

COM-JE Installation Manual

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IMR01Y02-E5

Thank you for purchasing the RKC product. In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place the manual in a convenient location for easy reference.

This manual describes the handling precautions, mounting, wiring and specifications only. For the basic operations, refer to **Quick Operation Manual (IMR01Y12-E□)**. For the detail handling procedures and various function settings, please read if necessary the **COM-JE Instruction Manual (IMR01Y07-E□)**; separate manual.



The above manuals can be downloaded from the official RKC website:
http://www.rkcinst.com/english/manual_load.htm

Product Check

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Quick Operation Manual (IMR01Y12-E□)	1
Communication Data List (IMR01Y17-E□)	1

Safety Precautions



WARNING

- An external protection device must be installed if failure of this instrument could result in damage to the instrument, equipment or injury to personnel.
- All wiring must be completed before power is turned on to prevent electric shock, fire or damage to instrument and equipment.
- This instrument must be used in accordance with the specifications to prevent fire or damage to instrument and equipment.
- This instrument is not intended for use in locations subject to flammable or explosive gases.
- Do not touch high-voltage connections such as power supply terminals, etc. to avoid electric shock.
- RKC is not responsible if this instrument is repaired, modified or disassembled by other than factory-approved personnel. Malfunction can occur and warranty is void under these conditions.

CAUTION

- This product is intended for use with industrial machines, test and measuring equipment. (It is not designed for use with medical equipment and nuclear energy.)
- This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take additional measures.
- This instrument is protected from electric shock by reinforced insulation. Provide reinforced insulation between the wire for the input signal and the wires for instrument power supply, source of power and loads.
- Be sure to provide an appropriate surge control circuit respectively for the following:
 - If input/output or signal lines within the building are longer than 30 meters.
 - If input/output or signal lines leave the building, regardless the length.
- This instrument is designed for installation in an enclosed instrumentation panel. All high-voltage connections such as power supply terminals must be enclosed in the instrumentation panel to avoid electric shock by operating personnel.
- All precautions described in this manual should be taken to avoid damage to the instrument or equipment.
- All wiring must be in accordance with local codes and regulations.
- To prevent instrument damage or failure, protect the power line and the input/output lines from high currents with a protection device such as fuse, circuit breaker, etc.
- Prevent metal fragments or lead wire scraps from falling inside instrument case to avoid electric shock, fire or malfunction.
- Tighten each terminal screw to the specified torque found in the manual to avoid electric shock, fire or malfunction.
- For proper operation of this instrument, provide adequate ventilation for heat dispensation.
- Do not connect wires to unused terminals as this will interfere with proper operation of the instrument.
- Turn off the power supply before cleaning the instrument.
- Do not use a volatile solvent such as paint thinner to clean the instrument. Deformation or discoloration will occur. Use a soft, dry cloth to remove stains from the instrument.
- To avoid damage to instrument display, do not rub with an abrasive material or push front panel with a hard object.
- Do not connect modular connectors to telephone line.
- When high alarm with hold action/re-hold action is used for Event function, alarm does not turn on while hold action is in operation. Take measures to prevent overheating which may occur if the control device fails.

NOTICE

- This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications.
- The figures, diagrams and numeric values used in this manual are only for purpose of illustration.
- RKC is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.
- RKC is not responsible for any damage and/or injury resulting from the use of instruments made by imitating this instrument.
- Periodic maintenance is required for safe and proper operation of this instrument. Some components have a limited service life, or characteristics that change over time.
- Every effort has been made to ensure accuracy of all information contained herein. RKC makes no warranty expressed or implied, with respect to the accuracy of the information. The information in this manual is subject to change without prior notice.
- No portion of this document may be reprinted, modified, copied, transmitted, digitized, stored, processed or retrieved through any mechanical, electronic, optical or other means without prior written approval from RKC.

1. MOUNTING



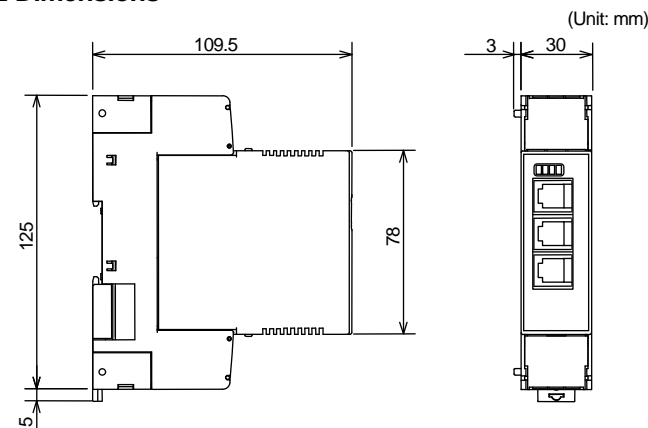
WARNING

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

1.1 Mounting Cautions

- (1) This instrument is intended to be used under the following environmental conditions. **(IEC61010-1)** [OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2]
 - (2) Use this instrument within the following environment conditions:
 - Allowable ambient temperature: -10 to +50 °C
 - Allowable ambient humidity: 5 to 95 %RH
(Absolute humidity: MAX. W. C 29.3 g/m³ dry air at 101.3 kPa)
 - Installation environment conditions: Indoor use
Altitude up to 2000 m
 - (3) Avoid the following conditions when selecting the mounting location:
 - Rapid changes in ambient temperature which may cause condensation.
 - Corrosive or inflammable gases.
 - Direct vibration or shock to the mainframe.
 - Water, oil, chemicals, vapor or steam splashes.
 - Excessive dust, salt or iron particles.
 - Excessive induction noise, static electricity, magnetic fields or noise.
 - Direct air flow from an air conditioner.
 - Exposure to direct sunlight.
 - Excessive heat accumulation.
 - (4) Mount this instrument in the panel considering the following conditions:
 - Ensure at least 50 mm space on top and bottom of the instrument for maintenance and environmental reasons.
 - Do not mount this instrument directly above equipment that generates large amount of heat (heaters, transformers, semi-conductor functional devices, large-wattage resistors).
 - If the ambient temperature rises above 50 °C, cool this instrument with a forced air fan, cooler, etc. Cooled air should not blow directly on this instrument.
 - In order to improve safety and the immunity to withstand noise, mount this instrument as far away as possible from high voltage equipment, power lines, and rotating machinery.
 - High voltage equipment: Do not mount within the same panel.
 - Power lines: Separate at least 200 mm.
 - Rotating machinery: Separate as far as possible.
 - (5) If this instrument is permanently connected to equipment, it is important to include a switch or circuit-breaker into the installation. This should be in close proximity to the equipment and within easy reach of the operator. It should be marked as the disconnecting device for the equipment.

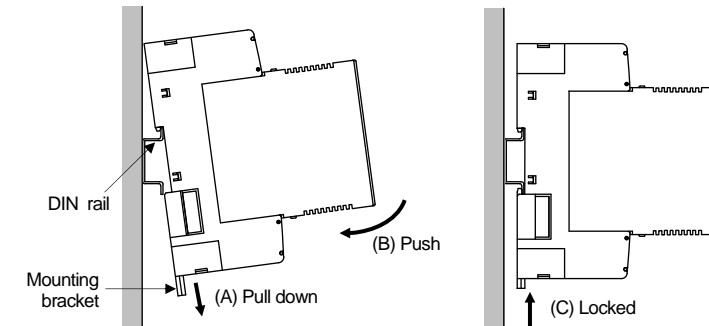
1.2 Dimensions



1.3 DIN rail Mounting

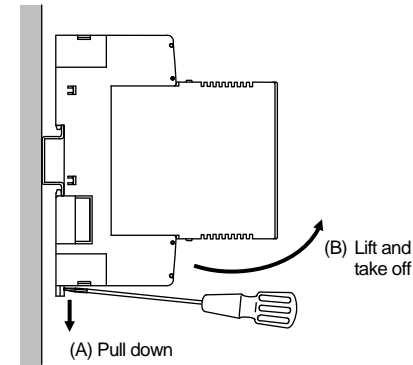
Mounting procedures

1. Pull down the mounting bracket at the bottom of the instrument (A). Attach the hooks on the top 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 it off (B).



1.4 Panel Mounting

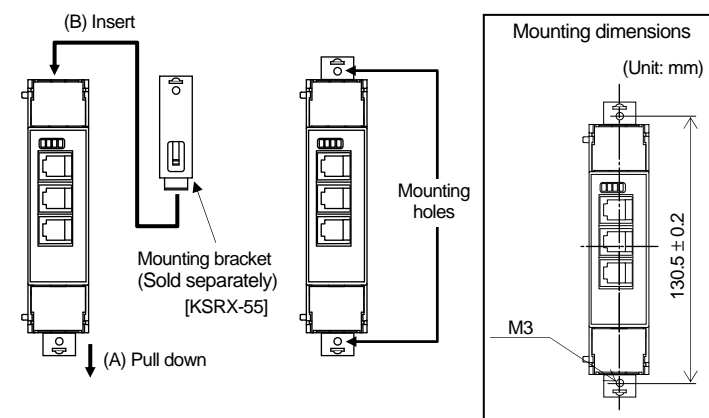
Mounting procedures

1. Pull down the mounting bracket (A) until locked and that a mounting hole appears.
2. Prepare one mounting bracket per instrument (B) sold separately (KSRX-55) and then insert it in the rear of the terminal board at top of the instrument until locked but a mounting hole does not disappear.
3. Mount each module directly on the panel with screws which are inserted in the mounting holes of the top and bottom mounting brackets.

Recommended tightening torque: 0.3 N·m (3 kgf·cm)



The customer needs to provide the M3 size screws. Select the screw length that matches the mounting panel.



2. WIRING

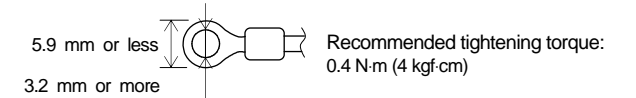


WARNING

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.

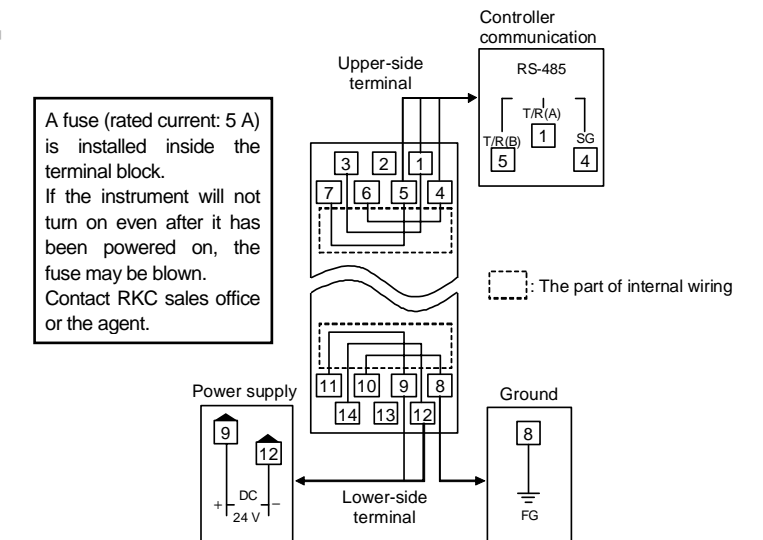
2.1 Wiring Cautions

- To avoid noise induction, keep communication signal wire away from instrument power line, load lines and power lines of other electric equipment.
- If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter.
 - Shorten the distance between the twisted power supply wire pitches 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 wiring 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).



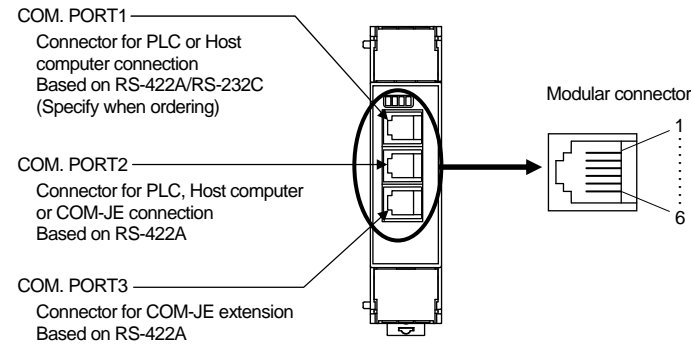
- Make sure that the any wiring such as solderless terminal is not in contact with the adjoining terminals.

2.2 Terminal Configuration



- As controller communication terminal No. 1, 4 and 5 are internally connected to terminal No. 3, 6 and 7, any terminals can be used.
- As ground and power supply terminal No. 8, 9 and 12 are internally connected to terminal No. 10, 11 and 14, any terminals can be used.
- Terminal No. 2 and No. 13 are not used.

2.3 Pin Layout of Connector



RS-422A

Pin No.	Signal name	Symbol
1	Receive data	R (A)
2	Receive data	R (B)
3	Signal ground	SG
4	Send data	T (B)
5	Send data	T (A)
6	Signal ground	SG

RS-232C

Pin No.	Signal name	Symbol
1	Unused	—
2	Send data	SD (TXD)
3	Signal ground	SG
4	Receive data	RD (RXD)
5	Unused	—
6	Signal ground	SG

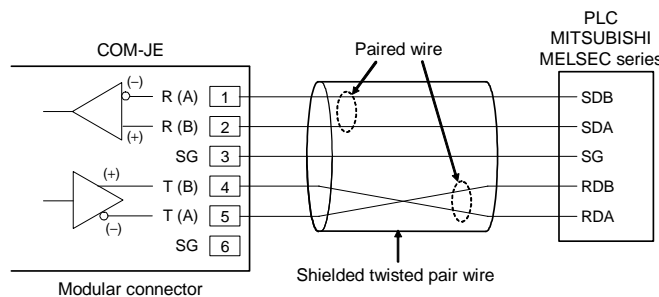
The 6-pin type modular connector should be used for the connection to the COM-JE.

Recommended manufacturer and model: Hirose Electric, TM4P-66P

2.4 Wiring to PLC

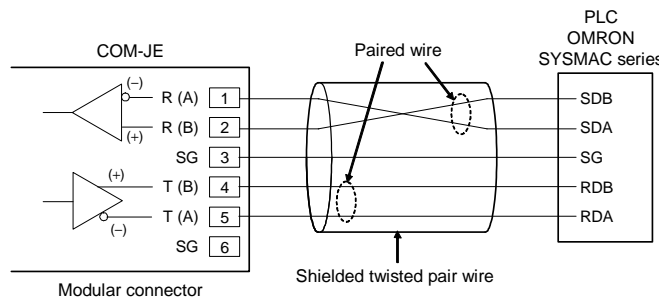
RS-422A

MITSUBISHI MELSEC series

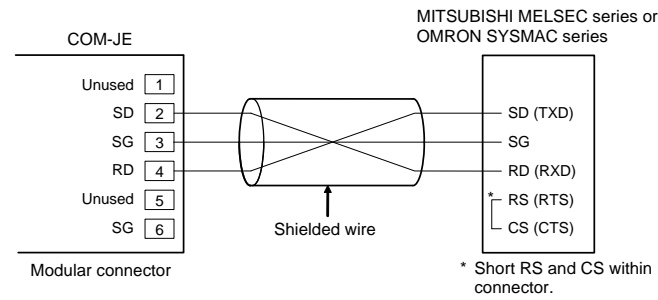


The signal polarity A and B may be reversed between the computer link unit of the MITSUBISHI MELSEC series and the COM-JE. Normally signal A of a certain device is connected to signal A of the other device, and so for B to B. However, in this case, signal polarity A should be connected to B and the polarity B to A.

OMRON SYSMAC series



RS-232C



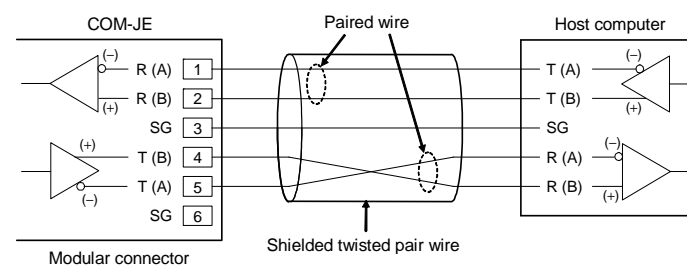
Customer is requested to prepare a communication cable fit for the COM-JE to be connected by the PLC. In addition, connection cable W-BF-01* (RKC product) can use to connect the PLC.

* Shields of the cable are connected to SG (No. 6 pin) of the COM-JE connector.

For wiring example using the connection cable W-BF-01, refer to the COM-JE Instruction Manual (IMR01Y07-E0).

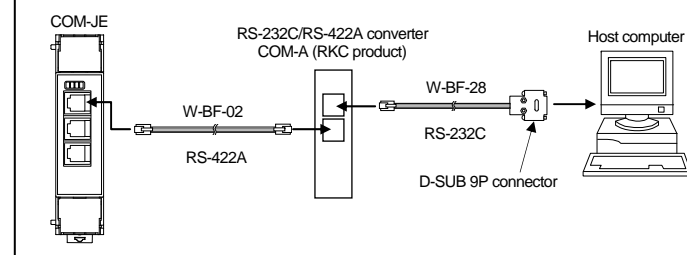
2.5 Wiring to Host Computer

RS-422A

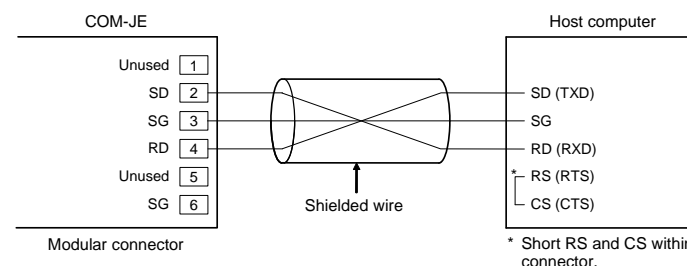


[Wiring example]

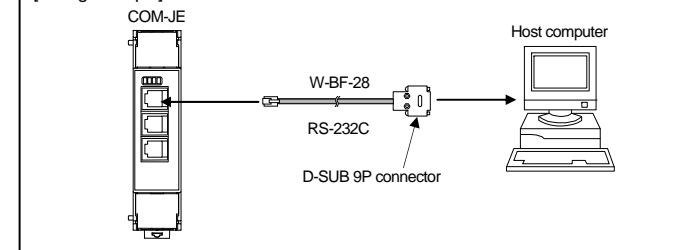
When the interface of host computer is RS-232C, connect the RS-232C/RS-422A converter between the host computer and the COM-JE.



RS-232C



[Wiring example]

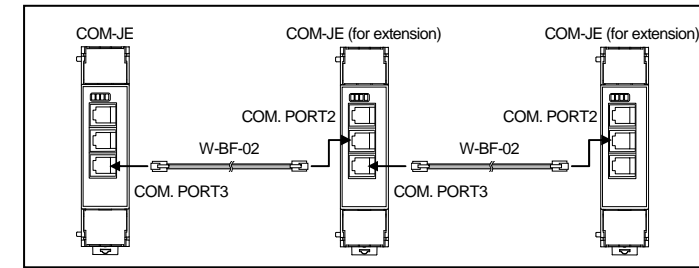


Customer is requested to prepare a communication cable fit for the COM-JE to be connected by the host computer. In addition, connection cable W-BF-02* and W-BF-28 (RKC product) can use to connect the host computer.

* Shields of the cable are connected to SG (No. 6 pin) of the COM-JE connector.

2.6 Multiple COM-JE connections

COM. PORT2 and COM. PORT3 are connectors for multi-drop connection of the COM-JE. For COM-JE extension, connect COM. PORT3 to COM. PORT2 of the COM-JE for extension.

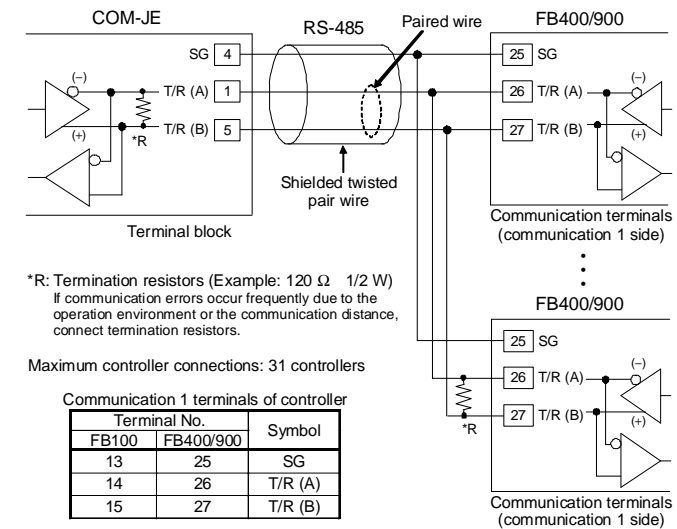


Connection cable W-BF-02* (RKC product) can use to connect the COM-JE for extension.

* Shields of the cable are connected to SG (No. 6 pin) of the COM-JE connector.

2.7 Wiring to the Controllers

Conduct wiring between the COM-JE and controller (FB100/400/900) as shown in the following. (When conducting wiring to the FB100/400/900, always conduct wiring to the Communication 1 terminal.)



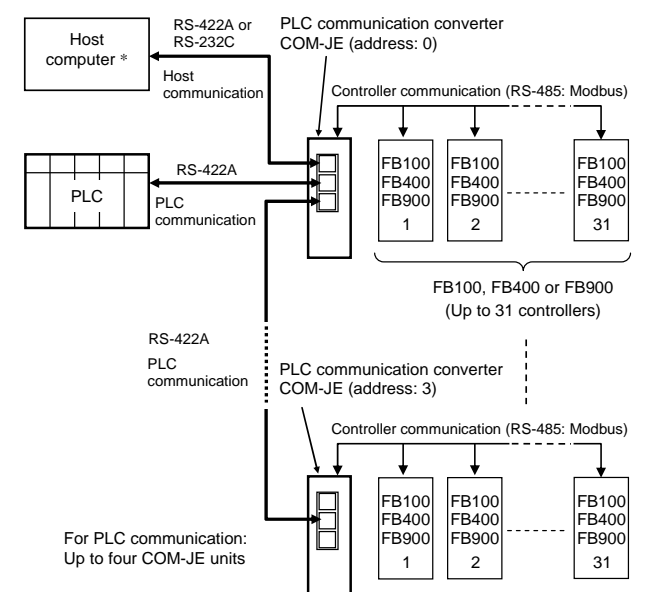
*R: Termination resistors (Example: 120 Ω 1/2 W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.

Maximum controller connections: 31 controllers

Communication 1 terminals of controller

- The cable is provided by the customer.
- The termination resistor existing within the COM-JE can be connected or disconnected by the switch. (Factory set value: Termination resistor connected)

2.8 System Configuration Example



For PLC communication: Up to four COM-JE units

* For above figure, the host computer connected to COM. PORT1 can communicate only COM-JE of address 0.

3. SPECIFICATIONS

PLC communication

Interface: Base on RS-422A, EIA standard
Base on RS-232C, EIA standard (RS-232C: COM. PORT1 only)

Protocol:

- MITSUBISHI MELSEC series special protocol
 - A-compatible 1C frame (format 4), ACPU common command (WR/WW) (A series, FX2N, FX2NC series)
 - A-compatible 1C frame (format 4), AnA/AnUCPU common command (QR/QW) (AnA/QnA series, Q series)
 - QnA-compatible 3C frame (format 4), command (0401/1401) (QnA series, Q series)
- OMRON SYSMAC series special protocol
 - C mode command (RD/WD, RE/WE)

Communication speed: 9600 bps, 19200 bps, 38400 bps
Maximum connections: Four COM-JE units per communication port of PLC
Usable PLC type:

- MITSUBISHI MELSEC series
 - Computer link module
 - AJ71UC24, A1SJ71UC24-R2, A1SJ71UC24-R4, A1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-R4, A1SJ71C24-PRF, A1SCPUC24-R2, A2CCPUC24 (PRF) etc.
 - The module which A-compatible 1C frame (format 4) or QnA-compatible 3C frame (format 4) can use.
- Serial communication modules
 - AJ71QC24N, A1SJ71QC24N, QJ71C24, LJ71C24 etc.
 - The module which A-compatible 1C frame (format 4) or QnA-compatible 3C frame (format 4) can use.
- Adapter
 - FX0N-232ADP, FX0N-485ADP, FX2NC-485ADP, FX3U-485ADP
- Expanded function board
 - FX2N-232BD, FX2N-485BD, FX3U-485BD
- OMRON SYSMAC series
 - High-order link unit
 - C200H-LK202-V1, C500-LK203, C120-LK202-V1 (SYSMAC C series) etc.
 - CPU unit with a built in communication port
 - CPU unit of SYSMAC CS1 series and CJ1 series
 - Serial communication board
 - CS1W-SCB41 (SYSMAC CS1 series), CJ1W-SCU41 (SYSMAC CJ1 series) etc.

Host communication

Interface: Base on RS-422A, EIA standard
Base on RS-232C, EIA standard (RS-232C: COM. PORT1 only)

Protocol: RKC communication (ANSI X3.28-1976 subcategories 2.5 and B1) or Modbus-RTU

Communication speed: 9600 bps, 19200 bps, 38400 bps
Maximum connections: RS-422A: 16 (COM-JE)
RS-232C: 1 (COM-JE)

Controller communication

Interface: Base on RS-485, EIA standard
Protocol: Modbus-RTU
Communication speed: 9600 bps, 19200 bps, 38400 bps
Maximum connections: 31 controllers (FB100/400/900)

General specifications

Power supply voltage: 24 V DC
Power supply voltage range: 21.6 to 26.4 V DC
Current consumption: 70 mA max.
Allowable ambient temperature: -10 to +50 °C
Allowable ambient humidity: 5 to 95 %RH (Absolute humidity: MAX.W.C 29.3 g/m³ dry air at 101.3 kPa)
Installation environment conditions: Indoor use
Altitude up to 2000 m
Weight: Approx. 170 g

Standard

Safety standard: UL: UL61010-1
cUL: CAN/CSA-C22.2 No.61010-1
CE marking: LVD: EN61010-1
EMC: EN61326-1
EN55011
RCM: EN55011

4. MODEL CODE

COM-JE-□*01
(1) (2)

(1) Communication interface (COM. PORT1) *

1: RS-232C 4: RS-422A

* COM. PORT2/COM. PORT3 is RS-422A, controller communication terminal is RS-485 (Fixed).

(2) Corresponding to the RKC controller

01: FB100/400/900

Modbus is a registered trademark of Schneider Electric.
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