

*FRENIC-Multi*

## Digital Interface Option "OPC-E1-DIO"

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### **CAUTION**

Thank you for purchasing our digital interface option.

- Read through this instruction manual and be familiar with the digital interface option before proceeding with installation, connections (wiring), operation, or maintenance and inspection.
- Improper handling might result in incorrect operation, a short life, or even a failure of this product as well as the motor.
- Deliver this manual to the end user of this product. Keep this manual in a safe place until this product is discarded.

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## Preface

Thank you for purchasing our digital interface option.

Mounting the digital interface option on your FRENIC-Multi makes it possible to specify frequency commands with binary code (8 or 12 bits) or BCD (4-bit Binary Coded Decimal) code. It also enables monitoring with 8-bit binary code.



This instruction manual does not contain inverter handling instructions. Read through this instruction manual in conjunction with the FRENIC-Multi Instruction Manual and be familiar with proper handling and operation of this product. Improper handling might result in incorrect operation, a short life, or even a failure of this product.

Keep this manual in a safe place.

### ■ Safety precautions

Read this manual thoroughly before proceeding with installation, connections (wiring), operation, or maintenance and inspection. Ensure you have sound knowledge of the device and familiarize yourself with all safety information and precautions before proceeding to operate the inverter.

Safety precautions are classified into the following two categories in this manual.

 <b>WARNING</b>	Failure to heed the information indicated by this symbol may lead to dangerous conditions, possibly resulting in death or serious bodily injuries.
 <b>CAUTION</b>	Failure to heed the information indicated by this symbol may lead to dangerous conditions, possibly resulting in minor or light bodily injuries and/or substantial property damage.

Failure to heed the information contained under the CAUTION title can also result in serious consequences. These safety precautions are of utmost importance and must be observed at all times.

## Installation and wiring

### **WARNING**

- Before starting installation and wiring, turn the inverter's power OFF and wait at least five minutes. Further, check with a multimeter or the similar instrument that the DC link bus voltage between the P (+) and N (-) terminals is lower than 25 VDC.
- Qualified electricians should carry out wiring.  
**Otherwise, an electric shock could occur.**

### **CAUTION**

- Do not use the product that is damaged or lacking parts.  
**Doing so could cause a fire, an accident, or injuries.**
- Prevent lint, paper fibers, sawdust, dust, metallic chips, or other foreign materials from getting into the inverter and the option.  
**Otherwise, a fire or an accident might result.**
- Incorrect handling in installation/removal jobs could cause a failure.  
**A failure might result.**
- Noise may be emitted from the inverter, motor and wires. Implement appropriate measure to prevent the nearby sensors and devices from malfunctioning due to such noise.  
**Otherwise, an accident could occur.**

## Operation

### **WARNING**

- Be sure to install the terminal cover and option terminal cover before turning the inverter's power ON. Do not remove the cover when the inverter power is ON.  
**Otherwise, an electric shock could occur.**
- Do not operate switches with wet hands.  
**Doing so could cause an electric shock.**
- If you set the function codes wrongly or without completely understanding the FRENIC-Multi Instruction Manual and the FRENIC-Multi User's Manual, the motor may rotate with a torque or at a speed not permitted for the machine. Confirm and adjust the setting of the function codes before running the inverter.  
**Otherwise, an accident could occur.**

## Maintenance and inspection, and parts replacement

### **WARNING**

- Before proceeding to the maintenance/inspection jobs, turn the inverter's power OFF and wait at least five minutes. Further, check with a multimeter or the similar instrument that the DC link bus voltage between the P (+) and N (-) terminals is lower than 25 VDC.  
**Otherwise, an electric shock could occur.**
- Maintenance, inspection, and parts replacement should be made only by qualified persons.
- Take off the watch, rings and other metallic objects before starting work.
- Use insulated tools.  
**Otherwise, an electric shock or injuries could occur.**

## Disposal

### **CAUTION**

- Treat the interface card(s) as an industrial waste when disposing of it.  
**Otherwise injuries could occur.**

## Others

### **WARNING**

- Never modify the interface option(s).  
**Doing so could cause an electric shock or injuries.**

## Icons

The following icons are used throughout this manual.



This icon indicates information which, if not heeded, can result in the product not operating to full efficiency, as well as information concerning incorrect operations and settings which can result in accidents.



This icon indicates information that can prove handy when performing certain settings or operations.



This icon indicates a reference to more detailed information.

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## Chapter 1 BEFORE USING THE INVERTER

### 1.1 Acceptance Inspection

Unpack the package and check the following:

- (1) A digital interface option and the following accessories are contained in the package. (See Figure 1.1.)
    - Two option connection cables  
(A short one for inverters with a capacity of 5 HP or below and a long one for inverters with a capacity of 7.5 HP or above)
    - One option fixing screw
    - Digital Interface Option Instruction Manual (this manual)
  - (2) The interface option and accessories have not been damaged during transportation—there should be no dents or parts missing.
  - (3) The model name "OPC-E1-DIO" is printed on the nameplate attached to the right side of the interface option. (See Figure 1.1.)
- If you suspect the product is not working properly or if you have any questions about your product, contact your Fuji Electric representative.

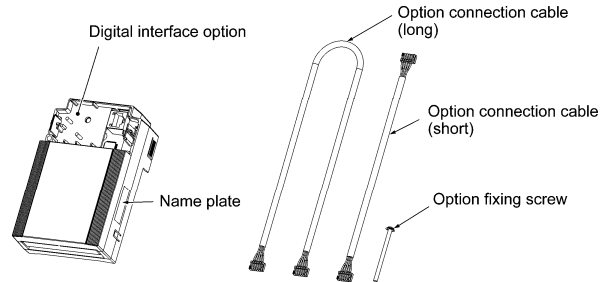


Figure 1.1 Digital Interface Option and Accessories

## 1.2 Installation of the Interface Option

### **WARNING**

Turn the inverter's power OFF and wait for at least five minutes. Further, check that the DC link bus voltage between the P (+) and N (-) terminals is lower than 25 VDC.

**Otherwise, electric shock could occur.**

### **CAUTION**

- Do not use the product that is damaged or lacking parts.  
**Doing so could cause a fire, accident, or injury.**
- Prevent lint, paper fibers, sawdust, dust, metallic chips, or other foreign materials from getting into the inverter and the interface option.  
**Otherwise, a fire or an accident might result.**
- Incorrect handling in installation/removal jobs could cause a failure.  
**A failure might result.**

When handling the interface option, take any antistatic measure or hold the plastic parts taking care not to directly touch the circuit board; otherwise, the static electricity charged in your body may damage it.





Before mounting the interface option, perform the wiring for the main circuit terminals and control circuit terminals on the inverter.

- (1) Remove the terminal cover from the inverter.

**Note:** For inverters with a capacity of 7.5 to 20 HP, you need to remove the terminal cover fixing screw to remove the terminal cover.

For details on how to remove the terminal cover, refer to the FRENIC-Multi Instruction Manual (INR-SI47-1204-E), Chapter 2, Section 2.3 "Wiring."

- (2) Connect the option connection cable to the CN1 connector on the interface printed circuit board (interface PCB) on the inverter.  
Use the short cable for inverters with a capacity of 5 HP or below, and the long cable for the ones with a capacity of 7.5 HP or above.

- (3) Mount the terminal cover.

For details on how to mount the terminal cover, refer to the FRENIC-Multi Instruction Manual, Chapter 2, Section 2.3 "Wiring."

- (4) Push the hooks provided on both sides of the keypad and pull the keypad up and out of the inverter.

For details on how to remove the keypad, refer to the FRENIC-Multi Instruction Manual, Chapter 2, Section 2.4 "Mounting and Connecting a Keypad."

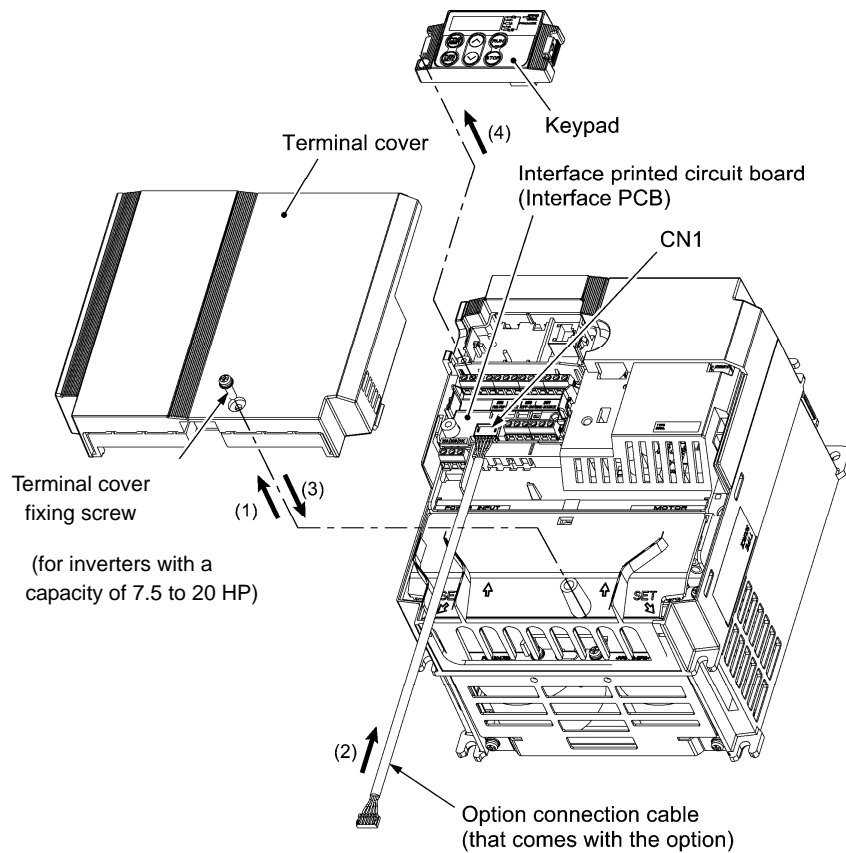


Figure 1.2 Connecting the Option Connection Cable to the Interface PCB and Removing the Keypad (For inverters with a capacity of 15 and 20 HP)

- (5) Mount the interface option on the inverter, making the RJ-45 connector on the back side of the option engage with the RJ-45 connector on the inverter (to which the keypad had been connected).
- (6) Connect the keypad to the RJ-45 connector on the front side of the interface option, then secure the keypad and interface option to the inverter with the option fixing screw (that comes with the interface option).

When using the keypad at a remote site, secure the interface option without the keypad to the inverter with the screw.  
Tightening torque: 0.6 N·m(0.4 lbf·ft)

**Note** Take care not to tighten the option fixing screw too much. Doing so could make the screw defective.

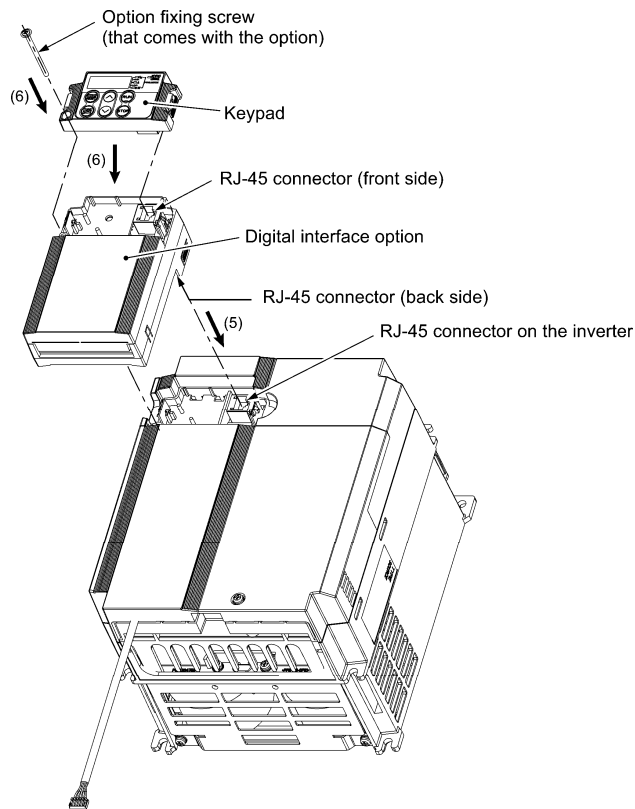


Figure 1.3 Mounting the Digital Interface Option and the Keypad

- (7) Slightly pull the bottom of the option terminal cover towards you and remove it downward.
- (8) Connect the other end of the option connection cable (whose end has been connected to the interface PCB on the inverter in step (2) above) to the CN1 connector on the interface option printed circuit board (interface option PCB).
- (9) Mount the option terminal cover.  
First fit the bosses on the top of the cover into the square holes provided in the interface option, and then push the bottom of the cover until it snaps into place.

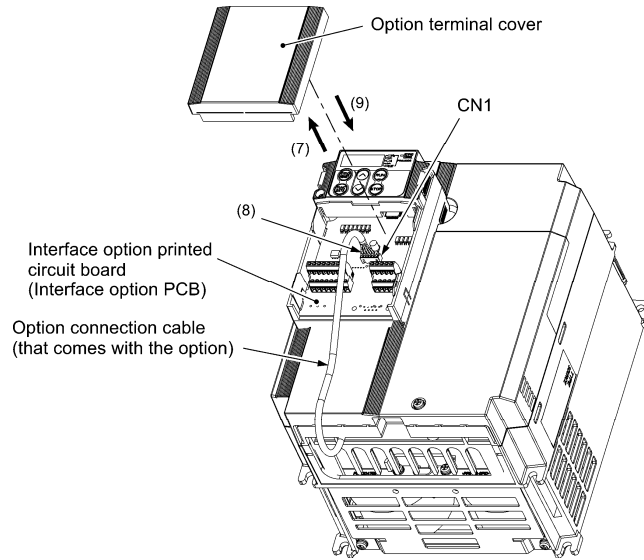


Figure 1.4 Connecting the Option Connection Cable to the Interface Option PCB

### 1.3 Wiring for the Interface Option

#### ⚠ WARNING

- Before starting installation, turn off the power to the inverter and wait for at least five minutes. Further, check the DC link circuit voltage between the P (+) and N (-) terminals to be lower than 25 VDC.
  - Qualified electricians should carry out wiring.
- Otherwise, electric shock could occur.**

#### ⚠ CAUTION

The inverter, motor, and wiring emit electrical noise. Take appropriate measures to prevent the nearby sensors and devices from malfunctioning due to such noise.

**Otherwise, an accident could occur.**

Perform wiring for the interface card observing the precautions below. Refer to the connection diagrams shown in Figure 2.1 in Chapter 2.

- (1) Turn the inverter's power OFF.
- (2) Use shielded wires.
- (3) To prevent malfunction due to noise, keep the wiring for the interface option PCB away from the main circuit wiring and other power lines as far as possible (at least 10 cm). Never install them in the same wire duct.
- (4) Complete wiring before turning the inverter ON.
- (5) The wire size applicable to the terminals on the interface option is AWG24 to AWG18(0.20 mm<sup>2</sup> to 0.82 mm<sup>2</sup>)

When using stripped wires (without attaching a crimp terminal), strip the wire end by 5 to 7 mm(0.2 to 0.28 in) (Figure 1.5) When using a crimp terminal, attach a vinyl-insulated ferrule.

Loosen the terminal screw, insert the wire end into above the metal part of the terminal block, and tighten the screw to fasten it. (Figure 1.6)

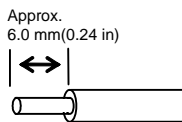


Figure 1.5 Wire End Treatment  
(For Connection to Terminals  
on Interface Option)

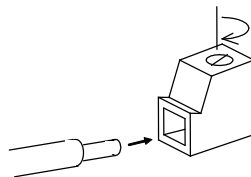
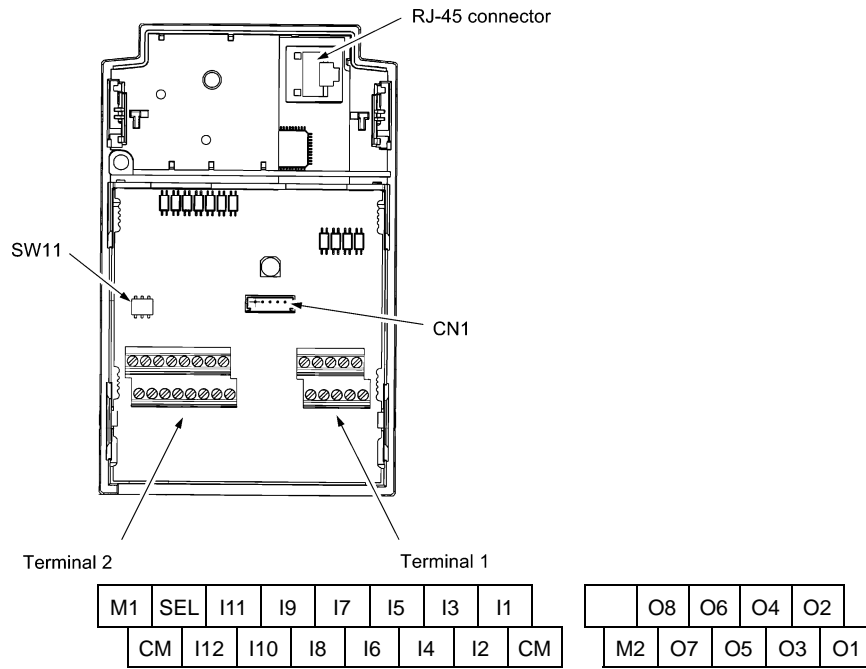


Figure 1.6 Connecting to a Terminal  
on Interface Option

Recommended wire: AWG24 to AWG18(0.20 mm<sup>2</sup> to 0.82 mm<sup>2</sup>), with rated temperature 105°C(221 °F) (UL)

### 1.4 Terminal Allocation on the Interface Option PCB



\* Screw size: M2

\* Tightening torque: 0.22 to 0.25 N·m(0.16 to 0.18 lbf·ft)

Figure 1.7 Terminal Allocation on the Interface Option PCB

**Chapter 2 WIRING**  
**2.1 Connection Diagram**

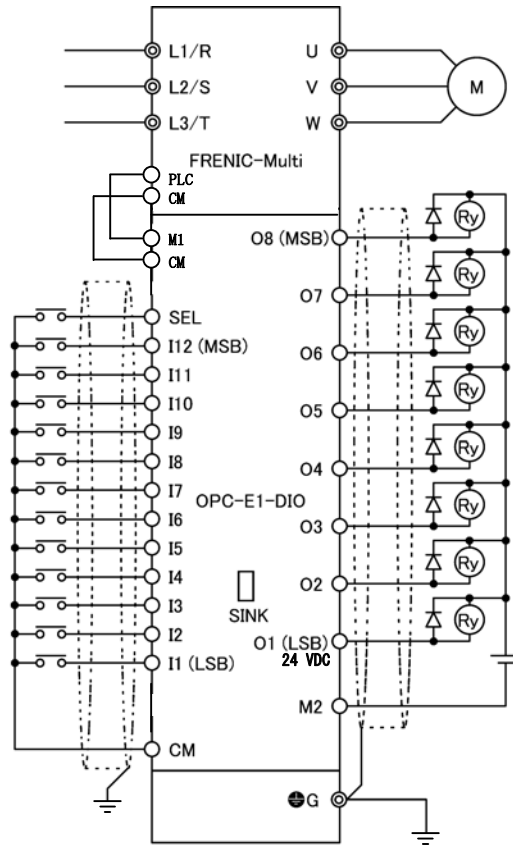


Figure 2.1 Connection Diagram

## 2.2 Terminal Functions

Table 2.1 lists terminal symbols, names and functions of the terminals on the digital interface option.

Table 2.1 Terminals and Their Specifications

Terminal symbol	Name	Functions
[I1] to [I12]	Input terminals	For entry of frequency commands
[SEL]	Input terminal	For entry of Hold signal
[M1]	External power supply for input terminal	For external power supply for frequency command input
[CM]	Common terminal for input	Common terminal for frequency command input
[O1] to [O8]	Output terminals	For monitoring
[M2]	Common terminal for output	For monitoring

## 2.3 Electrical Specifications

Table 2.2 lists the electrical specifications for the digital interface option.

Table 2.2 Electrical Specifications

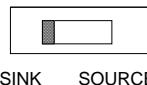
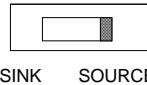
Terminal symbol	Item	Symbol	Conditions	Specifications			
				Min.	Typical	Max.	
[I1] to [I12], SEL	SINK mode	Input voltage at ON	VIL	$V_{CC} = 22\text{ V}$	0 V	-	2 V
		Output current at ON	IIL	$V_{CC} = 24\text{ V } V_{IL} = 0\text{ V}$	-	3.2 mA	-
				$V_{CC} = 27\text{ V } V_{IL} = 0\text{ V}$	-	-	4.5 mA
		Output voltage at OFF	VIH		22 V	24 V	27 V
	Leakage current at OFF	IIH		-	-	0.5 mA	
	SOURCE mode	Input voltage at ON	VIL		22 V	24 V	27 V
		Input voltage at OFF	VIH		0 V	1 V	5 V
Input current at ON		IIL	$V_{CC} = 24\text{ V } V_{IL} = 0\text{ V}$	-	3.2 mA	-	
	$V_{CC} = 27\text{ V } V_{IL} = 0\text{ V}$		-	-	4.5 mA		
[O1] to [O8]	SINK mode	SINK current at ON	IOL	$V_o = 27\text{ V}$	-	-	50 mA
		Output voltage at ON	VOL	$I_{OL} = 50\text{ mA}$	-	2 V	3 V
		Output voltage at OFF	VOH		-	24 VDC	27 VDC
		Leakage current at OFF	IOH	$V_o = 24\text{ V}$	-	-	0.5 mA
	SOURCE mode	SOURCE current at ON	IOL	$V_o = 27\text{ V}$	-	-	-50 mA
		Output voltage at ON	VOL	$I_{OL} = -50\text{ mA}$	-	2 V	3 V
		Output voltage at OFF	VOH		-	24 VDC	27 VDC
		Leakage current at OFF	IOH	$V_o = 24\text{ V}$	-	-	-0.5 mA

## Input Interface

### 2.3.1 Switching between SINK and SOURCE for digital input terminals ([I1] to [I12] and [SEL])

The input mode is switchable between SINK and SOURCE for digital input terminals ([I1] to [I12] and [SEL]) by using the slide switch SW11 on the interface option PCB (Figure 1.7 in Chapter 1). Specify the input mode referring to Table 2.3 below.

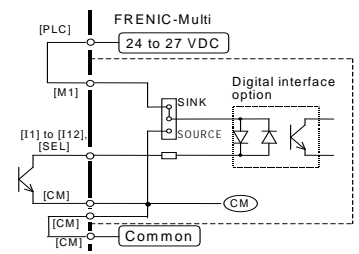
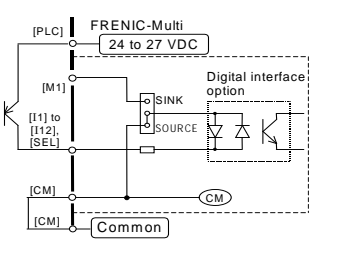
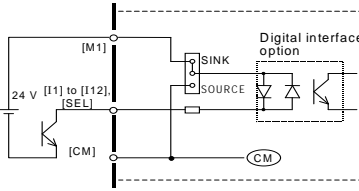
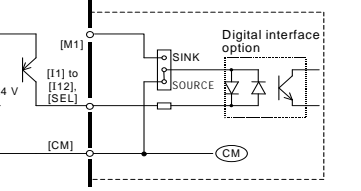
Table 2.3 Configuration of Slide Switch SW11

Input mode	Slide switch position
SINK default) (factory)	SINK side 
SOURCE	SOURCE side 

### 2.3.2 Connection diagrams for SINK/SOURCE input modes

Table 2.4 shows connection diagrams for input interface circuits.

Table 2.4 Connections of Input Interface Circuits

Power supply	Connection diagram	
	SINK mode	SOURCE mode
Internal		
External		



### 2.3.3 Precaution on the use of a contact relay

To configure input circuits using contact relays, use highly reliable relays.

## 2.4 Output Interface

Table 2.5 shows connection diagrams for output interface circuits.

Table 2.5 Connections of Output Interface Circuits

	Connection diagram
SINK mode	
SOURCE mode	

The output interface circuit should be configured with an external power supply. In the SINK mode, the positive (+) side of the external power supply should be connected to terminal [M2] on the interface option, and in the SOURCE mode, the negative (-) side.

### Chapter 3 CONFIGURING INVERTER'S FUNCTION CODE

Tables 3.1 and 3.2 list the function code and its parameters.

Table 3.1 Definition of Frequency Command Sources (Input)

Function code	Name	Data	Description	Remarks
F01 (C30)	Frequency Command 1 (Frequency Command 2)	11	Frequency command sourced from the digital interface option	
		Other than 11	Frequency command specified by function codes	
o20	Select input mode	0	8-bit, binary frequency command	(Note)
		1	12-bit, binary frequency command	
		4	3-digit, BCD frequency command (0 to 99.9 Hz)	
		5	3-digit, BCD frequency command (0 to 999 Hz)	

BCD: Binary Coded Decimal

Note: Terminal [SEL] comes to be exclusive to Hold signals. When SEL = 0, the interface option receives input data (I1 to I12).

Table 3.2 Monitor Items Selectable (Output)

Function code	Name	Data	Monitoring item	Remarks
o21	Select output mode	0	Output frequency (before slip compensation)	100%/8-bit (Note 1)
		1	Output frequency (after slip compensation)	100%/8-bit (Note 1)
		2	Output current	200%/8-bit (Note 2)
		3	Output voltage	100%/8-bit (Note 3)
		4	Output torque	200%/8-bit (Note 4)
		5	Load factor	200%/8-bit (Note 5)
		6	Input power	200%/8-bit (Note 6)
		7	PID feedback amount	100%/8-bit (Note 7)
		9	DC link bus voltage	100%/8-bit (Note 8)
		13	Motor output	200%/8-bit (Note 9)
		15	PID command (SV)	100%/8-bit (Note 10)
		16	PID output (MV)	100%/8-bit (Note 11)
		99	Individual signal output	(Note 12)

(Note 1) Output frequency monitor = (Output frequency / Maximum frequency) × 255

(Note 2) Output current monitor = (Output current / (Inverter's rated output current × 2)) × 255

(Note 3) Output voltage monitor = (Output voltage / 250 V) × 255: For 200 V class series  
= (Output voltage / 500 V) × 255: For 400 V class series

(Note 4) Output torque monitor = (Output torque / (Motor rated torque × 2)) × 255

(Note 5) Load factor monitor = (Load factor / (Motor rated load × 2)) × 255

(Note 6) Input power monitor = (Input power / (Inverter's rated output × 2)) × 255

(Note 7) PID feedback amount monitor = (PID feedback amount / Feedback amount 100%) × 255

(Note 8) DC link bus voltage monitor = (DC link bus voltage / 500 V) × 255: For 200 V class series  
= (DC link bus voltage / 1000 V) × 255: For 400 V class series

(Note 9) Motor output monitor = (Motor output / (Motor rated output × 2)) × 255

(Note 10) PID command (SV) monitor = (PID command / Feedback amount 100%) × 255

(Note 11) PID output (MV) monitor = (PID output / Maximum frequency) × 255

(Note 12) Terminal output signals **RUN, FDT, FAR, LU, OL, IPF** (assigned to the general-purpose programmable output terminals) are issued individually as bit information. For details of bit information (output bit position), refer to Table 4.2 in Chapter 4 "DETAILS OF FUNCTION CODES."

If the monitored value exceeds 100%, "11111111 (255)" is output.

## Chapter 4 DETAILS OF FUNCTION CODES

Tables 4.1 and 4.2 show the configuration of function codes o19 and o20 and the details of the terminal functions.

Table 4.1 Definition of Frequency Command Sources (Input)

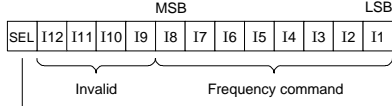
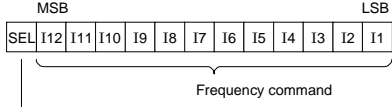
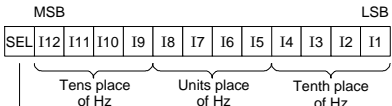
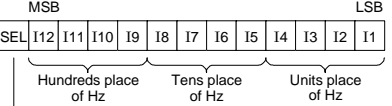
Function code	Data	Input signal name	Terminal function and configuration details
o20	0	8-bit binary frequency command	 <p>Hold signal When SEL = 0, data update is available. When SEL = 1, data update is not available.</p> <p>(1) Setting resolution = Specified maximum frequency × (1/255) (2) Upper/lower limiters are given priority..</p>
	1	12-bit binary frequency command	 <p>Hold signal When SEL = 0, data update is available. When SEL = 1, data update is not available.</p> <p>(1) Setting resolution = Specified maximum frequency × (1/4095) (2) Upper/lower limiters are given priority..</p>
	4	3-digit BCD frequency command (0 to 99.9 Hz)	 <p>Hold signal When SEL = 0, data update is available. When SEL = 1, data update is not available.</p> <p>(1) Frequency can be specified within the range of 0 to 99.9 Hz (Setting resolution = 0.1 Hz). (2) Upper/lower limiters are given priority.. (3) If a frequency command exceeding the maximum frequency is input, the maximum frequency is output.</p>
	5	3-digit BCD frequency command (0 to 999 Hz)	 <p>Hold signal When SEL = 0, data update is available. When SEL = 1, data update is not available.</p> <p>(1) Frequency can be specified within the range of 0 to 999 Hz (Setting resolution = 1 Hz). (2) Upper/lower limiters are given priority.. (3) If a frequency command exceeding the maximum frequency is input, the maximum frequency is output.</p>

Table 4.2 Monitor Items Selectable (Output)

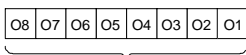
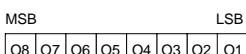
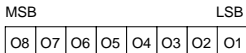
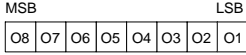
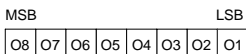
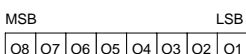
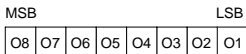
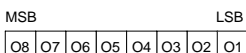
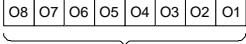
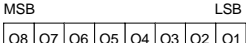
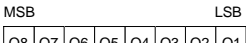
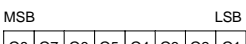
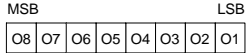
Function code	Data	Output signal name	Terminal function and configuration details
o21	0	Output frequency (before slip compensation)	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        100% of maximum frequency / 8 bits                 </div>
	1	Output frequency (after slip compensation)	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        100% of maximum frequency / 8 bits                 </div>
	2	Output current	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        200% of inverter's rated output current / 8 bits                 </div>
	3	Output voltage	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        100% of 250 V / 8 bits: 200 V class series                      100% of 500 V / 8 bits: 400 V class series                 </div>
	4	Output torque	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        200% of motor rated torque / 8 bits                 </div>
	5	Load factor	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        200% of motor rated load / 8 bits                 </div>
	6	Input power	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        200% of inverter's rated output / 8 bits                 </div>
	7	PID feedback amount	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>                        100% of feedback amount / 8 bits                 </div>

Table 4.2 Monitor Items Selectable (Output) (Continued)

Function code	Data	Output signal name	Terminal function and configuration details
o21	9	DC link bus voltage	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>   </div> <p>100% of 500 V / 8 bits: 200 V class series                      100% of 1000 V / 8 bits: 400 V class series</p>
	13	Motor output	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>   </div> <p>200% of motor rated output / 8 bits</p>
	15	PID command (SV)	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>   </div> <p>100% of feedback amount / 8 bits</p>
	16	PID output (MV)	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>   </div> <p>100% of maximum frequency / 8 bits</p>
	99	Individual signal output	<div style="text-align: center;">                     MSB <span style="float: right;">LSB</span>   </div> <p>Fixed at "0"</p> <ul style="list-style-type: none"> <li><b>RUN</b> : Inverter running</li> <li><b>FDT</b> : Frequency detected</li> <li><b>FAR</b> : Frequency arrival signal</li> <li><b>LU</b> : Undervoltage detected (Inverter stopped)</li> <li><b>IOL</b> : Inverter output limiting</li> <li><b>IPF</b> : Auto-restarting after momentary power failure</li> </ul> <p>Individual output signals are functionally equivalent to the general-purpose output terminals on the inverter.</p>

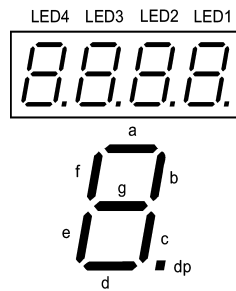
## Chapter 5 I/O CHECKING

Using Menu #4 "I/O Checking" in Program mode of the FRENIC-Multi displays the I/O status of external signals on the LED monitor of the keypad.

For details of Menu #4 "I/O Checking," refer to the FRENIC-Multi Instruction Manual (INR-SI47-1204-E), Chapter 3, Section 3.4 "Programming Mode."

The I/O status of the digital interface option can be displayed with ON/OFF of the LED segment or in hexadecimal. Signals are assigned to the LED segments as shown below.

Table 5.1 Display with ON/OFF of LED Segments



Segment	LED4	LED3	LED2	LED1
a	—	O1	I9	I1
b	—	O2	I10	I2
c	—	O3	I11	I3
d	—	O4	I12	I4
e	—	O5	SEL	I5
f	—	O6	—	I6
g	—	O7	—	I7
dp	—	O8	—	I8

Table 4.2 Segment Display for I/O Signal Status in Hexadecimal


LED number	LED4				LED3				LED2				LED1			
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Input terminal	-	-	-	SEL	I12	I11	I10	I9	I8	I7	I6	I5	I4	I3	I2	I1
Output terminal	-	-	-	-	-	-	-	-	O8	O7	O6	O5	O4	O3	O2	O1

## Chapter 6 PROTECTIVE FUNCTION

### Option communications error (*er4*)

Problem A communications error has occurred between the digital interface option and the inverter.

Possible Causes	What to Check and Suggested Measures
(1) There is a problem with the connection between the interface option and the inverter.	Check whether the connector on the interface option is firmly engaged with that of the inverter. → Reload the option card into the inverter.
(2) Strong electrical noise.	Check whether appropriate noise control measures have been implemented (e.g. correct grounding and routing of signal wires, communications cables, and main circuit wires). → Implement noise control measures.

 When no o code is displayed even if a digital interface option is mounted, check whether the connector on the interface option is firmly engaged with that of the inverter. In this case, *er4* does not appear.

## **Digital Interface Option "OPC-E1-DIO"**

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### **Instruction manual**

First Edition, February 2008  
Fuji Electric FA Components & Systems Co., Ltd.

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The purpose of this instruction manual is to provide accurate information in handling, setting up and operating of the digital interface option. Please feel free to send your comments regarding any errors or omissions you may have found, or any suggestions you may have for generally improving the manual.

In no event will Fuji Electric FA Components & Systems Co., Ltd. be liable for any direct or indirect damages resulting from the application of the information in this manual.



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**Fuji Electric Systems Co., Ltd.**  
**Fuji Electric Corp. of America**

47520 Westinghouse Drive Fremont, CA 94539, U.S.A.  
Tel.+1-510-440-1060 Fax.+1-510-440-1063  
Toll-free support 1-888-900-FUJI(3854)  
**INR-SI47-1285-EU Rev 052010**

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Information subject to change without notice.

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