

COM-MY Installation Manual

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IMR02E01-E2

Thank you for purchasing this 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 this manual in a convenient location for easy reference.

This manual describes the mounting, wiring and specifications only. For the operations, see COM-MY Instruction Manual (IMR02E02-E□).

The COM-MY manuals can be downloaded from our website:
URL: http://www.rkinst.com/english/manual_load.htm

Product check

COM-MY Installation Manual (This manual)	1
COM-MY Instruction Manual (IMR02E02-E□)	1
COM-MY Communication Data List (IMR02E03-E□)	1
Joint connector cover (KSRZ-517A)	2
Power terminal cover (KSRZ-518A)	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

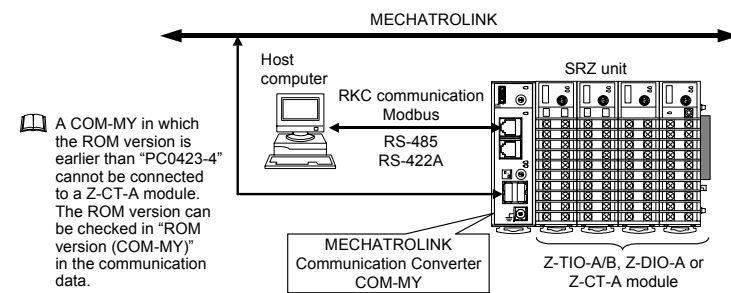
- This product is intended for use with industrial machines, test and measuring equipment. (It is not designed for use with medical equipment and nuclear energy.)
- This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take adequate 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.

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.

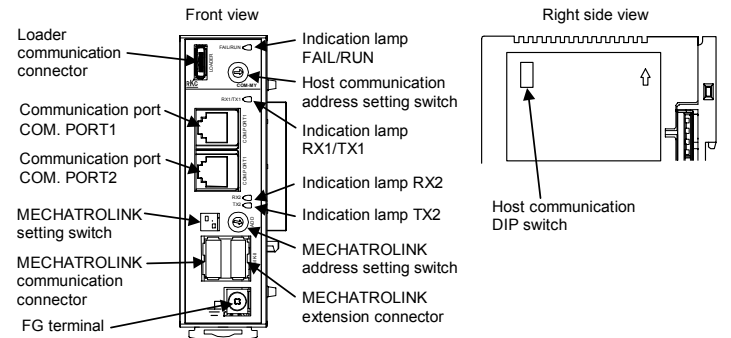
1. OUTLINE

The COM-MY is a MECHATROLINK gateway for RKC SRZ. Multi-zone temperature control system can be easily achieved by connecting function modules (Z-TIO-A/B, Z-DIO-A, Z-CT-A module of SRZ) to COM-MY. The combination of COM-MY and function module of SRZ is called an SRZ unit.



2. PARTS DESCRIPTION

Mainframe



Indication lamp

FAIL/RUN [Green or Red]	When normal: A green lamp is on (RUN)
	Self-diagnostic error: A green lamp flashes (FAIL)
	Instrument abnormality: A red lamp is on (FAIL)
RX1/TX1 [Green]	During host communication data send and receive: Turns on
RX2 [Green]	During MECHATROLINK data receive: Turns on
TX2 [Green]	During MECHATROLINK data send: Turns on

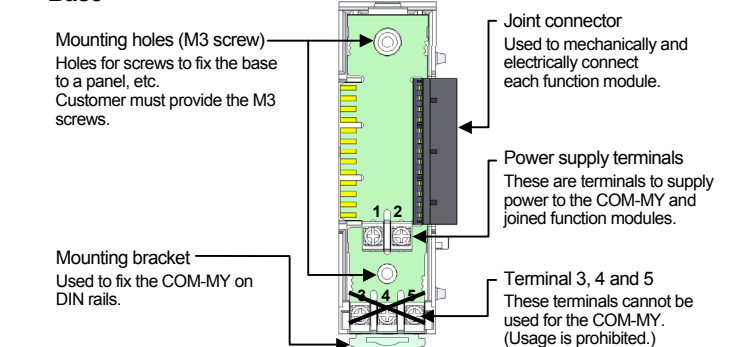
Communication port (modular connector) and communication connector

COM. PORT1	Use to connecting the Operation panel or Host computer. [RS-485 or RS-422A]
COM. PORT2	Use to connecting the extension of the SRZ unit. [RS-485 or RS-422A]
MECHATROLINK communication connector	Use to connecting the MECHATROLINK.
MECHATROLINK extension connector	Use to connecting the extension of the MECHATROLINK.
Loader communication connector	Use to connecting the communication converter and personal computer when loader communication is performed.

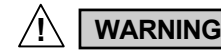
Switch

Host communication address setting switch	Sets unit address for host communication.
MECHATROLINK setting switch	Sets number of transmission bytes and station address high-order digit for MECHATROLINK.
MECHATROLINK address setting switch	Sets station address low-order digit for MECHATROLINK.
Host communication DIP switch	<ul style="list-style-type: none"> Sets communication speed, communication protocol and data bit configuration corresponding to host communication. Selects MECHATROLINK-I or MECHATROLINK-II. Sets host communication DIP switch setting validity/invalidity.

Base



3. MOUNTING

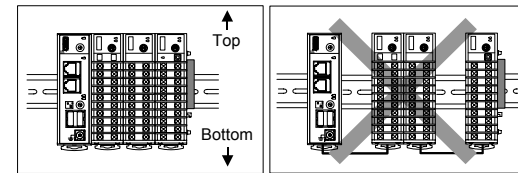


WARNING

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

3.1 Mounting Cautions

- This instrument is intended to be used under the following environmental conditions. (IEC61010-1) [OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2]
 - Use this instrument within the following ambient temperature and ambient humidity.
 - Allowable ambient temperature: 0 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
- 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.
- Take the following points into consideration when mounting this instrument in the panel.
 - 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, or the like.
 - 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.
- Be sure the COM-MY and function modules are joined when using them.



- This instrument is Permanently connected to equipment, please take the following points.
 - A switch or circuit-breaker shall be included in the building installation.
 - It shall be in close proximity to the equipment and within easy reach of the operator.
 - It shall be marked as the disconnecting device for the equipment.

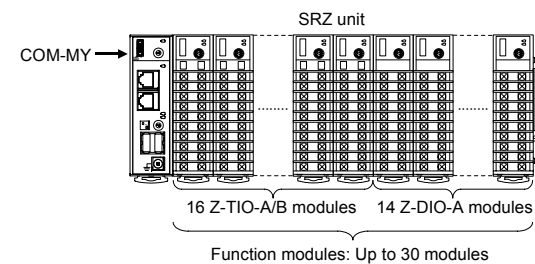
3.2 Joining Each Module

Before joining the COM-MY and function modules, use the Host communication DIP switch to make the communication settings. For the setting procedure, see COM-MY Instruction Manual (IMR02E02-E□).

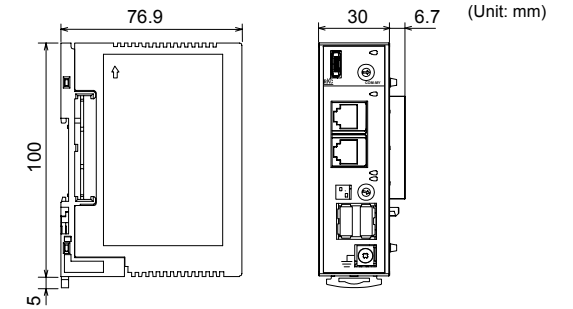
The maximum number of function modules (Z-TIO-A/B, Z-DIO-A, Z-CT-A module) described in the following can be joined per COM-MY. For details on joining function modules with the COM-MY, see the Z-TIO INSTRUCTION MANUAL (IMS01T01-E□).

- When joining function modules of the same type: Up to 16 modules
- When joining function modules of two or more different types: Up to 30 modules (However, the maximum joinable number of function modules of the same type is 16.)

[Example] When the Z-TIO-A/B and Z-DIO-A modules are joined

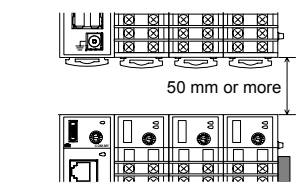


3.3 Dimensions



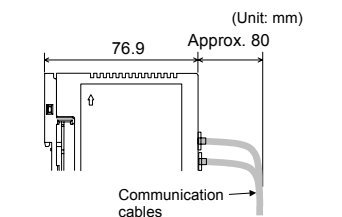
Space required between each instrument vertically

When the COM-MY is mounted on the panel, allow a minimum of 50 mm at the top and bottom of the COM-MY to attach the COM-MY to the mainframe.



Depth for communication cables mounting

Space for communication cables must be considered when installing.



Procedure for mounting or removing

The procedure for mounting or removing the COM-MY is the same as that of the function module (Z-TIO-A/B, Z-DIO-A, Z-CT-A module). Both DIN rail mounting and screw mounting are available. For the mounting or removing, see the Z-TIO INSTRUCTION MANUAL (IMS01T01-E□).

4. WIRING

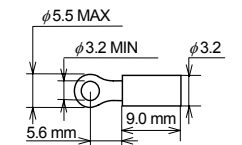


WARNING

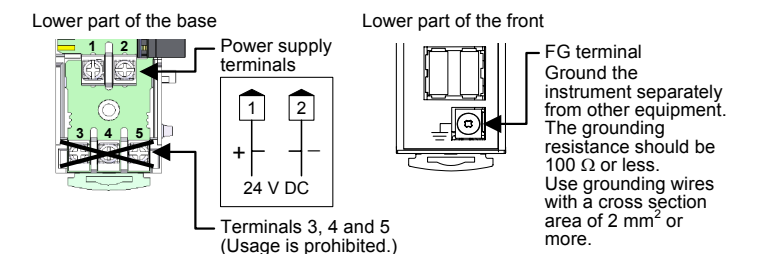
To prevent electric shock or instrument failure, do not turn on the power until all the wiring is completed.

4.1 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 the end-use equipment. The power supply must be in compliance with a limited-energy circuits (maximum available current of 8 A).
- Select the power capacity which is appropriate for the total power consumption of all joined modules (including COM-MY) and the initial current surge when the power is turned on. Power consumption (at maximum load): 80 mA max. (at 24 V DC)
Rush current: 12 A or less
- When connecting the wiring to the terminals on the base, use the specified solderless terminals. Only these specified solderless terminals can be used due to the insulation between the terminals.
 - Screw Size: Power supply terminals: M3 × 7 (with 5.8 × 5.8 square washer)
FG terminal M3 × 6
 - Recommended tightening torque: 0.4 N·m (4 kgf·cm)
 - Applicable wire: Solid/twisted wire of 0.25 to 1.65 mm²
 - Specified solderless terminal: Manufactured by J.S.T MFG CO., LTD.
Circular terminal with isolation V1.25-MS3 (M3 screw, width 5.5 mm, hole diameter 3.2 mm)

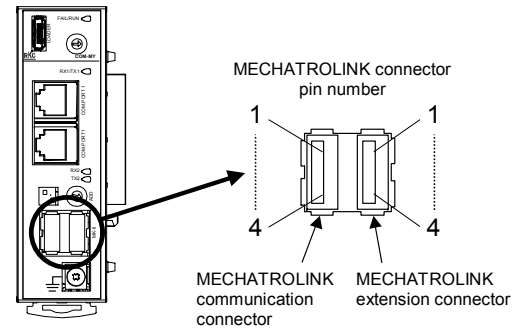


4.2 Terminal Configuration



Supply the power to only one of the joined modules or COM-MY. When power is supplied to any one of the joined modules or COM-MY, all of the joined modules and COM-MY will receive power.

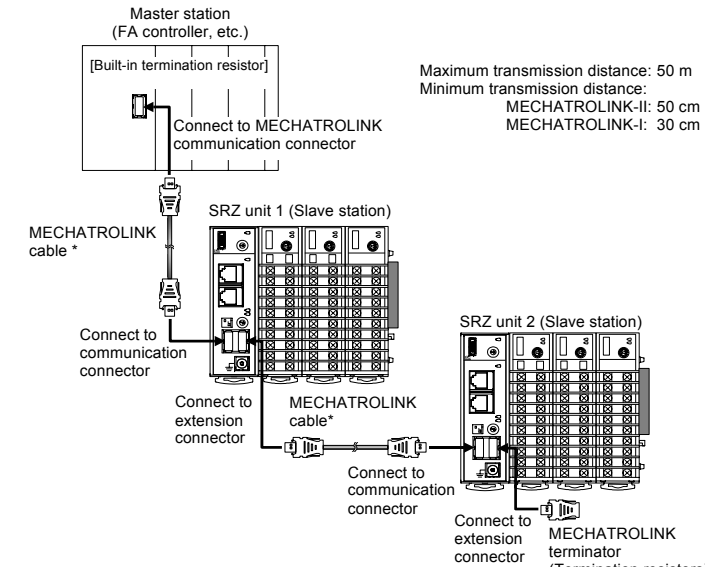
4.3 Connection to MECHATROLINK



Pin No.	Signal name	Symbol
1	Unused	NC
2	Signal -	/DATA
3	Signal +	DATA
4	Unused	SH
Shell	Connects the shield wire.	— (Shield)

Connection example

Use MECHATROLINK cable to connect the master station and the COM-MY. Install MECHATROLINK terminator (termination resistors) to both ends of a trunk line in MECHATROLINK. The MECHATROLINK cable and MECHATROLINK terminator must be provided by the customer.

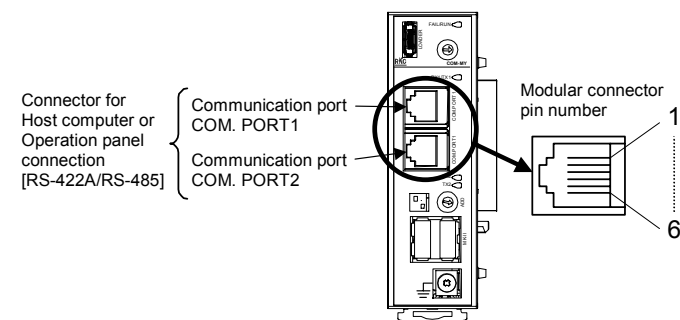


* MECHATROLINK cable (YASKAWA Controls Co., Ltd. product)
JEPMC-W6002-□□-E [□□: Cable length]
JEPMC-W6003-□□-E (with Ferrite Core) [□□: Cable length]

JEPMC-W6022 (YASKAWA Controls Co., Ltd. product)
JEPMC-W6023 (YASKAWA Controls Co., Ltd. product)

The details of the MECHATROLINK are connected to the website of MECHATROLINK Members Association, and obtain necessary information.
URL: <http://www.mechatrolink.org>

4.4 Connection to Host Computer

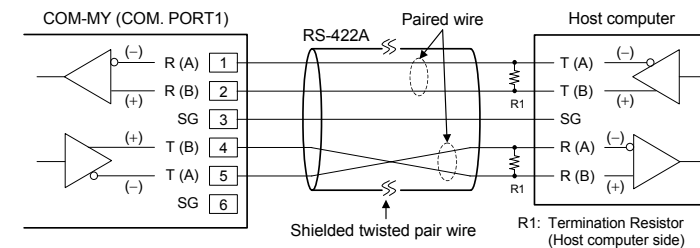


RS-422A			RS-485A		
Pin No.	Signal name	Symbol	Pin No.	Signal name	Symbol
1	Receive data	R (A)	1	Send/receive data	T/R (A)
2	Receive data	R (B)	2	Send/receive data	T/R (B)
3	Signal ground	SG	3	Signal ground	SG
4	Send data	T (B)	4	Unused	—
5	Send data	T (A)	5	Unused	—
6	Signal ground	SG	6	Signal ground	SG

The six-pin type modular connector should be used for the connection to the COM-MY. (Recommended manufacturer and model: Hirose Electric, TM4P-66P)

RS-422A

Up to 16 SRZ units can be connected to a host computer communication port.

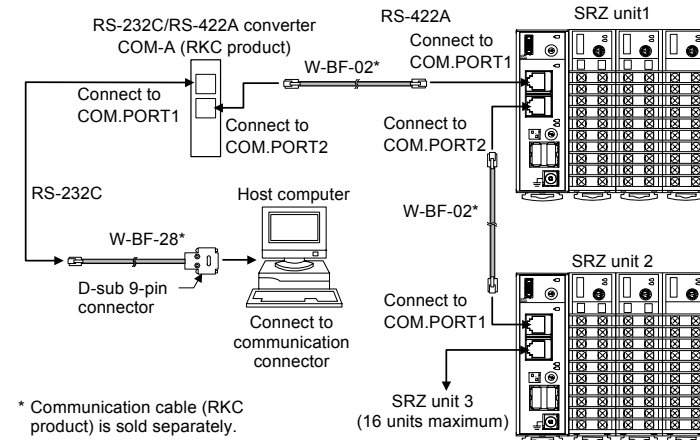


If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors to the COM-MY and the other party unit.

Insert the termination resistor of COM-MY side to COM. PORT2. For details, see ■ COM-MY termination resistor.

When the interface of host computer is RS-232C

Connect the RS-232C/RS-422A converter between the host computer and the COM-MY.



* Communication cable (RKC product) is sold separately.

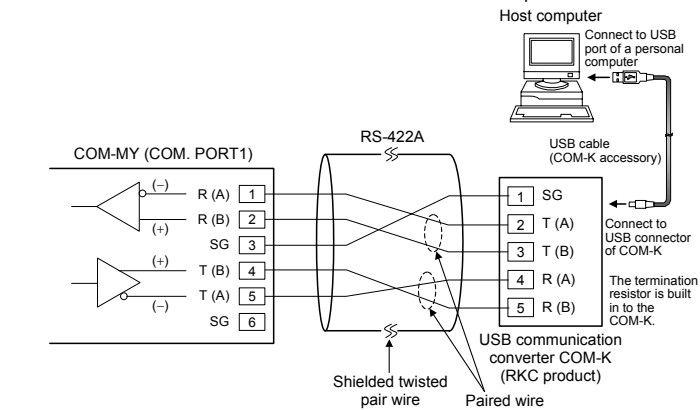
Customer is requested to prepare a communication cable fit for the COM-MY to be connected by the host computer. Communication cable W-BF-02* and W-BF-28* (RKC product) can use to connect host computer.

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

Recommended RS-232C/RS-422A converter: COM-A (RKC product)
For the COM-A, see the COM-A/COM-B Instruction Manual (IMSRM33-ED).

When the host computer has a USB connector

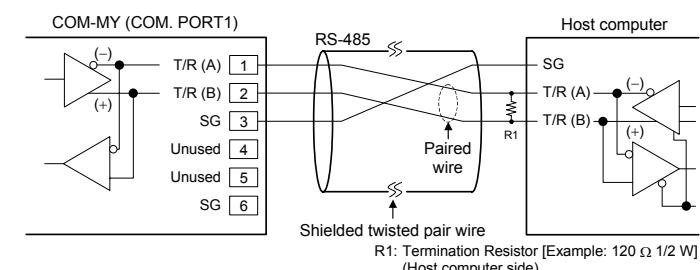
Connect the USB communication converter between the host computer and the COM-MY.



For the COM-K, see the COM-K Instruction Manual (IMR01Z01-ED).

RS-485

Up to 16 SRZ units can be connected to a host computer communication port.

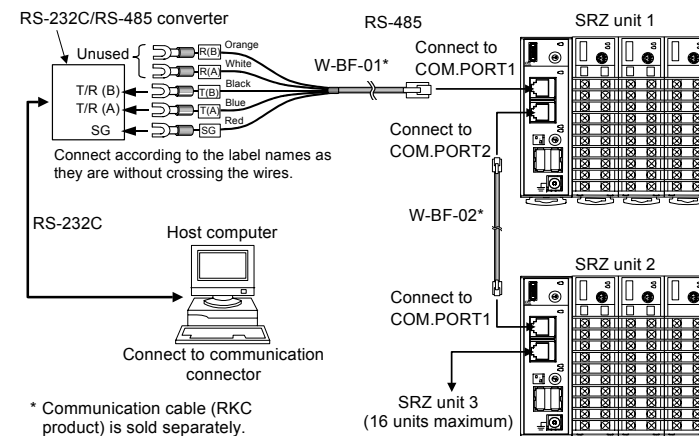


If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors to the COM-MY and the other party unit.

Insert the termination resistor of COM-MY side to COM. PORT2. For details, see ■ COM-MY termination resistor.

When the interface of host computer is RS-232C

Connect the RS-232C/RS-485 converter between the host computer and the COM-MY.

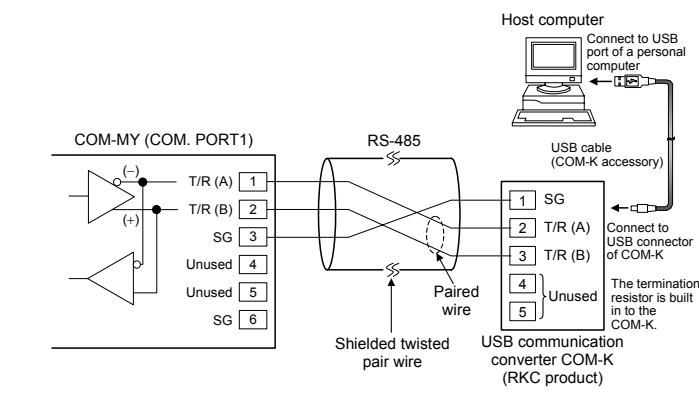


When the host computer (master) uses Windows 95/98/NT/2000/XP, use a RS-232C/RS-485 converter with an automatic send/receive transfer function. Recommended: CD485, CD485/V Data Link product, Inc. or equivalent.

Customer is requested to prepare a communication cable fit for the COM-MY to be connected by the host computer. Communication cable W-BF-01* and W-BF-02* (RKC product) can use to connect host computer.
* Shields of the cable are connected to SG (No. 6 pin) of the COM-MY connector.

When the host computer has a USB connector

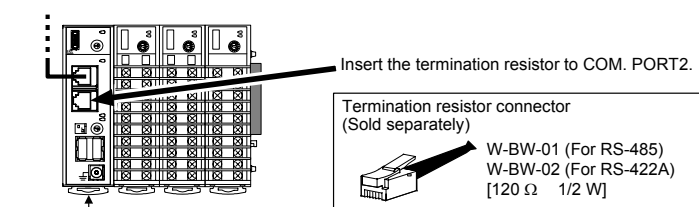
Connect the USB communication converter between the host computer and the COM-MY.



For the COM-K, see the COM-K Instruction Manual (IMR01Z01-ED).

COM-MY termination resistor

If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors to the COM-MY and the other party unit.

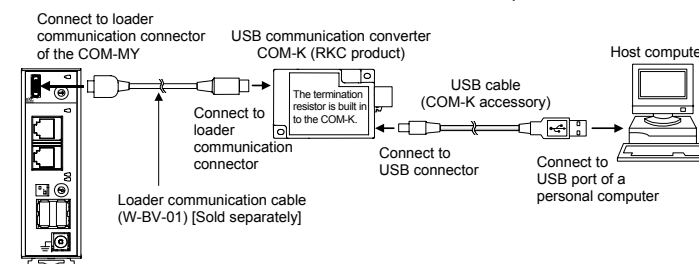


When multidrop connected, connect a termination resistor to the COM-MY at the farthest end of the communication line.

For the termination resistor of the other party unit, see the other party unit Instruction Manual.

Loader communication

Connect a USB communication converter between the host computer and the COM-MY.



The Loader port is only for parameter setup.

For the COM-K, see the COM-K Instruction Manual (IMR01Z01-ED).

5. SPECIFICATIONS

MECHATROLINK communication

Protocol	MECHATROLINK-II	MECHATROLINK-I
Communication speed	10 Mbps	4 Mbps
Maximum transmission distance	50 m	50 m
Minimum transmission distance	50 cm	30 cm
Transmission cable	MECHATROLINK shielded twisted-pair wire (Characteristic impedance = 130 Ω)	MECHATROLINK shielded twisted-pair wire (Characteristic impedance = 120 Ω)
Termination resistors	MECHATROLINK terminator	MECHATROLINK terminator
Number of stations	30 stations	15 stations (Master is JL-080: 14 stations)
Topology	Bus	Bus
Cycle time	1 to 8 ms (Can be selected with master station)	2 ms
Communications method	Master/slave synchronous	Master/slave synchronous
Encoding	Manchester encoding	Manchester encoding
String size	17 bytes or 32 bytes (Can be selected)	17 bytes
Transmission channel insulation	Transformer insulation	Transformer insulation
ASIC	JL-052	JL-052
Type of station	Slave station	Slave station

Host communication

Interface: Based on RS-422A, EIA standard
Based on RS-485, EIA standard
Protocol: RKC communication (ANSI X3.28-1976 subcategory 2.5, B1)
Modbus-RTU
Communication speed: 4800 bps, 9600 bps, 19200 bps, 38400 bps
Maximum connections: 16 SRZ units per communication port of host computer
Termination resistor: Externally connected (modular connector)

Loader communication

Connection method: Connection with a loader communication cable for our USB converter COM-K (sold separately).
Protocol: RKC communication (ANSI X3.28-1976 subcategory 2.5, B1)
Communication speed: 38400 bps
Maximum connections: 1 SRZ unit per communication port of host computer

General specifications

Power supply voltage: 24 V DC
Power supply voltage range: 21.6 V to 26.4 V DC [Including power supply voltage variation]
80 mA max.
Rush current: 12 A or less
Current consumption: 0 to 50 °C
Allowable ambient temperature: 5 to 95 %RH (Absolute humidity: MAX.W.C 29.3 g/m³ dry air at 101.3 kPa)
Allowable ambient humidity: Indoors use, Altitude up to 2000 m
Weight: Approx. 120 g

Standard
Safety standard: UL: UL61010-1
cUL: CAN/CSA-C22.2 No. 61010-1
CE marking: LVD: EN61010-1
OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2, Class II (Reinforced insulation)
EMC: EN61326
C-Tick: AS/NZS CISPR11 (equivalent to EN55011)

6. MODEL CODE

COM-MY-□*02
(1) (2)

(1) Host communication interface (COM. PORT1, COM. PORT2)

4: RS-422A 5: RS-485

(2) Corresponding to the RKC controller

02: SRZ

Other peripherals and accessories (Sold separately)

Communication cable [Modular ↔ Y-shaped terminal lugs] (W-BF-01-□, □: Cable length)
Communication cable [Modular ↔ Modular] (W-BF-02-□, □: Cable length)
Communication cable [Modular ↔ D-sub 9-pin] (W-BF-28-□, □: Cable length)
Termination resistor connector for COM-MY [For RS-485, 120 Ω 1/2 W] (W-BW-01)
Termination resistor connector for COM-MY [For RS-422A, 120 Ω 1/2 W] (W-BW-02)
Loader communication cable (W-BV-01-1500, Cable length: 1.5 m)
End plate (DEP-01, Package of 2 plates)

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Modbus is a registered trademark of Schneider Electric.
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HEADQUARTERS: 16-6, KUGAHARA 5-CHOME, OHTA-KU TOKYO 146-8515 JAPAN
PHONE: 03-3751-9799 (+81 3 3751 9799) E-mail: info@rkcinst.co.jp
FAX: 03-3751-8585 (+81 3 3751 8585) NOV. 2007