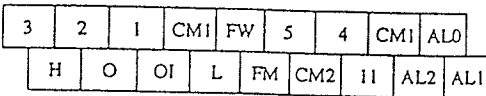
Part description	Function
AC reactor for improving the power factor (ALI-□□L) (ALI-□□H)	This part is used when the unbalance voltage ratio is 3% or more and power supply is 500 kVA or more, and there is a rapid change in the power supply. It also improves the power factor.
Radio noise filter (Zero phase reactor) (ZCL-A)	Using the inverter may cause noise on the peripheral equipment through the power lines. This part reduces noise.
EMI filter for inverter (JF-L □□) (JF-H □□)	This part reduces common noise generated between the power supply and the ground, as well as normal noise. Put it in the primary side of inverter.
Regenerative resistor (RB□□□-□)	This part is used for applications that needs to increase the brake torque of the inverter or to frequently turn on and off and to run high inertia load.
Radio noise filter (Zero phase reactor) (ZCL-A)	This part reduces noise generated at the output of the inverter. (It is possible to use for both input and output.)
AC reactor for preventing thermal relay malfunction and reducing vibration (ACL-L- □□) (ACL-H- □□)	Running motors with the inverter generates vibration greater than that with commercial power supply. This part installed between the inverter and motor reduces torque ripple. When the cable between the inverter and moter is too long, this part also prevents the thermal relay from malfunctioning.

5.3 Terminal

Main circuit terminal



Control circuit terminal



Main circuit terminal

[dimensions in the parentheses:
002-015LFU2 (002-015LF2)]

Tighten terminals to 12.2 kgf.cm.

	Screw diameter	Width (mm)
Main circuit	M4	(8.8) 9.8
Control circuit	M3	6.2
Grounding	M4	—

Dimension

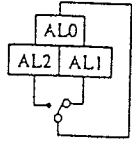
Main circuit

Terminal symbol	Terminal description	Function
(L1)(L2)(L3) R, S, T	Main power	Connect the power supply
(T1)(T2)(T3) U, V, W	Inverter output	Connect the motor
P, RB	External regenerative resistor	Connect a regenerative resistor (option)
G ⊕	Ground	Ground (connect grounding to avoid electric shock)

⚠ CAUTION: Use 60/75°C copper wire for load and line connections.

⚠ CAUTION: Use class 1 wire only, rated minimum 300 V for LFU2, 600 V for HFU2.

Control circuit

	Terminal symbol	Terminal description and function		Initial setting		Remarks	
				J100U2	J100Z		
Input, monitor signal	FW	Forward operation				Dry contact Close: ON (run) Open: OFF (stop) Min. ON time: 12 ms or more	
	5	Intelligent input terminals 1 to 5		Reverse running command			
	4	Reverse running command	Initialization	(NOTE 1) USP function	Reset input (NOTE 2)		
	3	Multistage speed (First stage)	2nd setting function	Reset	2 stage acc./dec. time		
	2	Multistage speed (Second stage)	2 stage acc./dec. time	Terminal software lock (NOTE 3)	USP function		Multistage speed (Second stage)
	1	Multistage speed (Third stage)	Free run stop (Coast-to-stop)		Multistage speed (First stage)		
			External DC	External trip			
		Damping one of the above is selected.					
	FM	Analog frequency monitor/Digital frequency monitor/Analog output current monitor		Analog frequency monitor			
	CM1	Common for input and monitor					
Frequency command input	H	Power supply for frequency command				5 VDC	
	O	Voltage frequency command				0-5 VDC (nominal) 0-10 VDC (nominal) (Input impedance 30 kΩ)	
	OI	Current frequency command				DC 4-20 mA (nominal) Input impedance 250Ω	
	L	Common for frequency command					
Output signal	I1	Intelligent output terminal One of frequency arrival signal, RUN signal, and Overload advance notice signal is selected.		Frequency arrival signal		27 VDC 50 mA max	
	CM2	Common for output					
Fault alarm output	AL0		Normal: AL0-AL1 close Abnormal, Power off: AL0-AL1 open (Initial setting)	Contact rating		(Min 100 VAC) 10 mA 5 VDC 100 mA	
	AL1			250 VAC	2.5 A (Resistor load)		
	AL2			30 VDC	3.0 A (Resistor load)		
				0.2 A (cosφ=0.4)	0.7 A (cosφ=0.4)		
				NOTE: When using an inverter that conforms to CSA standard, use DC-power supply. Working voltage: Max. 50 V			

NOTE 1: USP: Prevention function of restart upon power on.

NOTE 2: The reset terminal cannot be changed from "a contact" (NO) to "b contact" (NC).

NOTE 3: When the software is to be locked by the terminal 3 in the same way as with the J100U series, it is necessary to switch the terminal. (See page 7-14.)

6. OPERATION

6.1 Before Starting Operation

Prior to the test run, check the following.

- (1) Make sure that the power lines (input power supply R(L1), S(L2) and T(L3), and output terminals, U(T1), V(T2) and W(T3) are connected correctly.
- (2) Make sure that there are no mistakes in the signal line connections.
- (3) Make sure that the inverter case (G \oplus) is grounded.
- (4) Make sure that terminals other than those specified are not grounded.
- (5) Make sure that the inverter is installed vertically on a wall, and a nonflammable material such as a steel plate is used as a mounting surface.
- (6) Make sure that there are no short-circuits caused by stray pieces of wire, solderless terminals or other objects left from wiring work. Also, make sure that no tools have been left behind.
- (7) Make sure that the output wires are not short-circuited or grounded.
- (8) Make sure that there are no loose screws or terminals.
- (9) Make sure that the maximum frequency setting matches the machine specifications.
- (10) With the digital operator removed, do not operate the inverter. Make sure that the digital operator or remote operator is connected before operating the inverter.

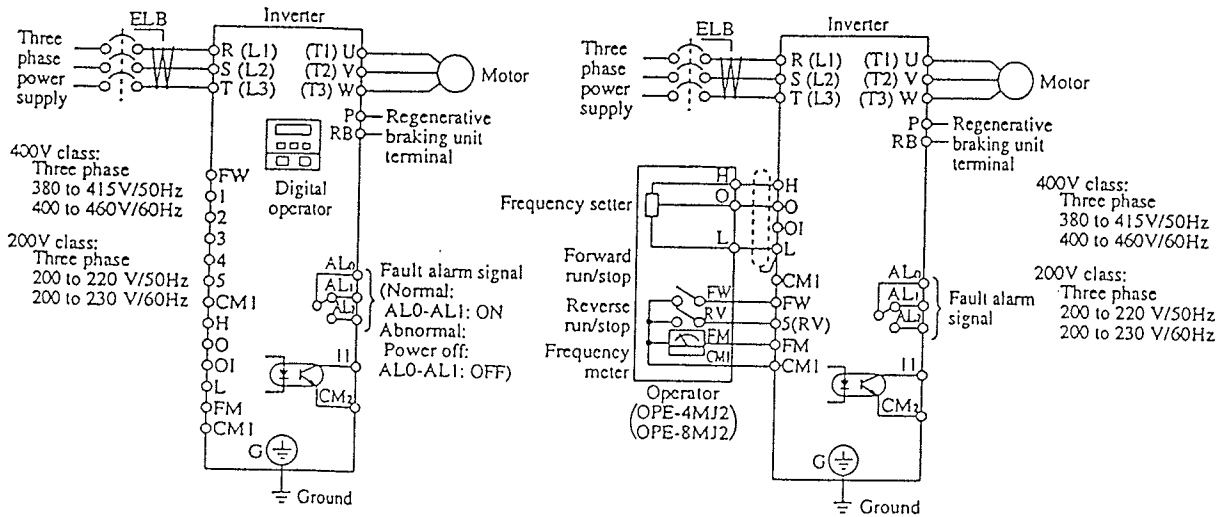
Be sure to refer to page 11-2 when conducting insulation resistance and withstand voltage tests. Never test terminals other than those which are indicated.

6.2 Test Run

An example of a general connection diagram is shown below.

Operating with digital operator:
When setting frequency, run and stop with digital operator.
(The same way as remote operator (DOP) or copy with (DRW).)

Running from external command:
When setting frequency, run and stop from external command (FW,RV Terminal.)
The following shows run from the operation box (OPE-4MJ2,OPE-8MJ2)



Procedure(Operating with digital operator)

- (1) Turn on ELB to supply power to the inverter. Make sure that the **POWER** LED on the digital operator goes ON.
- (2) Make sure that **F 9** is set to **00**.
- (3) Press **機能 FUNC** twice and display **F 2**.
- (4) Set frequency with **▲**. Check the output frequency and direction of revolution.
- (5) Press **運転 RUN** and start to run.
- (6) Press **停止/リセット STOP/RESET** and decelerate to a stop.

Check the following after the test run is complete.

- Was the direction of the motor correct?
- Was the inverter tripped during acceleration or deceleration?
- Were the rpm and frequency meter correct?
- Were there any abnormal motor vibrations or noise?

When overcurrent tripping or overvoltage tripping occurs during the test run, increase the acceleration time or deceleration time.

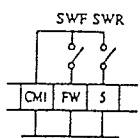
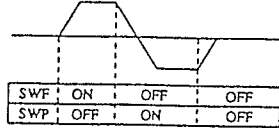
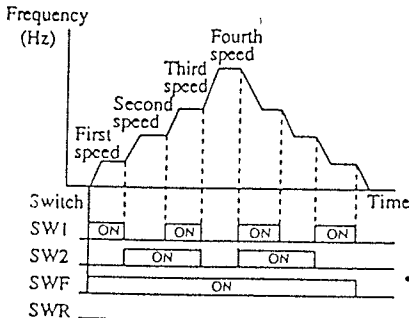
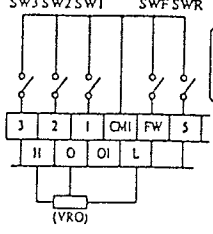
Factory settings

Maximum frequency: 60 Hz
Forward operation

7. FUNCTION OF CONTROL CIRCUIT TERMINAL

7.1 List of Control Circuit Terminals

The initialization of the intelligent input terminals is "a contact" (they turn on when short-circuited). When they are to be used in the b contact state, it is necessary to switch the setting by C20.

Terminal symbol	Function	Contents	
FW	Forward run/stop	SWF Contact (close): Forward run (open): Stop  	
RV	Reverse run/stop	SWR Contact (close): Reverse run (open): Stop Terminal 5: RV Both contacts SWF and SWR are close-stop.	
CF1	Multistage speed	  <p style="font-size: small;">Condition Terminal 1: CF1 Terminal 2: CF2 Terminal 3: CF3 Terminal 5: RV</p>	
CF2			SW2
CF3			SW3
DB	External DC braking	When the terminal [DB] is turned on, the DC braking operation can be performed.	
STN	Initialization	This function is used for initialization (state which is set at factory before shipment). When the terminal [STN] is turned on and the equipment is reset or the power is turned on again, the equipment will be initialized.	
SET	2nd setting function	When the terminal [SET] is turned on, the set frequency, torque boost, acceleration and deceleration time, second acceleration and deceleration time, and control system can be changed in a batch.	
2CH	2 stage acceleration and deceleration	When the terminal [2CH] is turned on, the acceleration and deceleration can be executed by the 2 stage acceleration and deceleration time.	
FRS	Free run stop	When the terminal [FRS] is turned on, the inverter stops output and the motor enters the free run state.	
EXT	External trip	When the terminal [EXT] is turned on, the inverter enters the trip state, stops output, and displays E12.	
USP	Power reclosing restart prevention	When the terminal [USP] is turned on, the restart when the power is turned on with the running command kept on can be prevented.	
RS	Reset	When the terminal [RS] is turned on, the trip state can be canceled. During running, the output is stopped. NOTE: The function cannot be used in the b contact state.	
SFT	Software lock	When the terminal [SFT] is turned on, the data of each function is locked. However, the running monitor and frequency setting are valid.	
CM1	Common terminal 1	Common terminal for running terminal, intelligent terminal or monitor terminal	

NOTE 1: "b contact" is set by initialization for terminal 2. When "a contact" is to be used, change the contact setting by C20. (J100U2 series)

Terminal symbol	Function	Contents	
Frequency command	H	Power supply terminal to command a frequency	<ul style="list-style-type: none"> Standard setting for external voltage signal is 0 to 4.8 V (5 V nominal). Voltage input 0 to 9.6 V (10 V nominal) can be switched by A148. <p>NOTE: When an inconvenience occurs in the above characteristics, adjust it using A80 and A81. The sum of both analog input signals is outputted. When selecting one of analog input current and voltage, make sure that the other is not inputted.</p>
	O	Frequency command terminal (voltage command)	
	OI	Frequency command terminal (current command)	
	L	Frequency command common	
Monitor terminal	FM	Frequency monitor	• Analog frequency monitor/Digital frequency monitor/Analog output current monitor
	CM1	Input monitor signal common	• Command terminal for the operation, software lock, and monitor terminals.
Intelligent output terminal 11 (NOTE 2)	AR	Frequency arrival signal	<ul style="list-style-type: none"> When [AR] is selected as a terminal, at the time of constant speed arrival, two types of methods for outputting a frequency more than an optionally set frequency can be executed.
	RUN	RUN signal	• When [RUN] is selected as a terminal, the inverter outputs when the motor is driven.
	OL	Overload previous notice signal	• When [OL] is selected as a terminal, a current more than the set current (rate to the rated current) is outputted.
CM2	Output signal common terminal	• Common terminal for intelligent output terminal	<p>Output terminal specification</p> <p>Open collector output 27 V DC max 50 mA max</p>
AL0	Alarm terminal	In the normal state: AL0 and AL1 are closed.	
AL1		In the abnormal state or when power is turned off: AL0 and AL2 are closed. (At the time of initialization)	
AL2		<p>Contact rating</p> <p>250 V AC 2.5 A (resistance load) 0.2 A (cosφ = 0.4)</p> <p>30 V DC 3.0 A (resistance load) 0.7 A (cosφ = 0.4)</p> <p>[Minimum 100 V AC 10 mA 5 V DC 100 mA]</p> <p>NOTE: When using an inverter that conforms to CSA standard, use DC-power supply. Working voltage: Max. 50 V</p>	

NOTE 2: "a contact" is set by initialization for terminal 11. When "b contact" is to be used, switch the contact setting by **C21**.

7.2 Function Contents of Monitor Terminal

Terminal name: Monitor terminal [FM]
(Analog, digital)

Function No. to be set: [A 50], [A 51], and [F 10]

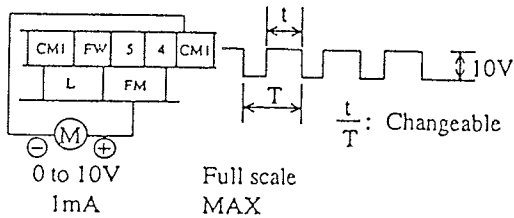
Function contents

Monitor output frequency signal or the current of the inverter is output from the control circuit terminal.

Monitor output current signal is output as an analog signal only.

① Analog Frequency Monitor Signal

The meter outputs duty cycle in proportion to the output frequency with full scale at the maximum frequency.

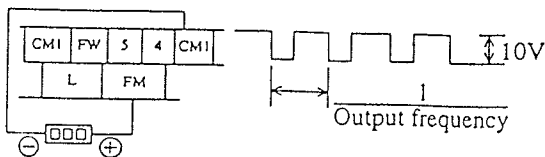


NOTE: This is a dedicated indicator, so that it cannot be used as a line speed signal.

Indication accuracy after adjustment: About $\pm 5\%$ (The accuracy of some meters may exceed this value.)

② Digital Frequency Monitor Signal

Pulse train of a frequency which is the same as the output frequency is output. The duty is about 50%.



③ Analog Current Monitor Signal

The duty cycle in proportion to the output current with full scale at 200% of the rated current of the inverter.

Specification of analog meter follows the analog frequency monitor specifications.

Setting contents

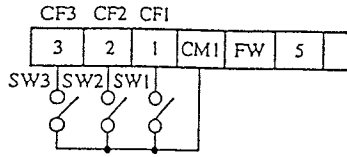
1. Select Frequency Monitor or Current Monitor by [A 51].
2. When Frequency Monitor is selected, select Analog Meter or Digital Meter by [A 50]. (When Current Monitor is selected, analog data is outputted even if Digital Meter is selected.)
3. When the analog meter is used, adjust the meter so that the needle of the meter indicates the maximum value at the time of maximum frequency by [F 10] (analog meter adjustment).

7.3 Function Contents of Intelligent Input Terminals

Terminal name: Reverse running/stop terminal [RV]	Function No. C 0 to C 4 to be set
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Function content</div> <ul style="list-style-type: none"> When the running command is inputted via the terminal [RV], the terminal executes the reverse running command or stop command. <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Terminal setting method</div> <div style="border: 1px solid black; padding: 5px;"> Digital operator _____ [RV] terminal setting (This is set in the terminal 5 at the time of initialization.) Set the set value [Reverse running command] 0 in one of the input terminals C0 to C4. </div>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Precautions</div> <ul style="list-style-type: none"> When the running command is inputted via the forward running terminal [FW] and reverse running terminal [RV] at the same time, the running command enters a state which is the same as stop. When the power is turned on when the running command is on, the motor starts rotation and it is dangerous. Before turning the power on, confirm that the running command is not on. Note that when the [RV] terminal is set to "b contact", the running automatically starts.

Terminal name: Multispeed [CF1], [CF2], [CF3]	Function No. C 0 to C 4 , F 2 to be set A 12 to A 17 , A 71
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Function content</div> <ul style="list-style-type: none"> When [CF1], [CF2], and [CF3] are selected as intelligent input terminals, Multispeed 1 to Multispeed 7 can be set. When the frequency command from the normal operator (or terminal) is combined with them, up to 8 stages of running are available. When the control terminal is set at each speed by the switch, the numerical value displayed at F2 indicates the output frequency at the time of each multispeed. Set the speed as shown below. <ol style="list-style-type: none"> ① Turn the running command off. ② Turn each switch on and set it to Multispeed n. Display the data section of F2. ③ Set an optional output frequency by pressing the ▲ and ▼ keys. 	<ol style="list-style-type: none"> ④ Press the 機能 FUNC key once so as to store the set frequency. If this occurs, F2 indicates the output frequency of Multispeed n. ⑤ Press the ▲ and ▼ keys once. (Confirm that the indication is the same as the set frequency.) ⑥ When the operations in (1) to (4) are repeated, the frequency of Multispeed n can be set. It can be set also by one of A12 to A17 and A71. <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Terminal setting method</div> <div style="border: 1px solid black; padding: 5px;"> Digital operator _____ Set the set values 1, 2, and 3 in one of the input terminals C0 to C4. </div>

Example of output terminal connection

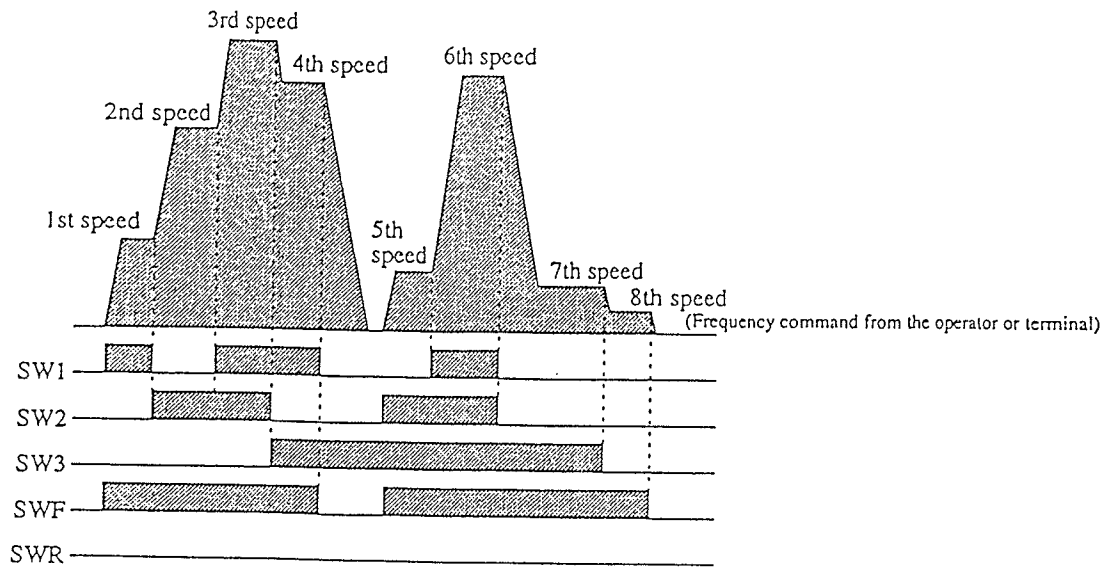


Setting of multispeed

Multispeed	Control circuit terminal		
	SW1	SW2	SW3
Multispeed 1	ON	OFF	OFF
Multispeed 2	OFF	ON	
Multispeed 3	ON	ON	
Multispeed 4	ON	OFF	ON
Multispeed 5	OFF	ON	
Multispeed 6	ON	ON	
Multispeed 7	OFF	OFF	

Precautions

- Up to the third speed of the multispeed can be set by initialization. When CF3 (allocated to the terminal 3 in this case) is set by the extended function mode [C 2], up to the seventh speed can be set.
- After any data is changed, be sure to press the 模能
FUNC key every time and then set the next one. Note that when the 模能
FUNC key is not pressed, no data will be set.
- When a frequency more than 120 Hz is to be set, it is necessary to switch the maximum frequency ([A 64]).



Terminal name: External DC damping [DB] Function No. to to be set , ,

Function content

- When the terminal [DB] is turned on, the DC braking [DB] operation can be performed.

Necessary setting items when the external DC braking terminal is used

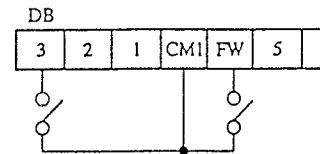
Set the following when the external DC braking terminal is to be used.

- DC braking type selection
- DC braking force setting
- DC braking time setting

DC braking execution method

- When the operation type is an edge operation
Turn the switch between [DB] and [CM1] on and output DC braking only for the time of DC braking time selection (at the time of stop).

- When the operation type is a level operation
Output DC braking when the switch between [DB] and [CM1] is on. Time setting is not related to it.



When [DB] is allocated to the terminal 3

Precautions

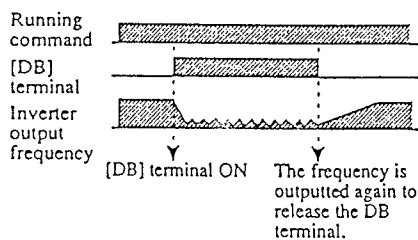
- As the DC braking force and DC braking time are increased, overload protection () is easily generated.

Terminal setting method

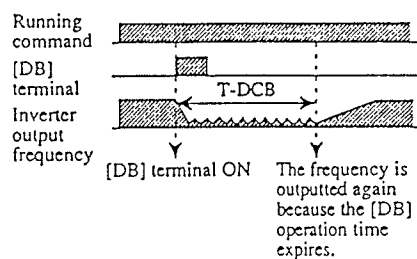
Digital operator

Set the set value in one of the input terminals to .

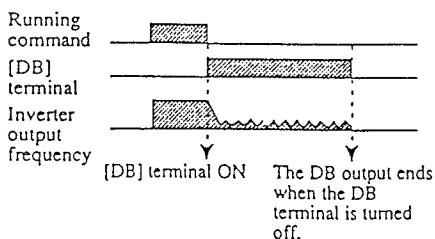
Level operation 1



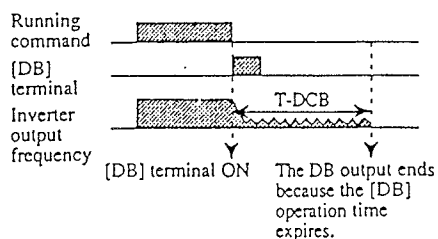
Edge operation 1



Level operation 2



Edge operation 2



Terminal name: Initialization Function No. C 0 to C 4
(factory delivery state) [STN] to be set

When returning the equipment to the initial state at factory before shipment for some reason, follow the following procedure.

- ① Allocate [STN] (set value) to one of the input intelligent terminals. (Use to in the extended function mode to set an intelligent terminal.)
- ② Turn the switch between the [STN] and [CM1] terminals on and then turn the power off and on or perform the reset operation as shown in Note 1. (After the power is turned off, do not turn the power on again before the charge lamp of the logic substrate goes off.)
- ③ When 6 seconds or more pass after the power is turned on or the reset operation is performed, turn the switch between the [STN] and [CM1] terminals off. (When the key operation, reset operation, or power turning operation is performed before 6 seconds pass, the equipment may not be initialized.)

NOTE 1: For resetting, turn the switch between the [RS] and [CM1] terminals of the terminal block on and then off.

NOTE 2: When the software is locked, the equipment cannot be initialized.

Terminal name: 2nd setting function [SET]

Function No. to be set: C 0 to C 4 (A 0 to A 2, A 18, A 19, A 62, A 63, F 2, F 5 to F 8)

Function content

- When the terminal [SET] is turned on, it is possible to set two types of motor constants and execute running by one inverter.
- Select the second setting function when the equipment is stopped.

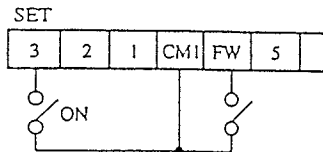
Functions which can be set by the second function

- F2: Output frequency setting
- F5: V/f pattern setting
- F6: Acceleration time 1 setting
- F7: Deceleration time 1 setting
- F8: Manual torque boost setting
- A0: Control method
- A1: Motor capacity setting
- A2: Motor poles setting
- A18: 2-stage acceleration time setting
- A19: 2-stage deceleration time setting
- A62: Base frequency setting
- A63: Maximum frequency setting

Function switching method

While the switch between the set terminals [SET] and [CM1] is on, the equipment is operated by the setting of the second function.

When the terminal is turned off, the setting is returned to the original setting (first function).



When [SET] is allocated to the terminal 3

How to set the monitor and function modes when the second function is executed

- To set the second set data, change the setting in the state that [SET] and [CM1] are turned on.
- Even when the [SET] terminal is switched during data display, the digital operator displays the same value and does not display the switched set data. When the display code is displayed, switch the [SET] terminal.
- In the digital operator, at the time of second setting, a decimal point is displayed in the first digit place of the data display section such as . However, when the acceleration and deceleration time, DC braking time adjustment time, and standby time after undervoltage display more than 100, it does not mean the second function setting. (When the remote operator is used for setting, there is no distinction display of the second setting. Confirm it from the state of ON or OFF of the terminal.)

Terminal setting method

Digital operator

Set the set value in one of the input terminals C 0 to C 4.

Precautions

- Connect and turn on the [SET] terminal before the running command terminals (FW and RV terminals). When they are connected and turned on at the same time, the setting may not be switched to the second setting.

Terminal name: Second stage acceleration and deceleration [2CH]

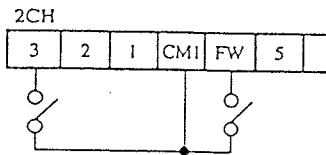
Function No. to ,
to be set ,

Function content

- When the terminal [2CH] is turned on, the equipment can be accelerated or decelerated (acceleration time 2, deceleration time 2) by the 2 stage acceleration and deceleration time.

Function switching method

- While the switch between the set terminals [2CH] and [CM1] is on, the equipment operates by the 2 stage acceleration and deceleration time (acceleration time 2, deceleration time 2).
- When the terminal is turned off, the equipment is returned to the original acceleration and deceleration time (acceleration time 1, deceleration time 1).



When [2CH] is allocated to the terminal 3

Terminal setting method

Digital operator

Set the set value in one of the input terminals to .

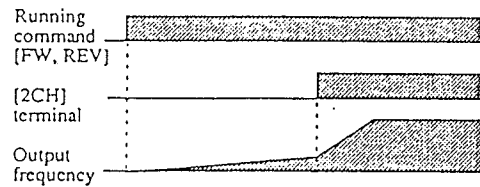
2 stage acceleration and deceleration time setting method

Use (acceleration time 2) and (deceleration time 2) to set the 2 stage acceleration and deceleration time (acceleration time 2, deceleration time 2).

Between terminals [2CH] and [CM1]	Acceleration and deceleration time for operation
OFF state	Acceleration time 1, Deceleration time 1
ON state	Acceleration time 2, Deceleration time 2

Precautions

When a time of more than 1000 seconds is set by the remote operator, the indication of the digital operator becomes . (However, the operation during the set time will be executed.)



Terminal name: Free run stop [FRS]

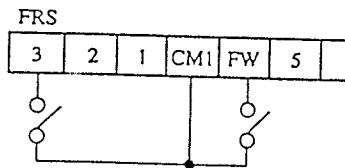
Function No. to to be set

Function content

- When the terminal [FRS] is turned on, the inverter stops output and the motor enters the free run state.

Function switching method

- While the switch between the set terminals [FRS] and [CM1] is on, the equipment operates the FRS operation.



When [FRS] is allocated to the terminal 3

NOTE: "a contact" is set by initialization.

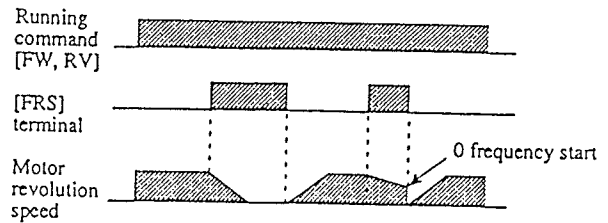
When "b contact" is to be used, switch the contact setting by .

The contact setting cannot be switched only by selecting FRS by switching to .

Terminal setting method

Digital operator _____

Set the set value in one of the input terminals to .



Terminal name: External trip [EXT]

Function No.
to be set

0 to 4

Function content

- When the terminal [EXT] is turned on, the inverter enters the trip state by an indication of E 12 and stops output.

Terminal setting method

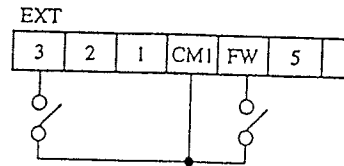
Digital operator

Set the set value 9 in one of the input terminals C 0 to C 4.

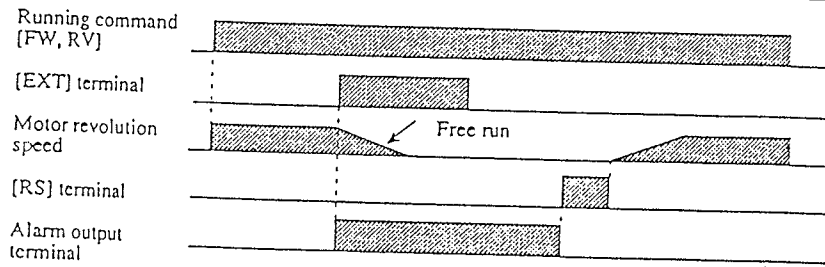
Function switching method

When the switch between the set terminals [EXT] and [CM1] is turned on, the equipment enters the trip state.

Even when the switch is turned off, the trip state will not be canceled. Reset the equipment or turn the power off and on again to cancel the trip state.



When [EXT] is allocated to the terminal 3



Terminal name: Prevention function of restart upon power on [USP]

Function No. to to be set

Function content

- If the running command is set when power is turned on, the inverter starts running immediately after it is activated. The USP function prevents it so that the inverter will not execute sudden running.
- To reset an alarm and restart running, turn the running command off (NOTE 1) or perform a reset operation by the terminal [RS] or the key. Refer to the time chart indicated below.

NOTE 1: When the running command is turned off, the indication is switched to but the trip state will be canceled.

Set content

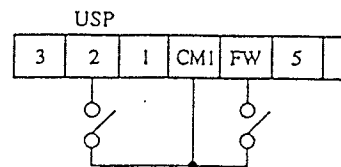
Digital operator

Set the set value in one of the input terminals to .

NOTE 2: The contact setting cannot be switched only by selecting USP by switching to .

Function switching method

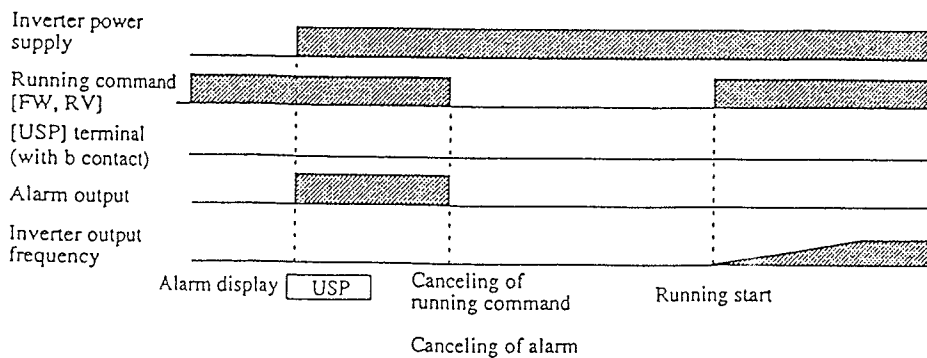
When b contact is set (initial setting for J100 U2 series), while the switch between the set terminals [USP] and [CM1] is off, the equipment executes the USP operation. If the power is turned on when the running command is inputted, the equipment enters the USP trip state (.



When [USP] is allocated to the terminal 2 (Initialization of J100U2 series)

Precautions

- Note that when a USP error occurs and it is canceled by resetting in the state that the running command from the terminal is inputted, the inverter restarts running immediately.
- Even when the trip state is canceled by turning the terminal [RS] on and off after an insufficient voltage protection () occurs, this function will be performed.
- When the running command is inputted immediately after the power is turned on, a USP error will be caused. When this function is used, input the running command two (2) seconds after the power is turned on.



Terminal name: Reset [RS]

Function No. to to be set

Function content

- The trip content can be canceled.
- The function is used to return each setting to the initialization (state which is set at factory before shipment). See page 7-7, "Initialization".
- The function is used to erase the trip history data. Set trip history clear selection.

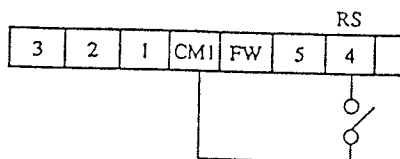
Terminal setting method

Digital operator

Set the set value in one of the input terminals to .

Function switching method

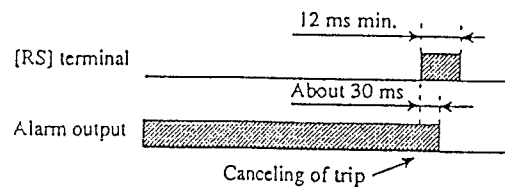
- When the switch between the set terminals [RS] and [CM1] is turned on and off, the equipment executes the reset operation. (Reset [RS] is allocated to the control terminal 4 by initialization.)



When [RS] is allocated to the terminal 4 (Initialization)

Precautions

- When the control terminal [RS] is kept on continuously for more than 4 seconds before using it, the display of the remote operator becomes R-ERROR COMM<2> (the display of the digital operator is). However, the inverter is normal. To return the display to the original one, open the terminal [RS] and press one of the keys of the operator.
- When the [RS] terminal is turned off from on, it becomes valid.
- The STOP/RESET key of the digital operator is valid only when an alarm occurs.
- Only "a contact" (NO) can be set to the [RS] terminal. The terminal cannot be used in the "b contact" (NC) state.
- Even when the power is turned off or on, the function of the terminal is the same as that of the reset terminal.



Terminal name: Terminal software lock [SFT]

Function No.

to

to be set

Function content

- When the terminal [SFT] is turned on, the data of all the functions except the output frequency is locked by initialization. When the data is locked, no data can be changed.

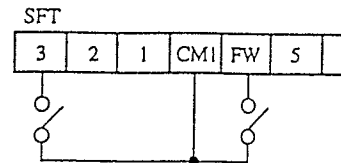
Terminal setting method

Digital operator

Set the set value in one of the input terminals to .

Function switching method

When the switch between the set terminals [SFT] and [CM1] is turned on, the equipment enters the software lock state.



When [SFT] is allocated to the terminal 3

Precautions

- When the [SFT] terminal is turned on by initialization, only the output frequency can be changed.
- Software lock can be made possible also for the output frequency by .
- Software lock by the operator is also possible without the [SFT] terminal being used. ()

7.4 Function Contents of Intelligent Output Terminals
(Initial setting is "a contact" (NO) state)

Terminal name: Frequency arrival signal [AR] Function No. ,
to be set

Function content

- When [AR] is selected as an intelligent output terminal, at the time of constant speed arrival, two types of methods for outputting a frequency more than an optionally set frequency can be executed. Select the output method by . Set an optionally set frequency by (setting at the time of acceleration) or (setting at the time of deceleration).

Terminal setting method

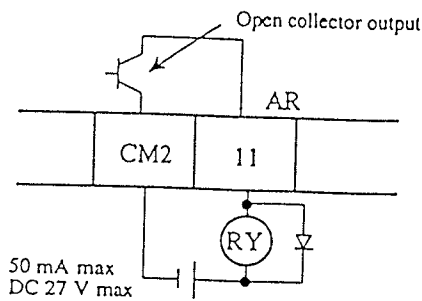
Digital operator _____

Set the set value in the output terminal .

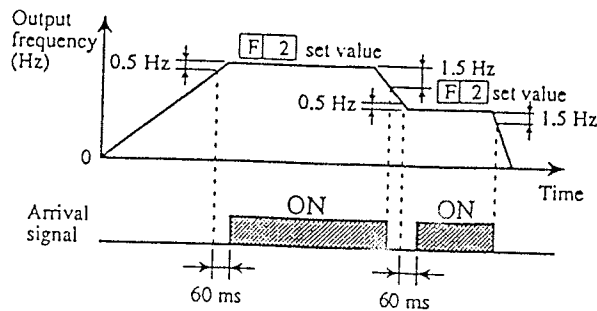
Precautions

- At the time of acceleration, an output signal at a frequency between the set frequency - 0.5 Hz to + 1.5 Hz is turned on.
- At the time of deceleration, an output signal at a frequency between the set frequency + 0.5 Hz to - 1.5 Hz is turned on.

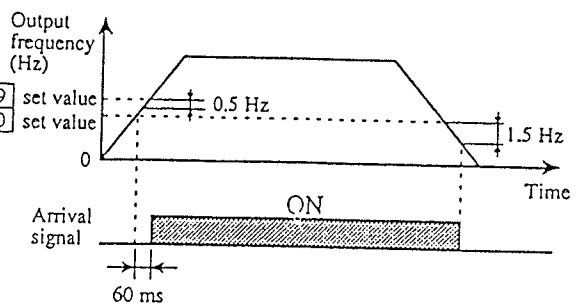
Connection example of output terminal



(Initialization)



At the time of constant speed arrival



More than optionally set frequency

NOTE: When an arrival signal is outputted, a delay of about 60 ms occurs.

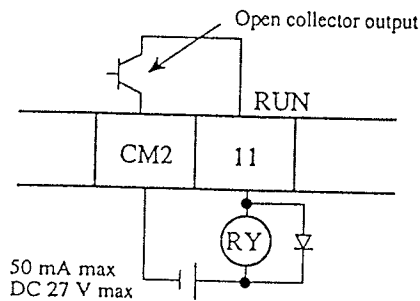
Terminal name: Run signal [RUN]

Function No.
to be set

Function content

- When [RUN] is selected as an intelligent output terminal, the inverter outputs a RUN signal when the motor is driven.

Connection example of output terminal



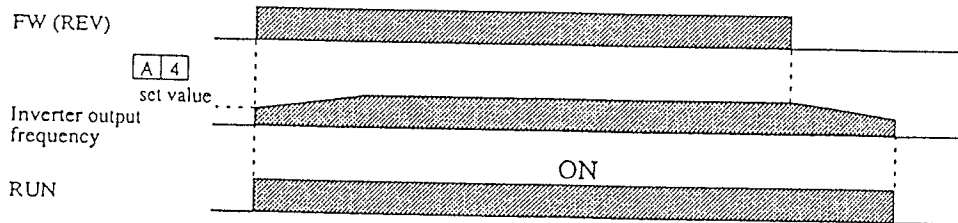
Terminal setting method

Digital operator

Set the set value in the output terminal .

Precautions

- A RUN signal is outputted simultaneously when a gate signal of the power module is outputted. Therefore, when the frequency of the RUN signal is less than the start frequency adjustment value , it will not be outputted.
- A RUN signal can be outputted even during DC braking by .



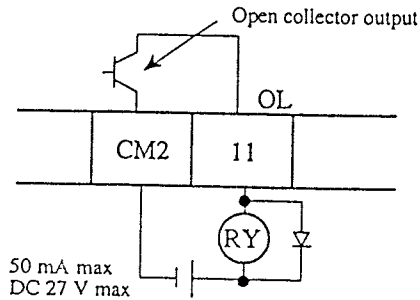
Terminal name: Overload advance notice signal [OL]

Function No. to be set

Function content

- When an output current more than the set current (rate to the rated current) flows, the terminal outputs a signal.

Connection example of output terminal



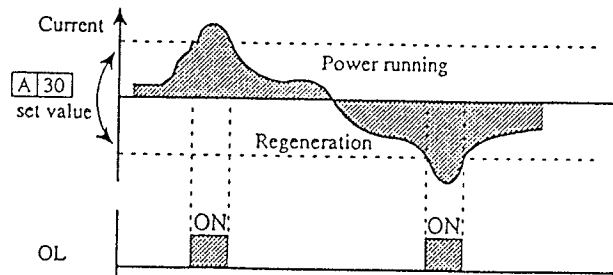
Terminal setting method

Digital operator

Set the set value in the output terminal .

Precautions

A value of 150% is set by initialization. To change the level, change (overload advance notice level).



7.5 Function Contents of Alarm Terminals

Terminal name: Alarm terminal
[AL1, AL2-AL0]

Function No. **C 21**
to be set

Function content

- When an alarm occurs, the function outputs an alarm signal from the terminals [AL0], [AL1], and [AL2] via the c contact. If this occurs, the operator displays the alarm content.

Terminal setting method

Digital operator

- “a contact” or “b contact” can be selected by **C 21**.
- The initialization is “b contact”.

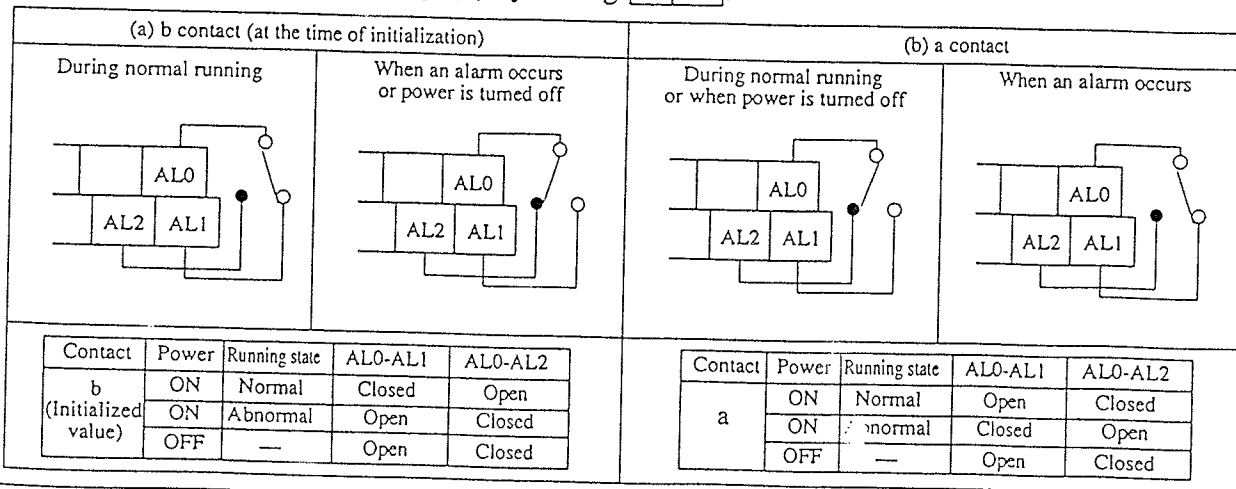
Precautions

- Holding of an alarm signal**
When an alarm signal is outputted, the alarm content will be stored even if the input power is turned off. Therefore, by turning the power on again, the content can be confirmed. However, when the input power is turned off, the alarm output will be reset (canceled) when the power is turned on again next. Therefore, to hold the alarm output, hold the alarm once by the external sequence and then turn the power switch of the inverter off.
- When the alarm contact output is set ON during normal running (b contact), a time delay occurs until the contact is closed when the power is turned on. Therefore, when the alarm contact output is to be used, set a delay of about 2 seconds when the power is turned on. (In the case of b contact, the contact may chatter when the power is turned on or off. If a fault may be caused by this, provide an interlock in the external circuit.)

Contact specification

Maximum	Minimum
AC 250V, 2.5A (load R) 0.2A (cos ϕ =0.4)	AC 100 V, 10 mA
DC 30 Vm, 3.0A (load R) 0.7A (cos ϕ =0.4)	DC 5 V, 100 mA

The alarm output terminals are connected as shown in Fig. (a) at the time of initialization. They can be changed as shown in Fig. (b) by setting **C 21**.



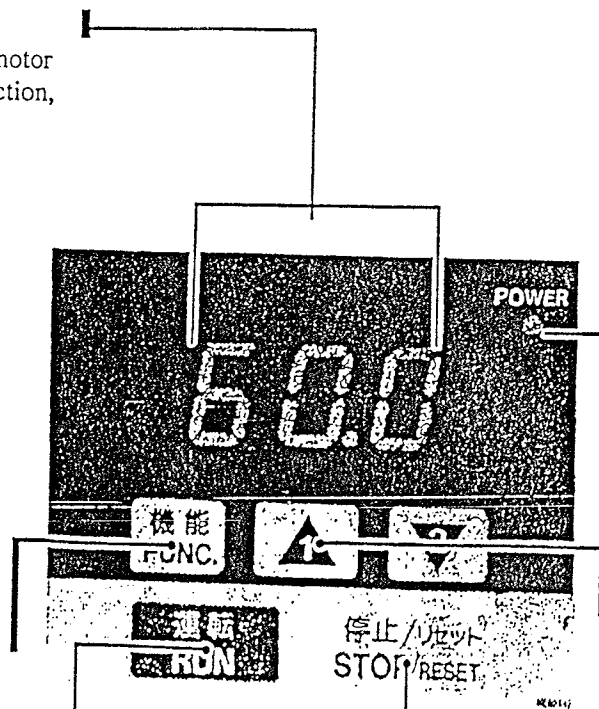
8. OPERATION OF THE DIGITAL OPERATOR

8.1 Name of Keys

Monitor (LED display)
This display shows frequency, motor current, DV voltage, motor direction, and type.

POWER Lamp
Power lamp of control circuit

NOTE:
Use the charge lamp on the right of the terminal block to confirm the DC voltage after power is turned off.



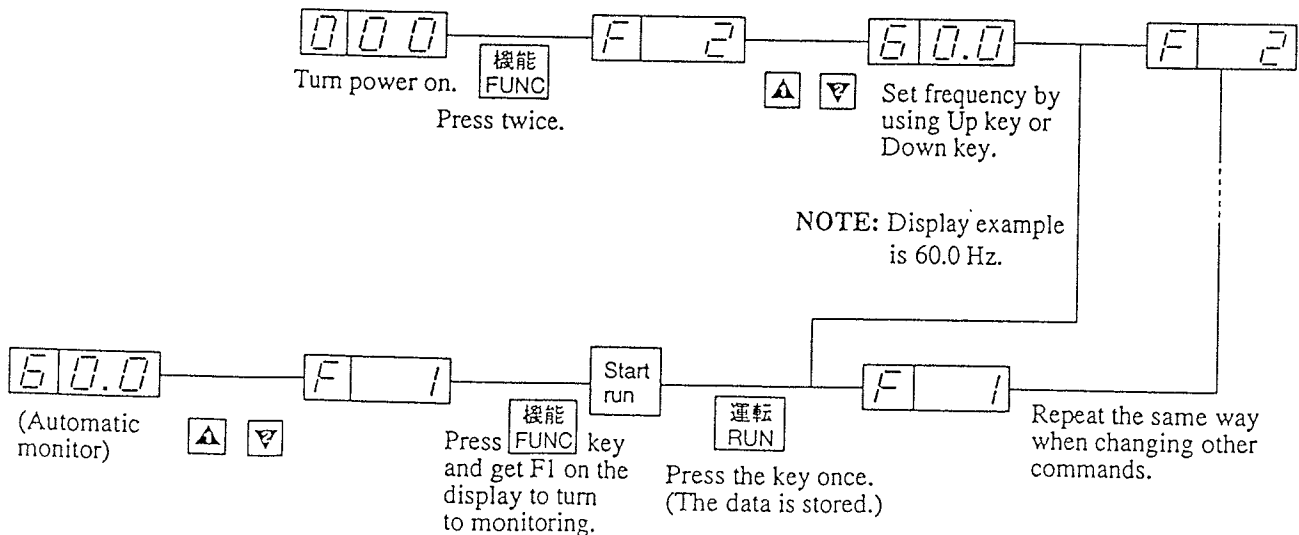
FUNC (Function) key
This key is used for changing commands. When pressing key after setting data and parameter, they are automatically memorized.

Up key, Down key
These keys are used to change data and increase or decrease the frequency.

RUN key
This key is used for starting.
(When terminal run is selected, this key does not work.)

STOP/RESET key
This key is used for stopping the motor or resetting errors.
(When either operator or terminal is selected, this key works. If the extension function is used, this function is void.)

8.2 Operation Procedure (Example that the frequency is set and the equipment starts running)

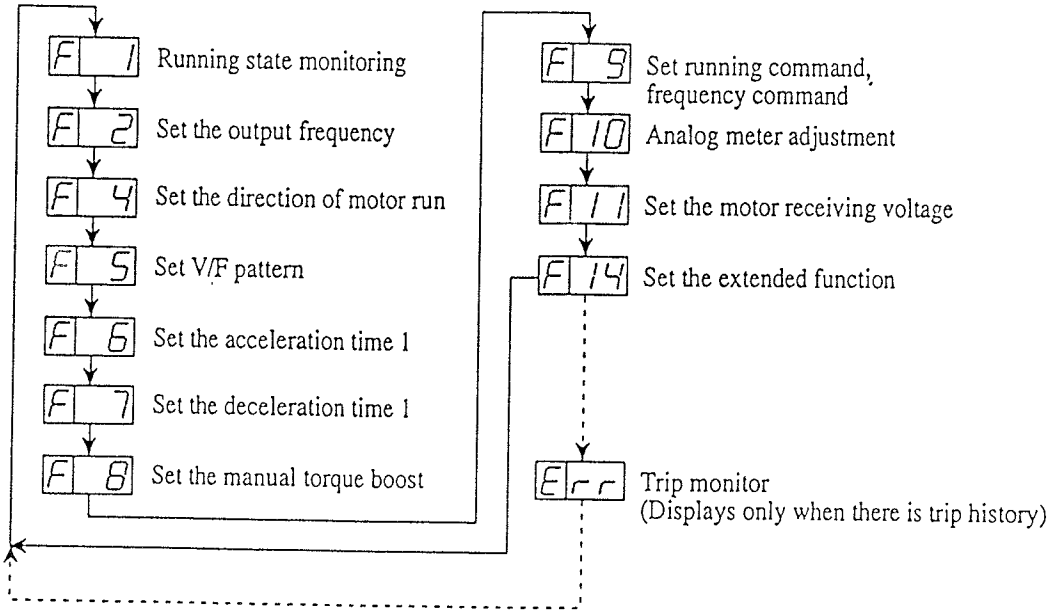


8.3 Key Description

**機能
FUNC**

[Function key] . . . This key allows the selection of commands and memorizes parameters.

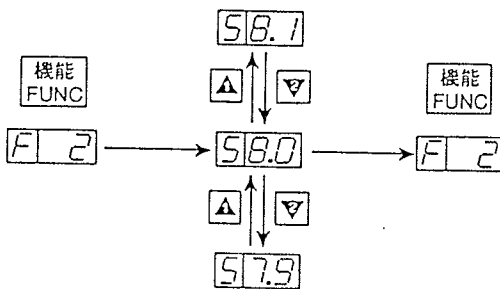
When each time the key is pressed, the display changes as follows.



[Up key, Down key] . . . These keys change the values of data, and parameters.

▲ ▼

Pushing down this key once under **F 1** to **F 14** condition moves to the data state.



NOTE: After the data is changed, be sure to press the **機能
FUNC** key.

**正転
RUN**

[RUN key] . . . This key starts the run.

The set value of **F 4** determines a forward run or a reverse run.

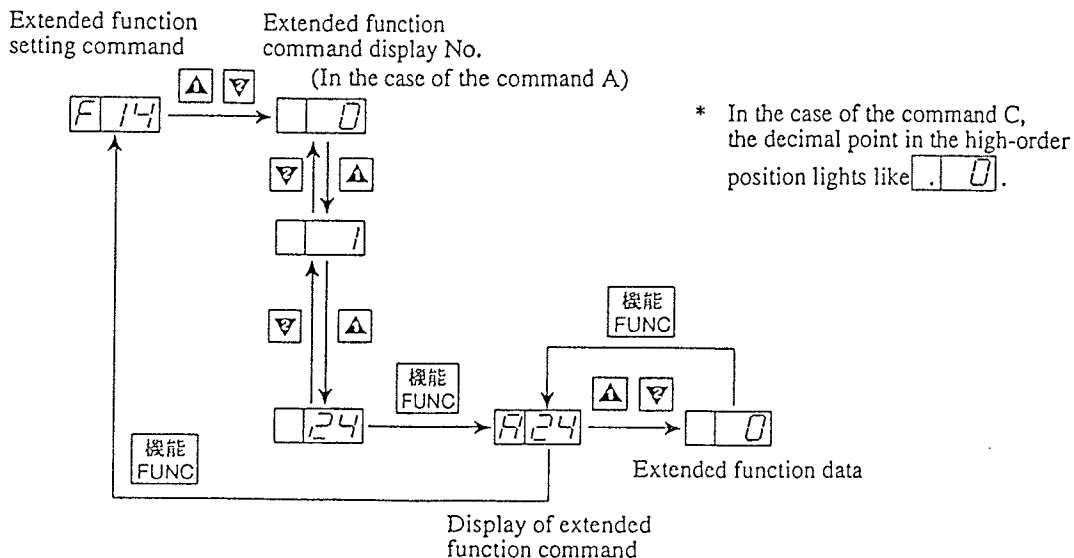
**停止/リセット
STOP/RESET**

[STOP/RESET key] . . . This key stops the run.

When a trip occurs, this key becomes the reset key.

Screen transfer for extended commands

When an extended command is to be used, select the extended function command No. from **F14** by using the keys **▲** and **▼** so as to enter the extended function mode.



Explanation of screen display

- ① When the inverter is turned on, the display which is outputted when the power is turned off before it is turned on appears. However, when the data display section for the commands F4 to F14 is turned off, the command display (F4 to F14) at that time appears.
- ② At the time of second setting, the decimal point in the first position of the data display section is displayed like **.22**. However, a display of more than 100 of the set frequency, acceleration and deceleration time, DC braking time adjustment time, or standby time after undervoltage does not mean the second setting.

8.4 Initialization List of Digital Operator

(1) Monitor mode, function mode

The initialized value and settable range of each mode are displayed.

For extended function setting of **F14**, the extended functions shown on pages 8-5 and 8-6 can be set.

Display order	Function name	Type	Screen display			Initializa- tion	Application of 2nd setting function
			Command display	Settable during running	Range of set values		
1	Running state monitoring	Monitor- ing	F1	—	Frequency, current, DC voltage, rotational direction	—	—
2	Output frequency setting	Setting	F2	√	0.0 to 99.9 Hz/0 to 360 Hz	0.0	√
3	Running direction setting	Setting	F4	—	F/r (Forward/reverse)	F	—
4	V/f pattern setting	Setting	F5	—	0 to 57	NOTE 1	√
5	Acceleration time 1	Setting	F6	√	0.1 to 99.9 seconds, 100 to 999 seconds	NOTE 2	√
6	Deceleration time 1	Setting	F7	√	0.1 to 99.9 seconds, 100 to 999 seconds	NOTE 2	√
7	Manual torque boost setting	Setting	F8	√	0 to 99	11	√
8	Running command, frequency command setting	Setting	F9	—	0 to 3	03	—
9	Analog meter adjustment	Setting	F10	√	1 to 99	72	—
10	Motor receiving voltage setting	Setting	F11	—	200 to 240 V/380 to 460 V NOTE 3	NOTE 4	—
11	Extended function setting	Setting	F14	—	0 to 85/ .0 to .21 NOTE 5	0	—

NOTE 1: 18 for 200 V class, 26 for 400 V class (Initialization of J100U2 series)
02 for 200 V class, 10 for 400 V class (Initialization of J100₂ series)

NOTE 2: 10 seconds for 200 V class, 15 seconds for 400 V class

NOTE 3: For the 200 V class, one of 200, 220, 230, and 240 can be selected. For the 400 V class, one of 380, 400, 415, 440, 460, and 480 can be selected.

NOTE 4: 230 V for 200 V class, 460 V for 400 V class (Initialization of J100U2 series)
200 V for 200 V class, 400 V for 400 V class (Initialization of J100₂ series)

NOTE 5: No extended function can be set during running. However, the set value of each function can be monitored.

(2) Extension function mode

- Each function name and settable range to the extension function mode are shown below.
- Set the extension function code to be changed by F14 .

Display order	Extended function name	Screen display		Initial value		Settable for 2nd function	Remarks	Ref. page
		Code display	Setting range	J100U2	J100 ₂			
1	Control method	A 0	0-2	0		√		8-15
2	Motor capacity setting	A 1	0.2-5.5	NOTE 1		√		8-15
3	Motor poles setting	A 2	2/4/6/8	4		√		8-15
4	Maximum frequency adjustment	A 3	0.0-15 Hz	0.0		—		8-16
5	Start frequency adjustment	A 4	0.5-5.0 Hz	0.5		—		8-17
6	Upper frequency limiter setting	A 5	0-375 Hz	0		—		8-17
7	Lower frequency limiter setting	A 6	0-375 Hz	0		—		8-17
8	Jump frequency setting 1	A 7	0-375 Hz	0		—		8-18
9	Jump frequency setting 2	A 8	0-375 Hz	0		—		8-18
10	Jump frequency setting 3	A 9	0-375 Hz	0		—		8-18
11	Carrier frequency setting	A10	5/8/12/16 Hz	16		—		8-18
12	Frequency command sampling setting	A11	1-8	8		—		8-19
13	Multispeed first speed setting	A12	0-375 Hz	5		—		8-20
14	Multispeed second speed setting	A13	0-375 Hz	20		—		8-20
15	Multispeed third speed setting	A14	0-375 Hz	40		—		8-20
16	Multispeed forth speed setting	A15	0-375 Hz	0		—		8-20
17	Multispeed fifth speed setting	A16	0-375 Hz	0		—		8-20
18	Multispeed sixth speed setting	A17	0-375 Hz	0		—		8-20
19	2-stage acceleration time setting	A18	0.1-999s	1.0		√	Changeable during RUN	8-21
20	2-stage deceleration time setting	A19	0.1-999s	1.0		√	Changeable during RUN	8-21
21	DC braking frequency setting	A20	0.5-375 Hz	0.5		—		8-21
22	DC braking force adjustment	A21	0-36 (400 V:0-20)	010		—		8-21
23	DC braking time adjustment	A22	0-600s	1		—		8-21
24	Electronic thermal level adjustment	A23	20-120%	100		—		8-22
25	Electronic thermal characteristic selection	A24	0/1	0		—		8-22
26	External frequency setting start	A26	0-375 Hz	0		—		8-19
27	External frequency setting end	A27	0-375 Hz	0		—		8-19
28	Acceleration selection (Linear, S-curve)	A28	0/1	0		—		8-23
29	Deceleration selection (Linear, S-curve)	A29	0/1	0		—		8-23
30	Overload previous notice signal setting 1	A30	50-150%	150		—		8-23
31	Overload limit level setting	A31	50-150%	150		—		8-23
32	Overload limit content selection	A32	0/1	0		—		8-24
33	LAD stop function setting	A33	0/1	0		—		8-24
34	Trip/retry function selection	A34	0/1	0		—		8-24
35	Trip ignorance selection	A35	0(off)/1(on)	0		—		8-24
36	AVR voltage setting for deceleration	A36	0/1	0		—		8-25
37	Motor voltage setting for deceleration	A37	200-270 V/380-540 V/000	230 460	200 400	—	000:Invalid during decel.	8-25
38	Dynamic braking usage ratio	A38	0.1-30.0, 31.0	5		—	31.0:BRD invalid	8-25
39	Optional arrival frequency for acceleration	A39	0-100%	100		—		8-26

Display order	Extended function name	Screen display		Initial value		Settable for 2nd function	Remarks	Ref. page
		Code display	Setting range	J100U2	J1002			
40	Optional arrival frequency for deceleration	A 40	0-100%	100		—		8-26
41	Forward rotation	A41	0(off)/1(on)	1		—		8-26
42	Reverse rotation	A42	0 (off) / 1 (on)	1		—		8-26
43	Stop key ON/OFF selection	A43	0/1	0		—		8-27
44	Analog input selection	A48	0(5 V)/1 (10 V)	0		—		8-19
45	Frequency arrival signal output method	A49	1/2	2		—		8-26
46	Analog/digital meter selection	A50	0/1	1		—		8-27
47	Frequency/current monitoring selection	A51	0/1	0		—		8-27
48	RUN signal output selection	A52	1/2	1		—		8-27
49	Enable/disable of frequency setting for software lock	A53	0/1	0		—		8-28
50	DC braking ON/OFF selection	A55	0 (off) / 1 (on)	0		—		8-22
51	DC braking edge/level selection	A56	0/1	1		—		8-22
52	Trip history clear selection	A57	0/1	0		—		8-28
53	Reduced voltage start selection	A58	0/1	1		—		8-28
54	Base frequency setting	A62	50-360 Hz	50		√		8-16
55	Maximum frequency setting	A63	50-360 Hz	50		√		8-16
56	Maximum frequency switching	A64	0 (120 Hz) / 1 (360 Hz)	0		—		8-16
57	Jump frequency range setting	A68	0-9.9 Hz	0.5		—		8-18
58	Multispeed seventh speed setting	A71	0-375 Hz	0		—		8-20
59	Frequency command adjust. (voltage)	A80	0-255	NOTE 2		—		8-29
60	Frequency command adjust. (current)	A81	0-255	NOTE 2		—		8-29
61	Allowable undervoltage time setting	A82	0.3-3.0s	1.0		—		8-29
62	Undervoltage retry waiting time	A83	0.3-100.0s	10.0		—		8-29
63	Software lock selection	A84	0/1	0		—		8-30
64	Deceleration rate setting for overload limit	A85	0.1-31.0s	1.0		—	31.0:Invalid	8-23
65	Input terminal setting 1	C0	0-12	1		—		8-31
66	Input terminal setting 2	C1	0-12	10	2	—		8-31
67	Input terminal setting 3	C2	0-12	7		—		8-31
68	Input terminal setting 4	C3	0-12	11		—		8-31
69	Input terminal setting 5	C4	0-12	0		—		8-31
70	Output terminal setting	C10	0-2	0		—		8-32
71	Input terminal a and b contact setting	C20	00-1F	02	00	—		8-33
72	Output terminal a and b contact setting	C21	00-03	03		—		8-34

NOTE 1: The most applicable motor capacity of the inverter is set.






NOTE 2: The initial setting of each inverter is adjusted when shipping from the works.

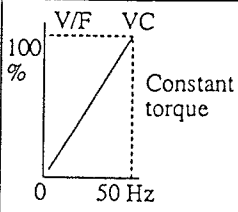
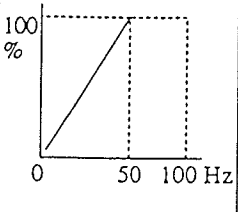
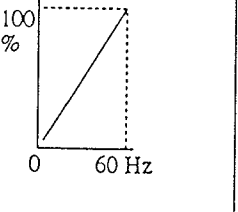
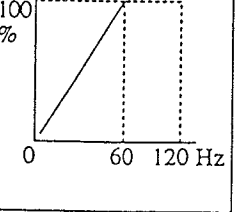
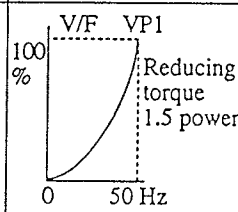
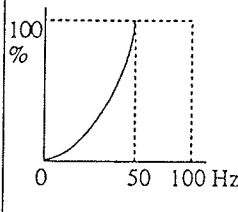
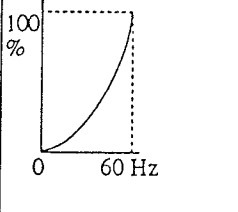
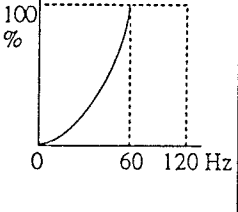
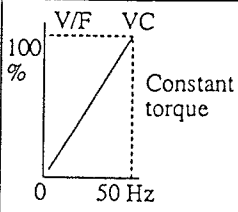
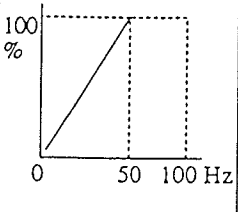
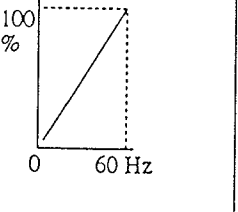
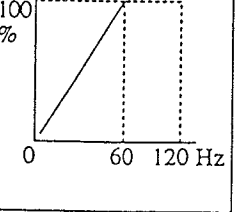
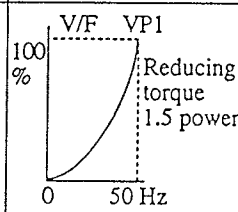
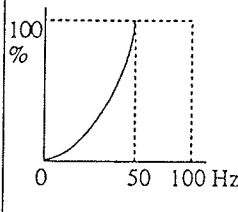
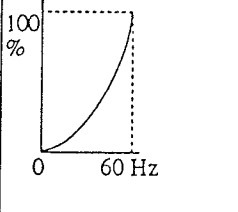
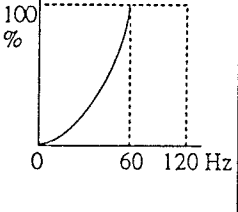
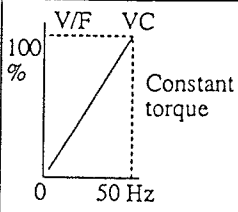
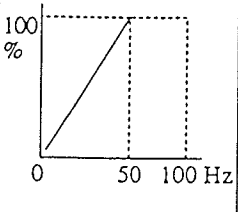
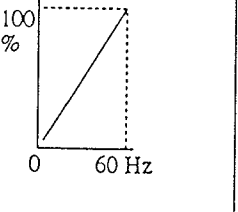
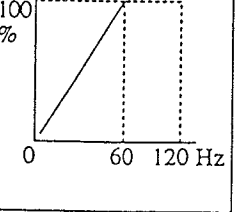
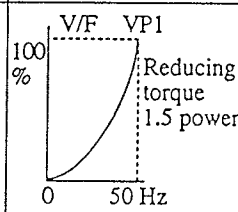
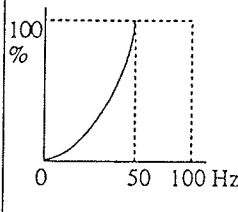
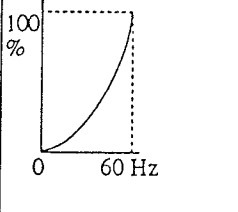
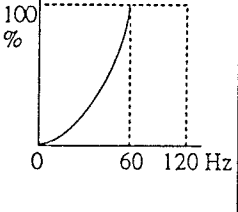
8.5 Explanation of the Mode

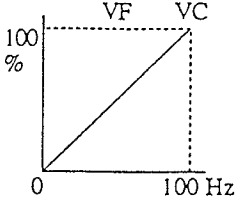
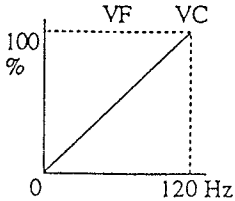
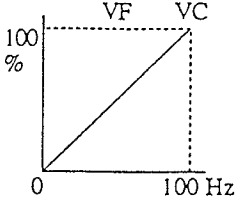
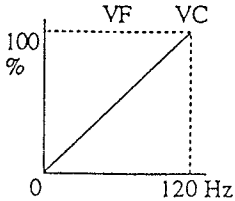
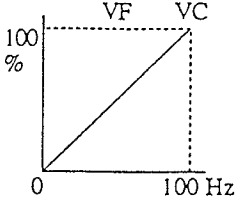
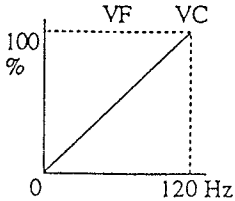
(1) Monitor mode and Function mode

Command	Contents and display	Remarks
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">F </div> <p>Running state monitoring</p>	<p>This command monitors the run state Frequency, output current, DC voltage and direction of revolution are displayed sequentially. [During run]</p> <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border-left: 1px solid black; border-right: 1px solid black; padding: 5px; margin-right: 10px;">2-second interval automatic monitoring</div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> </div> <div style="margin-right: 10px;"> <p>Run frequency 2 seconds ...</p> <p>Output current 2 seconds ...</p> <p>DC voltage of inverter 2 seconds ... (not output voltage)</p> <p>Direction of the motor 2 seconds ...</p> </div> <div style="margin-right: 10px;"> <p>Only integers are displayed when the frequency exceeds 100 Hz (Display example is 60 Hz)</p> <p>Only integers are displayed when the current exceeds 10·A (Display example is 1.6A)</p> <p>Only the first and second digits are displayed (Display example is 270 V)</p> <p>F: Forward run r: reverse run</p> </div> </div> <div style="display: flex; align-items: center; margin-top: 20px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); border-left: 1px solid black; border-right: 1px solid black; padding: 5px; margin-right: 10px;">Optional fixed monitoring</div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> </div> <div style="margin-right: 10px;"> <p>Operation frequency: Fixed display</p> <p>Output current: Fixed display</p> <p>Inverter DC voltage: Fixed display</p> <p>Motor rotation direction: Fixed display</p> </div> </div> <p>• When the or key is pressed in the 2-second interval automatic monitoring state, an optional monitor can display fixed values.</p> <div style="margin-top: 20px;"> <p>2-second interval automatic monitoring (Any display is available.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> Pressed once → 600 (Operation frequency) </div> <div style="text-align: center;"> Pressed 4 times → 600 2-second interval automatic monitoring (Operation frequency) </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;"> Pressed once → F (Motor rotation direction) </div> <div style="text-align: center;"> Pressed 4 times → 600 (Operation frequency) </div> </div> </div> <p>[Stop]</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 10px;">0 0 0 0</div>	<p>Possible to change during run</p>


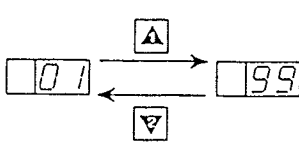
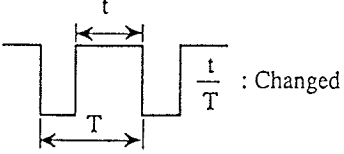

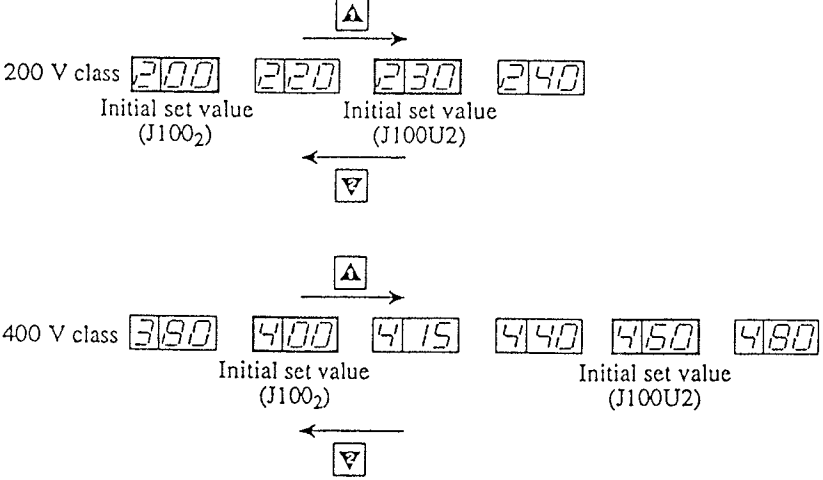
Command	Contents and display	Remarks																														
<div style="border: 1px solid black; padding: 5px; width: fit-content;">F 2</div> <p>Output frequency setting</p>	<p>This command sets the output frequency.</p> <p>600 Set frequency from 0 to 99.9 Hz by 0.1 Hz</p> <p>120 Set frequency from 100 to 360 Hz by 1 Hz (NOTE 1)</p> <p style="text-align: center;"> 59.8 ▲ → ▼ 59.9 ▲ → ▼ 60.0 </p> <p>To push down ▲ or ▼ once changes one digit. Keeping pushing down changes continuously.</p> <p>The output frequency in the multispeed mode can be set as specified below.</p> <p>(1) Connect the multispeed terminal for setting the frequency to PV24. (The relationship between multispeeds 1 to 7 and the control circuit terminals as shown below.)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Multispeed</th> <th colspan="3">Control circuit terminal</th> </tr> <tr> <th>SW1</th> <th>SW2</th> <th>SW3</th> </tr> </thead> <tbody> <tr> <td>Multispeed 1</td> <td>ON</td> <td>OFF</td> <td rowspan="2">OFF</td> </tr> <tr> <td>Multispeed 2</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Multispeed 3</td> <td>ON</td> <td>ON</td> <td rowspan="5">ON</td> </tr> <tr> <td>Multispeed 4</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>Multispeed 5</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>Multispeed 6</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>Multispeed 7</td> <td>OFF</td> <td>OFF</td> </tr> </tbody> </table> <p>The above example is the case when the intelligent input terminals 1, 2, and 3 are set to the terminals CF1, CF2, and CF3 respectively. (Set using C 0 - C 4 of the extension function mode.)</p> <p>(2) Set an optional output frequency using the ▲ or ▼ key.</p> <p>(3) Press the 機能 FUNC key once to store the set output frequency. (NOTE 2) (F 2 is displayed.)</p> <p>(4) Press the ▲ key once. (Check whether the output frequency, which is set is displayed.)</p> <p>(5) By repeating (1) to (4), the output frequency in the multispeed mode can be set</p> <p>NOTE 1: When setting to over 120 Hz, the changing over maximum frequency is necessary.</p> <p>NOTE 2: Whenever any data is changed, be sure to press the 機能 FUNC key before starting the next setting. Note that when the 機能 FUNC key is not pressed, the data will not be set.</p> <p>(*) The multi-speed output frequency can be set by the above method independently of the setting status of the command F 9.</p> <p>(*) The setting frequency blinks during stop, and does not blink during running. This distinguishes two conditions, RUN and STOP.</p>	Multispeed	Control circuit terminal			SW1	SW2	SW3	Multispeed 1	ON	OFF	OFF	Multispeed 2	OFF	ON	Multispeed 3	ON	ON	ON	Multispeed 4	ON	OFF	Multispeed 5	OFF	ON	Multispeed 6	ON	ON	Multispeed 7	OFF	OFF	<p>Possible to set during run</p> <p style="text-align: right;">600 Blinking during stop</p>
Multispeed	Control circuit terminal																															
	SW1	SW2	SW3																													
Multispeed 1	ON	OFF	OFF																													
Multispeed 2	OFF	ON																														
Multispeed 3	ON	ON	ON																													
Multispeed 4	ON	OFF																														
Multispeed 5	OFF	ON																														
Multispeed 6	ON	ON																														
Multispeed 7	OFF	OFF																														

Command	Contents and display	Remarks
<div data-bbox="164 264 261 344" style="border: 1px solid black; padding: 2px; display: inline-block;"> </div> Running direction setting	<p>Set the motor direction.</p> <p>Set the motor direction when running by pressing  key.</p> <p>  Forward run  Reverse run } Switching can be done by pressing  . </p>	Im-possible to change during run

Command	Contents and display	Remarks																																																																				
<div style="border: 1px solid black; display: inline-block; padding: 2px;">F 5</div> V/f pattern setting	<p>This command sets V/F pattern.</p> <p>When combining V/F patterns other than the following using the control method (A0), the basic frequency (A62) and the maximum frequency (A63) of the extension function mode, the display shows - - -.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Output voltage</th> <th rowspan="2">V/F pattern</th> </tr> <tr> <th>200</th> <th>220</th> <th>230</th> <th>240</th> </tr> </thead> <tbody> <tr> <td>380</td> <td>400</td> <td>440</td> <td>460</td> <td></td> </tr> <tr> <td>00</td> <td>08</td> <td>16</td> <td>24</td> <td>  </td> </tr> <tr> <td>01</td> <td>09</td> <td>17</td> <td>25</td> <td>  </td> </tr> <tr> <td>02</td> <td>10</td> <td>18</td> <td>26</td> <td>  </td> </tr> <tr> <td>03</td> <td>11</td> <td>19</td> <td>27</td> <td>  </td> </tr> <tr> <th colspan="4">Output voltage</th> <th rowspan="2">V/F pattern</th> </tr> <tr> <th>200</th> <th>220</th> <th>230</th> <th>240</th> </tr> <tr> <td>380</td> <td>400</td> <td>440</td> <td>460</td> <td></td> </tr> <tr> <td>04</td> <td>12</td> <td>20</td> <td>28</td> <td>  </td> </tr> <tr> <td>05</td> <td>13</td> <td>21</td> <td>29</td> <td>  </td> </tr> <tr> <td>06</td> <td>14</td> <td>22</td> <td>30</td> <td>  </td> </tr> <tr> <td>07</td> <td>15</td> <td>23</td> <td>31</td> <td>  </td> </tr> </tbody> </table> <p>NOTE: 02 for 200 V class, 10 for 400 V class (Initialization of J100₂)</p>	Output voltage				V/F pattern	200	220	230	240	380	400	440	460		00	08	16	24		01	09	17	25		02	10	18	26		03	11	19	27		Output voltage				V/F pattern	200	220	230	240	380	400	440	460		04	12	20	28		05	13	21	29		06	14	22	30		07	15	23	31		Im-possible to set during run
Output voltage				V/F pattern																																																																		
200	220	230	240																																																																			
380	400	440	460																																																																			
00	08	16	24																																																																			
01	09	17	25																																																																			
02	10	18	26																																																																			
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04	12	20	28																																																																			
05	13	21	29																																																																			
06	14	22	30																																																																			
07	15	23	31																																																																			

Command	Contents and display	Remarks																							
	<p data-bbox="316 268 490 296">Special V/F pattern</p> <table border="1" data-bbox="305 317 743 913"> <thead> <tr> <th colspan="4" data-bbox="310 323 500 352">Output voltage</th> <th data-bbox="505 323 738 352" rowspan="3">V/F pattern</th> </tr> <tr> <th data-bbox="310 359 358 388">200</th> <th data-bbox="358 359 407 388">220</th> <th data-bbox="407 359 456 388">230</th> <th data-bbox="456 359 500 388">240</th> </tr> <tr> <th data-bbox="310 394 358 424">380</th> <th data-bbox="358 394 407 424">400</th> <th data-bbox="407 394 456 424">440</th> <th data-bbox="456 394 500 424">460</th> </tr> </thead> <tbody> <tr> <td data-bbox="310 430 358 667">50</td> <td data-bbox="358 430 407 667">51</td> <td data-bbox="407 430 456 667">52</td> <td data-bbox="456 430 500 667">53</td> <td data-bbox="505 430 738 667">  </td> </tr> <tr> <td data-bbox="310 674 358 911">54</td> <td data-bbox="358 674 407 911">55</td> <td data-bbox="407 674 456 911">56</td> <td data-bbox="456 674 500 911">57</td> <td data-bbox="505 674 738 911">  </td> </tr> </tbody> </table> <p data-bbox="760 394 1193 485">Uses for V/F pattern Constant torque characteristics : Conveyor Reduced torque characteristics : Fan, pump</p> <p data-bbox="321 947 1182 1031">NOTE: When sensorless vector control (SLV1, SLV2) is selected as a control system and this command is changed in design, V/F control is forcibly selected. Be careful in this regard.</p>	Output voltage				V/F pattern	200	220	230	240	380	400	440	460	50	51	52	53		54	55	56	57		
Output voltage				V/F pattern																					
200	220	230	240																						
380	400	440	460																						
50	51	52	53																						
54	55	56	57																						

Command	Contents and display	Remarks															
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">F 6</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">F 7</div> <p>Acceleration time 1</p> <p>Deceleration time 1</p> </div>	<p>These commands set and display Acc. time (F 6) and Dec. time (F 7). In the case of adjustment in real time, press the 機能 FUNC key after data is changed.</p> <div style="text-align: center; margin: 10px 0;"> </div> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Setting range</th> <th>Period</th> </tr> </thead> <tbody> <tr> <td>0.1 to 99.9</td> <td>Every 0.1s</td> </tr> <tr> <td>100 to 999</td> <td>Every 1s</td> </tr> </tbody> </table> <p>• When a time of more than 999 seconds is set by the remote operator, -- is displayed on the digital operator.</p>	Setting range	Period	0.1 to 99.9	Every 0.1s	100 to 999	Every 1s	Possible to set during run									
Setting range	Period																
0.1 to 99.9	Every 0.1s																
100 to 999	Every 1s																
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">F 8</div> <p>Manual torque boost setting</p> </div>	<p>Set torque boost</p> <ul style="list-style-type: none"> • Motor torque can be adjusted to increase the output voltage when the starting torque is not sufficient in V/F control. Pay attention not to cause the motor to burnout and an inverter trip. • Setting is effective only when V/F control is selected. • In the case of adjustment in real time, press the 機能 FUNC key after data is changed. <div style="display: flex; justify-content: space-around; align-items: center; margin: 10px 0;"> <div style="text-align: center;"> <p>Code 00</p> <p style="font-size: 2em;">}</p> <p>99</p> </div> <div style="text-align: center;"> <p>Output voltage 100%</p> <p>About 21</p> </div> </div> <p>Setting and changing is done with ▲ ▼ keys.</p>	Possible to set during run															
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">F 9</div> <p>Running command</p> <p>Frequency command setting</p> </div>	<p>Change setting mode</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>Run command to</th> <th>Frequency command to (NOTE 1)</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>Digital operator</td> <td>Digital operator</td> </tr> <tr> <td>01</td> <td>Digital operator</td> <td>Terminal block</td> </tr> <tr> <td>02</td> <td>Terminal block</td> <td>Digital operator</td> </tr> <tr> <td>03</td> <td>Terminal block</td> <td>Terminal block</td> </tr> </tbody> </table> <p>NOTE 1: The multi-speed output frequency can be set for one of 00 to 03. (See page 8-8.)</p>		Run command to	Frequency command to (NOTE 1)	00	Digital operator	Digital operator	01	Digital operator	Terminal block	02	Terminal block	Digital operator	03	Terminal block	Terminal block	Impossible to set during run
	Run command to	Frequency command to (NOTE 1)															
00	Digital operator	Digital operator															
01	Digital operator	Terminal block															
02	Terminal block	Digital operator															
03	Terminal block	Terminal block															

Command	Contents and display	Remarks
<p data-bbox="203 254 298 331">  </p> <p data-bbox="196 365 310 443">Analog meter adjustment</p>	<p data-bbox="329 254 1187 359">The voltage which is outputted to the [FM] monitor terminal can be adjusted. When the equipment starts running, t/T which is proportional to the output data is outputted between the terminals [FM] and [CM1]. Adjust the meter so that it indicates the highest point when the output is maximized.</p> <div data-bbox="386 359 1170 512">   </div> <div data-bbox="656 533 1179 657" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p data-bbox="699 533 1029 562">Maximum level of analog meter</p> <p data-bbox="672 583 1179 638">Frequency monitor: Maximum frequency Current monitor: 200% of rated current of inverter</p> </div> <p data-bbox="370 663 1068 722">NOTE: This function is valid only when the analog monitor is used. (Analog frequency monitor, current monitor)</p>	<p data-bbox="1198 296 1295 401">Possible to set during run</p>
<p data-bbox="203 770 298 848">  </p> <p data-bbox="191 869 293 974">Motor receiving voltage setting</p>	<p data-bbox="326 764 862 821">The command sets the supply voltage for the motor. Set the supply voltage for the motor as shown below.</p> <div data-bbox="337 842 1154 1318">  </div>	<p data-bbox="1198 770 1284 896">Impossible to set during run</p>

Command	Contents and display	Remarks
<div data-bbox="196 289 293 369" style="border: 1px solid black; padding: 2px; display: inline-block;">F 14</div> Extended function setting	<p data-bbox="326 289 1154 369">Setting of extended functions The command selects the item of each extended function. When the setting ends, the screen is returned to the code display screen. When any data is changed, be sure to press the 機能 FUNC key to store the new data</p> <div data-bbox="337 436 1154 688" style="text-align: center;"> </div> <p data-bbox="326 699 1170 835">NOTE: During running, the code display of each extended function can be changed. However, each data setting of the extended functions cannot be changed. (However, the double acceleration and deceleration times R 18 and R 19 can be changed.)</p>	<p data-bbox="1190 331 1279 457">NOTE: Possible to set during run</p>
<div data-bbox="196 884 293 963" style="border: 1px solid black; padding: 2px; display: inline-block;">E r r</div> Trip history monitor	<p data-bbox="326 884 938 963">Trip history monitor (Displays only when there is trip history) Display method of monitoring trip history</p> <div data-bbox="370 1003 1036 1465" style="text-align: center;"> </div> <p data-bbox="326 1192 1166 1402">NOTE: The alarm voltage display at the time of E 8 (EEPROM error) or E 10 (CT error) is 00V (0 V). *Function key returns to the original display.</p>	<p data-bbox="1190 884 1279 989">Possible to check during run</p>

(2) Extension Function Mode

Command	Contents and display																														
<p>A 0</p> <p>Control method</p>	<p>This command sets a control method. Select one of the control codes shown below.</p> <p style="text-align: center;">Initial set value</p> <p style="text-align: center;"> </p> <p style="text-align: center;"> A 0 V/f control (VC, VP1, VP2, VP3) 1 High starting torque (SLV1) for HITACHI general motors 2 High starting torque (SLV2) for dedicated general motors </p> <p>Notes:</p> <ol style="list-style-type: none"> The SLV2 control method has a mode for setting control constants such as motor constants. This mode requires a remote operator (DOP or DRW). Performing the initialization procedure (page 7-7) will reset the values previously set by a remote operator (DOP or DRW). If you change F 5 (V/F Pattern Setting) after setting SLV1 or SLV2 with this command, the control method is forcibly reset to "V/f control." 																														
<p>A 1</p> <p>A 2</p> <p>Motor capacity</p> <p>Motor poles setting</p>	<p>This command sets the capacity and the number of poles of the motor. Maximum applicable ratings of 4-pole motors for each inverter are set initially.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Motor capacity</p> </div> <div style="text-align: center;"> <p>Number of poles</p> </div> </div> <table border="1" style="margin-top: 20px;"> <thead> <tr> <th>Model</th> <th>A 1</th> <th>Initial value</th> </tr> </thead> <tbody> <tr><td>002LFU2 (002LF2)</td><td></td><td>0.2</td></tr> <tr><td>004LFU2 (004LF2)</td><td></td><td>0.4</td></tr> <tr><td>007LFU2 (007LF2)</td><td></td><td>0.75</td></tr> <tr><td>015LFU2 (015LF2)</td><td></td><td>1.5</td></tr> <tr><td>022LFU2 (022LF2)</td><td></td><td>2.2</td></tr> <tr><td>037LFU2 (037LF2)</td><td></td><td>3.7</td></tr> <tr><td>015HFU2 (015HF2)</td><td></td><td>1.5</td></tr> <tr><td>022HFU2 (022HF2)</td><td></td><td>2.2</td></tr> <tr><td>037HFU2 (037HF2)</td><td></td><td>3.7</td></tr> </tbody> </table> <p>Notes:</p> <ol style="list-style-type: none"> If the values set by this command are not fit for the motor running in the Sensorless Vector mode, the expected motor performance will not be obtained. In the sensorless vector operation, a motor whose ratings are lower than the maximum applicable ratings will not do its best performance. The sensorless vector function is not available for a simultaneous operation of two or more motors. If the rating for the motor in the V/f control mode is not the maximum applicable rating, set a correct rating for the motor. 	Model	A 1	Initial value	002LFU2 (002LF2)		0.2	004LFU2 (004LF2)		0.4	007LFU2 (007LF2)		0.75	015LFU2 (015LF2)		1.5	022LFU2 (022LF2)		2.2	037LFU2 (037LF2)		3.7	015HFU2 (015HF2)		1.5	022HFU2 (022HF2)		2.2	037HFU2 (037HF2)		3.7
Model	A 1	Initial value																													
002LFU2 (002LF2)		0.2																													
004LFU2 (004LF2)		0.4																													
007LFU2 (007LF2)		0.75																													
015LFU2 (015LF2)		1.5																													
022LFU2 (022LF2)		2.2																													
037LFU2 (037LF2)		3.7																													
015HFU2 (015HF2)		1.5																													
022HFU2 (022HF2)		2.2																													
037HFU2 (037HF2)		3.7																													

Command	Contents and display						
<p data-bbox="186 298 272 340">A 3</p> <p data-bbox="162 352 279 445">Maximum frequency adjustment</p>	<p data-bbox="305 298 1198 361">This command increases the maximum frequency at steps of 0.1Hz. Adjust the maximum frequency in the constant output range.</p> <div data-bbox="337 394 743 604"> </div> <div data-bbox="750 340 1263 688"> </div> <p data-bbox="316 625 370 646">Note:</p> <p data-bbox="316 655 815 688">1. Use the command A 63 to set the maximum frequency.</p>						
<p data-bbox="186 718 272 760">A 62</p> <p data-bbox="186 772 272 814">A 63</p> <p data-bbox="162 823 263 886">Base frequency</p> <p data-bbox="162 907 263 1003">Maximum frequency setting</p>	<p data-bbox="305 718 1166 772">These commands set a base frequency A 62 and a maximum frequency A 63 respectively.</p> <div data-bbox="295 772 727 1054"> </div> <div data-bbox="734 760 1269 1087"> <p data-bbox="831 760 977 793">Setting examples</p> <p data-bbox="760 991 938 1087">(A62)(A63) Base frequency 60 Hz Maximum frequency 60 Hz</p> <p data-bbox="971 1033 1269 1087">(A62) Base frequency 60Hz (A63) Maximum frequency 120Hz</p> </div> <p data-bbox="321 1054 669 1201">If the specified base frequency is greater than the specified maximum frequency, the system forcibly resets the base frequency to the maximum frequency at the start of operation and operates the motor with this frequency.</p> <div data-bbox="295 1222 685 1558"> </div> <p data-bbox="295 1579 1247 1633">advance. After switching to the control method (V/f control or sensorless vector control), the first or second setting, specify frequencies by the A 62 and A 63 commands. Data for the settings are stored.</p> <p data-bbox="295 1642 1263 1684">5. When a maximum frequency (by the A 63 command) smaller than a base frequency (by the A 62 command) is specified, the base frequency is changed.</p> <p data-bbox="711 1096 766 1117">Notes:</p> <ol data-bbox="711 1129 1269 1558" style="list-style-type: none"> 1. When a base frequency exceeding 60Hz is specified, the motor is used as a special-purpose motor (instead of a general-purpose motor). Accordingly, the maximum ratings of the motor vary and the capacity of the inverter must be increased even when the motor has the identical KW indication. 2. Either the setting by this command or the setting by the F 5 command (V/f Pattern Setting) which is specified last is used preferentially. When a V/f pattern is set by the F 5 command after a base or maximum frequency is set by this command, the setting of the frequency is cancelled. Set the frequency again. 3. When a base or maximum frequency exceeding 120Hz is set, the maximum frequency must be set to 360Hz by the A 64 command. 4. You can switch between the first and second settings of base frequencies, maximum frequencies, and control methods (V/f control or sensorless vector control) when they are stored. To use this function, you must store the first and second settings in advance. 						
<p data-bbox="186 1705 272 1747">A 64</p> <p data-bbox="162 1759 263 1852">Maximum frequency switching</p>	<p data-bbox="295 1705 782 1738">This command changes the maximum frequency.</p> <div data-bbox="321 1738 620 1948"> </div> <table border="1" data-bbox="782 1768 1107 1885"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>120 Hz</td> </tr> <tr> <td>1</td> <td>360 Hz</td> </tr> </tbody> </table>	Set value	Function	0	120 Hz	1	360 Hz
Set value	Function						
0	120 Hz						
1	360 Hz						

Command	Contents and display
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A 4

Start frequency adjustment

This command sets an inverter-output starting frequency. The frequency can be in the range of 0.5Hz to 5.0Hz (at steps of 0.1Hz).

Notes:

1. The acceleration/deceleration time becomes shorter as the starting frequency goes higher.
2. As the starting frequency goes higher, an overcurrent tripping is apt to occur.

A 5
A 6

Frequency upper, lower limiter setting

These commands respectively set upper and lower limits to the frequencies specified by **A 4** (Start Frequency Adjustment), **A 63** (Maximum Frequency Setting), and **A 3** (Maximum Frequency Adjustment) commands.

Setting range	Step
0.0 ~ 99.9Hz	0.1Hz
100 ~ 375Hz	1Hz

Notes:

1. When setting upper and lower limits, set an upper limit (by the **A 5** command) first.
2. A value entered from the operator (ROP or DRW) will not be stored if it is over the upper limit or below the lower limit.
3. When a value over the upper limit or below the lower limit is entered from a frequency command terminal (O, OI-L), the frequency will not change over the upper limit or below the lower limit.
4. Limit setting condition.
The specified limit values are valid only when the upper limit value is not smaller than the lower limit value. The upper and lower limits are not valid for a frequency of 0Hz.

Example of setting upper and lower limits

Setting of an upper limit of 45Hz and a lower limit of 20Hz

Command

Contents and display

A 7

A 8

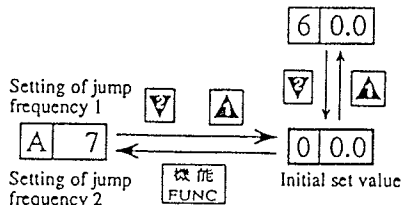
A 9

Jump frequency setting
1, 2, 3

Setting range	Step
0.0 ~ 99.9Hz	0.1Hz
100 ~ 375Hz	1Hz

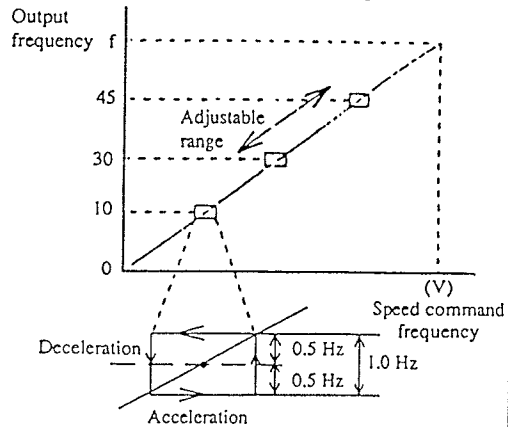
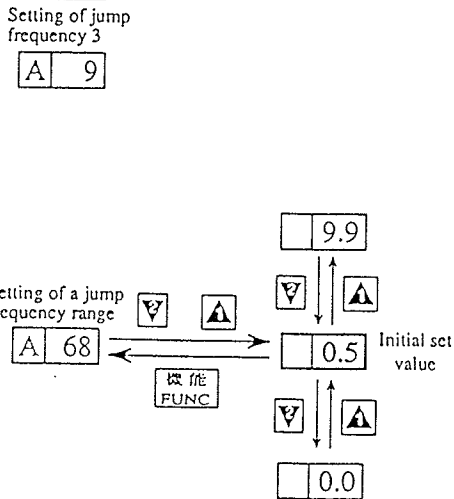
Setting examples

Jump frequency 1: 10Hz
 Jump frequency 2: 30Hz
 Jump frequency 3: 45Hz
 Jump frequency range: 0.5Hz



A 68

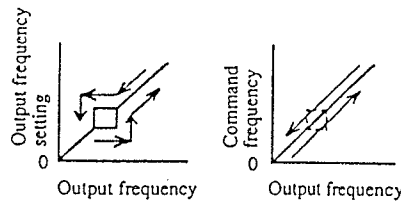
Jump frequency range setting



When the jump frequency range of 0.5Hz is specified, a total frequency range of 1Hz is jumped.

Note:

1. A frequency command value specified by a Jump Frequency Setting command is jumped.

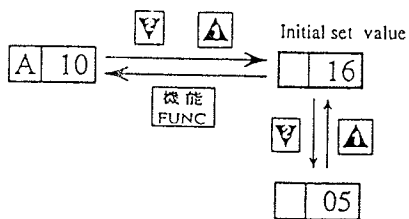


A 10

Carrier frequency setting

This command sets a switching frequency (carrier frequency) of the power module.

Select one of the following carrier frequencies:



Initial set value

Set value	Carrier frequency
16	16 kHz
12	12 kHz
8	8 kHz
5	5kHz

Notes:

1. When a smaller carrier frequency is selected, the magnetic noise of the motor becomes louder.
2. The carrier frequency is always 5kHz regardless of setting of this command in the D.C. Braking operation.

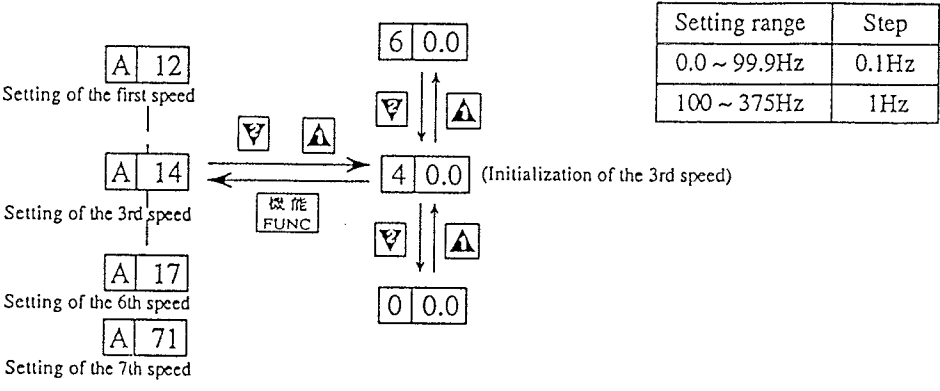
Command	Contents and display						
<p data-bbox="186 252 284 294">A 11</p> <p data-bbox="170 315 284 441">Frequency command sampling setting</p>	<p data-bbox="316 252 1274 346">This command changes the effect of a filter to remove noises from an external analog frequency command. This command is used to increase the response ability of the external analog frequency command.</p> <div data-bbox="324 367 714 588"> </div> <table border="1" data-bbox="844 367 1266 504"> <tr> <td>Set value</td> <td>1 ←→ 8</td> </tr> <tr> <td>Filter effect</td> <td>Small ←→ Large</td> </tr> <tr> <td>Response ability</td> <td>Quick ←→ Slow</td> </tr> </table>	Set value	1 ←→ 8	Filter effect	Small ←→ Large	Response ability	Quick ←→ Slow
Set value	1 ←→ 8						
Filter effect	Small ←→ Large						
Response ability	Quick ←→ Slow						
<p data-bbox="186 640 284 682">A 26</p> <p data-bbox="186 703 284 745">A 27</p> <p data-bbox="170 766 284 892">External frequency setting start</p> <p data-bbox="170 913 284 1039">External frequency setting end</p>	<p data-bbox="316 640 1274 766">These commands respectively set a frequency at which the inverter starts outputting in response to a frequency command(0 to 10V, 0 to 5V, 4 to 20mA) coming from the outside and a frequency at which the inverter stops outputting. When you specify 0Hz for these commands, this function is released.</p> <table border="1" data-bbox="324 777 609 903"> <tr> <th>Setting range</th> <th>Step</th> </tr> <tr> <td>0.0 ~ 99.9Hz</td> <td>0.1Hz</td> </tr> <tr> <td>100 ~ 375Hz</td> <td>1Hz</td> </tr> </table> <div data-bbox="308 924 730 1123"> </div> <p data-bbox="308 1134 755 1228">Setting an output stopping frequency A 27 : Same as the above A 26</p> <p data-bbox="795 766 1274 1071"> Notes: 1. The standard setting frequency is 0Hz. 2. The settings by the F 26 and F 27 commands are cancelled when a maximum frequency is changed next. Set the start and end frequencies again by the F 26 and F 27 commands. 3. When the valid starting and ending frequencies are specified and when the minimum frequency command (0V or 4mA) is entered, it sometimes happens that the output frequency may be 0.1 to 0.3Hz smaller than the frequency set by the F 26 command. </p> <p data-bbox="795 1092 1274 1470"> Setting examples </p>	Setting range	Step	0.0 ~ 99.9Hz	0.1Hz	100 ~ 375Hz	1Hz
Setting range	Step						
0.0 ~ 99.9Hz	0.1Hz						
100 ~ 375Hz	1Hz						
<p data-bbox="186 1501 284 1543">A 48</p> <p data-bbox="170 1564 284 1659">Analog input selection</p>	<p data-bbox="316 1501 1274 1543">This command changes a maximum voltage supplied to terminals O and L.</p> <div data-bbox="324 1554 714 1837"> </div> <div data-bbox="779 1554 1274 1722"> </div> <p data-bbox="755 1732 1274 1900"> Connection examples <table border="1"> <tr> <th>Set value</th> <th>Function</th> </tr> <tr> <td>0</td> <td>Inputs a maximum of 5V.</td> </tr> <tr> <td>1</td> <td>Inputs a maximum of 10V.</td> </tr> </table> </p>	Set value	Function	0	Inputs a maximum of 5V.	1	Inputs a maximum of 10V.
Set value	Function						
0	Inputs a maximum of 5V.						
1	Inputs a maximum of 10V.						

Command	Contents and display
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- A 12
- A 13
- A 14
- A 15
- A 16
- A 17
- A 71

Multispeed
 first
 second
 third
 forth
 fifth
 sixth
 seventh
 speed
 setting

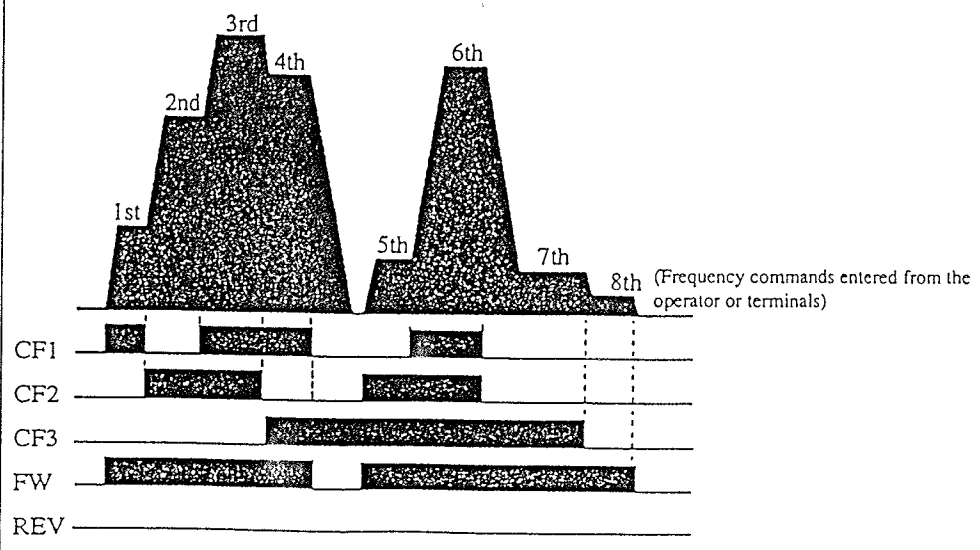
These commands set output frequencies for 1st to 7th speeds.
 Each speed setting becomes valid when the intelligent input terminals [CF1], [CF2],[CF3] to [PV24] are combined adequately.

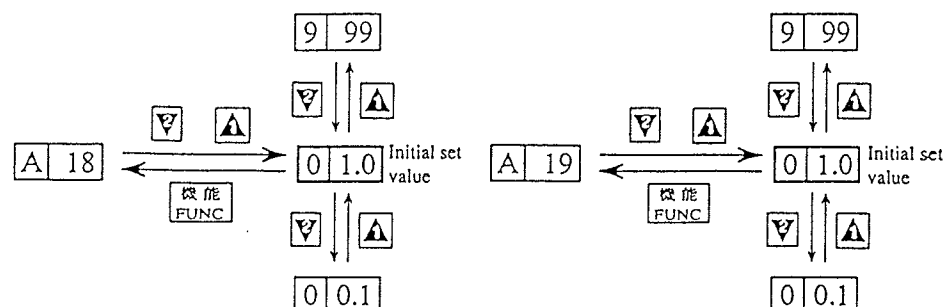
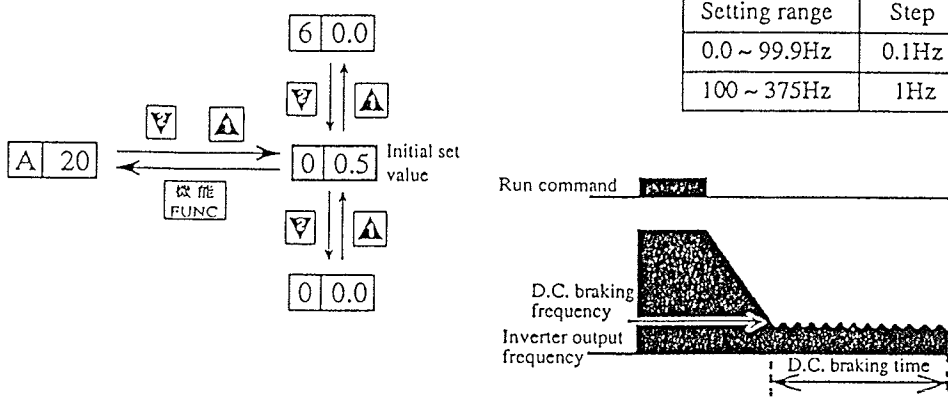
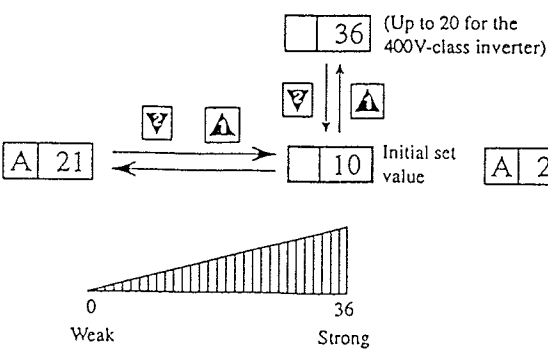


Speed	Control circuit terminals			Expansion function code
	CF1	CF2	CF3	
1st	ON	OFF	OFF	A 12
2nd	OFF	ON	OFF	A 13
3rd	ON	ON	OFF	A 14
4th	ON	OFF	ON	A 15
5th	OFF	ON	ON	A 16
6th	ON	ON	ON	A 17
7th	OFF	OFF	ON	A 71

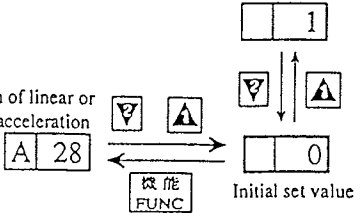
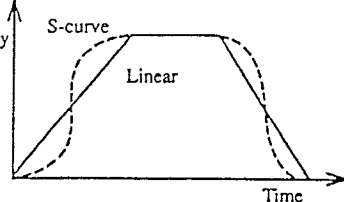
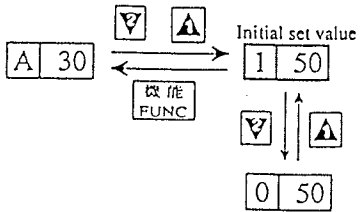
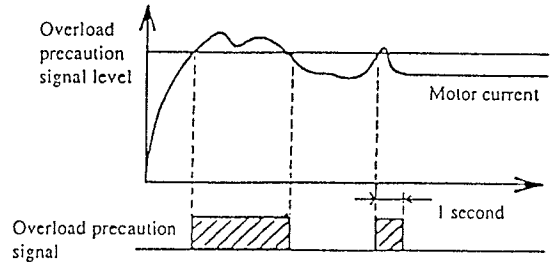
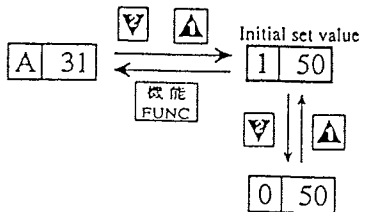
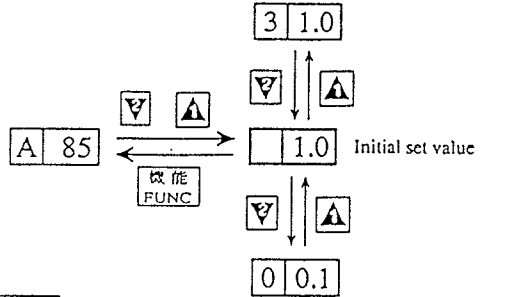
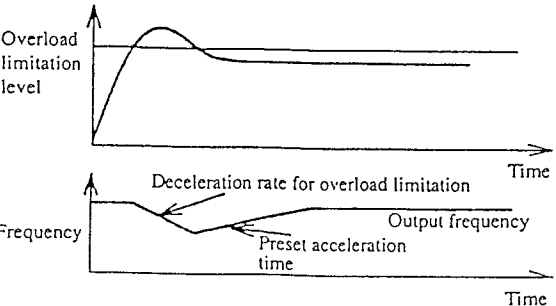
Note:

- When using multispeed commands of 4th to 7th, assign the multispeed terminal (CF3) to the input terminal.



Command	Contents and display													
<p data-bbox="170 273 267 325">A 18</p> <p data-bbox="170 336 267 388">A 19</p> <p data-bbox="154 399 284 577">2-stage acceleration, deceleration time setting</p>	<p data-bbox="292 262 893 336">These commands respectively set a 2-step acceleration time A 18 and a 2-step deceleration time A 19.</p> <table border="1" data-bbox="966 273 1250 399"> <thead> <tr> <th>Setting range</th> <th>Step</th> </tr> </thead> <tbody> <tr> <td>0.0 ~ 99.9 sec.</td> <td>0.1 sec.</td> </tr> <tr> <td>100 ~ 999 sec.</td> <td>1 sec.</td> </tr> </tbody> </table> 		Setting range	Step	0.0 ~ 99.9 sec.	0.1 sec.	100 ~ 999 sec.	1 sec.						
Setting range	Step													
0.0 ~ 99.9 sec.	0.1 sec.													
100 ~ 999 sec.	1 sec.													
<p data-bbox="170 798 267 850">A 20</p> <p data-bbox="170 861 267 913">A 21</p> <p data-bbox="170 924 267 976">A 22</p> <p data-bbox="154 976 284 1102">DC braking frequency setting</p> <p data-bbox="154 1123 284 1249">DC braking force adjustment</p> <p data-bbox="154 1270 284 1396">DC braking time adjustment</p>	<p data-bbox="292 798 958 871">The A 20 command sets a frequency at which the D.C. braking operation starts.</p> <table border="1" data-bbox="966 861 1250 987"> <thead> <tr> <th>Setting range</th> <th>Step</th> </tr> </thead> <tbody> <tr> <td>0.0 ~ 99.9Hz</td> <td>0.1Hz</td> </tr> <tr> <td>100 ~ 375Hz</td> <td>1Hz</td> </tr> </tbody> </table>  <p data-bbox="292 1312 682 1386">The A 21 command adjusts a D.C. braking force.</p> <p data-bbox="844 1312 1242 1386">The A 22 command adjusts a D.C. braking time.</p>  <table border="1" data-bbox="966 1596 1250 1722"> <thead> <tr> <th>Setting range</th> <th>Step</th> </tr> </thead> <tbody> <tr> <td>0.0 ~ 99.9 sec.</td> <td>0.1 sec.</td> </tr> <tr> <td>100 ~ 600 sec.</td> <td>1 sec.</td> </tr> </tbody> </table>		Setting range	Step	0.0 ~ 99.9Hz	0.1Hz	100 ~ 375Hz	1Hz	Setting range	Step	0.0 ~ 99.9 sec.	0.1 sec.	100 ~ 600 sec.	1 sec.
Setting range	Step													
0.0 ~ 99.9Hz	0.1Hz													
100 ~ 375Hz	1Hz													
Setting range	Step													
0.0 ~ 99.9 sec.	0.1 sec.													
100 ~ 600 sec.	1 sec.													
<p data-bbox="292 1785 349 1816">Notes:</p> <ol data-bbox="292 1816 1258 1921" style="list-style-type: none"> 1. During D.C. braking, an Overload Protection error (E 5) is apt to occur. 2. The carrier frequency in the D.C. braking operation is always 5kHz regardless of the carrier frequency setting by A 10. 														

Command	Contents and display						
<p data-bbox="203 283 284 325">A 55</p> <p data-bbox="178 346 284 472">DC braking ON/OFF selection</p>	<p data-bbox="324 283 1039 325">This command enables (ON) or disables (OFF) a D.C. braking function.</p> <div data-bbox="332 325 682 535"> </div> <table border="1" data-bbox="868 325 1282 462"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>OFF</td> </tr> <tr> <td>1</td> <td>ON</td> </tr> </tbody> </table> <p data-bbox="787 472 836 493">Note:</p> <p data-bbox="787 504 1144 535">1. Set "1" to use the D.C. braking function.</p>	Set value	Function	0	OFF	1	ON
Set value	Function						
0	OFF						
1	ON						
<p data-bbox="203 556 284 598">A 56</p> <p data-bbox="178 619 284 745">DC braking edge/level selection</p>	<p data-bbox="324 556 771 619">This command selects a level of D.C. braking operation.</p> <div data-bbox="332 619 682 871"> </div> <table border="1" data-bbox="868 556 1282 693"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Edge operation</td> </tr> <tr> <td>1</td> <td>Level operation</td> </tr> </tbody> </table> <div data-bbox="673 703 1282 903"> </div>	Set value	Function	0	Edge operation	1	Level operation
Set value	Function						
0	Edge operation						
1	Level operation						
<p data-bbox="203 913 284 955">A 23</p> <p data-bbox="178 976 284 1102">Electronic thermal level adjustment</p>	<p data-bbox="324 913 1274 976">This command sets a level of an electronic thermal sensor. Set a thermal sensor level according to the rated current value of the motor.</p> <p data-bbox="316 976 373 997">Notes:</p> <ol data-bbox="316 1008 1274 1144" style="list-style-type: none"> Even when a thermal level of more than 100% is set, do not operate the motor continuously with more than the rated current of the inverter, or the life of the capacitor will shorten. If the ambient temperature rises, overheat of the inverter will cause a trip by the power module protection. If the thermal level is greater than the rated current of the motor, the motor cannot be protected by the electronic thermal function. Use a thermal relay or the like to protect the motor against overloading. <div data-bbox="349 1144 974 1207"> $\text{Adjustable thermal level} = \frac{\text{Rated current of motor}}{\text{Rated current of inverter}} \times 100$ </div> <div data-bbox="332 1207 730 1501"> </div> <div data-bbox="803 1218 1282 1512"> </div>						
<p data-bbox="203 1522 284 1564">A 24</p> <p data-bbox="178 1585 284 1732">Electronic thermal characteristic selection</p>	<p data-bbox="324 1522 901 1585">This command selects an electronic thermal characteristics. Set a thermal characteristic fit for the load.</p> <div data-bbox="332 1585 730 1795"> </div> <table border="1" data-bbox="389 1816 803 1942"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Reduced torque characteristic</td> </tr> <tr> <td>1</td> <td>Constant torque characteristic</td> </tr> </tbody> </table> <div data-bbox="852 1575 1282 1879"> </div>	Set value	Function	0	Reduced torque characteristic	1	Constant torque characteristic
Set value	Function						
0	Reduced torque characteristic						
1	Constant torque characteristic						

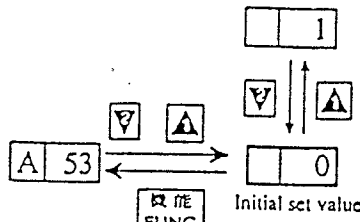
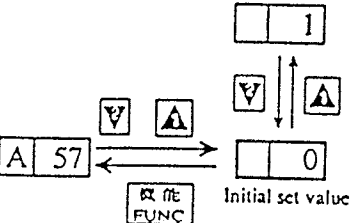
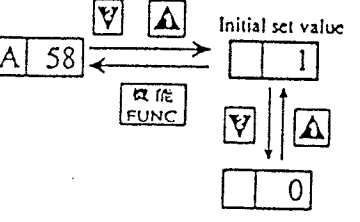
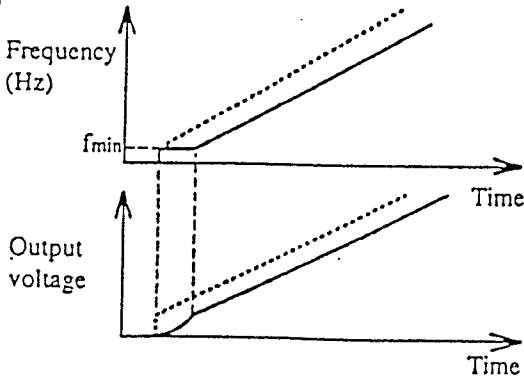
Command	Contents and display						
<p data-bbox="203 268 289 304">A 28</p> <p data-bbox="203 325 289 361">A 29</p> <p data-bbox="175 388 316 504">Acceleration Deceleration (Linear, S- curve)</p>	<p data-bbox="316 268 1274 331">These commands respectively select liner or S-curve acceleration A 28 and liner or S-curve deceleration. A 29.</p> <div data-bbox="397 346 755 556"> <p data-bbox="316 430 495 472">Selection of linear or S-curve acceleration</p> <p data-bbox="397 478 495 514">A 28</p>  <p data-bbox="625 520 755 556">Initial set value</p> </div> <div data-bbox="933 346 1193 472"> <table border="1"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Linear</td> </tr> <tr> <td>1</td> <td>S-curve</td> </tr> </tbody> </table> </div> <div data-bbox="316 577 803 661"> <p data-bbox="316 577 511 619">Selection of linear or S-curve deceleration</p> <p data-bbox="397 625 803 661">A 29 : Same as the above A 28</p> </div> <div data-bbox="852 504 1274 703"> <p data-bbox="852 388 933 430">Initial set value</p>  <p data-bbox="852 514 933 556">Output frequency</p> <p data-bbox="1185 682 1242 703">Time</p> </div>	Set value	Function	0	Linear	1	S-curve
Set value	Function						
0	Linear						
1	S-curve						
<p data-bbox="203 745 289 781">A 30</p> <p data-bbox="175 808 284 871">Overload signal</p>	<p data-bbox="316 745 1291 808">This command sets the ratio of the output level of the overload limiting signal to the rated current of the motor.</p> <div data-bbox="332 829 690 1039"> <p data-bbox="332 871 430 907">A 30</p>  <p data-bbox="560 850 690 886">Initial set value</p> </div> <div data-bbox="722 808 1274 1071">  <p data-bbox="722 829 852 871">Overload precaution signal level</p> <p data-bbox="1112 892 1258 913">Motor current</p> <p data-bbox="722 1018 852 1060">Overload precaution signal</p> <p data-bbox="1161 1008 1226 1029">1 second</p> </div> <p data-bbox="316 1060 381 1081">Notes:</p> <ol data-bbox="316 1092 1193 1155" style="list-style-type: none"> 1. The overload precaution signal is retained for at least one second. 2. Set the C 10 command to 2 and assign the Overload Precaution signal to the intelligent terminal. 						
<p data-bbox="203 1186 289 1222">A 31</p> <p data-bbox="203 1243 289 1278">A 85</p> <p data-bbox="175 1302 284 1386">Overload limit level setting</p> <p data-bbox="175 1417 316 1533">Deceleration rate setting for overload limit</p>	<p data-bbox="316 1186 1274 1249">These commands respectively set an overload limitation level A 31 and a deceleration rate for overload limitation.</p> <div data-bbox="316 1270 690 1543"> <p data-bbox="316 1270 690 1291">Setting of an overload limitation level</p>  <p data-bbox="560 1354 690 1390">Initial set value</p> </div> <div data-bbox="771 1270 1274 1627"> <p data-bbox="771 1270 1274 1291">Setting of a deceleration rate for overload limitation</p>  <p data-bbox="1112 1459 1242 1495">Initial set value</p> </div> <div data-bbox="316 1575 868 1879">  <p data-bbox="316 1606 397 1648">Overload limitation level</p> <p data-bbox="820 1732 868 1753">Time</p> <p data-bbox="316 1795 397 1816">Frequency</p> <p data-bbox="462 1743 787 1764">Deceleration rate for overload limitation</p> <p data-bbox="576 1795 722 1816">Preset acceleration time</p> <p data-bbox="787 1795 852 1816">Output frequency</p> <p data-bbox="820 1858 868 1879">Time</p> </div> <div data-bbox="917 1648 1258 1921"> <p data-bbox="917 1648 1258 1921">The Overload Limiting function reduces the output frequency and suppresses the output current when the motor is overloaded. Specify the overload limitation level and the deceleration rate, considering the load status and inertia of the machine used.</p> </div>						

Command	Contents and display						
<p data-bbox="186 262 284 304">A 32</p> <p data-bbox="170 325 284 451">Overload limit content selection</p>	<p data-bbox="316 262 860 304">This command sets the content of overload limitation.</p> <div data-bbox="324 304 747 514"> </div> <table data-bbox="763 315 1287 451"> <thead> <tr> <th>Set value</th> <th>Condition of enabling the function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Under acceleration and at constant speed</td> </tr> <tr> <td>1</td> <td>At constant speed only</td> </tr> </tbody> </table> <p data-bbox="316 525 860 598">Note: 1. The Overload Limitation function is disabled during deceleration.</p>	Set value	Condition of enabling the function	0	Under acceleration and at constant speed	1	At constant speed only
Set value	Condition of enabling the function						
0	Under acceleration and at constant speed						
1	At constant speed only						
<p data-bbox="186 619 284 661">A 33</p> <p data-bbox="170 682 284 787">LAD stop function setting</p>	<p data-bbox="316 619 893 661">This command enables or disables the LAD Stop function.</p> <div data-bbox="324 672 747 903"> </div> <table data-bbox="836 672 1258 808"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Enabled</td> </tr> <tr> <td>1</td> <td>Disabled</td> </tr> </tbody> </table> <div data-bbox="682 829 1250 1144"> </div> <p data-bbox="316 1071 730 1144">Note: 1. This function is enabled also during deceleration.</p>	Set value	Function	0	Enabled	1	Disabled
Set value	Function						
0	Enabled						
1	Disabled						
<p data-bbox="186 1155 284 1197">A 34</p> <p data-bbox="170 1218 284 1312">Trip/retry function selection</p>	<p data-bbox="316 1155 1071 1197">This command selects a retry operation of the inverter when the inverter trips.</p> <div data-bbox="324 1207 747 1417"> </div> <table data-bbox="771 1239 1258 1375"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Trips and outputs an alarm signal.</td> </tr> <tr> <td>1</td> <td>Restarts with a frequency of 0Hz.</td> </tr> </tbody> </table> <p data-bbox="316 1417 860 1491">Note: 1. This function always restarts the inverter with a frequency of 0Hz.</p>	Set value	Function	0	Trips and outputs an alarm signal.	1	Restarts with a frequency of 0Hz.
Set value	Function						
0	Trips and outputs an alarm signal.						
1	Restarts with a frequency of 0Hz.						
<p data-bbox="186 1501 284 1543">A 35</p> <p data-bbox="170 1564 284 1659">Trip ignorance selection</p>	<p data-bbox="316 1501 1250 1564">This command enables or disables tripping by an undervoltage of the inverter when the inverter stops.</p> <div data-bbox="324 1575 747 1827"> </div> <table data-bbox="738 1648 1258 1785"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Disables tripping by an undervoltage.</td> </tr> <tr> <td>1</td> <td>Enables tripping by an undervoltage.</td> </tr> </tbody> </table>	Set value	Function	0	Disables tripping by an undervoltage.	1	Enables tripping by an undervoltage.
Set value	Function						
0	Disables tripping by an undervoltage.						
1	Enables tripping by an undervoltage.						

Command	Contents and display										
<p data-bbox="207 226 300 262">A 36</p> <p data-bbox="191 304 316 420">AVR setting for deceleration</p>	<p data-bbox="332 231 1144 262">This command selects a receiving voltage (AVR) of the motor during deceleration.</p> <div data-bbox="341 283 747 504"> </div> <table border="1" data-bbox="771 315 1291 451"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>AVR value equal to a value set by E 5</td> </tr> <tr> <td>1</td> <td>Any AVR value set by A 37.</td> </tr> </tbody> </table> <p data-bbox="763 472 1291 682">* To increase the regenerative torque of the decelerated motor, set this command to "1" and increase the value of A 37 or reset the A 37 value to 0 00. In this situation, if the Overvoltage Protection error (E 7) occurs, use an external regenerative braking resistor.</p>	Set value	Function	0	AVR value equal to a value set by E 5	1	Any AVR value set by A 37 .				
Set value	Function										
0	AVR value equal to a value set by E 5										
1	Any AVR value set by A 37 .										
<p data-bbox="207 703 300 739">A 37</p> <p data-bbox="191 777 316 892">Motor voltage setting for deceleration</p>	<p data-bbox="332 703 1274 756">This command sets the receiving voltage of the decelerated motor. Set the receiving voltage of the decelerated motor as shown below.</p> <div data-bbox="332 766 1291 1081"> </div>										
<p data-bbox="207 1159 300 1194">A 38</p> <p data-bbox="191 1228 316 1323">Dynamic braking usage ratio</p>	<p data-bbox="332 1159 1274 1270">This command sets the rate of use (in percentage) of the regenerative braking resistor for 100 seconds. When the resistor is used more than this rate, the Braking Resistor Overload Trip error E 6 occurs.</p> <div data-bbox="332 1281 1274 1585"> </div> <p data-bbox="316 1585 373 1606">Notes:</p> <ol data-bbox="316 1617 1274 1743" style="list-style-type: none"> When a rate of 31.0% is specified, the braking resistor (BRD) function is disabled. When the value T exceeds a preset value, the BRD function When an external resistor is used, its resistance must not be smaller than the minimum resistance shown below. The wire between the external resistor and the inverter should be a maximum of 5 meters long. <table border="1" data-bbox="332 1753 1242 1890"> <tbody> <tr> <td>Model</td> <td>002, 004LFU2 (002, 004LF2)</td> <td>007, 015, 022, 037LFU2 (007, 015, 022, 037LF2)</td> <td>015HFU2 (015LF2)</td> <td>022, 037HFU2 (022, 037HF2)</td> </tr> <tr> <td>Minimum resistance</td> <td>100 Ω</td> <td>35 Ω</td> <td>180 Ω</td> <td>100 Ω</td> </tr> </tbody> </table>	Model	002, 004LFU2 (002, 004LF2)	007, 015, 022, 037LFU2 (007, 015, 022, 037LF2)	015HFU2 (015LF2)	022, 037HFU2 (022, 037HF2)	Minimum resistance	100 Ω	35 Ω	180 Ω	100 Ω
Model	002, 004LFU2 (002, 004LF2)	007, 015, 022, 037LFU2 (007, 015, 022, 037LF2)	015HFU2 (015LF2)	022, 037HFU2 (022, 037HF2)							
Minimum resistance	100 Ω	35 Ω	180 Ω	100 Ω							

Command	Contents and display						
<p data-bbox="191 289 285 373"> <input type="text" value="A"/> <input type="text" value="39"/> <input type="text" value="A"/> <input type="text" value="40"/> </p> <p data-bbox="175 405 302 583">Optional arrival frequency for acceleration, deceleration</p>	<p data-bbox="318 300 1260 447">These commands respectively set the frequency of the output signal when the motor is accelerated <input type="text" value="A"/> <input type="text" value="39"/> and the frequency of the output signal when the motor is decelerated <input type="text" value="A"/> <input type="text" value="40"/> (at steps of 1%). These commands are valid when <input type="text" value=""/> <input type="text" value="1"/> or <input type="text" value=""/> <input type="text" value="2"/> is selected for the <input type="text" value="A"/> <input type="text" value="49"/> command (Frequency Arrival Signal Output Method).</p> <div data-bbox="310 489 760 783"> <p>Setting of the frequency of the output signal (for acceleration) <input type="text" value="A"/> <input type="text" value="39"/> ← Initial set value <input type="text" value=""/> <input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/></p> <p style="text-align: center;">↓ ↑</p> <p>Setting of the frequency of the output signal (for deceleration) <input type="text" value="A"/> <input type="text" value="40"/> : Same as the above <input type="text" value="A"/> <input type="text" value="39"/></p> </div> <div data-bbox="781 499 1284 972"> </div> <p data-bbox="310 810 833 961">Note: 1. In case the specified acceleration arrival frequency is equal to or less than the specified deceleration arrival frequency or the difference between the specified acceleration and deceleration arrival frequencies is very small, the arrival signal may chatter when an analog frequency command is given.</p>						
<p data-bbox="191 997 285 1203"> <input type="text" value="A"/> <input type="text" value="49"/> </p> <p data-bbox="175 1066 302 1203">Frequency arrival signal output method</p>	<p data-bbox="310 1003 1206 1056">This command selects a method of outputting a frequency arrival signal when the signal is selected for the output terminal.</p> <div data-bbox="310 1087 743 1287"> <p>Setting of <input type="text" value="A"/> <input type="text" value="49"/> ← Initial set value <input type="text" value=""/> <input type="text" value="2"/></p> <p style="text-align: center;">↓ ↑</p> <p>Initial set value <input type="text" value=""/> <input type="text" value="1"/></p> </div> <table border="1" data-bbox="748 1119 1268 1276"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Frequency setting or more</td> </tr> <tr> <td>2</td> <td>Setting frequency arrival (at constant speed)</td> </tr> </tbody> </table> <p data-bbox="748 1308 1276 1402">The frequency for the A49 value of "1" can be specified by the <input type="text" value="A"/> <input type="text" value="39"/> (Acceleration) or <input type="text" value="A"/> <input type="text" value="40"/> (Deceleration) command.</p> <p data-bbox="310 1392 1179 1455">Note: 1. Set the <input type="text" value="C"/> <input type="text" value="10"/> command to <input type="text" value=""/> <input type="text" value="0"/> and assign the Frequency Arrival signal to the intelligent terminal.</p>	Set value	Function	1	Frequency setting or more	2	Setting frequency arrival (at constant speed)
Set value	Function						
1	Frequency setting or more						
2	Setting frequency arrival (at constant speed)						
<p data-bbox="191 1486 285 1570"> <input type="text" value="A"/> <input type="text" value="41"/> <input type="text" value="A"/> <input type="text" value="42"/> </p> <p data-bbox="175 1602 302 1749">Forward rotation Reverse rotation</p>	<p data-bbox="310 1486 1252 1528">These commands respectively specify forward rotation <input type="text" value="A"/> <input type="text" value="41"/> and reverse rotation <input type="text" value="A"/> <input type="text" value="42"/>.</p> <div data-bbox="310 1549 841 1833"> <p>Specification of forward rotation <input type="text" value="A"/> <input type="text" value="41"/> ← Initial set value <input type="text" value=""/> <input type="text" value="1"/></p> <p style="text-align: center;">↓ ↑</p> <p>Specification of backward rotation <input type="text" value="A"/> <input type="text" value="42"/> : Same as the above <input type="text" value="A"/> <input type="text" value="41"/></p> </div> <table border="1" data-bbox="849 1633 1263 1822"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Disables rotation in the specified direction.</td> </tr> <tr> <td>1</td> <td>Enables rotation in the specified direction.</td> </tr> </tbody> </table>	Set value	Function	0	Disables rotation in the specified direction.	1	Enables rotation in the specified direction.
Set value	Function						
0	Disables rotation in the specified direction.						
1	Enables rotation in the specified direction.						

Command	Contents and display						
<p data-bbox="186 273 276 315">A 43</p> <p data-bbox="170 336 284 430">Stop key ON/OFF selection</p>	<p data-bbox="316 273 1258 336">This command enables or disables the STOP key function of the digital or remote operator when a run command is sent to the terminal board.</p> <div data-bbox="316 346 649 567"> </div> <table data-bbox="966 388 1209 514"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Enable</td> </tr> <tr> <td>1</td> <td>Disable</td> </tr> </tbody> </table> <p data-bbox="308 598 357 630">Note:</p> <p data-bbox="308 640 1258 703">1. When the STOP key function is disabled, the STOP key is locked. You can neither stop the motor nor release tripping. The "Disable" setting is not valid when the run command is sent to the digital operator.</p>	Set value	Function	0	Enable	1	Disable
Set value	Function						
0	Enable						
1	Disable						
<p data-bbox="186 745 276 787">A 50</p> <p data-bbox="162 808 284 934">Analog/digital meter selection</p>	<p data-bbox="308 745 1169 787">This command changes a monitor's method of outputting to the terminals FM and CMI.</p> <div data-bbox="308 798 649 997"> </div> <table data-bbox="787 829 1161 955"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>for the digital meter</td> </tr> <tr> <td>1</td> <td>for the analog meter</td> </tr> </tbody> </table>	Set value	Function	0	for the digital meter	1	for the analog meter
Set value	Function						
0	for the digital meter						
1	for the analog meter						
<p data-bbox="186 1113 276 1155">A 51</p> <p data-bbox="162 1186 284 1302">Frequency Current monitoring selection</p>	<p data-bbox="308 1113 1153 1155">This command changes a type of monitor which outputs to the terminals FM and CMI.</p> <div data-bbox="308 1165 649 1386"> </div> <table data-bbox="787 1197 1161 1323"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Frequency monitor</td> </tr> <tr> <td>1</td> <td>Current monitor</td> </tr> </tbody> </table>	Set value	Function	0	Frequency monitor	1	Current monitor
Set value	Function						
0	Frequency monitor						
1	Current monitor						
<p data-bbox="186 1522 276 1564">A 52</p> <p data-bbox="162 1596 284 1690">Run signal output selection</p>	<p data-bbox="308 1522 1218 1585">This command selects an output mode of the RUN signal when the output terminals select the RUN signal.</p> <div data-bbox="308 1585 649 1795"> </div> <table data-bbox="771 1627 1218 1774"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Outputting during running</td> </tr> <tr> <td>2</td> <td>Outputting during running and during D.C. braking</td> </tr> </tbody> </table> <p data-bbox="308 1827 357 1858">Note:</p> <p data-bbox="308 1858 1047 1900">1. Set the C 10 command to 1 and assign the RUN signal to the intelligent terminal.</p>	Set value	Function	1	Outputting during running	2	Outputting during running and during D.C. braking
Set value	Function						
1	Outputting during running						
2	Outputting during running and during D.C. braking						

Command	Contents and display						
<p>A 53</p> <p>Enables/ disables change of frequency setting in the soft lock status</p>	<p>This command enables or disables change of a frequency setting in the Soft Lock status.</p>  <table border="1" data-bbox="1055 178 1534 315"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Enables change of setting.</td> </tr> <tr> <td>1</td> <td>Disables change of setting.</td> </tr> </tbody> </table>	Set value	Function	0	Enables change of setting.	1	Disables change of setting.
Set value	Function						
0	Enables change of setting.						
1	Disables change of setting.						
<p>A 57</p> <p>Trip history clear selection</p>	<p>This command is used to clear the history of tripping. After setting "1" for this command, turn off and on power or connect and disconnect the RS (Reset) terminal. The history of tripping is cleared.</p>  <table border="1" data-bbox="1031 735 1518 871"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Counts trippings.</td> </tr> <tr> <td>1</td> <td>Clears the history of tripping.</td> </tr> </tbody> </table>	Set value	Function	0	Counts trippings.	1	Clears the history of tripping.
Set value	Function						
0	Counts trippings.						
1	Clears the history of tripping.						
<p>A 58</p> <p>Reduced voltage start selection</p>	<p>This command enables or disables soft-start of a reduced voltage. Set "0" (Disables soft-start with reduced voltage) for this command to make the start response quicker. In this situation, an Overcurrent Protection error is apt to occur. Accordingly, when a starting torque is required (e.g. because of a heavy load, etc.), set "1" for this command.</p>  <table border="1" data-bbox="1015 1186 1502 1375"> <thead> <tr> <th>Set value</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Disables soft-start with reduced voltage.</td> </tr> <tr> <td>1</td> <td>Enables soft-start with reduced voltage.</td> </tr> </tbody> </table>	Set value	Function	0	Disables soft-start with reduced voltage.	1	Enables soft-start with reduced voltage.
Set value	Function						
0	Disables soft-start with reduced voltage.						
1	Enables soft-start with reduced voltage.						
	 <p>Frequency (Hz)</p> <p>Output voltage</p> <p>Time</p> <p>Time</p> <p>----- Setting of "Disables soft-start with reduced voltage."</p> <p>————— Setting of "Enables soft-start with reduced voltage."</p>						

Command	Contents and display
<p data-bbox="212 327 293 359">A 80</p> <p data-bbox="212 369 293 401">A 81</p> <p data-bbox="196 432 293 569">Frequency command adjust (voltage, current)</p>	<p data-bbox="326 306 1154 369">These commands adjust the relationship between external frequency commands and inverter output frequencies.</p> <p data-bbox="350 411 683 443">A 80 : Voltage command (O-L)</p> <p data-bbox="350 453 691 485">A 81 : Current command (OI-L)</p> <p data-bbox="326 516 1187 579">The initial setting of each inverter is adjusted when shipping from the works. Before adjusting, be sure to store the initial set data.</p> <p data-bbox="326 569 1187 684">It is not recommended to use this function so often. If this function is used so often, the relationship between external frequency commands and inverter output frequencies is broken and the control function is disabled. Use this function only when the external commands are not related to output frequencies adequately.</p> <p data-bbox="350 705 1170 768">In case the output frequency is smaller than the external command, increase the data value. In case the output frequency is greater than the external command, decrease the data value.</p> <p data-bbox="350 789 1187 821">NOTE: Even if initialization is performed, the data doesn't return to the works shipping data.</p>
<p data-bbox="212 863 293 894">A 82</p> <p data-bbox="212 905 293 936">A 83</p> <p data-bbox="196 968 318 1188">Allowable under voltage time, Under voltage retry waiting time setting</p>	<p data-bbox="326 852 1179 915">These commands respectively set an allowance time of an undervoltage and a reentry wait time after power recovery.</p> <div data-bbox="334 905 1170 1167"> </div> <p data-bbox="326 1167 732 1388">An undervoltage event occurs when power is shut off or the voltage falls under a preset value while the inverter is in service. When the undervoltage event ends within a preset time period, the inverter can be restarted. (When the under-voltage event lasts over the preset time period, tripping occurs with the Undervoltage Protection error.)</p> <p data-bbox="781 1167 1187 1220">A preset reentry wait time later after power is recovered, retrying starts.</p> <div data-bbox="350 1388 1097 1776"> </div> <p data-bbox="334 1787 375 1808">Note:</p> <p data-bbox="334 1818 967 1839">1. To use the retry function, set the A 34 command to 1 (Restart with 0Hz).</p>

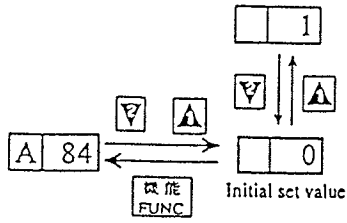
Command

Contents and display

A 84

Software
lock
selection

This command enables or disables rewriting of data.












Initial set
value

Set value	Function
0	Enables rewriting.
1	Disables rewriting.

soft lock

Note:

1. When you operate the  or  key on the operator in the Soft-Lock status, data on the display changes but will neither be changed nor stored.

Command	Contents and display																																																																																				
<p data-bbox="186 268 276 310">C 0</p> <p data-bbox="224 331 240 363">}</p> <p data-bbox="186 380 276 422">C 4</p> <p data-bbox="167 453 295 569">Input terminal setting 1,2,3 4 and 5</p>	<p data-bbox="305 268 1198 327">These commands respectively assign terminal functions to terminals 1 to 5 (a total of five terminals).</p> <p data-bbox="305 331 1198 390">When changing the initial functions assigned to the terminals or changing the order of the terminals, reassign the functions respectively to the terminals by these commands.</p> <p data-bbox="305 394 1149 422">The time to input a signal to an input intelligent terminal should be 12 msec or more.</p> <p data-bbox="337 426 829 453">Assignment of commands to intelligent terminals</p> <table border="1" data-bbox="310 464 862 684"> <thead> <tr> <th>Command</th> <th>Name of function</th> <th>Terminal symbol</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>C 0</td> <td>Input terminal setting 1</td> <td>1</td> <td>1</td> </tr> <tr> <td>C 1</td> <td>Input terminal setting 2</td> <td>2</td> <td>10 (NOTE)</td> </tr> <tr> <td>C 2</td> <td>Input terminal setting 3</td> <td>3</td> <td>7</td> </tr> <tr> <td>C 3</td> <td>Input terminal setting 4</td> <td>4</td> <td>11</td> </tr> <tr> <td>C 4</td> <td>Input terminal setting 5</td> <td>5</td> <td>0</td> </tr> </tbody> </table> <div data-bbox="878 489 1274 636" style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Input intelligent terminals</p> <table border="1"> <tr><td>3</td><td>2</td><td>1</td></tr> <tr><td>H</td><td>O</td><td>OI</td></tr> </table> </div> <div style="text-align: center;"> <p>Input intelligent terminals</p> <table border="1"> <tr><td>CM1</td><td>FW</td><td>5</td><td>4</td><td>CM1</td><td>ALQ</td></tr> <tr><td>L</td><td>FM</td><td>CM2</td><td>11</td><td>AL2</td><td>ALI</td></tr> </table> </div> </div> <p data-bbox="878 653 1274 699">NOTE: In the case of a J100₂ series inverter, this initial value is 2.</p> <p data-bbox="305 695 488 722">Setting procedure</p> <ul data-bbox="337 730 1274 930" style="list-style-type: none"> - Press the  or  key once for a desired terminal setting command. - The preset value of the terminal is displayed. Press the  or  key repeatedly until the desired value appears on the display (in reference with the List of Functions), then press the  key. - Return to the command display status and make sure that a new terminal function has been assigned. <div data-bbox="329 940 1255 1140" style="border: 1px solid black; padding: 5px;"> <p data-bbox="337 940 505 968">Setting example:</p> <p data-bbox="337 972 1092 999">Assigning the SFT (Terminal Soft Lock) function to the RS (Reset) terminal</p> <p data-bbox="667 1014 954 1041">Enter the value of a desired terminal</p> <p data-bbox="667 1052 922 1079">by pressing the  or  key.</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 10px;">C 0</div> <div style="margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 10px;">11</div> <div style="margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 2px 5px; margin-right: 10px;">12</div> <div style="margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 2px 5px;">C 0</div> </div> </div> <p data-bbox="321 1146 594 1173">List of Terminal Functions</p> <table border="1" data-bbox="321 1182 907 1734"> <thead> <tr> <th>Set value</th> <th>Symbol</th> <th>Name of function</th> </tr> </thead> <tbody> <tr><td>0</td><td>REV</td><td>Backward rotation</td></tr> <tr><td>1</td><td>CF 1</td><td>Speed 1</td></tr> <tr><td>2</td><td>CF 2</td><td>Speed 2</td></tr> <tr><td>3</td><td>CF 3</td><td>Speed 3</td></tr> <tr><td>4</td><td>DB</td><td>External D.C. braking</td></tr> <tr><td>5</td><td>STN</td><td>Initial setting</td></tr> <tr><td>6</td><td>SET</td><td>Secondary setting function</td></tr> <tr><td>7</td><td>2CH</td><td>2-stage acceleration/deceleration</td></tr> <tr><td>8</td><td>FRS</td><td>Free-running stop</td></tr> <tr><td>9</td><td>EXT</td><td>External tripping</td></tr> <tr><td>10</td><td>USP</td><td>USP function</td></tr> <tr><td>11</td><td>RS</td><td>Resetting</td></tr> <tr><td>12</td><td>SFT</td><td>Terminal Soft Lock</td></tr> </tbody> </table> <p data-bbox="305 1740 561 1768">Notes on terminal setting</p> <ul data-bbox="337 1772 1274 1919" style="list-style-type: none"> - Do not enter identical values for C 0 to C 4 commands. When moving a terminal function from a terminal to another terminal, first assign a set value of a terminal function to a terminal from which its function is moved, then assign the value of a function to be moved to the destination terminal. (Do not enter a value of the function to the destination terminal first.) 	Command	Name of function	Terminal symbol	Initial value	C 0	Input terminal setting 1	1	1	C 1	Input terminal setting 2	2	10 (NOTE)	C 2	Input terminal setting 3	3	7	C 3	Input terminal setting 4	4	11	C 4	Input terminal setting 5	5	0	3	2	1	H	O	OI	CM1	FW	5	4	CM1	ALQ	L	FM	CM2	11	AL2	ALI	Set value	Symbol	Name of function	0	REV	Backward rotation	1	CF 1	Speed 1	2	CF 2	Speed 2	3	CF 3	Speed 3	4	DB	External D.C. braking	5	STN	Initial setting	6	SET	Secondary setting function	7	2CH	2-stage acceleration/deceleration	8	FRS	Free-running stop	9	EXT	External tripping	10	USP	USP function	11	RS	Resetting	12	SFT	Terminal Soft Lock
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11	RS	Resetting																																																																																			
12	SFT	Terminal Soft Lock																																																																																			

Command

Contents and display

C 10

This command assigns a terminal function to the output intelligent terminal 11. Use this command when changing the terminal function assigned to the terminal.

Output terminal setting

Assignment of commands to intelligent terminals

Command	Name of function	Terminal symbol	Initial value
C10	Output terminal setting	11	0

3	2	1	CM1	FW	5	4	CM1	ALC
H	O	OI	L	FM	CM2	11	AL2	AL1

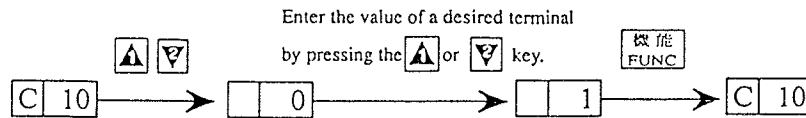
Output intelligent terminal

Setting procedure

- Press the or key once for a desired terminal setting command.
- The preset value of the terminal is displayed. Press the or key repeatedly until the desired value appears on the display (in reference with the List of Functions), then press the key.
- Return to the command display status and make sure that a new terminal function has been assigned.

Setting example:

Changing the RUN (Run signal) function to the AR (Frequency Arrival signal) function



List of Output Terminal Functions

Set value	Symbol	Name of function
0	AR	Frequency Arrival signal
1	RUN	Running signal
2	OL	Overload Precaution signal

Command

Contents and display

C 20

This command changes setting of contacts "a" and "b" for input intelligent terminals 1 to 5.

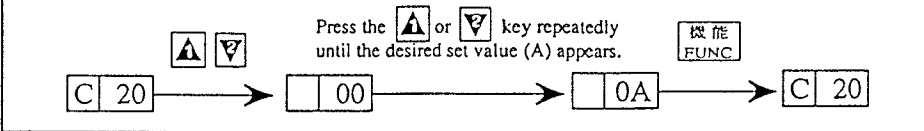
Input terminal a and b contact setting

Setting procedure

- Press the or key once while this command is displayed.
- The currently-set value is displayed. Press the or key repeatedly until a desired set value appears (in reference with the List of Contact Functions), then press the key.
- Return to the command display status and make sure that a new terminal function has been set.

Setting example:

Using input terminals 1, 3, and 5 as contact "a" and input terminals 2 and 4 as contact "b" (Set value A)



Initial set value (J1002)

Initial set value (J1002)

Set value	OF	OE	Od	OC	Ob	OA	O9	O8	O7	O6	O5	O4	O3	O2	O1	O0
1	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a
2	b	b	a	a	b	b	a	a	b	b	a	a	b	b	a	a
3	b	b	b	b	a	a	a	a	b	b	b	b	a	a	a	a
4	b	b	b	b	b	b	b	b	a	a	a	a	a	a	a	a
5	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a

a: Contact "a" specification (ON when short-connected)
 b: Contact "b" specification (ON when opened)

Set value	1F	1E	1d	1C	1b	1A	19	18	17	16	15	14	13	12	11	10
1	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a
2	b	b	a	a	b	b	a	a	b	b	a	a	b	b	a	a
3	b	b	b	b	a	a	a	a	b	b	b	b	a	a	a	a
4	b	b	b	b	b	b	b	b	a	a	a	a	a	a	a	a
5	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b

Note:

1. An input terminal to which the RS function is assigned can be contact "a" only. Even when contact "b" is assigned to the terminal, contact "a" is automatically set to the terminal.

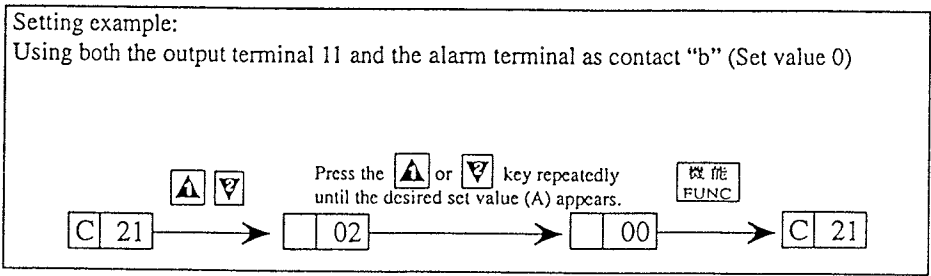
Command	Contents and display
---------	----------------------

C 21
 Output terminal a and b contact setting

This command changes setting of contacts "a" and "b" for the output intelligent terminal and the alarm output terminal.

Setting procedure

- Press the or key once while this command is displayed.
- The currently-set value is displayed. Press the or key repeatedly until a desired set value appears (in reference with the List of Contact Functions), then press the 機能
FUNC key.
- Return to the command display status and make sure that a new terminal function has been set.



Initial set value

02

The leading "0" is always required.

List of Contact Functions
(for output and alarm terminals)

		set value	3	2	1	0
Output terminal	11	b	a	b	a	
	Alarm	b	b	a	a	

a: Contact "a" specification (ON when short-connected)
b: Contact "b" specification (ON when opened)

9. PROTECTIVE FUNCTIONS

The J100 series inverters are equipped with protective functions against overcurrent, overvoltage, and undervoltage which protect the inverter. If the protective functions are engaged, the output is shut down, motor runs free and holds that condition until it is reset.

Description	Contents	Display	
Power module protection (NOTE 1)	When output of an inverter is short circuited or the motor is locked, a large current flows through the inverter and causes a fault. When the current flowing through the power module or a temperature abnormality of the main devices comes to certain level, the output is cut off.	Constant speed	E 1
		Dec.	E 2
		Acc.	E 3
		Stop	E 4
Overload protection (NOTE 1)	When a motor overload is detected by the electronic thermal function, the output of the inverter is cut off.	E 5	
Braking resistor overload	When regenerative braking resistor exceeds the usage time ratio an overvoltage caused by the stop of the BRD function is detected, and output of the inverter is cut off.	E 6	
Overvoltage protection	When the converter voltage exceeds a certain level due to regenerative energy from the motor, this protection function engages, and the output of inverter is cut off.	E 7	
EEPROM error (NOTE 2)	When the memory built in has problems due to noise or excessive temperature rise, this protective function engages, and the output of inverter is cut off.	E 8	
Undervoltage protection	A decrease of the input voltage of an inverter results in improper function of the control circuit. It also generates motor heat and causes low torque. Output is cut off when the input voltage goes down to less than 150 V to 160 V (200 V class), 300 V to 320 V (400 V class).	E 9	
CT error	When a large noise source is near the inverter or an abnormality occurs on built-in CT, the output of the inverter is cut off.	E 10	
CPU error	Malfunction or abnormality on built-in CPU and the output of the inverter is cut off.	E 11	
External trip	An abnormality signal from external equipment cuts off the output of the inverter.	E 12	
USP error	It indicates an error when power is turned on while the inverter is being run. (When USP function is selected)	E 13	
Ground fault protection	The inverter is protected by detection of ground faults between the inverter output and the motor upon power on. There may be the possibility of power module failure. This protection is provided for the inverter, not for humans.	E 14	

NOTE 1: If a trip occurs, press the reset key after an elapse of 10 seconds to restore the inverter.

NOTE 2: If an EEPROM error occurs, be sure to confirm the setting value again.





Other display

Contents	Display
It is displayed when the registered data in F3 is different from the respective data. (For example, it is displayed when confirming V/F data in F5 after 06 was selected in F3)	--
It is displayed when the fault happens between digital operator and the inverter, or short circuit RS-PV24 for four seconds or more. Pushing down any one of the ▲ ▼ and 機能 FUNC keys recovers. If not, turn off and on power again.	---
It is displayed when power is shut off.	---
It displays the rest time of retry waiting time after the power recovery of undervoltage when selecting the retry mode. (example) - / 0 shows restart after 10 seconds.	-V 0

For display contents when the remote operator or copy unit is used, see page 13-1 and the subsequent pages.

10. TROUBLESHOOTING

Symptom	Probable cause	Countermeasure
The motor will not run.	The inverter outputs U, V and W are not supplying voltage.	<ul style="list-style-type: none"> • Is power being supplied to terminals R(L1), S(L2), and T(L3)? If it is, the POWER lamp should be on. • Check terminals R(L1), S(L2), T(L3), U(T1), V(T2), and W(T3). • Turn on the power supply.
		<ul style="list-style-type: none"> • Is the display E <input type="checkbox"/> <input type="checkbox"/> ? • Press <input type="button" value="▲"/> <input type="button" value="▼"/> and check the content. Then press the reset key.
		<ul style="list-style-type: none"> • Is the operation instruction RUN ON? • Is terminal FW (or RV) connected to terminal CM1? . • Set to ON. • Connect terminal CM1 to terminal FW (or RV) on the printed-circuit board. (When the terminal mode is selected.)
		<ul style="list-style-type: none"> • Has the frequency setter been turned on by pushing <input type="button" value="機能"/> <input type="button" value="FUNC"/> key to select <input type="button" value="F"/> <input type="button" value="r"/> and then <input type="button" value="▲"/> <input type="button" value="▼"/> key. • Are the printed-circuit board terminals H, O and L connected to the potentiometer? . • Push down keys and set. • When terminal mode is selected, connect the potentiometer to H, O, and L, and then set.
		<ul style="list-style-type: none"> • Has RS/FRS been left ON? • Release reset.
		<ul style="list-style-type: none"> • Is the mode key <input type="button" value="F"/> <input type="button" value="5"/> setting correct? • Read the instruction manual again (8-10).
Inverter outputs U, V, and W are supplying voltage.	The optional remote operator is used. (copy unit)	<ul style="list-style-type: none"> • Has the motor seized or is the load too great? • Release seizure or lighten the load. • Test the motor independently.
	The optional remote operator is used. (copy unit)	<ul style="list-style-type: none"> • Are the operational settings between the remote operator and inverter unit correct? . • Check the operation of the optional remote operator. (copy unit) <div style="margin-top: 10px;"> <p>ON <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p>OFF <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p style="margin-left: 100px;">1: OFF 2: ON (Same as J300)</p> </div>
The direction of the motor is reversed.		<ul style="list-style-type: none"> • Are the connections of output terminals U(T1), V(T2), and W(T3) correct? • Is the phase sequence of the motor forward or reverse in respect to U(T1), V(T2), and W(T3)? • Make the connections according to the phase sequence of the motor. (In general, forward should be in the sequence: U(T1), V(T2), and W(T3).)
		<ul style="list-style-type: none"> • Are the terminals on the printed-circuit board correct? . • Is the mode key <input type="button" value="F"/> <input type="button" value="4"/> set correctly? . • Terminal FW for forward, and RV for reverse.

Symptom		Probable cause	Countermeasure
The rpm of the motor will not increase.		<ul style="list-style-type: none"> • After checking the wiring of the frequency setter, the rpm still does not increase when the setter is turned. 	<ul style="list-style-type: none"> • Replace the frequency setter.
		<ul style="list-style-type: none"> • Are terminals 1 and CM1, terminal 2 and CM1, terminal 3 and CM1 ON? 	<ul style="list-style-type: none"> • Turn off terminal 1, 2, and 3. (When the frequency and multistage speed are fixed at a given frequency, the speed potentiometer will be invalid.)
		<ul style="list-style-type: none"> • Is the load too great? 	<ul style="list-style-type: none"> • Decrease the load. • When the load is too great, the limiting function will be activated, so that the rotational speed will be lower than the setting.
Rotation is unstable.		<ul style="list-style-type: none"> • Is the fluctuation in load too great? • Is the power supply voltage fluctuating? • Is some peculiar frequency causing the problem? 	<ul style="list-style-type: none"> • Increase the capacity. (Both of the motor and inverter.) • Decrease the fluctuation. • Change the output frequency slightly.
The rpm of the motor does not match the inverter.		<ul style="list-style-type: none"> • Is the maximum frequency setting correct? • Are the number of motor poles, the gear ratio, and pulley ratio correct? 	<ul style="list-style-type: none"> • Check the V/F pattern against the motor specifications. • Check the speed-change ratio.
The data is incorrect.	The data has not changed.	<ul style="list-style-type: none"> • Was the power turned off without pushing the  key after the data was changed with   keys. • The data is memorized upon power off. Is the time from power OFF to ON less than six seconds? 	<ul style="list-style-type: none"> • Input the data and push the  key once. • Take six seconds or more when turning power OFF and ON after changing the data.
	Data copied by the copy unit is not input.	<ul style="list-style-type: none"> • Is the power turned off for six seconds or more after the display changed from REMT to INV. 	<ul style="list-style-type: none"> • Copy again and turn the power off six seconds or more after copying.

Symptom		Probable cause	Countermeasure
The data is not changed.	Frequency setting can not be changed. Run and stop can not be done.	<ul style="list-style-type: none"> The change of the terminal mode and digital operator mode were correct? 	<ul style="list-style-type: none"> Confirm the change in F 9 setting mode. (See page 8-12.)
	The data can not be changed.	<ul style="list-style-type: none"> Is software lock ON? Is software lock ON with software lock selection F 84 (date: 1) Is the switch 4 mounted on the back of the remote operator (copy unit) ON? (See page 13-2) 	<ul style="list-style-type: none"> Open SFT terminal and PV24. Change the data of F 84 to 1 to 0. Turn the switch OFF.
		Note: If software lock is ON because of use with an explosion proof motor, do not release the software locks.	

Precautions for data setting

When changing any set data by one of the following methods (① to ③), keep the equipment unoperated for 6 seconds or more after the selected method is executed. When any key is pressed, or the reset operation is performed, or the power is turned off within 6 seconds, correct data may not be set.

- ① Changing the data and pressing the **記憶 STR** key to store the data
- ② Operating the **コピー COPY** key when copying another inverter data using the copy unit (DRW) (See page 13-12.)
- ③ Returning to the initialization (the factory settings) (See page 7-7.)

11. MAINTENANCE AND INSPECTION

11.1 Maintenance and Inspection Precautions

- ▲ WARNING:** Hazard of electrical shock. Disconnect incoming power and wait more than one (1) minute before removing cover.
- ▲ WARNING:** Confirm that the CHARGE lamp beside the control terminal no longer blinks.
(Dangerous voltage exist when the lamp is lit or blinking)
- ▲ CAUTION:** When removing connectors, never pull the wires. (Wires for cooling fan)

- General precautions

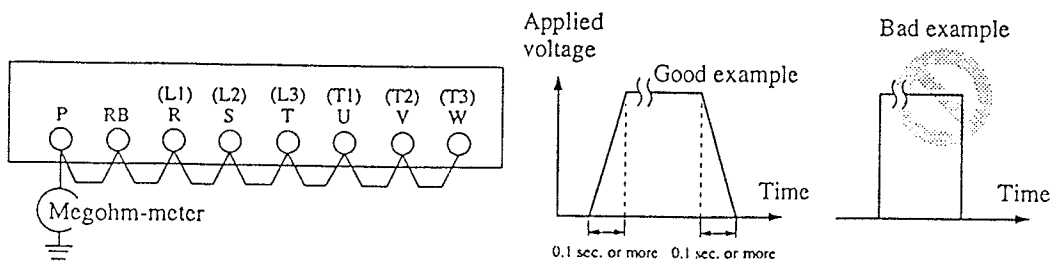
Always keep the unit clean so that dust or other foreign matter does not enter the inverter. Take special care in regard to breaking lines and connection mistakes. Firmly connect terminals and connectors. Keep electronic equipment away from moisture and oil. Dust, steel filings and other foreign matter can damage insulation, causing unexpected accidents, so take special care.

11.2 Inspection Items

- (1) Daily inspection
- (2) Periodic inspection (Approximately once a year)
- (3) Insulation resistance tests, withstand voltage tests

Conduct these tests by short-circuiting the terminals as shown below, and by following the conditions described.

- In regard to insulation resistance tests, measure the terminals below and the grounding at 500 VDC, and make sure that 5 M-ohms or greater is indicated.
- Do not perform the withstand voltage test. When it should be done, in regard to withstand voltage tests, supply the terminals below and the grounding with 1500 VAC (200 V class), 2000 VAC (400 V class) for one minute, and make sure that there are no abnormalities.
- Do not conduct insulation resistance tests and withstand voltage tests for terminals other than those indicated below.
Increase or decrease the applied voltage for the withstand voltage test slowly and turn the equipment 0 V again.



Insulation Resistance Tests and Withstand Voltage Tests

NOTE 1: If the inverter is used under high temperature and heavy load conditions, its operating life will be significantly reduced.

NOTE 2: If the inverter has been stored for three years or more, apply the following conditions.

- ① Apply 80% of the rated voltage of the capacitor for 1 hour at normal temperature.
- ② Increase the voltage to 90% and apply it for 1 hour.
- ③ Apply the rated voltage for 5 hours.

NOTE 3: Precautions in handling printed-circuit boards.

When maintenance and inspection of printed-circuit boards is necessary, be sure to follow the precautions below.

- Prevent damage caused by static electricity. The MCUs and ICs on a printed-circuit board can be destroyed by static electricity, so be sure to ground work benches, soldering irons, and yourself before working on a printed-circuit board.

We recommend that the following parts be stocked to reduce down time.

Recommended Spare Parts

Part description	Symbol	Quantity		Remarks
		Used	Spare	
Main circuit P.C. board assembly	POWER PCB	1	1	Main circuit device, circuit parts, fin assembly
Cooling fan	FAN	1	1	Used for 015LFU2 to 037LFU2 015HFU2 to 037HFU2
Smoothing capacitor P.C. board assembly	CB PCB	1	1	Used for 022LFU2 and 037LFU2 015HFU2 to 037HFU2 Store this part at a temperature ranging from -20°C to 30°C
Digital operator	D. OPE	1	1	Applicable for all models
Logic P.C. board	LOGIC PCB	1	1	Same as above (Input kw data)

Daily Inspection and Periodic Inspection (1/3)

Inspection location	Inspection item	Inspection content	Inspection cycle		Inspection method	Criteria	Standard replacement period	Instruments
			Daily	Periodic				
Overall	Ambient environment	Check ambient temperature, humidity, dust, corrosive gases, oil mist, etc.	✓			Ambient temperature between -10 to +40°C; no icing. Ambient humidity 20 to 90%; no dew condensation.	—	Thermometer
	Devices overall	Check for abnormal vibrations and noise.	✓		Visual and aural inspection.			Hygrometer
	Power supply voltage	Check the input line voltage.	✓		Measure the voltage between inverter terminals R(L1), S(L2), and T(L3).	No abnormalities. 200 to 220 V, 50 Hz 200 to 230 V, 60 Hz 380 to 415 V, 50 Hz 400 to 460 V, 60 Hz		Tester
Main circuit	Overall	(1) Insulation resistance test (between main circuit terminals and grounding terminal)	✓			No abnormalities in (1) and (2).	—	500 V class Megohm meter
		(2) Check installation for looseness.		✓	(1) Tighten.	Tightening torque (except for terminal block) • M3 (Diode module): 0.59 - 0.79 N•m • M4 (Power module): 0.98 - 1.47 N•m		
		(3) Check for evidence of overheating in the various components.		✓	(2) Visual inspection.	• M3: 0.79 - 0.98 N•m • M4: 0.98 - 1.18 N•m.		
		(4) Clean.		✓				

Daily Inspection and Periodic Inspection (2/3)

Inspection location	Inspection item	Inspection content	Inspection cycle		Inspection method	Criteria	Standard replacement period	Instruments
			Daily	Periodic				
Main circuit	Terminal block	No damage.		✓	Visual inspection	No abnormalities.		
	Smoothing capacitor	(1) Check for leaking	✓		Visual inspection of (1) and (2).	No abnormalities in (1) and (2).	5 years (NOTE)	Capacity meter
		(2) Check for swelling	✓		(1) Aural inspection.	(1) No abnormalities.	—	
	Relays	(1) Check for stuttering noise when operating		✓	(1) Visual inspection	(1) No abnormalities.		Tester
	Resistors	(1) Check for large cracks or changes in color		✓	(1) Rotate manually with power off. (2) Increase tightening	(1) Smooth rotation (2) No abnormality	2 - 3 years	—
	Cooling fan	(1) Check for abnormal vibrations and noise (2) Check for dust	✓	✓				

Daily Inspection and Periodic Inspection (3/3)

Inspection location	Inspection item	Inspection content	Inspection cycle		Inspection method	Criteria	Standard replacement period	Instruments
			Daily	Periodic				
Control circuit	Operation check	(1) Check the balance of the output voltage of individual phases when operating the inverter independently.		✓	(1) Measure the voltage between the phases of inverter output terminals U(T1), V(T2), and W(T3).	(1) Within 2% voltage difference between phases.	—	—
		(2) Conduct a sequence protection operation test, and make sure that there are no errors in the protection and display circuits.		✓	(2) Simulate operation of the inverter protection circuit.	(2) Operate without any abnormalities.	—	—
	Component check, including printed-circuit boards	Overall	(1) No abnormal odor or changes in color. (2) No significant corrosion.		✓	Visual inspection	No abnormalities	—
Display	Digital operation panel	Capacitor		✓	Visual inspection		5 years (NOTE)	—
		(1) No illegible display (2) No lack of character (3) No blown out LEDs		✓	Visual inspection	Normal operation Display can be read out.	7 years	—
				✓	Visual inspection			

NOTE: The life of capacitor will be affected by the ambient temperature. See Appendix 3 Capacitor Life Curve.

11.3 Measurement Method for I/O Voltage, Current, and Power

General measuring instruments for I/O voltage, current, and power are indicated below. The voltage to be measured is the fundamental wave effective voltage and the power to be measured is the total effective value.

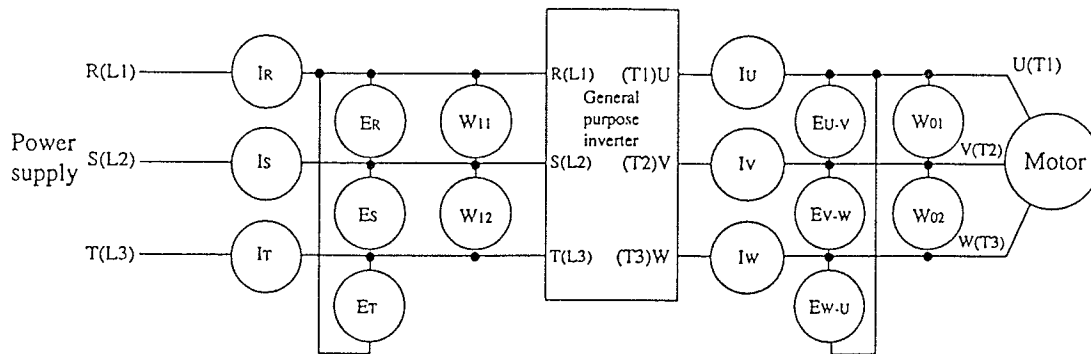








Table 3 Parts to be measured

Measurement item	Parts to be measured	Measuring instrument	Remarks	Reference value
Supply voltage E_1	Between L1 and L2, L2 and L3, L3 and L1 (ER) (Es) (Et)	 Moving-iron type voltmeter or rectifier type voltmeter	Fundamental wave effective value	Commercial supply voltage 3ø 200 V class 200-220 V 50 Hz 200-230 V 60 Hz 3ø 400 V class 380-415 V 50 Hz 400-460 V 60 Hz
Supply current I_1	L1, L2, L3 (IR)(IS)(IT)	 Moving-iron type ammeter	Total effective value	
Supply power W_1	Between L1 and L2, L2 and L3 (W11)(W12)	 Electrodynamic type wattmeter	Total effective value	
Supply power factor Pf_1	Calculate the supply power factor from the measured supply voltage, E_1 , supply current I_1 and supply power W_1 . $Pf_1 = \frac{W_1}{\sqrt{3} \cdot E_1 \cdot I_1} \times 100(\%)$			
Output voltage E_0	Between T1 and T2, T2 and T3, T3 and T1 (EU)(EV)(EW)	 Rectifier type voltmeter	Total effective value	
Output current I_0	U(T1), V(T2), W(T3) (IU)(IV)(IW)	 Moving-iron type ammeter	Total effective value	
Output power W_0	Between U and V, V and W (W01)(W02)	 Electronic type wattmeter	Total effective value	
Output power factor Pf_0	Calculate the output power factor from the output voltage E, output current I, and output power W. $Pf_0 = \frac{W_0}{\sqrt{3} \cdot E_0 \cdot I_0} \times 100(\%)$			

NOTE 1: Use a meter indicating a fundamental wave effective value for voltage, and meters indicating total effective values for current and power.

NOTE 2: The inverter output waveform is a distorted wave, and low frequencies may cause errors. However, the measuring instruments and methods indicated above provide comparatively accurate values.

NOTE 3: A tester (general purpose) may not be suited often to measurement of a distorted wave.

12. STANDARD SPECIFICATIONS

Model designation (J100-)		002LFU2 (002LF2)	004LFU2 (004LP2)	007LFU2 (007LP2)	015LFU2 (015LP2)	022LFU2 (022LF2)	037LFU2 (037LF2)	015HFU2 (015HF2)	022HFU2 (022HF2)	037HFU2 (037HF2)
Protective structure		IP20 (NOTE 1)								
Maximum motor size (4P, HP)(NOTE 2)		—	3/4	1	2	3	5	2	3	5
Maximum capacity (kVA)	200 V	0.5	1.0	1.7	2.6	3.6	5.7			
	230 V	0.6	1.2	2.0	3.0	4.2	6.6			
	400 V							2.6	3.7	6.0
	460 V							3.0	4.2	6.9
Rated input AC voltage		Single-phase 200 to 220 V/200 to 230 V $\pm 10\%$, 50/60 Hz $\pm 5\%$						Three-phase 380 to 415/400 to 460 V $\pm 10\%$, 50/60 Hz $\pm 5\%$		
Rated output voltage (V) (NOTE 3)		Three-phase 200 to 230 (Corresponds to input voltage.)						Three-phase 400 to 460 (Corresponds to input voltage.)		
Rated output current (A)		1.5	3	5	7.5	10.5	16.5	3.8	5.3	8.6
Output frequency range (NOTE 4)		0.5 to 360 Hz								
Frequency accuracy		$\pm 0.01\%$ of the maximum frequency Analog $\pm 0.2\%$ (25 $\pm 10^\circ\text{C}$)								
Frequency setting resolution		0.01 Hz								
Voltage/frequency characteristics		V/F any type possible, High starting torque, standard starting torque (constant torque, reduced torque)								
Overload current capacity		150%, 60 seconds								
Acceleration/deceleration time		0.1 to 999 seconds, individually set (independent settings from 0.1 to 2999.9 seconds are possible when the remote operator is used.)								
Starting torque (NOTE 5)		150% or more (3 Hz)								
Braking torque	Dynamic braking (NOTE 6) Feedback to capacitor	Approx. 100% (50 Hz) Approx. 50% (60 Hz)			Approx. 70% (50 Hz) Approx. 30% (60 Hz)		Approx. 20%			
	Dynamic braking using external regenerative resistor	150%					100%			
	DC injection braking	Braking is ON at the min. frequency or less. Braking can be selected by the remote operator. (Min. frequency, operative frequency, brake time and brake force can be set.)								

Model designation (J100)		002LFU2 (002LF2)	004LFU2 (004LF2)	007LFU2 (007LF2)	015LFU2 (015LF2)	022LFU2 (022LF2)	037LFU2 (037LF2)	015HFU2 (015HF2)	022HFU2 (022HF2)	037HFU2 (037HF2)	
Input signals	Frequency setting	Digital operator	Settings with ▲ ▼								
		External signals	0 - 5 VDC (nominal), 0 - 10 VDC (nominal) (Input impedance 30 kΩ) 4 - 20 mA (nominal) (Input impedance 250Ω) Potentiometer: 500Ω to 2 kΩ (2 W) Variable resistor								
	Forward/reverse run, stop	Digital operator	RUN/STOP switch (The forward run (FW) when shipped from the factory)								
		FW command	FW/STOP								
	Intelligent input terminal	RV: Reverse run command CF1: Change of multi-stage first speed CF2: Change of multi-stage second speed CF3: Change of multi-stage third speed DB: External DB input STN: Initial setting SET: Change of second setting function 2CH: Change of 2 accel/decel speed FRS: Free run input EXT: External trip terminal USP: USP function RS: Reset SFT: Software lock input									
Intelligent output terminal	AR: Frequency arrival signal RUN: RUN signal OL: Overload previous notice signal										
Output signals	Frequency monitoring	Analog meter (0 - 10 VDC 1 mA full-scale) Selection of the digital frequency signal or analog output current monitor.									
Fault alarm contact		ON when the inverter is abnormal (1c contact)									
Other characteristics		Change of V/f patter, curve accel/decel, upper/lower limiter, output current signal, DC voltage monitoring, output frequency display, trip history monitoring (memorable up to 3 times), etc.									
Protection functions		Overcurrent, overvoltage, undervoltage, electronic thermal, temperature abnormality, ground fault overcurrent upon starting, overload limit									
General specifications	Ambient temperature	-10 to 40°C (In the case of a Japanese version of J100 ₂ series, -10 to 50°C when cover is removed.)									
	Humidity	20 to 90% RH (no dew condensation)									
	Vibrations	5.9 m/S ² (0.6G) 10 - 55 Hz									
	Operation location	1,000 meter or less altitude, indoors (no corrosive gas or dust)									
	Paint color	Gray									
Options		Remote operator, copy unit, cable for digital operator, regenerative resistor, reactor for improving power factor, noise filter for inverters, L type fitting for connection of electric tube									
Estimated mass (kg)		1.2	1.3	1.6	1.9	3.3	3.4	3.3	3.4	3.4	

NOTE 1: Protective structure is based upon JEM1030 (1977).
IP40 for J100-LF2 series (200 V class, Japanese version)

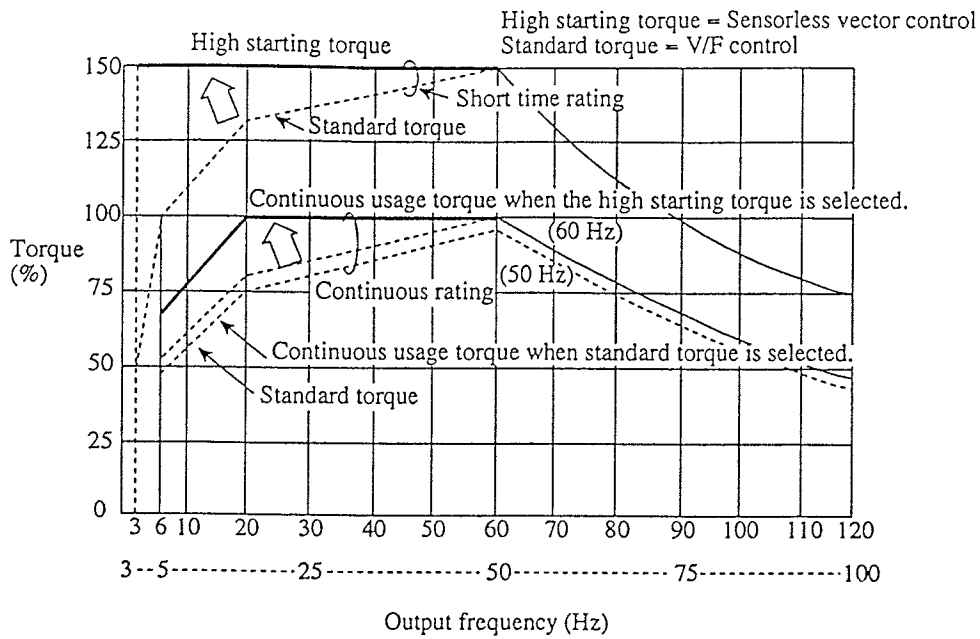
NOTE 2: The applicable motor is a general-purpose motor rated at 230 V (60 Hz)
or 460 V (60 Hz).

NOTE 3: The output voltage will decrease if input voltage decreases.

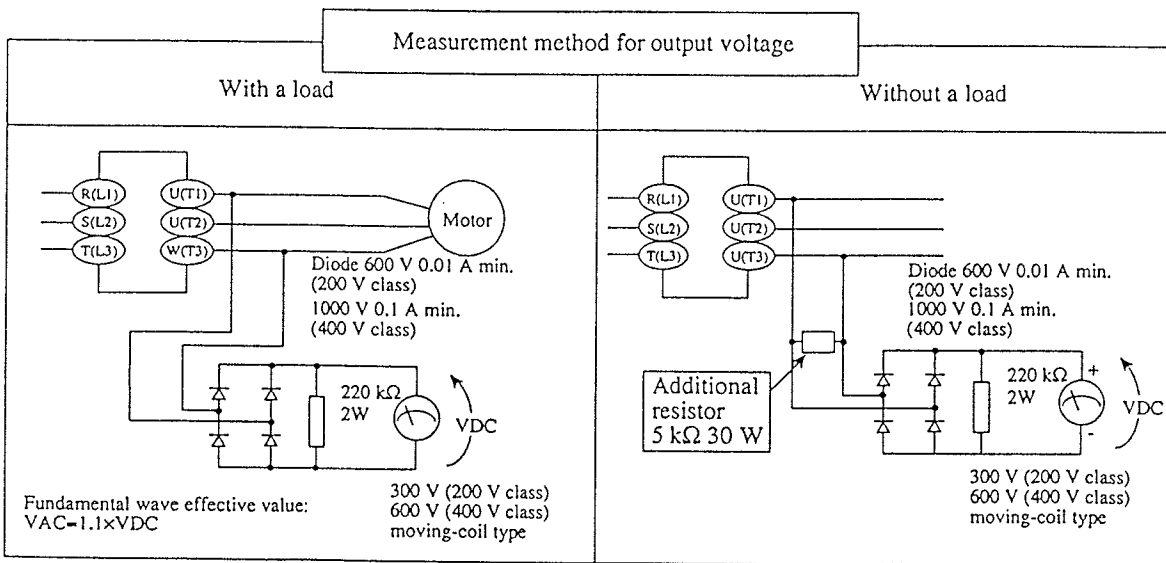
NOTE 4: Confirm with the motor manufacturer the motors maximum rpm when using a
motor running at frequency higher than 50/60 Hz.

NOTE 5: When using the standard four-pole motor, select the high start torque (SLV) at
the rated voltage of the motor.

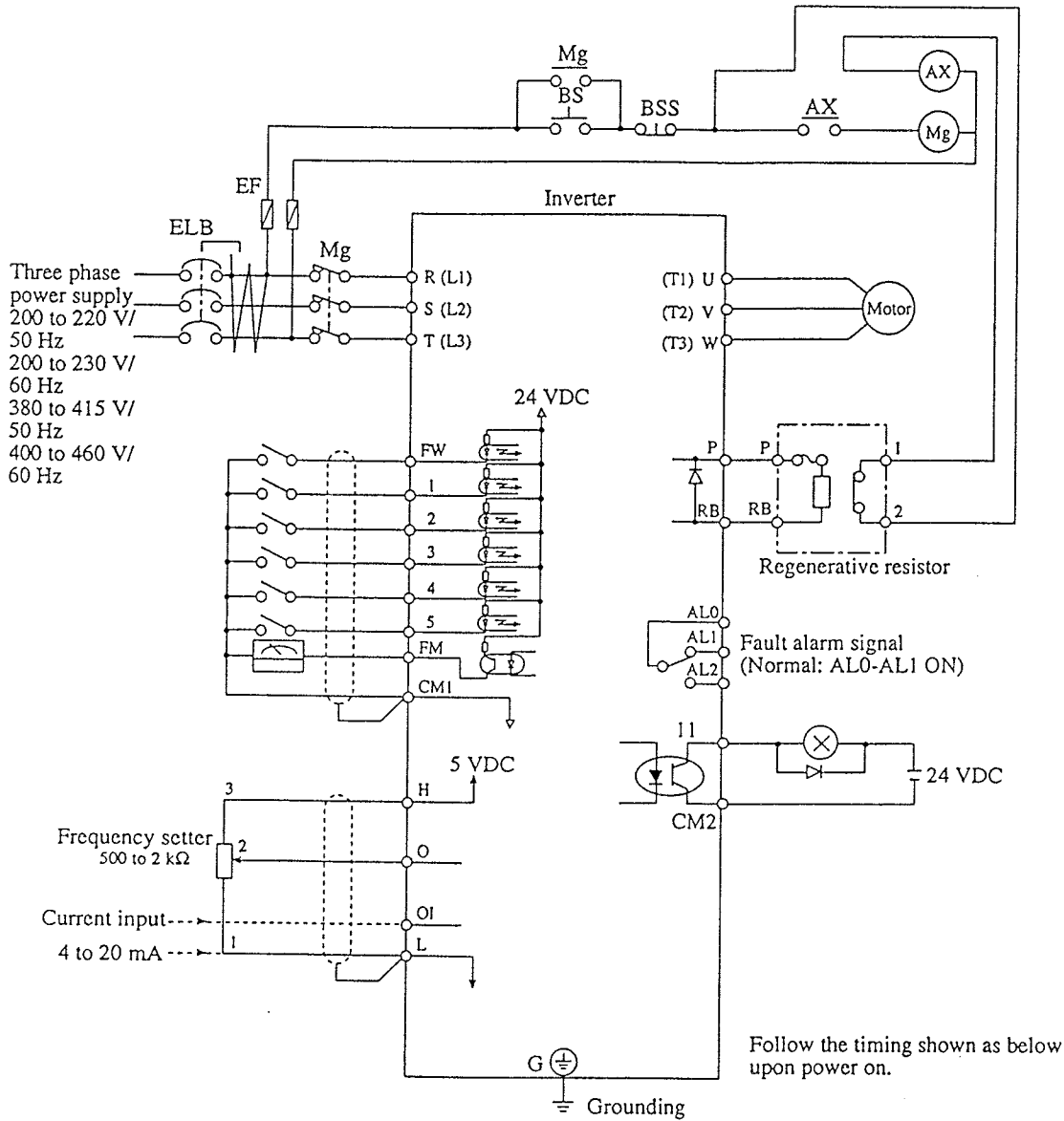
NOTE 6: Torque will be reduced when the base frequency exceeds 50/60 Hz.



NOTE: Using the Hitachi standard four-pole motor



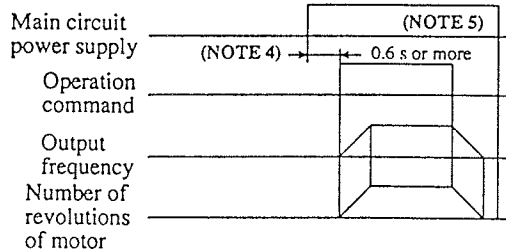
Terminal Connection Diagram



NOTE 1: Common terminal for each terminal is different.

Terminal name	FW, 1, 2, 3, 4, 5, FM	H, O, OI	11
Common	CM1	L	CM2

NOTE 2: The regenerative resistor has a temperature sensor. When it works, turn off power supply to the inverter or set the deceleration time longer.



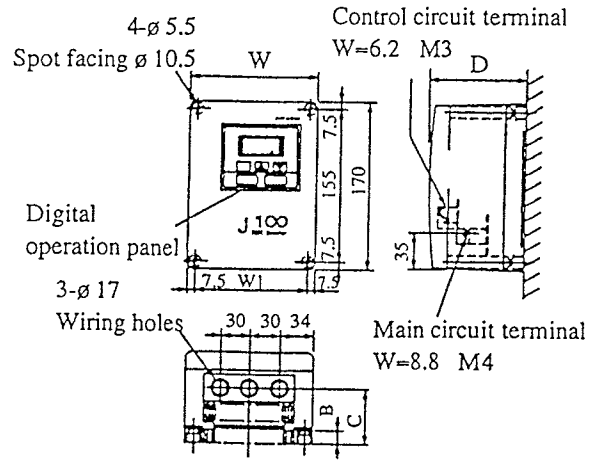
NOTE 3: When the operation command is input first and the main circuit power is turned ON, a direct start results and a trip occurs.

NOTE 4: Do not input the operation command simultaneously when the main circuit is turned on.

NOTE 5: Do not turn OFF the main circuit power during running.

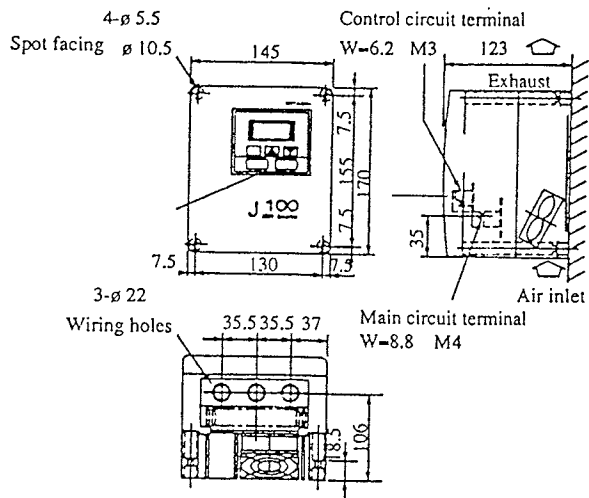
Dimension Diagram

J100-002LFU2/004LFU2/007LFU2
(J100-002LF2/004LF2/007LF2)

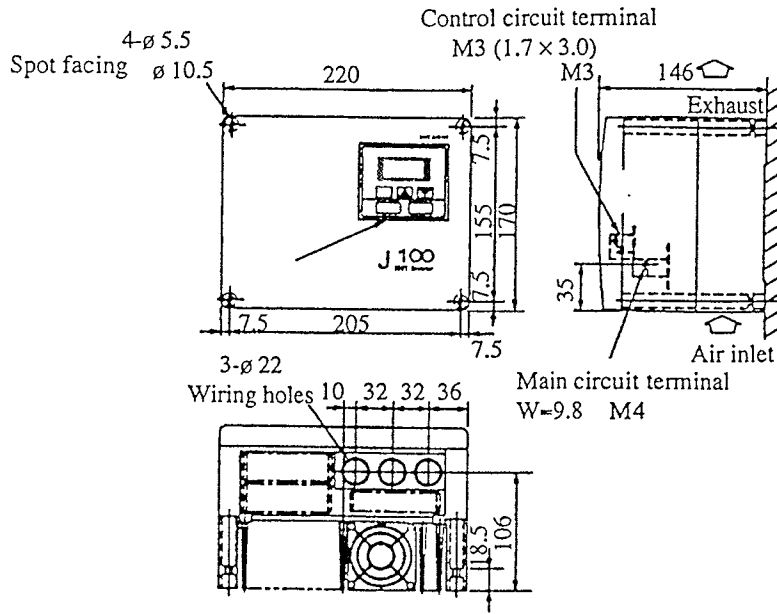


	W	W1	D	C	B
J100-002LFU2 (J100-002LF2)	128	113	93	55	14.5
J100-004LFU2 (J100-004LF2)	128	113	93	55	14.5
J100-007LFU2 (J100-007LF2)	145	130	103	69	18.5

J100-015LFU2
(J100-015LF2)

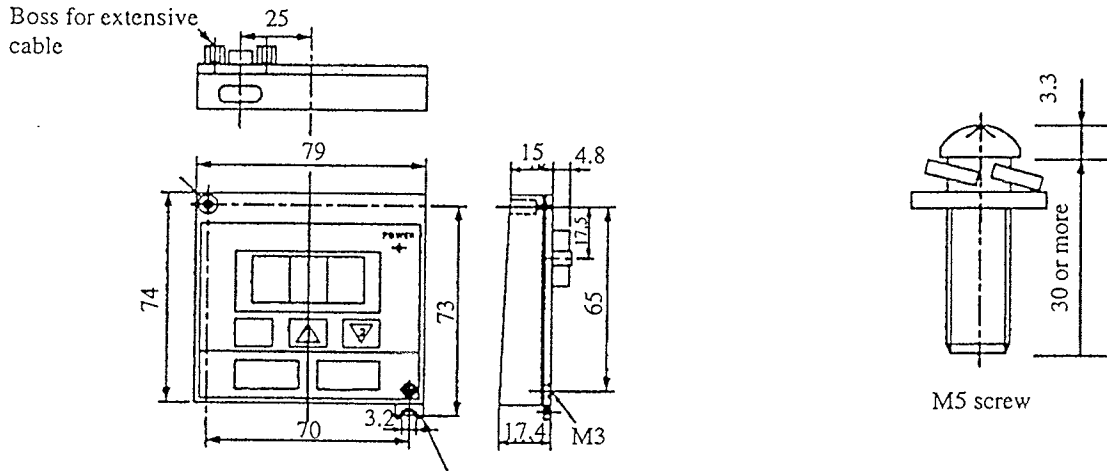


J100-022LFU2/037LFU2/015HFU2/022HFU2/037HFU2
 (J100-022LF2/037LF2/015HF2/022HF2/037HF2)

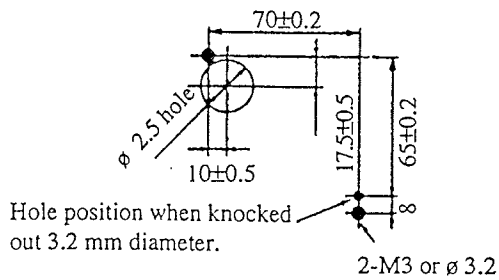


NOTE: Vent covers are provided to Japanese version J100-002 thru 037LF2

Digital operator



This section can be knocked out and mounted with an M3 screw.

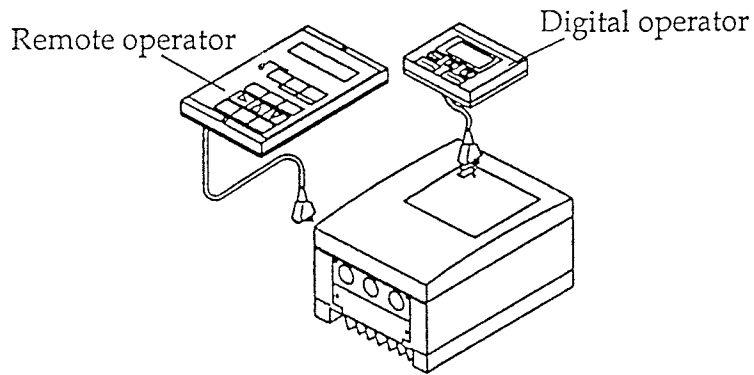


Model	ℓ
J100-002LFU2 J100-004LFU2	25 or more
J100-007LFU2 J100-037LFU2 J100-015HFU2 J100-037HFU2	30 or more

13. FUNCTIONS WHEN USING THE OPTIONAL REMOTE OPERATOR

13.1 Connecting the remote operator

Be sure to turn the power supply off when connecting the connector.

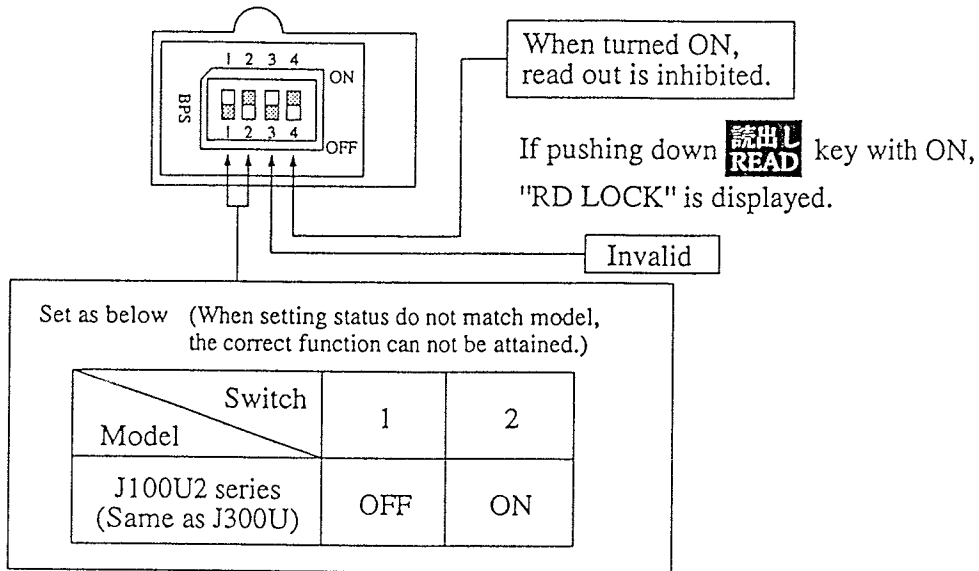


- (1) Insert the connector straight into the remote operator and inverter unit printed-circuit board.
- (2) Turn on the power supply.
- (3) Make sure that the liquid crystal display of the remote operator is lit.

When the power supply of the inverter is turned on, **FS000.0.....** of the monitoring mode will be displayed. If, however, any of the following is displayed when the inverter is turned off, they will be displayed when power is turned on again.

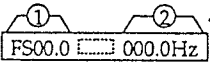
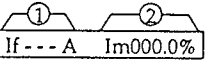
- Frequency setting, multi-speed setting or other frequency displays, motor rotational speed display, frequency conversion display, or output current display.


NOTE: See the operation manual of the remote operator for instructions.
 In addition, see the following pages for details on its various functions. Set the dip-switches mounted on the backside of the remote operator and copy unit as below.



Y : Setting can be changed during operation
 N : Setting cannot be changed during operation
 - : Display only

Monitoring mode displays
 (when the remote operator is used)

Display sequence	Monitor name	Display content	Standard setting	Setting range	Setting and change are possible?	Remarks	Digital operator
1	Frequency setting and output frequency		000.0	000.0 to 375.0	Y	(1) displays the setting. (2) displays the output. • [] is displayed when run instruction is ON. F: Forward run R: Reverse run Displayed during multistage operation.	Monitoring: F1 Setting: F2
	Multistage-speed setting and output frequency	1S005.0 [] 005.0Hz	005.0				
		2S020.0 [] 020.0Hz	020.0				
		3S040.0 [] 040.0Hz	040.0				
		Expansion multistage speed	4S000.0 [] 000.0Hz				
	5S000.0 [] 000.0Hz						
	6S000.0 [] 000.0Hz						
	7S000.0 [] 000.0Hz						
2	Acceleration time setting	ACCEL-1 0010.0S	10.0 (15.0)	0.1 to 2999.9	Y		F6
3	Deceleration time setting	DECEL-1 0010.0S	10.0 (15.0)	0.1 to 2999.9	Y		F7
4	2-stage acceleration time setting	ACCEL-2 0001.0S	1.0	0.1 to 2999.9	Y		A18
5	2-stage deceleration time setting	DECEL-2 001.0S	1.0	0.1 to 2999.9	Y		A19
6	Frequency setting command	F-SET-M Remote	Remote	Remote Terminal	N	REMOTE: Setting from the remote operator TERMINAL: Setting from the inverter terminal	F9
7	Operation command method	F/R-SW Remote	Remote	Remote Terminal	N		
8	Revolution speed display	RPM 4P 00000RPM	4	2 to 48	Y	Synchronized speed display	N.A.
9	Output current display		-	1.5 to 23	Y	(1) displays the rated current of the inverter (2) displays output current	Monitoring: F1
10	DC voltage display	PN-V 000V	-	-	-		Monitoring: F1
11	Manual torque boost adjustment	V-Boost Code<11>	11	00 to 99	Y		F8
12	Output voltage gain adjustment	V-Gain 100%	100	50 to 100	Y		N.A.
13	Analog meter adjustment	M-ADJ 72	72	01 to 99	Y		F10
14	Failure display	# []	-	-	-	#: Normal operation, Alarm content takes precedence over all other displays.	Err
		? ERROR Over V.					
15	Trip history monitor	? ERR COUNT 000	-	-	-	Displays three alarms of the past (Voltage and current upon alarm)	Err (count excluded)

NOTE: When data is changed, be sure to press the  key. (Otherwise, the changed data may not be stored.)

The following functions can be obtained with connection of J-100-series to the remote operator (DOP) or the copy unit (DRW). However, selection is limited within the terminal functions.

Function mode

Display sequence	No.	Function name	Display content (Function mode 2)	Standard setting	Setting range	Remarks	Digital operator																																			
1	F-00	V/F pattern setting	CONTROL VF	VF	SLV1, SLV2 or VF	High starting torque (SLV1, SLV2) standard starting torque (VF)	A0, A1, A2 A62, A63, F5																																			
2	F-01	Maximum frequency adjustment	\pm Fmax. 000.0 Hz	0	0 to 15 (Hz)	Adjustment against the maximum frequency set at F-00	A3																																			
3	F-02	Start frequency adjustment	Fmin. 000.5 Hz	0.5	0.5 to 5.0 (Hz)		A4																																			
4	F-03	Maximum frequency limiter setting	H-LIM-F 000.0 Hz	0	0 to 375 (Hz)	Set the maximum and minimum set frequency. (NOTE 1)	A5																																			
5	F-04	Minimum frequency limiter setting	L-LIM-F 000.0 Hz	0	0 to 375 (Hz)	When 0 is set. : Not valid	A6																																			
6	F-05	Multistage-speed first speed setting	Speed-1 005.0 Hz	5	0 to 375 (Hz)	Setting the multistage speed <table border="1"> <thead> <tr> <th colspan="3">Control circuit terminal</th> <th rowspan="2">Set frequency</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>ON</td> <td>OFF</td> <td></td> <td>(1S) F-05</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>(2S) F-06</td> </tr> <tr> <td>ON</td> <td>ON</td> <td></td> <td>(3S) F-07</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td></td> <td>(4S) F-08</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>ON</td> <td>(5S) F-09</td> </tr> <tr> <td>ON</td> <td>ON</td> <td></td> <td>(6S) F-10</td> </tr> <tr> <td>OFF</td> <td>OFF</td> <td></td> <td>(7S) F-11</td> </tr> </tbody> </table>	Control circuit terminal			Set frequency	1	2	3	ON	OFF		(1S) F-05	OFF	ON	OFF	(2S) F-06	ON	ON		(3S) F-07	ON	OFF		(4S) F-08	OFF	ON	ON	(5S) F-09	ON	ON		(6S) F-10	OFF	OFF		(7S) F-11	A12
Control circuit terminal			Set frequency																																							
1	2	3																																								
ON	OFF		(1S) F-05																																							
OFF	ON	OFF	(2S) F-06																																							
ON	ON		(3S) F-07																																							
ON	OFF		(4S) F-08																																							
OFF	ON	ON	(5S) F-09																																							
ON	ON		(6S) F-10																																							
OFF	OFF		(7S) F-11																																							
7	F-06	Multistage-speed second speed setting	Speed-2 020.0 Hz	20	0 to 375 (Hz)		A13																																			
8	F-07	Multistage-speed third speed setting	Speed-3 040.0 Hz	40	0 to 375 (Hz)		A14																																			
9	F-08	Multi-stage-speed fourth speed setting	Speed-4 000.0 Hz	0	0 to 375 (Hz)		A15																																			
10	F-09	Multistage-speed fifth speed setting	Speed-5 000.0 Hz	0	0 to 375 (Hz)	(NOTE 1)	A16																																			
11	F-10	Multistage-speed sixth speed setting	Speed-6 000.0 Hz	0	0 to 375 (Hz)		A17																																			
12	F-11	Multistage-speed seventh speed setting	Speed-7 000.0 Hz	0	0 to 375 (Hz)		A71																																			
13	F-12	DC braking frequency adjustment	F-DCB 000.5 Hz	0.5	0.5 to 375 (Hz)	Set the starting frequency to perform DC braking.	A20																																			
14	F-13	DC braking force adjustment	V-DCB 010	010	000 to 036 (000 to 020)	Set the DC braking force Maximum is at 020.	A21																																			

Display sequence	No.	Function name	Display content (Function mode 2)	Standard setting	Setting range	Remarks	Digital operator
15	F-14	DC braking time adjustment	T-DCB 000.0 S	1 (s)	00 to 600 (S)	Set the DC braking time. If 0 is set, no DC braking.	A22
16	F-15	Electronic thermal level adjustment	E-therm 100%	100 (%)	120 to 20 (%)		A23
17	F-16	Acceleration selection (Linear, S-curve)	ΔCcline Linear	Linear	Linear S-curve		A28
18	F-17	Deceleration selection (Linear, S-curve)	DEcline Linear	Linear			A29
19	F-18	External frequency setting start	E-START 000.0 Hz	0 (Hz)	0 to 375 (Hz)	Set the relationship of the output frequency against the frequency setting from the terminal. F-START: Minimum set frequency F-END: Maximum set frequency	A26
20	F-19	External frequency setting end	E-END 000.0 Hz	0 (Hz)	0 to 375 (Hz)		A27
21	F-20	Switch selection 1	SWITCH1 DCB OFF	See the left	DCB ON/OFF	① DC braking Yes/No	A55
			SWITCH1 FM ANA		FM ANA/DIG	② Frequency monitor: Analog meter/Digital meter	A50
			SWITCH1 fmax 120		Imax 120/360	③ Switch the maximum frequency 120/360 Hz	A64
			SWITCH1 PWER ALM		PWER ALM/ZST	④ Trip/Retry function (Restart upon undervoltage) (NOTE 2)	A34
			SWITCH1 DIOP FWD		DIOP FWD/REV	⑤ Switch the motor revolution direction with the digital operator	F4
			SWITCH1 FWD ON		FWD ON/OFF	⑥ Direction of the motor revolution ON/OFF (Forward)	A41
			SWITCH1 REV ON		REV ON/OFF	⑦ Direction of the motor revolution ON/OFF (Reverse)	A42
			SWITCH1 OLMT ON		OLMT ON/OFF	⑧ Overload limiter	A32

Display sequence	No.	Function name	Display content (Function mode 2)	Standard setting	Setting range	Remarks	Digital operator
22	F-21	Switch selection 2	SWITCH2 DB LVL	See the left	DB EDG/LVL	① DC braking edge/level selection	A56
			SWITCH2 STOP ON		STOP ON/OFF	② STOP key is effective when external run is selected.	A43
			SWITCH2 Ethm 000		Ethm 000/100	③ Electronic Thermal relay is selected.	A24
			SWITCH2 SLOK OFF		SLOK OFF/ON	④ Setting frequency in software lock (Invalid from the terminal)	A53
			SWITCH2 AIN 5V		AIN 5V/10V	⑤ Setting voltage for analog input. NOTE: Even if either VOL or CUR is selected, the total output frequency of both analog input signals is displayed.	A48
			SWITCH2 AIN TER		AIN TER/PAN	⑥ Be sure to select TER.	N.A.
23	F-22	Switch selection 3	SWITCH3 SOFTFREE	See the left	SOFT LOCK/FREE	① Data is changed or not. (NOTE 3)	A84
			SWITCH3 FARV 2		FARV 1/2	② Selection of frequency arrival (2: Set frequency 1: Any frequency)	A49
			SWITCH3 TRIP OFF		TRIP OFF/ON	③ Selection of neglect of undervoltage trip upon stop	A35
			SWITCH3 DEBG OFF		DEBG OFF/ON	④ Must be OFF.	N.A.
			SWITCH3 TCNT CNT		CNT/CLR	⑤ Trip history clear selection	A57
24	F-23	Switch selection 4	SWITCH4 MON FM		MON FM/CUR	Monitoring selection FM: Frequency monitoring CUR: Current monitoring	A51
25	F-24	Switch selection 5	SWITCH5 RUN 1	See the left	RUN 1/2	① RUN signal output selection 1: Output during operation 2: Output during operation and DC braking	A52
			SWITCH5 AVR ON		AVR ON/OFF	② AVR value delection for deceleration ON: The AVR value is the same as the V-SET value. OFF: An optional AVR value can be delected by DEC-V	A36
			SWITCH5 LAD ON		LAD ON/OFF	③ LAD stop function selection ON: LAD stop sunction (NOTE 4) OFF: No LAD stop function	A33
			SWITCH5 RVS ON		RVS ON/OFF	④ Reduced voltage start ON/OFF	A58

Display sequence	No.	Function name	Display content (Function mode 2)	Standard setting	Setting range	Remarks	Digital operator	
26	F-25	Overload limiter constant setting	<u>L</u> M.CONS 150%01.0	150 (%) /1.0	50 to 150 (%) /0.3 to 31.0 (NOTE 5)	Set the overload limit level and deceleration time	A31, A85	
27	F-26	Allowable undervoltage time setting	<u>I</u> PS-T 001.0 S	1.0 (S)	0.3 to 3.0 (S)		A82	
28	F-27	Standby time after undervoltage setting	<u>I</u> PS-R-T 0010.0 S	10.0 (S)	0.3 to 100.0 (S)		A83	
29	F-28	Dynamic braking usage ratio setting	<u>B</u> RD-%ED 05.0%	5.0 (%)	0.1 to 31.0 (%) (NOTE 6)	Set the allowable usage ratio of regenerative resistor to over 100 seconds	A38	
30	F-29	Frequency arrival setting	<u>S</u> PD-ARV ACC100%	ACC	ACC or DEC	Rate to the maximum frequency which is set in Item F-00 or F-01	A39	
			<u>S</u> PD-ARV DEC100%	100%	0 to 100 %		A40	
31	F-30	Carrier frequency setting	<u>C</u> ARRIER 16 kHz	16	5, 8, 12, 16 (kHz)		A10	
32	F-31	Input voltage setting	<u>V</u> -SET 230V	230 (460) (NOTE 8)	200, 220, 230, 240 V	Set the motor voltage (NOTE 7)	F11, F5	
			<u>S</u> PD-ARV ACC100%		[380, 400, 415, 440, 460, 480]			
33	F-32	AVR voltage selection for deceleration	<u>D</u> EC-V 230V	230 (460) (NOTE 8)	200, 220, 230, 240, 250, 270, 000 V [380, 400, 415, 440, 460, 480, 500, 540, 000]	This is effective when AVR OFF is selected in Item of Switch selection 5. *When AVR OFF is selected, the cursor will not move. (NOTE 7)	A37	
34	F-33	Jump frequency 1	<u>J</u> UMP-F1 000.0Hz	0	0 to 375 (Hz)	Up to 3 locations can be set. 0 means invalid.	A7	
35	F-34	Jump frequency 2	<u>J</u> UMP-F2 000.0Hz	0	0 to 375 (Hz)		A8	
36	F-35	Jump frequency 3	<u>J</u> UMP-F3 000.0Hz	0	0 to 375 (Hz)		A9	
37	F-36	Jump frequency width	<u>J</u> MP-WID 0.5Hz	0.5	0 to 9.9 (Hz)		A68	
38	F-37	Overload previous notice level	<u>O</u> Lalarm 150%	150	50 to 150 (%)	ON level of overload previous notice signal	A30	
39	F-38	Intelligent terminal input terminal setting	Input terminal 1	<u>I</u> N-TM 1 CF 1	Same as left	REV/CF1/CF2 CF3/DB/STN SET/2CH/FRS EXT/USP/RS SFT	REV: Reverse running command	C0
			Input terminal 2	<u>I</u> N-TM 2 USP (NOTE 9)			CF1: 1st multispeed switching	C1
			Input terminal 3	<u>I</u> N-TM 3 2CH			CF2: 2nd multispeed switching	C2
			Input terminal 4	<u>I</u> N-TM 4 RS			CF3: 3rd multispeed switching	C3
			Input terminal 5	<u>I</u> N-TM 5 REV			DB: External DB input	C4
		Input terminal 1 NO/NC setting	<u>I</u> N-TM O/C-1 NO	Same as left	NO/NC	STN: Initialization	C20	
		Input terminal 2 NO/NC setting	<u>I</u> N-TM O/C-2 NC (NOTE 10)			SET: 2nd setting function switching		
		Input terminal 3 NO/NC setting	<u>I</u> N-TM O/C-3 NO			2CH: 2-stage acceleration and deceleration switching		
		Input terminal 4 NO/NC setting	<u>I</u> N-TM O/C-4 NO			FRS: Free run input		
		Input terminal 5 NO/NC setting	<u>I</u> N-TM O/C-5 NO			EXT: External trip terminal		
USP: USP function RS: Reset input SFT: Software lock input NO: a contact NC: b contact When the corresponding terminal is the [RS] terminal, only the NO operation is performed. (Even when NC is set, * display remains but the setting is returned to NO.)								

Display sequence	No.	Function name	Display content (Function mode 2)	Standard setting	Setting range	Remarks	Digital operator
40	F-39 Intelligent terminal output terminal setting	Output terminal 11	<u>OUT-TM</u> 1 AR	AR	AR/RUN/OL	AR: Speed arrival signal RUN: During on-line signal OL: Overload previous notice signal NO: a contact NC: b contact	C10
		Output terminal 11 NO/NC setting	<u>OUT-TM</u> O/C-1 NO	NO	NO/NC		C21
		Alarm output NO/NC setting	<u>OUT-TM</u> O/C-A NC	NC			
41	F-40	External frequency command input sampling count setting	<u>SAMP-F</u> 08	08	1 to 8 (times)	When the frequency is low, the external frequency command may malfunction due to noise.	A11

NOTE 1: In the case of standard setting, up to 135 Hz (120 Hz + 15 Hz) can be set. When (3) the maximum frequency to be switched by Switch Selection 1 in the standard mode F-20 is set to 360 Hz, up to 375 Hz (360 Hz + 15 Hz) can be set.

When a high frequency is to be selected, please sufficiently examine the mechanical strength of the motor and load. Particularly the general purpose motor is designed at 50 or 60 Hz. Therefore, when the running frequency is more than it, contact the manufacturer of motor beforehand.

NOTE 2: In the case of retry, the starting frequency is 0.

NOTE 3: Even in the enabled state, when the software lock terminal [SFT] is on, the equipment is in the disabled state.

NOTE 4: When the current becomes more than 150% of the rating of load current, the acceleration and deceleration will be halted.

NOTE 5: When the deceleration time is set to 31.0 by F-25 LM CONS, this function will not be performed.


NOTE 6: When F-28 BRD-%ED is set to 31%, the damping circuit will not be operated.

NOTE 7: When F-24 switch 5 AVR is ON, the value of F-32 DEC-V is forcibly set to the value of F-31 V-SET.

NOTE 8: Standard setting of J100₂ series is 200 (400).

NOTE 9: Standard setting of J100₂ series is CF2.

NOTE 10: Standard setting of J100₂ series is NO.

- Function mode operation when using the remote operator
 - After data is changed, be sure to push down the  key.
 - Change data when the inverter is stopped. No data can be changed when the inverter is tripped and stopped.
 - In the function mode, the motor can not be started running. Select the monitor mode beforehand.

Function name: V/F pattern setting
Function No. to be set F-00.

Function contents.

- Set the control system of the inverter.

NOTE 1: Do not set 0 for motor constants (A, B, C) (Motor constant > 0).

NOTE 2: Ask the motor manufacturer about motor constants (A, B, C) when setting SLV2.

NOTE 3: Set the motor capacity and motor pole number for running at a high start torque. If the motor constants do not match the motor, adequate performance can not be obtained.

NOTE 4: When running multiple motors, high start torque can not be used.

NOTE 5: Any initial setting is automatically reset to the factory-set value.

Setting
SLV1 3.7 kW 4P

Example of setting SLV1 2.2 kW 2P

	F-00	CONTROL	
	CONTROL	SLV1	
	SLV1	F060-060	
	SLV1	F060-060	
	SLV1	K 3.7 K	
	SLV1	K 3.7 K	
	SLV1	*K 2.2 K	
	SLV1	K 2.2 K	
	SLV1	K 2.2 K	
	SLV1	P 4P	
	SLV1	P 4P	
	SLV1	*P 2P	
	SLV1	P 2P	

Setting items

```

F-00 CONTROL  -->[FUN]--> CONTROL VF  -->[FUN]--> VF-VC 60-60
  
```

CONTROL High start torque SLV1 (Hitachi general purpose motor) High start torque SLV2 (Dedicated purpose motor)	Standard torque VF VC (Constant torque) VP1 (Reduced torque to the 1.5th power) VP2 (Reduced torque to the 1.7th power) VP3 (Reduced torque to the 2nd power)	F (Set basic frequency-Maximum frequency) K (Motor capacity) P (Motor pole count)	A B C CD J	Motor constants Motor stabilization constants Load inertia constant *	Basic frequency Maximum frequency
---	---	---	------------------------	---	--------------------------------------

* Setting J

J	Load inertia
1	Light
↑	
↓	
15	Heavy

Protective function displayed when using the remote operator

Description	Contents	Display	
Power module protection	When output of an inverter is short circuited or the motor is locked, a large current flows through the inverter and causes a fault. When the current flowing through the power module or a temperature abnormality of the main devices comes to certain level, the output is cut off.	Constant speed	PM. Drive
		Dec.	PM. Decel
		Acc.	PM. Accel
		Stop	PM. ERR
Over-current protection (NOTE1)	The output current of the inverter is detected. When it exceeds the specified value, the output is turned off.	Constant speed	OC. Drive
		Dec.	OC. Decel
		Acc.	OC. Accel
		Stop	OC. ERR
Overload protection (NOTE1)	When a motor overload is detected the inverter's built in thermostat detects it and the output of the inverter is cut off.	Over. L	
Braking resistor overload	When regenerative braking resistor exceeds the usage time ratio, an overvoltage caused by the stop of the BRD function is detected, and output of the inverter is cut off.	OL. BRD	
Over-voltage protection	When the converter voltage exceeds a certain level due to regenerative energy from the motor, this protection function engages, and the output of inverter is cut off.	Over. V	
	This is an error display when the voltage supplied to the inverter exceeds the specified value.	OV. SRC	
EEPROM error	When the memory built in has problem by noise and excessive temperature rise, protective function works and output of inverter is cut off.	EEPROM	
Under-voltage protection	A decrease of the input voltage of an inverter results in improper function of the control circuit. It also generates motor heat and causes low torque. Output is cut off when the input voltage goes down to less than a 150 to 160V (200V class), 300 to 320V (400V class).	Under. V	
CT error	When a large noise source is near the inverter or an abnormality occurs on built-in CT, the output of the inverter is cut off.	CT	
CPU error	Malfunction or abnormality on built in CPU and the output of the inverter is cuts off.	CPU	
External trip	An abnormality signal from external equipment cuts off the output of the inverter. (When the external trip function is selected)	EXTERNAL	
USP error	It indicates an error when power is turned on while the inverter is being run. (When USP function is selected)	USP	
Ground fault protection	The inverter is protected by detection of ground fault between the inverter output and the motor upon power on. There may be the possibility of power module failure.	GND Flt	

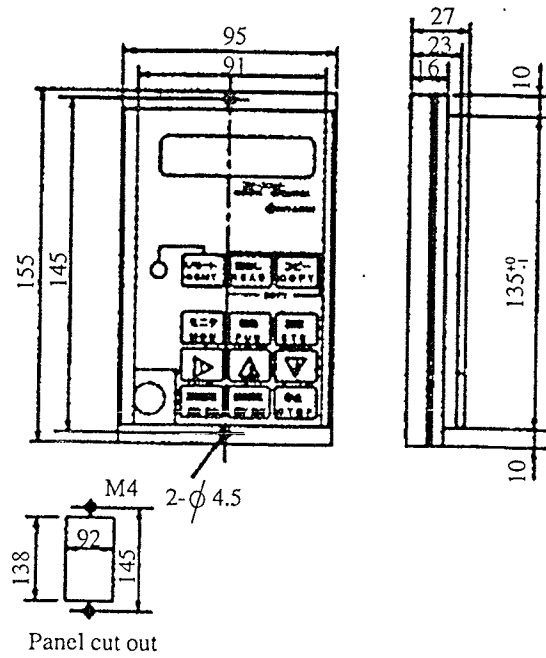
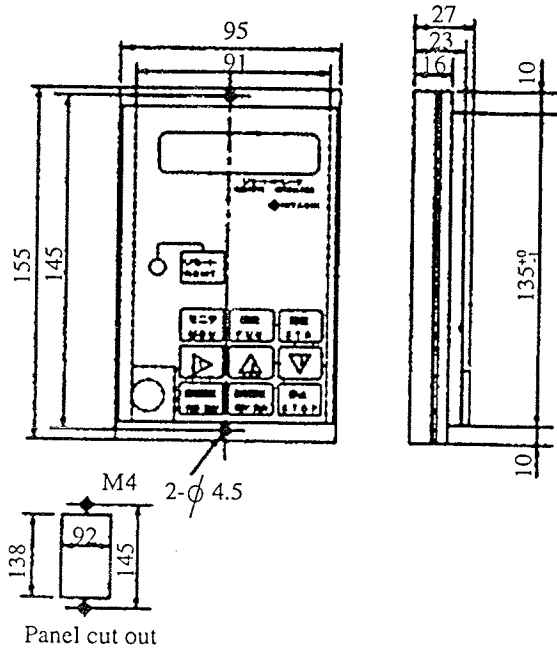
NOTE1: If a trip occurs, press the reset key after an elapse of 10 seconds to restore the inverter.

Remote operator/Copy unit

Dimension (unit:mm)

Remote operator (DOP-0EA)

Copy unit (DRW-0EA2)



J100 CABLE

Extension cable for connector between the J100 and the remote operator

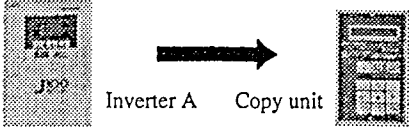
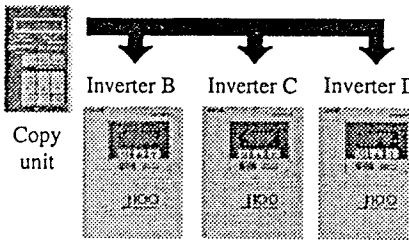
Extension cable for connector between the J100 and the remote operator or the copy unit


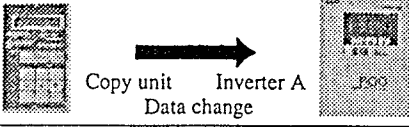
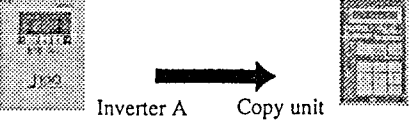
(ICJ-1, ICJ-3)


(ICA-1J, ICA-3J)

NOTE 1: Shape of the cable for the J100U series is different from that of the VWS3D and VWAU. Only the cable can be provided when changing the cable.

Copy unit function

Operation example (Procedure to transfer the data of inverter A to B,C, and D inverters)			
Se- quence	Operation	Key	Operation result
1	Set data is read out from the inverter A (It is stored into the memory).	読出し READ	
2	Turn off the power supply to inverter A and remove the cable.	—	—
3	Connect the cable to inverter B and turn on the power.	—	—
4	Copy data stored in the copy unit is written to inverter B.	コピー COPY (* 1)	
5	Cut off the power supply to inverter B. (* 1)	—	
6	Perform the above processes from 3 to 5 sequentially for inverters C and D. That is, the same process as at for inverter B.	—	

Operation example (Process to change and transfer to inverters B, C and D)			
1	Connect the cable and press the remote key. Change the data of the inverter with copy unit.	モニター MON 機能 FUN 記憶 STR 	
2 to 6	Read out the data from inverter A (It is stored into the memory area of the copy unit). The following procedures are the same those of the operation 1. Change the data setting first.	読出し READ	

*1 When pressing any key or resetting the unit after the  key is pressed, be sure to wait for at least six seconds. (When any key is pressed, the unit is reset, or the power is turned off within six seconds, the data may not be copied.)

NOTE 1: The following settings cannot be copied by the copy function. Note that the current set data is saved as it is.

- Monitor mode
 - Analog meter adjustment
 - Trip history monitor
 - (Counts of latest three alarms)

- Function mode
 - F-23 Switch selection 4
 - F-24 Switch selection 5
 - F-32 AVR voltage selection for deceleration
 - F-33 Jump frequency 1
 - F-34 Jump frequency 2
 - F-35 Jump frequency 3
 - F-36 Jump frequency width
 - F-37 Overload previous notice level
 - F-38 Intelligent input terminal setting
 - F-39 Intelligent output terminal setting
 - F-40 Setting of external frequency command sampling times

NOTE 2: Do not copy the setting from the 200 V class to the 400 V class or from the 400 V class to the 200 V class. (When the setting is copied to a different voltage class by mistake, reset F-31 V-SET (motor voltage setting).)

NOTE 3: Do not copy the setting from the Japanese version to the European or American version or from the European or American version to the Japanese version.

NOTE 4: When the V/f control setting data is copied from a different capacity (for example, copied from J100-004LFU2 to J100-022LFU2), change the kW setting of F-00 CONTROL to the kW value of the applied motor.

14. SERVICE

When inquiring about inverter trouble, please be ready to inform the shop where you purchased your unit or the nearest service station the following.

- (1) Type
- (2) Purchased date
- (3) Manufacturing No. (MFG. No.)
- (4) Malfunction symptoms

If the contents are unclear due to an old nameplate, give only the clear items. To reduce the non-operation time, it is recommended to stock a spare inverter.

Warranty

The warranty period under normal installation and handling conditions shall be one (1) year after the date of delivery. The warranty shall cover the repair of only the inverter to be delivered.

1. Service in the following cases, even within the warranty period, shall be charged to the purchaser.
 - (a) Malfunction or damage caused by misoperation or remodelling or improper repair
 - (b) Malfunction or damage caused by a drop after purchase and transportation
 - (c) Malfunction or damage caused by fire, earthquake, flood, thunderbolt, or other natural calamities, pollution or abnormal voltage.
2. When service is required for the product at your worksite, all expenses associated with field repair shall be charged to the purchaser.
3. Always keep it handy. Please do not lose it. We are sorry but this manual can not re-issued.

Appendix 1 J100 series data setting values (For the digital operator)

J100 series inverters provide many functions and their parameters can be set by the user. It is recommended to record the parameters that have been set by the user, in order to speed the investigation and repair in the event of a failure.

Inverter model J100

MFG. No.

} This information is written on the nameplate located on the side cover of the inverter.

For the digital operator

Display sequence	Function name	Standard setting		Set value
		J100U2	J100 ₂	
F1	Setting frequency and output frequency	—		
F2	Setting output frequency	0.0		
F4	Direction of the motor revolution	F		
F5	Setting V/F pattern	08 (00)		
F6	Setting acceleration time	10.0 (15.0)		
F7	Setting deceleration time	10.0 (15.0)		
F8	Setting torque boost	11		
F9	Switch over of the digital operator and terminal mode	03		
F10	Analog meter adjustment	72		
F11	Setting input voltage	230 (460)	200 (400)	
F14	Setting extension function	0		

NOTE: The value in the parentheses is for 400 V class.

(2) Extension Function Mode

Command display	Function name	Standard setting		Remarks
		J100U2	J100 ₂	
A 0	Control method	0		
A 1	Motor capacity setting	NOTE 1		
A 2	Motor poles setting	4		
A 3	Maximum frequency adjustment	0.0		
A 4	Start frequency adjustment	0.5		
A 5	Upper frequency limiter setting	0		
A 6	Lower frequency limiter setting	0		
A 7	Jump frequency setting 1	0		
A 8	Jump frequency setting 2	0		
A 9	Jump frequency setting 3	0		
A10	Carrier frequency setting	16		
A11	Frequency command sampling setting	8		
A12	Multispeed first speed setting	5		
A13	Multispeed second speed setting	20		
A14	Multispeed third speed setting	40		
A15	Multispeed fourth speed setting	0		
A16	Multispeed fifth speed setting	0		
A17	Multispeed sixth speed setting	0		
A18	2-stage acceleration time setting	1.0		
A19	2-stage deceleration time setting	1.0		
A20	DC braking frequency setting	0.5		
A21	DC braking force adjustment	10		
A22	DC braking time adjustment	1		
A23	Electronic thermal level adjustment	100		
A24	Electronic thermal characteristic selection	0		
A26	External frequency setting start	0		
A27	External frequency setting end	0		
A28	Acceleration selection (Linear, S-curve)	0		
A29	Deceleration selection (Linear, S-curve)	0		
A30	Overload previous notice signal setting	150		
A31	Overload limit level setting	150		
A32	Overload limit content selection	0		
A33	LAD stop function setting	0		
A34	Trip/retry function selection	0		
A35	Trip ignorance selection	0		
A36	AVR voltage setting for deceleration	0		
A37	Motor voltage setting for deceleration	230 (460)	200 (400)	
A38	Dynamic braking usage ratio	5		
A39	Optional arrival frequency for acceleration	100		

Command display	Function name	Standard setting		Remarks
		J100U2	J100 ₂	
A 40	Optional arrival frequency for deceleration	100		
A41	Forward rotation	1		
A42	Reverse rotation	1		
A43	Stop key ON/OFF selection	0		
A48	Analog input selection	0		
A49	Frequency arrival signal output method	2		
A50	Analog/digital meter selection	1		
A51	Frequency/current monitoring selection	0		
A52	RUN signal output selection	1		
A53	Enable/disable of frequency setting for software lock	0		
A55	DC braking ON/OFF selection	0		
A56	DC braking edge/level selection	1		
A57	Trip history clear selection	0		
A58	Reduced voltage start selection	1		
A62	Base frequency setting	60		
A63	Maximum frequency setting	60		
A64	Maximum frequency switching	0		
A68	Jump frequency range setting	0.5		
A71	Multispeed seventh speed setting	0		
A80	Frequency command adjust. (voltage)	NOTE 2		
A81	Frequency command adjust.(current)	NOTE 2		
A82	Allowable undervoltage time setting	1.0		
A83	Undervoltage retry waiting time	10.0		
A84	Software lock selection	0		
A85	Deceleration rate setting for overload limit	1.0		
C0	Input terminal setting 1	1		
C1	Input terminal setting 2	10	2	
C2	Input terminal setting 3	7		
C3	Input terminal setting 4	11		
C4	Input terminal setting 5	0		
C10	Output terminal setting	0		
C20	Input terminal a and b contact setting	02	00	
C21	Output terminal a and b contact setting	03		

NOTE 1: The most applicable motor capacity of the inverter is set.

NOTE 2: The initial setting of each inverter is adjusted when shipped from the factory.

NOTE 3: The value in the parentheses is for 400 V class standard setting.

Appendix 2 J100 series data setting values (For the remote operator)

J100 series inverters provide many functions and their parameters can be set by the user. It is recommended to record the parameters that have been set by the user, in order to speed the investigation and repair in the event of a failure.

Inverter model J100

MFG. No.

} This information is written on the nameplate located on the side cover of the inverter.

Monitor mode

NO.	Monitor name	Display content	Set value
1	Frequency setting and output frequency	FS000.0 000.0Hz	
		1S005.0 005.0Hz	
	Multistage speed setting and output frequency	2S020.0 020.0Hz	
		3S040.0 040.0Hz	
		Expansion multistage speed	4S000.0 000.0Hz
	5S000.0 000.0Hz		
	6S000.0 000.0Hz		
	7S000.0 000.0Hz		
2	Acceleration time setting	ACCEL-1 010.0S <small>(NOTE)</small>	
3	Deceleration time setting	DECEL-1 010.0S <small>(NOTE)</small>	
4	2-stage acceleration time setting	ACCEL-2 001.0S	
5	2-stage deceleration time setting	DECEL-2 001.0S	
6	Frequency setting command	F-SET-M Remote	
7	Operation command method	F/R-SW Remote	
8	Revolution speed display	RPM 4P 00000RPM	———
9	Output current display	If - - - A Im000.0%	———
10	DC current display	PN-V 000V	———
11	Output voltage gain adjustment	V-Boost Code <11>	
12	Output voltage gain adjustment	V-Gain 100%	
13	Analog meter adjustment	M-ADJ 72	
14	Trip display	# <input type="text"/>	———
		?ERROR Over V.	In case of over voltage tripping
15	Trip history	?ERR COUNT 000	———

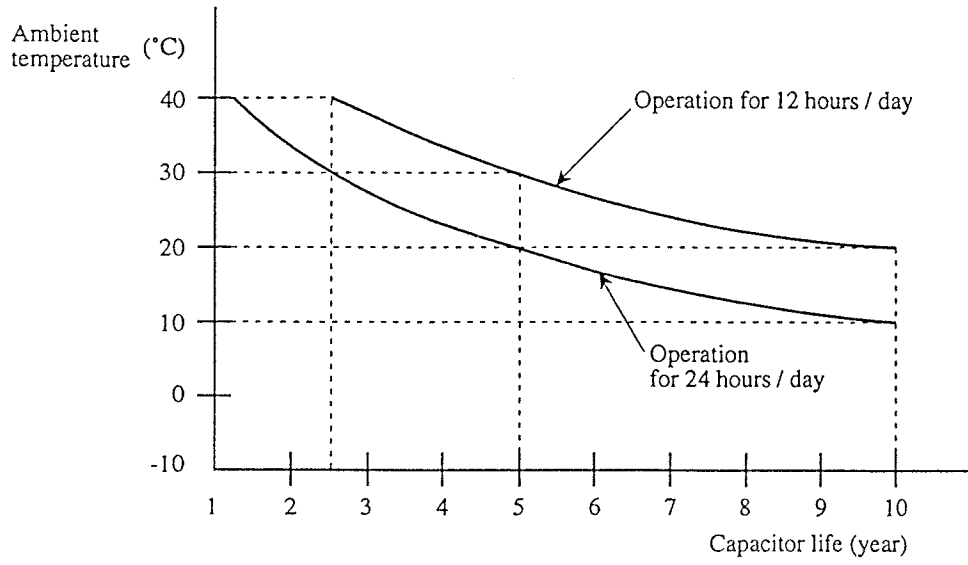
NOTE : The value of 400 V class is 15.0s.

Function mode

Display sequence	Function name		Standard setting		Set value
			J100U2	J1002	
F-00	V/F pattern setting		V/F-VC 060-060		
F-01	Maximum frequency adjustment		0		
F-02	Start frequency adjustment		0.5		
F-03	Maximum frequency limiter setting		0		
F-04	Minimum frequency limiter setting		0		
F-05	Multistage-speed first speed setting		0 (Hz)		
F-06	Multistage-speed second speed setting		0 (Hz)		
F-07	Multistage-speed third speed setting		0 (Hz)		
F-08	Multistage-speed fourth speed setting		0 (Hz)		
F-09	Multistage-speed fifth speed setting		0 (Hz)		
F-10	Multistage-speed sixth speed setting		0 (Hz)		
F-11	Multistage-speed seventh speed setting		0 (Hz)		
F-12	DC braking frequency adjustment		0.5 (Hz)		
F-13	DC braking force adjustment		010		
F-14	DC braking time adjustment		1 (S)		
F-15	Electronic thermal level adjustment		100 (%)		
F-16	Acceleration selection(Linear, Curve)		Linear		
F-17	Deceleration selection(Linear, Curve)		Linear		
F-18	External frequency setting start		0 (Hz)		
F-19	External frequency setting end		0 (Hz)		
F-20	Switch selection 1	Set DC braking	DCB OFF		
		Switch of frequency monitor	FM ANA		
		Switch of the maximum frequency	fmax 120		
		Switch of trip and retry	PWER ALM		
		Switch of the motor direction when using the digital operator	DIOP FWD		
		Direction of the motor (Forward)	FWD ON		
		Direction of the motor (Reverse)	REV ON		
F-21	Switch selection 2	Overload limiter	OLMT ON		
		DC braking edge/level selection	DB LVL		
		[Stop]key is effective when external run is selected	STOP ON		
		Selection of electronic thermal characteristic	Ethm 000		
		Selection of software lock	SLOK OFF		
		Setting voltage for analog input	AIN 5V		
F-22	Switch selection 3	Selection of analog input	AIN TER		
		Selection of data change	SOFTFREE		
		Selection of frequency arrival	FARV 2		
		Selection of neglect of trip	TRIP OFF		
		Debug mode display	DEBG OFF		
F-23	Switch selection 4	Trip history clear	TCNT CNT		
		Monitoring selection	MON FM		
F-24	Switch selection 5	RUN signal output selection	RUN 1		
		AVR value selection for deceleration	AVR ON		
		LAD stop function selection	LAD ON		
		Selection of reduced voltage start	RVS ON		
F-25	Overload limiter constant		150% 1.0		
F-26	Allowable undervoltage time		001.0S		
F-27	Stand by time after undervoltage setting		0010.0S		
F-28	Dynamic braking usage ratio setting		5.0		
F-29	Frequency arrival setting		ACC, DEC 100%		ACC DEC
F-30	Carrier frequency setting		16 kHz		
F-31	Input voltage setting		230 V	200 V	
			(460 V)	(400 V)	
F-32	AVR voltage setting for deceleration		230 V	200 V	
			(460 V)	(400 V)	

Display sequence	Function name	Standard setting		Set value	
		J100U2	J100 ₂		
F-33	Jump frequency 1	0			
F-34	Jump frequency 2	0			
F-35	Jump frequency 3	0			
F-36	Jump frequency width	0.5			
F-37	Overload previous notice level	150%			
F-38	Intelligent terminal input terminal setting	Input terminal 1	CF1		
		Input terminal 2	USP	CF2	
		Input terminal 3	2CH		
		Input terminal 4	RS		
		Input terminal 5	REV		
		Input terminal 1 NO/NC setting	NO		
		Input terminal 2 NO/NC setting	NC	NO	
		Input terminal 3 NO/NC setting	NO		
		Input terminal 4 NO/NC setting	NO		
		Input terminal 5 NO/NC setting	NO		
F-39	Intelligent terminal output terminal setting	Output terminal 11	AR		
		Output terminal 11 NO/NC setting	NO		
		Alarm output NO/NC setting	NC		
F-40	External frequency command input sampling count setting	08			

Appendix 3 Capacitor Life Curve



* When the inverter is stored in the panel, the ambient temperature is the temperature in the panel.