**2. WIRING**

To prevent electric shock or instrument failure, turn off the power before connecting or disconnecting the instrument and peripheral equipment.

Make sure that lugs or unshielded cables of the communication terminals are not touched to the screw heads, lugs, or unshielded cables of the power supply terminals to prevent electric shock or instrument failure. Use additional care when two lugs are screwed to one communication terminal.

The cable and termination resistor(s) must be provided by the customer.

### 2.1 RS-485

#### Communication terminal number and signal details

- **Terminal No.**
  - D: Signal ground
  - R: +5 V
  - T: -5 V
  - D, R, T, and ground: each current 20 mA, max.

- **Signal level:**
  - R, T: ±5 V
  - D: 0 V to 5 V

- **Termination resistance:**
  - 39.0 kΩ (when the cable is 2.5 m, or less)

- **Maximum connections:**
  - Up to 32 controllers

#### Wiring method

When the interface of host computer (Master) is RS-485

1. **Controller (Slave):**
   - RS-485 Pin Male side
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

2. **Host computer (Master):**
   - RS-485 pin Male side
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

### 2.2 RS-422A

**Communication terminal number and signal details**

- **Terminal No.**
  - R: Signal ground
  - T: +5 V
  - D: -5 V
  - R, T, and ground: each current 20 mA, max.

- **Signal level:**
  - R, T: ±5 V
  - D: 0 V to 5 V

- **Termination resistance:**
  - 39.0 kΩ (when the cable is 2.5 m, or less)

- **Maximum connections:**
  - Up to 32 controllers

#### Wiring method

When the host computer (Master) has a USB connector

1. **Controller (Slave):**
   - USB (COM port)
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

2. **Host computer (Master):**
   - USB (COM port)
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

### 2.3 RS-232C

**Communication terminal number and signal details**

- **Terminal No.**
  - R: Signal ground
  - T: +5 V
  - D: -5 V
  - R, T, and ground: each current 20 mA, max.

- **Signal level:**
  - R, T: ±5 V
  - D: 0 V to 5 V

- **Termination resistance:**
  - 39.0 kΩ (when the cable is 2.5 m, or less)

- **Maximum connections:**
  - Up to 31 controllers

#### Wiring method

When the interface of host computer (Master) is RS-232C

1. **Controller (Slave):**
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

2. **Host computer (Master):**
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

### 2.4 Connections for Loader Communication

**Controller** is connected with a loader communication connector.

- The controller loader communication connector, our COMA, USB communication connector (sold separately), and a host computer can be connected with the appropriate cables.

#### The Loader port is only for parameter setup

- Loader communication corresponds to RKC communication (based on ANSI X3.25-1976 subclassette 2.5 and A).

#### For the COMA, refer to the COMA Instruction Manual (IMR1210-E).

### 3. SETTING

To establish communication parameters between host computer (master) and controller (slave), it is necessary to set the device address (slave address), communication speed, data bit configuration and interval time on each controller (slave) in the Setup setting mode.

After all communication parameters are set, in order to make these values stay set valid perform any of the following operations.

- The power is turned on again after turning it off once.
- The RUN/STOP mode is changed in RUN from STOP again after changing it in STOP once.

Parameters that are not related to existing functions on the controller are not displayed.

This instrument uses the P2SV monitor screen if no key operation is performed for more than one minute.

This section describes the parameters which must be set for host communication. For the screen operation and key operation, refer to the FB400/FB900 Quick Operation Manual (IMR1062-E).

### Description of each parameters

- **Symbol**
- **Name**
- **Device address (Slave address 1)**
- **Data Setting**
- **Description**
- **Default setting**
- **Factory set value**

#### Description of each parameters

- **Symbol**
- **Name**
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- **Factory set value**

#### Error code

- **Symbol**
- **Name**
- **Description**
- **Factory set value**

### 4. COMMUNICATION DATA LIST

#### Modbus communication/MODBUS

- **Description of communication data (RKC communication/Modbus)**
- **No.**
  - **Model code**
  - **Type**
  - **Protocol**
  - **Address byte**
  - **Function**
  - **Data range**
  - **Note**
  - **Factory set value**

#### Error code

- **Symbol**
- **Name**
- **Description**
- **Factory set value**

### Warnings

- **WARNING**

To prevent electric shock or instrument failure, turn off the power before connecting or disconnecting the instrument and peripheral equipment.

Make sure that lugs or unshielded cables of the communication terminals are not touched to the screw heads, lugs, or unshielded cables of the power supply terminals to prevent electric shock or instrument failure. Use additional care when two lugs are screwed to one communication terminal.

The cable and termination resistor(s) must be provided by the customer.

#### Wiring method

When the interface of host computer (Master) is RS-485

1. **Controller (Slave):**
   - RS-485 Pin Male side
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

2. **Host computer (Master):**
   - RS-485 pin Male side
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

### Wiring method

When the host computer (Master) has a USB connector

1. **Controller (Slave):**
   - USB (COM port)
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

2. **Host computer (Master):**
   - USB (COM port)
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

### Wiring method

When the interface of host computer (Master) is RS-232C

1. **Controller (Slave):**
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

2. **Host computer (Master):**
   - Signal wire: Send data (D), Receive data (D)
   - Shielded twisted pair wire

### Connections for Loader Communication

**Controller** is connected with a loader communication connector.

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After all communication parameters are set, in order to make these values stay set valid perform any of the following operations.

- The power is turned on again after turning it off once.
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Parameters that are not related to existing functions on the controller are not displayed.

This instrument uses the P2SV monitor screen if no key operation is performed for more than one minute.

This section describes the parameters which must be set for host communication. For the screen operation and key operation, refer to the FB400/FB900 Quick Operation Manual (IMR1062-E).

### Description of each parameters

- **Symbol**
- **Name**
- **Device address (Slave address 1)**
- **Data Setting**
- **Description**
- **Default setting**
- **Factory set value**

### Error code

- **Symbol**
- **Name**
- **Description**
- **Factory set value**
Data write is enabled only when the CT1 assignment to 0 (0.0) or 0.00). Unused

- If Event 4 corresponds to 0 (0.0) or 0.00, the Event 4 setting becomes invalid.

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