1. OUTLINE
COM-JG is a communication converter to connect the RKC module type controller (SRZ) to a programmable controller (hereafter called PLC) for PROFBUS.

2. MOUNTING

To prevent electric shock or instrument failure, always turn off the power before mounting or removing the instrument.

2.1 Mounting Cautions
- This instrument is not suited to be used under the following environmental conditions. 
  (RECOMMENDATION) 
  - Electric voltage: 100 - 240 VAC ± 10% (47 - 63 Hz) 
  - Power supply: SELV 
  - Maximum ambient temperature: 0 to 50 °C (32 to 122 °F) 
  - Humidity: 5 to 90% RH 
  - Altitude: up to 2000 m
- Avoid the following conditions when selecting the mounting location:
  - Rapid changes in ambient temperature which may cause condensation.
  - Corrosive or inflammable gases.
  - Direct sunlight or shock to the mainframe.
  - Water, oil, chemicals, or steam splashes.
  - Excessive dust or salt particles.
  - Excessive induction noise, static electricity, magnetic fields or noise.
  - Direct airflow from an air conditioner.
  - Exposure to direct sunlight.
  - Excessive vibration

2.2 Dimensions

Mounting dimensions (Unit: mm)

2.3 DIN rail Mounting

Mounting procedures
1. Pull down the mounting bracket at the bottom of the instrument (A). Attach the hook on the left side of the instrument to the DIN rail and push the lower section into place on the DIN rail (B).
2. Slide the mounting bracket up to secure the instrument to the DIN rail (C).

Removal procedures
Pull down a mounting bracket with a slotted screwdriver (A). Lift the instrument from bottom, and take off (B).

3. WIRING

To prevent electric shock or instrument failure, do not turn on the power until all wiring is completed. Make sure that the wiring is correct before applying power to the instrument.

3.1 Wiring Cautions
- To avoid noise induction, keep communication signal wire away from instrument power lines, load lines and power lines of other electric equipment.
- If there is electrical noise in the vicinity of the instrument that could affect communication, use a noise filter.
  - Shorten the distance between the twisted power supply wire pairs to achieve the most effective noise reduction.
  - Always install the noise filter on a grounded panel. Minimize the wiring distance between the noise filter output and the instrument power supply terminals to achieve the most effective noise reduction.
  - Do not connect fuses or switches to the noise filter output wire as this will reduce the effectiveness of the noise filter.
- Power supply wiring must be twisted and have a low voltage drop.
- For an instrument with 24 V power supply, supply power from a SELV circuit.
- A suitable power supply should be considered in end-use equipment. The power supply must be in compliance with a limited-energy circuits (maximum available current of 8 A).
- Use the solderless terminal appropriate to the screw size (M3).

Make sure that the wire casing such as solderless terminal is not in contact with the adjoining terminals.

3.2 Terminal Configuration

- As controller communication terminal Nos. 1, 4 and 5 are internally connected to terminal Nos. 3, 6 and 7, any terminals can be used.
- All ground and power terminals Nos. 2, 7 and 12 are internally connected to terminal Nos. 10, 11, and 14, any terminals can be used.
- Terminal No. 2 and No. 13 is not used.
### 3.3 Connection to PROFIBUS

#### Pin Layout of Connector

![PROFIBUS connector (COM. PORT)](image)

#### PROFIBUS cables

- Use the PROFIBUS cable which fitted the following requirement.
- Use the shielded twisted pair wire
- Based on IEC61158, Standard (Recommend cable type A)

**Cable type A**

- Impedance: 135 to 165 Ω
- Capacitance: < 30 pF/km
- Loop resistance: 110 Ω/km
- Core diameter: 0.64 mm
- Core cross section: > 0.34 mm

**Maximum cable length by communication speed (For cable type A)**

<table>
<thead>
<tr>
<th>Communication speed (kbps)</th>
<th>9.6</th>
<th>19.2</th>
<th>38.4</th>
<th>57.6</th>
<th>115.2</th>
<th>230.4</th>
<th>460.8</th>
<th>921.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable length (m)</td>
<td>1500</td>
<td>1200</td>
<td>1000</td>
<td>900</td>
<td>800</td>
<td>700</td>
<td>600</td>
<td>500</td>
</tr>
</tbody>
</table>

- Connect the termination resistor to the end of a bus (Refer to below)

#### Signal | Termination resistor
--- | ---
VP | 390 Ω
RxD/TxD-P | 220 Ω
RxD/TxD-N | 390 Ω
DGND | 220 Ω

*Customer must provide the PROFIBUS cable (a connection cable of PLC and COM-JG). As for the PROFIBUS cable, there is a case prepared by a PLC manufacturer.*

*The details except the above are connected to the website of PROFIBUS International, and obtain necessary information.

URL: [http://www.profibus.com/](http://www.profibus.com/)

### 3.4 Connection to the Controllers

- Conduct wiring between the COM-JG and controller (SRZ) as shown in the following.

#### Connection diagram

![Connection diagram](image)

#### Connection to PROFIBUS

- **Terminal base:**
  - Shielded twisted pair wire
- **Terminal indicator:**
  - PROFIBUS connector (COM. PORT)
- **Controller communication**:
  - Protocol: PROFIBUS-DP
  - Communication speed: 9600 bps, 19200 bps, 93.75 kbps, 187.5 kbps, 500 kbps, 1.5 Mbps, 12 Mbps
- **A master judges the quality situation of a line, and set it automatically.**

#### Connection to the Controllers

- **Terminal block:**
  - Connected by the internal communication line

- **Pin Layout of Connector**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal name</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unused</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Unused</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Receive data/transmission data (plus)</td>
<td>RxD/TxD-P</td>
</tr>
<tr>
<td>4</td>
<td>Unused</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Signal ground</td>
<td>DGN</td>
</tr>
<tr>
<td>6</td>
<td>Terminations terminal supply voltage (5 V)</td>
<td>VP</td>
</tr>
<tr>
<td>7</td>
<td>Unused</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Receive data/transmission data (negative)</td>
<td>RxD/TxD-N</td>
</tr>
<tr>
<td>9</td>
<td>Unused</td>
<td></td>
</tr>
</tbody>
</table>

- **PROFIBUS connector**
  - **Terminal block:**
    - Shielded twisted pair wire
  - **Connection diagram:**
    - Connected by the internal communication line

#### Protocol:

- **RS-485**
- **PROFIBUS**

#### Terminations:

- **R1:** Internal termination resistor
- **R2:** Termination resistor for external connection

#### Power Supply Voltage:

- **VP**

### 3.5 System Configuration Example

#### Programmable controller

- **PLC (Master)**

#### PLC-PROFIBUS Converter

- **Connector for PLC (Master) connection**

#### Address setting switch

- **Set the address for PROFIBUS**

#### DP switch

- **Set the communication speed for controlling communication, controller address auto obtain, and controller communication enable/disable**

### 4. PARTS DESCRIPTION

- **Terminal cover:**
  - Terminal covers above and below the COM-JG
- **Mounting bracket:**
  - Used for the DIN rail mounting
  - When mounted, two mounting brackets are required for the upper and lower sides (one required for each side separately solid).
- **Terminal base:**
  - Part of the terminal base of COM-JG
  - (There is the termination resistor setting switch in the inside of terminal base)
- **Mainframe:**
  - Part of the mainframe of COM-JG

### 5. SPECIFICATIONS

- **PROFIBUS communication**
  - **Interface:** Based on RS-485, EIA standard
  - **Protocol:** PROFIBUS-DP
  - **Communication speeds:**
    - 9600 bps, 19200 bps, 93.75 kbps, 187.5 kbps, 500 kbps, 1.5 Mbps, 12 Mbps
  - **A master judges the quality situation of a line, and set it automatically.**
  - **Number of connection nodes:**
    - 1 to 126
  - **Connection cable:** Special cable (Shielded twisted pair wire)

- **Controller communication**
  - **Interface:** Based on RS-485, EIA standard
  - **Protocol:** Modbus-RTU
  - **Communication speeds:**
    - 9600 bps, 19200 bps, 38400 bps
  - **Data bit configuration:**
    - Data 8-bit
    - Without parity
    - Stop 1-bit
  - **Shielded twisted pair wire**
  - **Line pair wire**
  - **Maximum connections:**
    - 31 controllers (SRZ modules)

#### General specifications

- **Power supply voltage:**
  - 24 V DC
- **Power supply voltage range:**
  - 21.6 to 26.4 V DC
- **Current consumption:**
  - 90 mA max. (at 24 V DC)
  - Rush current: 3 A or less
- **Allowable ambient temperature:**
  - -10 to +50 °C (14 to 122 °F)
  - Allowable ambient humidity:
    - 5 to 95 %RH
    - (Absolute humidity: MAX.W.C 29.3 g/m³ dry air at 101.3 kPa)
    - Environment installation conditions:
      - Indoor use
      - Altitude up to 2000 m
  - **Weight:**
    - Approx. 170 g

### 6. MODEL CODE

**COM-JG 02**

(1) Corresponding to the RKC controller

**02:** SRZ