**MEMO**

# English Version

# Preface

Thank you for purchasing our analog output interface card.

This instruction manual describes the analog output interface card "OPC-AO" designed for the inverter series of inverters.

Mounting the analog output interface card on your inverter enables analog input (voltage and current for each terminal) and analog output (voltage and current for each terminal) to/from the inverter.

The analog output interface card can be connected to option connection ports on the inverter. However, simultaneous connection with OPC-AIO cannot be performed.

This instruction manual does not contain inverter handling instructions. Read through this instruction manual in conjunction with the

**Installation and wiring**

⚠ **WARNING**

- Before changing the switches, turn OFF the power and wait at least 10 minutes. Make sure that the charging lamp is turned OFF. Further, make sure, using a multimeter or a similar instrument, that the DC link bus voltage between the terminals P(+) and N(-) has dropped to the safe level (+25 VDC or below).
- 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 front 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 configure the function codes wrongly or without completely understanding inverter Instruction Manual and the inverter 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 changing the switches, turn OFF the power and wait at least 10 minutes. Make sure that the charging lamp is turned OFF. Further, make sure, using a multimeter or a similar instrument, that the DC link bus voltage between the terminals P(+) and N(-) has dropped to the safe level (+25 VDC or below).

  **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 as an industrial waste when disposing of it.
  **Otherwise injuries could occur.**

# Table of Contents

# Chapter 1 BEFORE USING THIS OPTION

## 1.1 Acceptance Inspection

Unpack the package and check the following:

(1) An interface card, two screws (M3 × 8), and the Analog Output Interface Card Instruction Manual (this manual) are contained in the package.

(2) The interface card is not damaged during transportation--no defective parts, dents or warps.

(3) The model name "OPC-AO" is printed on the interface card. (See Figure 1.1.)

If you suspect the product is not working properly or if you have any questions about your product, contact the shop where you bought the product or your local Fuji branch office.
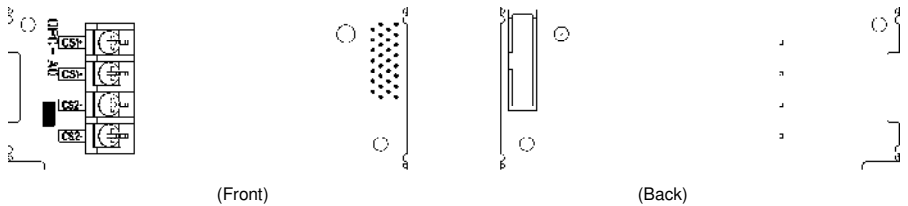
(Front)                    (Back)

Figure 1.1    Name of Parts on Analog Output Interface Card (OPC-AO)

## 1.3 Installation and Removal of the Interface Card

### ⚠ WARNING

Before changing the switches, turn OFF the power and wait at least 10 minutes. Make sure that the charging lamp is turned OFF. Further, make sure, using a multimeter or a similar instrument, that the DC link bus voltage between the terminals P(+) and N(-) has dropped to the safe level (+25 VDC or below).

**Otherwise, an electric shock could occur.**

⚠ **WARNING**

•

ENGLISH

## 1.5 Terminal Allocation on the Interface Card
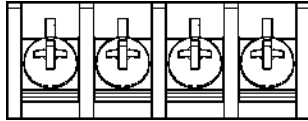
# Chapter 2   WIRING

## 2.1   Connection Diagram

## 2.2  Terminal Functions

Table 2.1  Terminals and Their Specifications

| Classifi-cations | Symbol | Name |
| --- | --- | --- |

## 2.3  Configuring Inverter's Function Codes

### 2.3.1  Configuring Inverter's Function Codes (MEGA)

Table 2.2 lists the function codes related to the analog input/output interface card.
(Function codes o71, o72,o74 and o75 become available when the interface card is connected to the inverter.)

Table 2.2  Function Codes and Parameters (MEGA)

| Function code | Name | Data setting range | Change when running *1 | Data copy *2 | Default setting | Drive control *3 | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | V/f | w/o PG | w/ PG |
| o71 | Terminal [CS2] Function (Mode selection) | | | | | | | |

### 2.3.2  Configuring Inverter's Function Codes (HVAC/AQUA)

Table 2.3 lists the function codes related to the analog input/output interface card.
For details about these function codes, refer to User's Manual.

## 2.4 Function Codes Details

This section details the function codes.

### 2.4.1 Function Codes Details (MEGA)
■ **Terminal [CS2,CS1] function (o71 and o74)**

Configure function codes o71 and o74 to assign functions to terminals [CS2] and [CS1].

Table 2.4    Function Codes Details (MEGA)

| o71 | o74 | Function | Description |
|---|---|---|---|
| 0 | 0 | Output frequency 1 (before slip compensation) | 4 to 20 mA/0 to +100%<br>• 100% = Maximum frequency |
| 1 | 1 | Output frequency 2 (after slip compensation) | |
| 2 | 2 | Output current | 4 to 20 mA/0 to +200%<br>• 100% = Inverter rated current |
| 3 | 3 | Output voltage | 200 V class series:<br>4 to 20 mA/0 to +250 V<br>400 V class series:<br>4 to 20 mA/0 to +500 V |
| 4 | 4 | Output torque | 4 to 20 mA/0 to +200%<br>• 100% = Motor rated torque |
| 5 | 5 | Load factor | 4 to 20 mA/0 to +200%<br>• 100% = Motor rated load |
| 6 | 6 | Input power | 4 to 20 mA/0 to +200%<br>• 100% = Inverter rated output |
| 7 | 7 | PID feedback amount | 4 to 20 mA/0 to +100%<br>• 100% = 100% of the PID feedback amount |
| 8 | 8 | PG feedback value (speed) | 4 to 20 mA/0 to +100%<br>• 100% = Maximum frequency |
| 9 | 9 | DC link bus voltage | 200 V class series:<br>4 to 20 mA/0 to +500 V<br>400 V class series:<br>4 to 20 mA/0 to +1000 V |
| 10 | 10 | Universal AO | 4 to 20 mA/0 to +100%<br>• 100% = 20000d |
| 13 | 13 | Motor output | 4 to 20 mA/0 to +200%<br>• 100% = Motor rated output |
| 14 | 14 | Calibration | Outputs 20 mA. |
| 15 | 15 | PID command (SV) | 4 to 20 mA/0 to +100%<br>• 100% = Feedback amount |
| 16 | 16 | PID output (MV) | 4 to 20 mA/0 to +100%<br>• 100% = Maximum frequency |

■ **Gain (o72 and o75)**
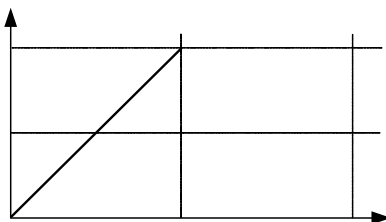
## Chapter 3   I/O CHECKING

"I/O Checking" in your inverter program mode displays the I/O status of external signals on the monitor of the keypad. Refer to "I/O Checking" of the inverter Instruction Manual or user's manual for the operation method.

**Chapter 4    PROTECTIVE FUNCTION**

**MEMO**