EtherNet/IP™ Communication Converter

COM-ME-2 [For SRZ] Installation Manual

IMR02E40-E1

In order to achieve maximum performance and ensure proper operation of the instrument, carefully read all the instructions in this manual. Please place the manual in a convenient location for easy reference. This manual describes the mounting, wiring and specifications only.

For detailed handling procedures and various function settings, refer to separate **COM-ME-2 [For SRZ] Instruction Manual (IMR02E39-E□)**.
The manual can be downloaded from the official RKC website:
https://www.rkcinst.co.jp/english/download-center/

■ Product check

COM-ME-2 [For SRZ] Installation Manual (IMR02E40-E1) 1
COM-ME-2 [For SRZ] Host Communication Data List (IMR02E37-E□) 1
COM-ME-2 [For SRZ] Object Model (IMR02E38-E□) 1
Joint connector cover (KSRZ-517A) 2
Power terminal cover (KSRZ-518A) 1

■ Safety precautions

⚠ WARNING

- To prevent injury to persons, damage to the instrument and the equipment, a suitable external protection device shall be required.
- All wiring must be completed before power is turned on to prevent electric shock, fire or damage to the instrument and the equipment.
- This instrument must be used in accordance with the specifications to prevent fire or damage to the instrument and the 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 may occur and warranty is void under these conditions.

⚠ CAUTION

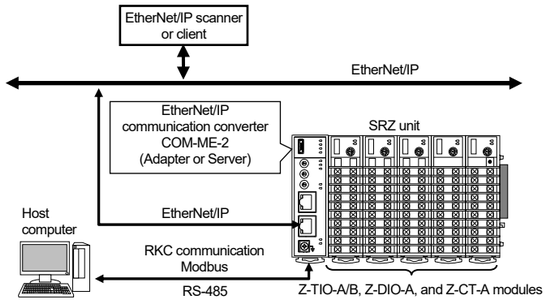
- This product is intended for use with industrial machines, test and measuring equipment. (It is not designed for use with medical equipment and nuclear energy plant.)
- This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take additional measures.
- 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 to operating personnel.
- All precautions described in this manual should be taken to avoid damage to the instrument or equipment.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- All wiring must be in accordance with local codes and regulations.
- To prevent instrument damage as a result of failure, protect the power line and the input/output lines from high currents with a suitable overcurrent protection device with adequate breaking capacity such as a fuse, circuit breaker, etc.
- A malfunction in this product may occasionally make control operations impossible or prevent alarm outputs, resulting in a possible hazard. Take appropriate measures in the end use to prevent hazards in the event of malfunction.
- 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 dissipation.
- 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 may occur. Use a soft, dry cloth to remove stains from the instrument.
- 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 explanation purpose.
- 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.
- Various symbols are used on the equipment, they have the following meaning.
  ⚠ : Caution (This symbol is used where the instruction manual needs to be consulted for the safety of operator and equipment.)
  This symbol on the left side of the product denotes caution for electric shock and damages to the equipment. Read the following items before using this product.
  - ■ Safety precautions "WARNING"
  - **3. MOUNTING** "**WARNING**" and **4. WIRING** "**WARNING**"

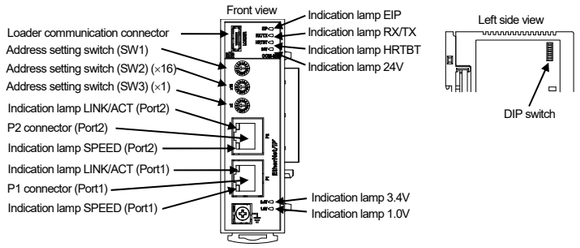
1. OUTLINE

The COM-ME-2 (hereafter called COM-ME) is an EtherNet/IP™ gateway for RKC SRZ.
Multi-zone temperature control system can be easily achieved by connecting function modules (Z-TIO-A/B, Z-DIO-A and Z-CT-A modules) of SRZ to COM-ME. The combination of COM-ME and function module of SRZ is called an SRZ unit.



2. PARTS DESCRIPTION

■ Front Panel



Indication lamp

EIP	[Green or Red]	• When the power is off or when there is no IP address: Turns off • When in IP address setting mode using the DIP switch (When the IP address is set or defaulted): Green lamp blinks • When a connection is not established in online state: Green lamp blinks • When a connection is established in online state: Green lamp turns on • When connection timeout: Red lamp blinks • When the IP address is overlapped, when the IP address setting is wrong, or when a serious failure has occurred: Red lamp turns on
RX/TX	[Green]	During host communication data send and receive: Green lamp turns on
HRTBT	[Green]	• Self-diagnostic error (Major fault): Turns off • While software is properly running: Green lamp turns on
24V	[Green]	While 24V power is supplied: Green lamp turns on
3.4V	[Green]	While 3.4V power is properly supplied: Green lamp turns on
1.0V	[Green]	While 1.0V power is properly supplied: Green lamp turns on
LINK/ACT (Port1/Port2)	[Green]	• No link or No power: Turns off • Link is being established or in data communication: Green lamp turns on
SPEED (Port1/Port2)	[Yellow]	• When connected at 100Mbps or when not in communication: Turns off • When connected at 10Mbps: Yellow lamp turns on

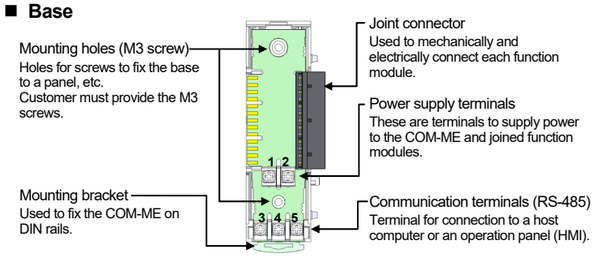
Communication port (modular connector) and communication connector

Loader communication connector	Used to connect the communication converter and personal computer when loader communication is performed.
P1 connector (Port1) P2 connector (Port2)	Use to connect the EtherNet/IP.

Switch

Address setting switch (SW1)	• During operation: Not used • During IP address setting: Used to set the IP address.
Address setting switch (SW2, SW3) (×16, ×1)	• Sets the host communication address in hexadecimal during the operation. • Sets the IP address in hexadecimal during the IP address setting.
DIP switch	• Sets communication speed and communication protocol corresponding to host communication. • Sets DIP switch setting validity/invalidity. • Used to set the IP address setting and how it works.

■ Base



3. MOUNTING

⚠ WARNING

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

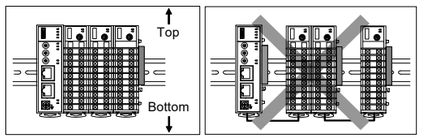
3.1 Mounting Cautions

(1) This instrument is intended to be used under the following environmental conditions.
(IEC 61010-1) [POLLUTION DEGREE 2]

(2) Use this instrument within the following environment conditions:
- Allowable ambient temperature: –10 to +55 °C
- Allowable ambient humidity: 5 to 95 %RH (Absolute humidity: MAX. W. C 29 g/m^3 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 main unit.
- 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 the equipment that generates large amount of heat (heaters, transformers, semi-conductor functional devices, large-wattage resistors.)
- If the ambient temperature rises above 55 °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.
- For correct functioning mount this instrument in a horizontal position.
- Be sure the COM-ME and function modules are joined when using them.



(5) In case this instrument is connected to a supply by means of a permanent connection, a switch or circuit-breaker shall be included in the installation. This 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.

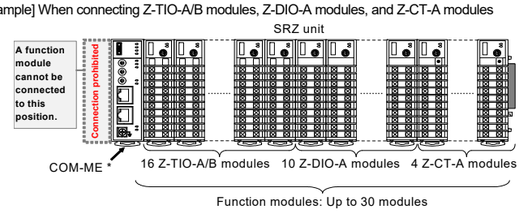
3.2 Joining Each Module

Finish host communication settings before connecting the COM-ME to the function modules. Refer to 5. COMMUNICATION SETTING (backside) for how to set the module.

The maximum number of function modules (Z-TIO-A/B, Z-DIO-A, and Z-CT-A) connectable to one COM-ME is described below. For details on joining function modules with the COM-ME, refer to 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.)

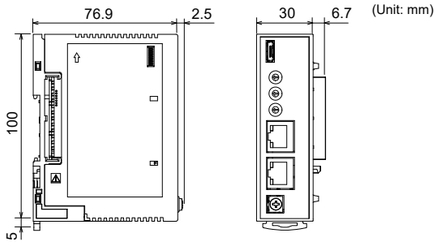
[Example] When connecting Z-TIO-A/B modules, Z-DIO-A modules, and Z-CT-A modules



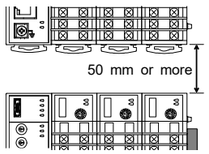
* COM-ML and Z-COM modules cannot be connected to the COM-ME module.

3.3 Dimensions

(Unit: mm)

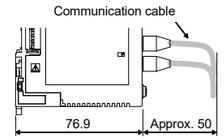


● **Space required between each instrument vertically**
When the COM-ME is mounted on the panel, allow a minimum of 50 mm at the top and bottom of the COM-ME to attach the COM-ME to the main unit.



● **Depth for communication cables mounting**
Space for communication cables must be considered when installing

(Unit: mm)



■ Procedure for mounting or removing

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

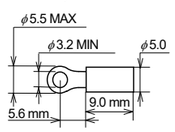
4. WIRING

⚠ WARNING

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

4.1 Wiring Cautions

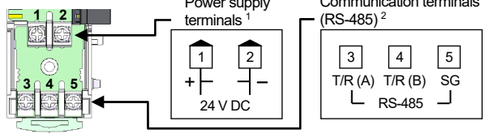
- To avoid noise induction, keep communication signal wire away from instrument power line, load lines and power lines of other electric equipment.
- If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter.
  – Shorten the distance between the twisted 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 input, supply power from a "SELV" circuit defined as IEC 60950-1.
- 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 5.6 A).
- Select the power capacity which is appropriate for the total power consumption of all joined modules (including COM-ME) and the initial current surge when the power is turned on.
  Power consumption (at maximum load): 150 mA max. (at 24 V DC)
  Rush current: 15 A or less
- When connecting the wiring to the terminals, use the recommended solderless terminals. Only these recommended solderless terminals can be used due to the insulation between the terminals.
  Screw Size: Power supply terminals and Communication 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 mm^2
  Recommended 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)



- Make sure that during field wiring parts of conductors cannot come into contact with adjacent conductive parts.

4.2 Terminal Configuration

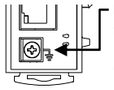
● **Lower part of the base**



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

[2] The communication lines of the modules connected to the COM-ME are mutually interconnected. Make the wiring of the communication terminals between the COM-ME and any one of the modules.

● **Lower part of the front**

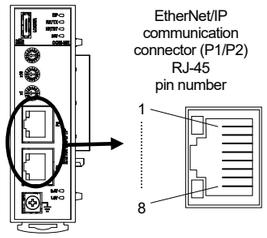


FG terminal

Ground the instrument separately from other equipment.

The grounding resistance should be 100 Ω or less. Use grounding wires with a cross section area of 2 mm^2 or more.

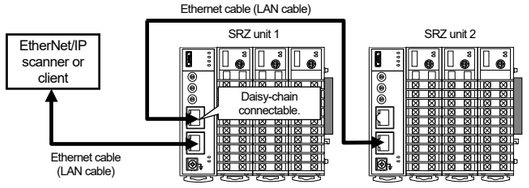
4.3 Connection to EtherNet/IP



Pin No.	Signal name	Symbol
1	Send data +	TX+
2	Send data –	TX–
3	Receive data +	RX+
4	Unused (75 ohm termination)	—
5	Unused (75 ohm termination)	—
6	Receive data –	RX–
7	Unused (75 ohm termination)	—
8	Unused (75 ohm termination)	—

■ Connection Example

The Ethernet cable (LAN cable) which is marketed can be connected. The Ethernet cable (LAN cable) must be provided by the customer.



Ethernet straight through cable and Ethernet crossover cable may be used. Use category 5 Ethernet cable (LAN cable).

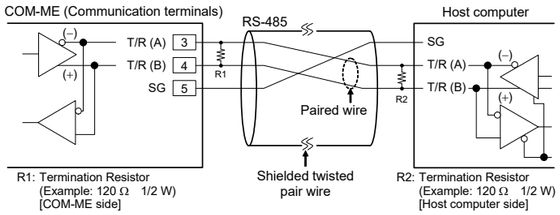
For EtherNet/IP, refer to the website of ODVA (Open DeviceNet Vendor Association).
https://www.odva.org

4.4 Connection to Host Computer

Use RS-485 interface for connection to the host computer.

■ Connection Example

Up to 31 modules of SRZ can be connected to one communication port of the host computer.



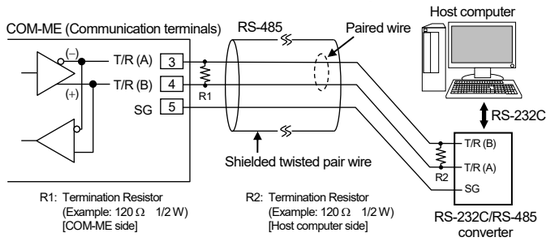
Pin number and signal details

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

If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors to the host computer side.

● **When the interface of host computer is RS-232C**

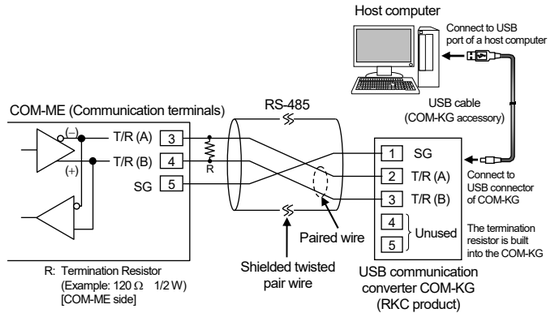
Connect the RS-232C/RS-485 converter between the host computer and the COM-ME.



Recommended RS-232C/RS-485 converter:
CD485, CD485/V Data Link product, Inc. or equivalent.

● **When the host computer has a USB connector**

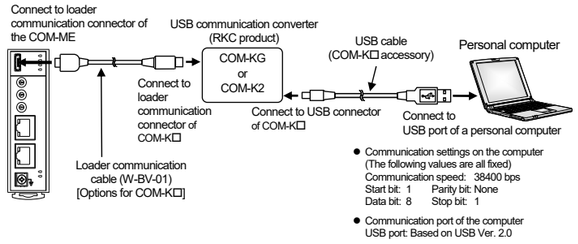
Connect the USB communication converter between the host computer and the COM-ME.



For the COM-KG, refer to the **COM-KG Instruction Manual**. You can also use our USB communication converter COM-K2.

■ Loader communication

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



The Loader port is only for parameter setup. Not used for data logging during operation.

During the loader communication, the COM-ME requires an external power source. The COM-ME will not function on the USB power from a personal computer alone.

The module address for loader communication is fixed at "0."

For the COM-KG, refer to the **COM-KG Instruction Manual**. You can also use our USB communication converter COM-K2.

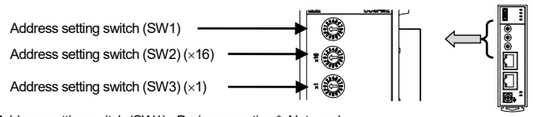
5. COMMUNICATION SETTINGS

5.1 Address Setting

These switches are used to set the device address for the host communication and the IP address for various network communications.
Use a small flat-blade screwdriver to configure the setting.

Set the address such that it is different to the other addresses on the same line. Otherwise, problems or malfunction may result.

To activate the set device address, turn off the power once and turn it back on again.



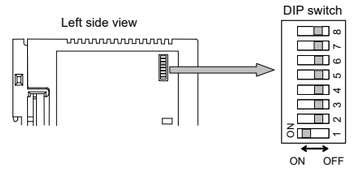
- Address setting switch (SW1): During operation *: Not used
  During IP address setting *: Setting operation **
  Setting range: 00 to 0Fh (Factory set value: 00h)
- Address setting switch (SW2): During operation *: Host communication address (high order)
  During IP address setting *: IP address (high order)
  Setting range: 00 to 0Fh (Factory set value: 00h)
- Address setting switch (SW3): During operation *: Host communication address (low order)
  During IP address setting *: IP address (low order)
  Setting range: 00 to 0Fh (Factory set value: 00h)

* How to recognize "during operation" and "during IP address setting"
During operation: Started with the DIP switch No.6 OFF and No.7 OFF
During IP address setting: Started with DIP switch No.6 OFF and No.7 ON

** Used to input and determine the IP address setting done on the Address setting switches (SW2 and SW3).

5.2 Communication Setting Other Than Address

The DIP switch is used for communication speed of the host communication, communication protocol, enable/disable the DIP switch setting, and the action of the IP address setting mode of the network communication.



1	2	Host communication speed	
OFF	OFF	9600 bps	
ON	OFF	19200 bps	← Factory set value: 19200 bps
OFF	ON	38400 bps	
ON	ON	57600 bps	

3	Communication protocol/Data bit configuration	
OFF	RKC communication (Data 8-bit, without parity, Stop 1-bit)	← Factory set value: RKC communication
ON	Modbus (Data 8-bit, without parity, Stop 1-bit)	

4	5	
OFF	OFF	Fixed (Do not change)

6	7	Setting network communication/Host communication	
OFF	OFF	Operates with the set IP address	← Factory set value
ON	OFF	Do not change	
OFF	ON	Perform IP address setting on the Address setting switches	
ON	ON	Execute the default IP address setting	

8	DIP switch enable/disable	
OFF	Enable (enable the DIP switch settings)	← Factory set value: Enabled
ON	Disable (enable the host communication or loader communication settings)*	

* The only host communication or loader communication settings that are enabled are the host communication speed and protocol and the data bit configuration.

When the communication protocol is set with the DIP switch, the data bit configuration is automatically set to "data 8-bit, without parity, stop 1-bit." To change to another data bit configuration, set the configuration in host communication or loader communication.

If you wish to set the data bit configuration, host communication speed, and communication protocol in host communication or loader communication, first set DIP switch No. 8 to ON.

6. SPECIFICATIONS

■ EtherNet/IP communication

Physical layer:	10BASE-T/100BASE-TX automatic recognition
User layer:	EtherNet/IP
Correspondence message:	Explicit message, I/O message
Connector type:	RJ-45 (2 ports)
IP address:	0.0.0.0 to 255.255.255.255
Subnet mask:	0.0.0.0 to 255.255.255.255

■ Host communication

Interface:	Base on RS-485, EIA standard
Protocol:	RKC communication (ANSI X3.28-1976 subcategories 2.5 and B1) Modbus-RTU
Communication speed:	9600 bps, 19200 bps, 38400 bps, 57600 bps
Maximum connections:	31 modules (including function modules in the SRZ unit)
Connection method:	Terminal block
Termination resistor:	Externally connected

■ Loader communication

Connection method:	Connection with a loader communication cable for our USB converter COM-K2 or COM-KG. (COM-K☐ are sold separately)
Protocol:	RKC communication (ANSI X3.28-1976 subcategories 2.5 and B1)
Communication speed:	38400 bps
Maximum connections:	One modules

■ General specifications

Power supply voltage:	24 V DC (Rated)
Power supply voltage range:	21.6 V to 26.4 V DC [Including power supply voltage variation]
Power consumption (at maximum load):	150 mA max. (24 V DC) Rush current: 15 A or less
Allowable ambient temperature:	−10 to +55 °C
Allowable ambient humidity:	5 to 95 %RH (Absolute humidity: MAX.W.C 29 g/m^3 dry air at 101.3 kPa)
Weight:	Approx. 150 g

■ Standard

Safety standard:	UL:	UL 61010-1
	cUL:	CAN/CSA-C22.2 No.61010-1
CE/UKCA marking:		
	EMC:	EN61326-1
	RoHS:	EN IEC 63000
RCM:		EN55011
Environment conditions:		
		POLLUTION DEGREE 2
		Altitude up to 2000 m (Indoor use)

7. MODEL CODE

COM-ME- 2 5∗02/☐☐
(1)(2) (3) (4) (5)

(1) Network
2: EtherNet/IP

(2) Host communication
5: RS-485

(3) Corresponding to the RKC controller
02: SRZ

(4) Factory setting (Specify a communication protocol)
No code: No need to factory preset a communication protocol. *
1: A communication protocol needs to be factory preset.

(5) Host communication protocol
No code: No need to specify when the factory setting is not required.
1: RKC communication (ANSI X3.28-1976 subcategories 2.5 and B1)
2: Modbus

* Factory setting when "No need to factory preset a communication protocol" is specified.
Host communication protocol: RKC communication

■ Other peripherals and accessories (Sold separately)

- Communication converter COM-KG-1N (Optional: with loader communication cable)
- Communication converter COM-K2-1 (Optional: with loader communication cable)
- End plate (DEP-01, Package of 2 plates)

The first edition: SEP. 2022 [IMQ00]

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