Module Type Controller SRZ

Communication Extension Module

Z-COM

Instruction Manual

RKC INSTRUMENT INC. IMS01T22-E5

- Modbus is a registered trademark of Schneider Electric.
- The name of each programmable controller (PLC) means the products of each manufacturer.
- Company names and product names used in this manual are the trademarks or registered trademarks of the respective companies.

Thank you for purchasing this RKC product. 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.

SYMBOLS

WARNING : This mark indicates precautions that must be taken if there is danger of electric shock, fire, etc., which could result in loss of life or injury.

CAUTION : This mark indicates that if these precautions and operating procedures are not taken, damage to the instrument may result.

 : This mark indicates that all precautions should be taken for safe usage.

 : This mark indicates important information on installation, handling and operating procedures.

 : This mark indicates supplemental information on installation, handling and operating procedures.

 : This mark indicates where additional information may be located.

⚠ 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.
- 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 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.
- All wiring must be completed before power is turned on to prevent electric shock, instrument failure, or incorrect action. The power must be turned off before repairing work for input break and output failure including replacement of sensor, contactor or SSR, and all wiring must be completed before power is turned on again.
- 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.
- To avoid damage to the instrument display, do not rub with an abrasive material or push the 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 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.
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MEMO

1 OUTLINE

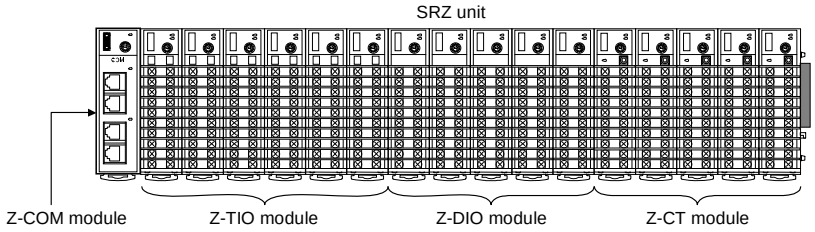
This chapter describes features, package contents, model code, and system configuration, etc.

1.1 Features

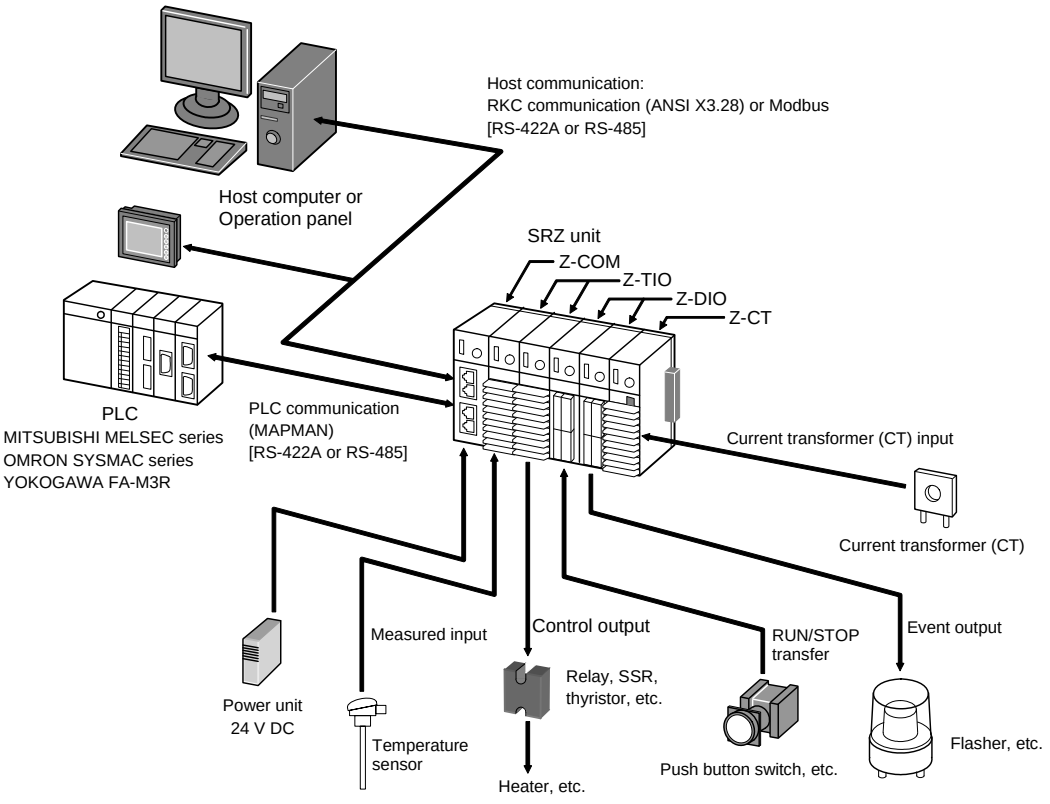
The communication extension module Z-COM module has the following features:
The SRZ unit sets all of the data items via communication. Therefore before operation, it is necessary to set value of each data item via communication.

■ The Z-COM module is connected to an SRZ function module* (hereafter called “function module”) for the purpose of performing Programmable controller communication (hereafter called “PLC communication”) or Host communication. The Z-COM module cannot be used alone.
The combination of Z-COM module and function module is called an SRZ unit.

* SRZ function module: Temperature control module Z-TIO module (hereafter called “Z-TIO module”)
Digital I/O module Z-DIO module (hereafter called “Z-DIO module”)
Current transformer input module Z-CT module (hereafter called “Z-CT module”)



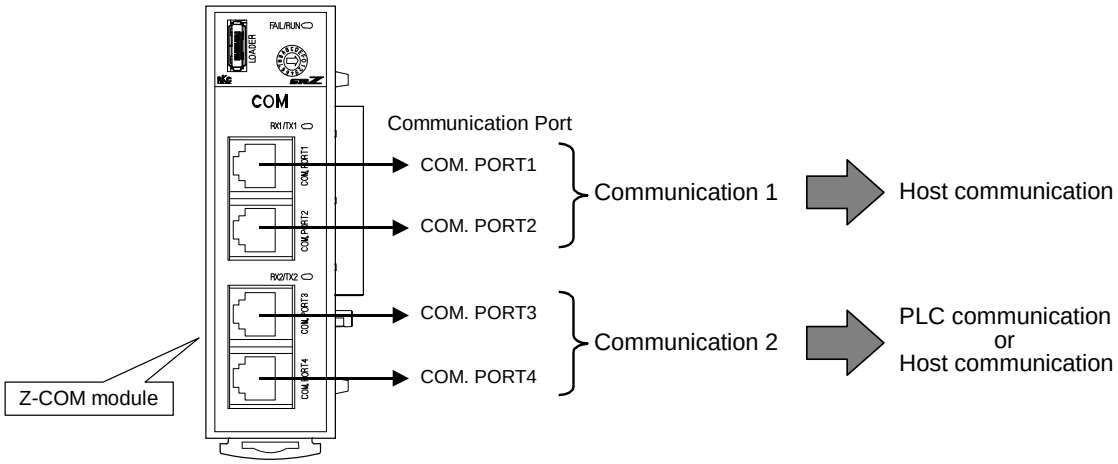
- Host communication
  SRZ unit interfaces with the host computer or the operation panel via Modbus or RKC communication protocols.
  (RS-422A and RS-485 communication interfaces are used for both protocols.)
- PLC communication
  SRZ unit can be connected to the MITSUBISHI MELSEC series, OMRON SYSMAC series or YOKOGAWA FA-M3R programmable controller (hereafter called “PLC”) without using any program.



■ The four communication ports (COM. PORT1 to COM. PORT4) of the Z-COM module can be used to perform the following types of communication. Two systems are used for communication.

	COM. PORT	Usage 1	Usage 2
Communication 1	COM. PORT1	Host communication	Host communication
	COM. PORT2 *		
Communication 2	COM. PORT3	PLC communication	Host communication
	COM. PORT4 *		

* SRZ unit extension communication port



■ Joinable modules

The Z-COM module can be connected to the following function modules.

Module Name	Type	Remarks
Z-TIO module	Z-TIO-A/B	—
	Z-TIO-C/D	Usable only when Host communication is selected.
	Z-TIO-E/F	Usable only when Host communication is selected.
Z-DIO module	Z-DIO-A	—
Z-CT module	Z-CT-A	A Z-COM module in which the ROM version is earlier than "PC0379-15" cannot be connected to a Z-CT module. The ROM version can be checked in "ROM version (Z-COM module) [Identifier: VR]" in the communication data.

When joining function modules of the same type:
Up to 16 function modules can be connected to one Z-COM module.
When joining function modules of two or more different types:
Up to 31 function modules can be connected to one Z-COM module.
(However, the maximum joinable number of function modules of the same type is 16.)

■ Number of temperature control (Z-TIO module)

- Up to 16 Z-TIO modules can be connected to one Z-COM module. For example, when up to 16 Z-TIO modules (4-channel type) are connected to one Z-COM module, the maximum number of temperature control channels per one unit becomes 64 (4 CH × 16 modules).
- For PLC communication, up to four Z-COM modules can be multi-drop connected to one PLC communication port. Therefore, temperature control of up to 256 channels per one PLC communication port can be performed.

- For Host communication, up to 16 Z-COM modules can be multi-drop connected to one communication port of host computer. Therefore, temperature control of up to 1024 channels per one communication port of host computer can be performed.

■ Number of digital input (DI) and digital output (DO) (Z-DIO module)

- Up to 16 Z-DIO modules can be connected to one Z-COM module. For example, when up to 16 Z-DIO modules are connected to one Z-COM module, the maximum number of digital input (DI) and digital output (DO) channels per one unit becomes 128 (8 CH × 16 modules).
- For PLC communication, up to four Z-COM modules can be multi-drop connected to one PLC communication port. Therefore, digital input (DI) and digital output (DO) of up to 512 channels per one PLC communication port can be performed.
- For Host communication, up to 16 Z-COM modules can be multi-drop connected to one communication port of host computer. Therefore, digital input (DI) and digital output (DO) of up to 2048 channels per one communication port of host computer can be performed.

■ Number of current transformer (CT) input (Z-CT module)

- Up to 16 Z-DIO modules can be connected to one Z-COM module. For example, when up to 16 Z-CT modules are connected to one Z-COM module, the maximum number of current transformer (CT) input channels per one unit becomes 192 (12 CH × 16 modules).
- For PLC communication, up to four Z-COM modules can be multi-drop connected to one PLC communication port. Therefore, current transformer (CT) input of up to 768 channels per one PLC communication port can be performed.
- For Host communication, up to 16 Z-COM modules can be multi-drop connected to one communication port of host computer. Therefore, current transformer (CT) input of up to 3072 channels per one communication port of host computer can be performed.

1.2 Checking the Product

Before using this product, check each of the following:

- Model code
- Check that there are no scratches or breakage in external appearance (case, front panel, or terminal, etc.)
- Check that all of the items delivered are complete. (Refer to below)

Name	Q'TY	Remarks
☐ Z-COM module	1	———————
☐ Z-COM Installation Manual (IMS01T05-E☐)	1	Enclosed with instrument
☐ Z-COM Host Communication Quick Instruction Manual (IMS01T09-E☐)	1	Enclosed with instrument
☐ Z-COM PLC Communication Quick Instruction Manual (IMS01T14-E☐)	1	Enclosed with instrument
☐ Z-COM PLC Communication Data List (IMS01T15-E☐)	1	Enclosed with instrument
☐ Joint connector cover KSRZ-517A	2	Enclosed with instrument
☐ Power terminal cover KSRZ-518A	1	Enclosed with instrument

If any of the products are missing, damaged, or if your manual is incomplete, please contact RKC sales office or the agent.

■ Optional (sold separately)

Name	Q'TY	Remarks	
☐ End plate DEP-01	2	———————	
☐ Termination resistor connector for Z-COM W-BW-01	1	For RS-485	
☐ Termination resistor connector for Z-COM W-BW-02	1	For RS-422A	
☐ Connection cable W-BF-01-3000	1	For PLC connection (Cable length: 3 m) Terminal treatment: Modular connector and Spade lug terminal *	
☐ Connection cable W-BF-02-500	1	For SRZ unit extension (Cable length: 0.5 m) Terminal treatment: Modular connectors (at both ends)	
☐ Connection cable W-BF-02-1000	1	For SRZ unit extension (Cable length: 1 m) Terminal treatment: Modular connectors (at both ends)	
☐ Connection cable W-BF-02-3000	1	For SRZ unit extension (Cable length: 3 m) Terminal treatment: Modular connectors (at both ends)	
☐ Z-COM Instruction Manual (IMS01T22-E5)	1	This manual (sold separately)	This manual can be downloaded from the RKC official website: http://www.rkcinst.com/english/manual_load.htm
☐ Z-COM Host Communication Instruction Manual (IMS01T23-E☐)	1	Sold separately	

* Other types of cable, such as cable with 9-pin D-SUB connector, are also available. Please contact RKC sales office or the agent.

1.3 Model Code

Check that the product received is correctly specified by referring to the following model code list:
If the product is not identical to the specifications, please contact RKC sales office or the agent.

■ Z-COM module

Z - COM - A - □ □ / □ □ □ □

(1) (2) (3) (4) (5) (6)

Hardware coding only — Quick start code [a]

(1) COM. PORT1, COM. PORT2 (Communication 1)
- 4: RS-422A
- 5: RS-485

(2) COM. PORT3, COM. PORT4 (Communication 2)
- 4: RS-422A
- 5 [b]: RS-485

(3) Quick start code (communication protocol selection)
- N [c]: No quick start code (Configured as factory default)
- 1: Specify quick start code

(4) COM. PORT1, COM. PORT2 communication protocol (Communication 1) [Quick start code]
- No code: No quick start code
- 1 [c]: RKC/ANSI standard protocol [RKC communication] (Based on ANSI X3.28-1976 subcategories 2.5 and B1)
- 2: Modbus protocol

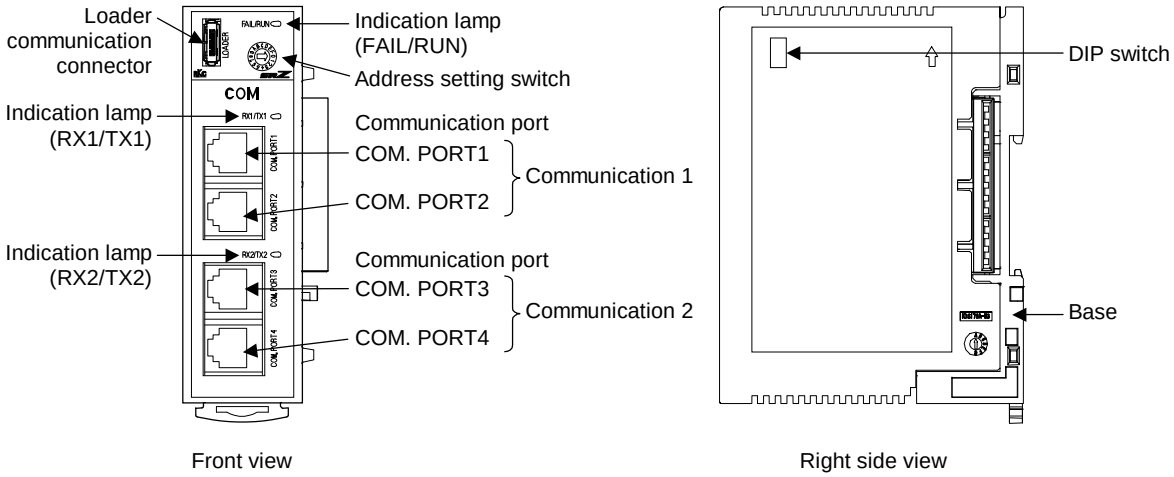
(5) COM. PORT3, COM. PORT4 communication protocol (Communication 2) [Quick start code]
- No code: No quick start code
- 1 [c]: RKC/ANSI standard protocol [RKC communication] (Based on ANSI X3.28-1976 subcategories 2.5 and B1)
- 2: Modbus protocol
- 3: PLC special protocol (MAPMAN) [PLC communication] MITSUBISHI MELSEC series:
  A-compatible 1C frame (format 4) AnA/AnUCPU common command (QR/QW)
  [AnA, AnU, QnA, Q, FX3U or FX3UC series]
  QnA-compatible 3C frame (format 4) command 0401/1401
  [QnA or Q series]
- 4: PLC special protocol (MAPMAN) [PLC communication] OMRON SYSMAC series
- 5: PLC special protocol (MAPMAN) [PLC communication] MITSUBISHI MELSEC series:
  A-compatible 1C frame (format 4) ACPU common command (WR/WW)
  [A, FX2N, FX2NC, FX3U or FX3UC series]
- 6: This code is not available
- 7: PLC special protocol (MAPMAN) [PLC communication] YOKOGAWA FA-M3R

(6) Maximum channel data (Only PLC communication)
- No code: No quick start code
- A: 16 channels specification
- B: 32 channels specification
- C: 48 channels specification
- D [c]: 64 channels specification

[a] If not specified, these codes will not be printed on labels and all settings will be factory default.
[b] When using the OMRON SYSMAC series, RS-485 cannot be selected.
[c] Factory set value when there is not specification of quick start code:
COM. PORT1/2 communication protocol (Communication 1): RKC/ANSI standard protocol [RKC communication]
COM. PORT3/4 communication protocol (Communication 2): RKC/ANSI standard protocol [RKC communication]
Maximum channel data: 64 channels specification

1.4 Parts Description

■ Z-COM module mainframe



● Indication lamps

FAIL/RUN* [Green or Red]	When normal (RUN): A green lamp is on
	Function stop by self-diagnostic function (FAIL): A green lamp flashes
	Action stop by self-diagnostic function (FAIL): A red lamp is on
RX1/TX1 [Green]	The green lamp is lit when data corresponding to communication 1 (COM. PORT1/2) is sent or received.
RX2/TX2 [Green]	The green lamp is lit when data corresponding to communication 2 (COM. PORT3/4) is sent or received.

* When error occurs, refer to **7. TROUBLESHOOTING (P. 7-1)**.

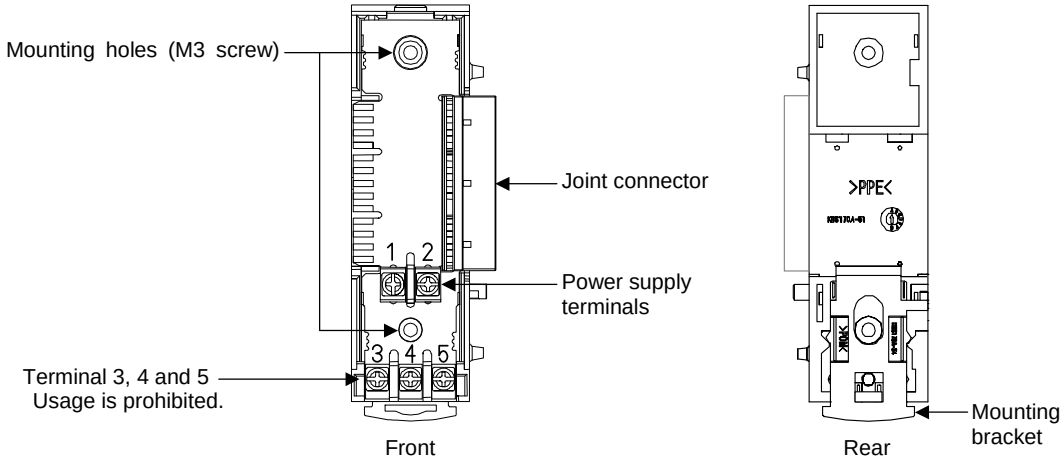
● Communication port (modular connector)

COM. PORT1 (Communication 1)	Used to connecting the Operation panel or Host computer. [RS-485 or RS-422A]
COM. PORT2 (Communication 1)	The COM. PORT2 is used for the extension of SRZ unit. [RS-485 or RS-422A]
COM. PORT3 (Communication 2)	Used to connecting the programmable controller (PLC), Operation panel or Host computer. [RS-485 or RS-422A]
COM. PORT4 (Communication 2)	The COM. PORT4 is used for the extension of SRZ unit. [RS-485 or RS-422A]

● Switches

Address setting switch	Set SRZ unit address with address setting switch.
DIP switch	• Sets Communication speed, Communication protocol and Data bit configuration corresponding to each of communication 1 and communication 2. • Sets dip switch setting validity/invalidity.

■ Base



Mounting holes (M3 screw)	Holes for screws to fix the base to a panel, etc. Customer must provide the M3 screws.
Joint connector	Used to mechanically and electrically connect each module.
Power supply terminals	These are terminals to supply power to the Z-COM module and joined function modules. Terminal number: 1 — Signal name: 24 V DC (+) Terminal number: 2 — Signal name: 24 V DC (–)
Terminal 3, 4 and 5	These terminals cannot be used for the Z-COM module. (Usage is prohibited.) **When the Z-COM module is connected to a function module, do not use terminals 3, 4, and 5 of the function module.**
Mounting bracket	Used to fix the module on DIN rails and also to fix each module joined together.

1.5 Example of System Configuration

The following is an example of system configuration when the SRZ unit is connected to PLC, host computer or operation panel.

One SRZ unit consists of one Z-COM module and several function modules.

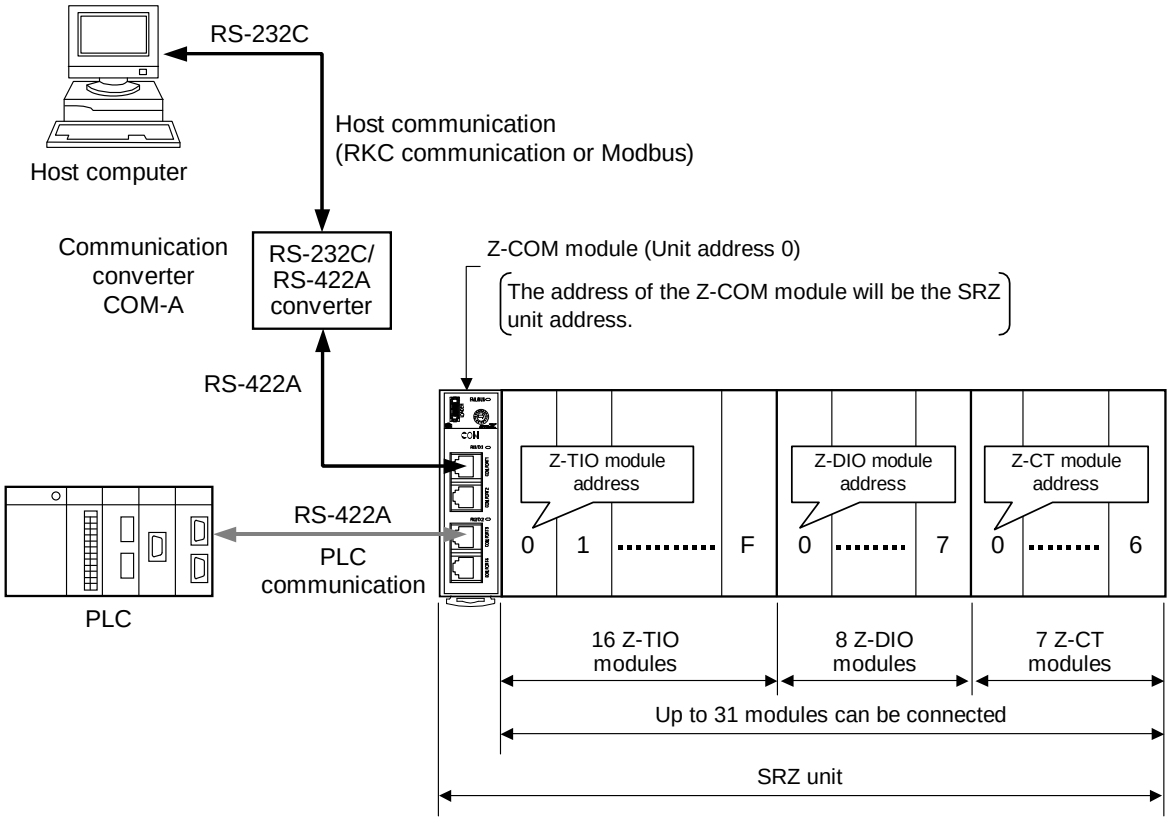
1.5.1 When one SRZ unit is connected

■ **Number of connected modules for function modules and Number of temperature controls**

- **When joining function modules of the same type to Z-COM module**
  Up to 16 function modules (Z-TIO, Z-DIO or Z-CT) can be connected to one Z-COM module with SRZ unit. As the number of temperature control channels per Z-TIO module is 4, the maximum number of temperature control channels per unit becomes 64 (4-channel × 16 Z-TIO modules).
- **When joining function modules of two or more differential types to Z-COM module**
  Up to 31 function modules (Z-TIO, Z-DIO or Z-CT) can be connected to one Z-COM module with SRZ unit.
  (However, the maximum joinable number of function modules of the same type is 16.)

■ **Example**

Communication 1 (COM. PORT1/2): Host communication (RS-422A)
Communication 2 (COM. PORT3/4): PLC communication (RS-422A)
Z-TIO module: 16 modules
Z-DIO module: 8 modules
Z-CT module: 7 modules



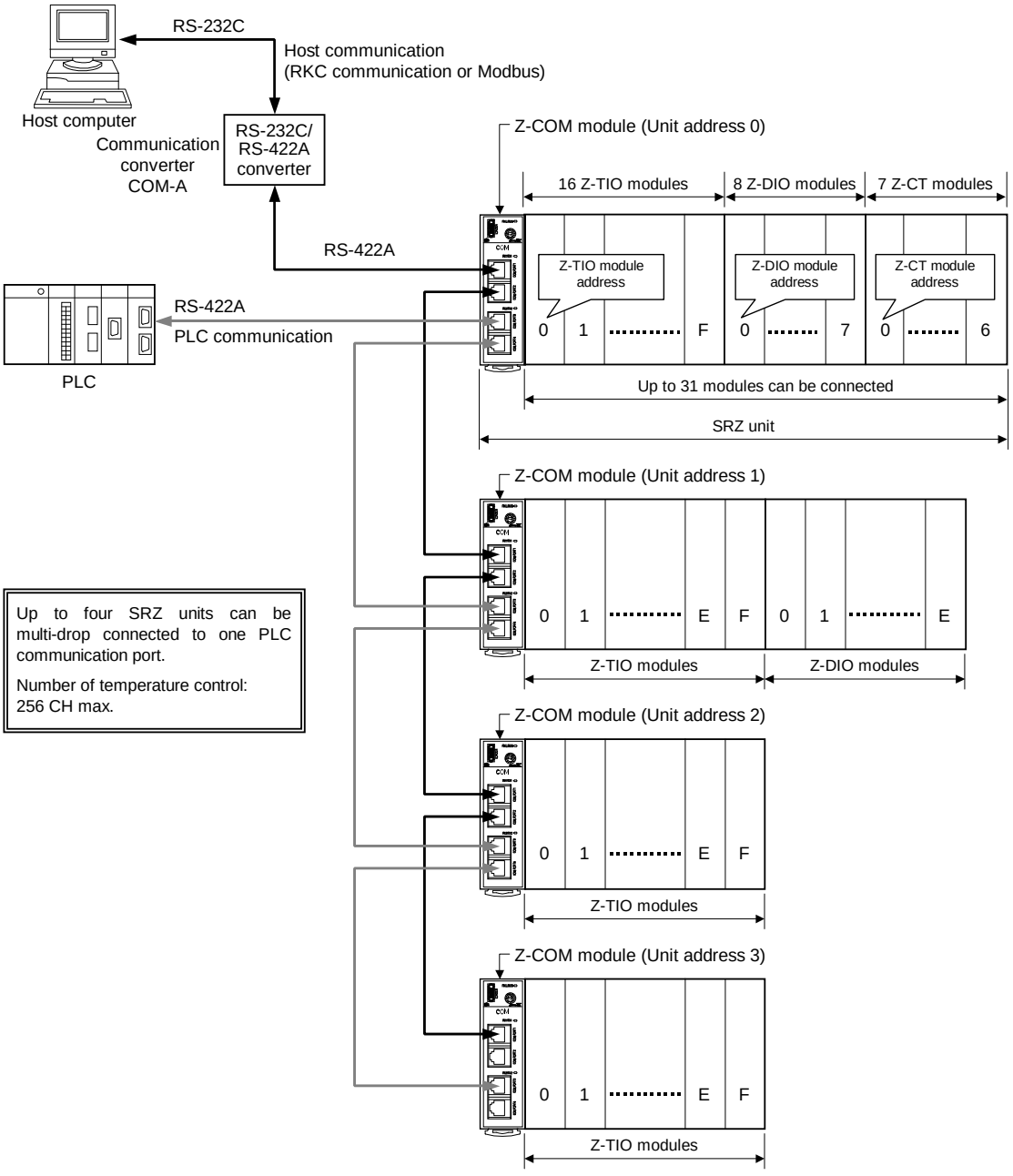
1.5.2 Multi-drop connection by PLC communication

■ Number of connected modules for SRZ units and Number of temperature controls

- For PLC communication, up to four units (i.e. four Z-COM modules) can be multi-drop connected to one PLC communication port.
- As up to 16 Z-TIO modules can be connected to one Z-COM module, temperature control of up to 256 channels can be performed. (4-channel × 16 Z-TIO modules × four SRZ units)

■ Example

Communication 1 (COM. PORT1/2): Host communication (RS-422A)
Communication 2 (COM. PORT3/4): PLC communication (RS-422A)
SRZ unit: 4 units



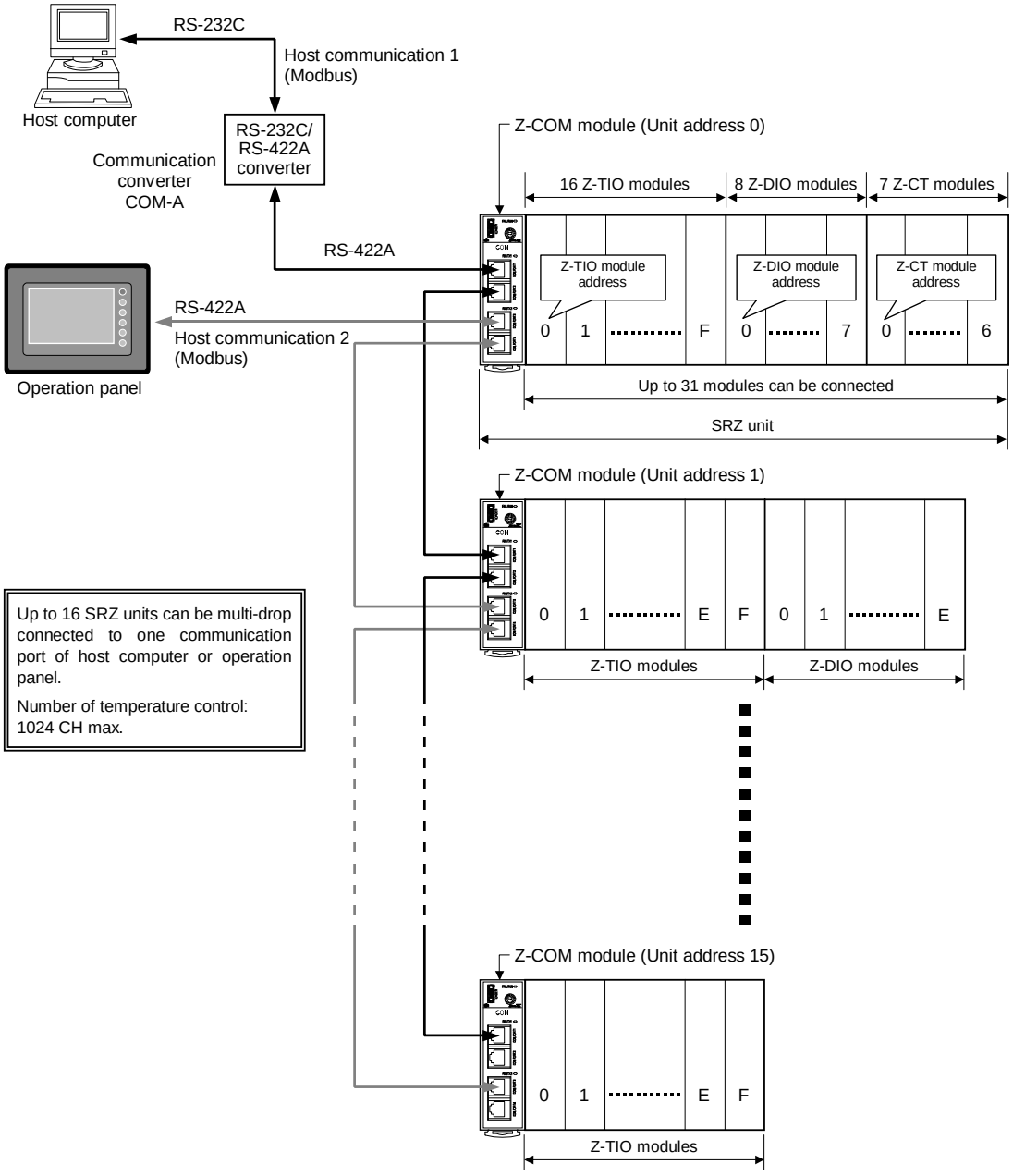
1.5.3 Multi-drop connection by Host communication

■ Number of connected modules for SRZ units and Number of temperature controls

- For Host communication, up to 16 units (i.e. 16 Z-COM modules) can be multi-drop connected to one host communication port.
- As up to 16 Z-TIO modules can be connected to one Z-COM module, temperature control of up to 1024 channels can be performed. (4-channel × 16 Z-TIO modules × 16 SRZ units)

■ Example

Communication 1 (COM. PORT1/2): Host communication 1 (RS-422A)
Communication 2 (COM. PORT3/4): Host communication 2 (RS-422A)
SRZ unit: 16 units



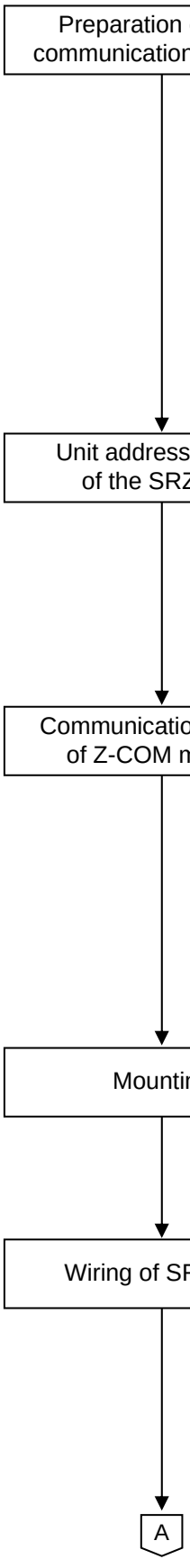
MEMO

SETTING PROCEDURE TO OPERATION

2

2.1 When Use PLC Communication and Host Communication

Conduct necessary setting before operation according to the procedure described below.



To perform Host communication, a communication program must be created. Refer to the RKC communication protocol or the Modbus communication protocol to create a communication program.

[Communication support tool]
PROTEM2: Communication tool
WinUCI-SRZ: Communication setup tool

The PROTEM2 and WinUCI-SRZ can be downloaded from the RKC official website: http://www.rkcinst.com/.

☞ For the communication protocol, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□).**

Set the SRZ unit address (Z-COM module device address) and configure the module addresses of the function modules (Z-TIO, Z-DIO and Z-CT modules) that will be joined to the Z-COM module.

☞ Refer to **3.1.1 SRZ unit address setting (P. 3-2)** and **3.2.1 Address setting of function module (P. 3-10)**.

Set the communication settings of Z-COM module by the DIP switch.

📖 When the DIP switches are used to configure settings, the selections for the Communication speed and Data bit configuration are limited. To configure settings that cannot be set with the DIP switches, use Host communication (Loader communication can also be used).

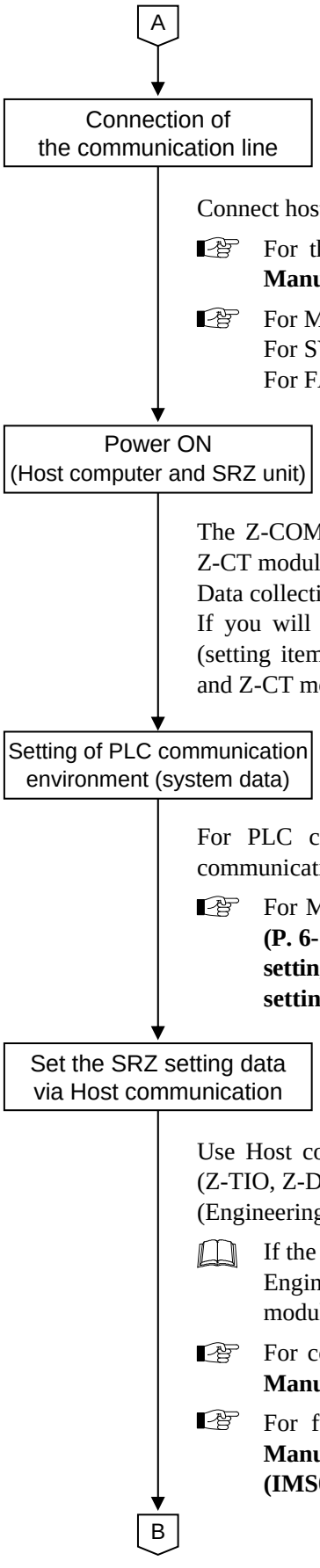
☞ For the DIP switch setting, refer to **3.1.2 Communication speed and Communication protocol setting by DIP switch (P. 3-5).**

Mount the Z-COM module and function modules on the DIN rail or panel.

☞ Refer to **4. MOUNTING (P. 4-1).**

Wire the power supply of SRZ unit and input/output of function modules (Z-TIO, Z-DIO and Z-CT modules).

☞ For power supply wiring, refer to **5. WIRING (P. 5-1)**.
For input/output wiring, refer to **SRZ Instruction Manual (IMS01T04-E□)**.
For Z-CT module, refer to **Z-CT Instruction Manual (IMS01T16-E□)**.



Connect host computer to SRZ unit. And connect PLC to SRZ unit.

☞ For the host computer, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

☞ For MELSEC series, refer to **6.2 MITSUBISHI MELSEC Series (P. 6-3)**.
For SYSMAC series, refer to **6.3 OMRON SYSMAC Series (P. 6-19)**.
For FA-M3R, refer to **6.4 YOKOGAWA FA-M3R (P. 6-30)**.

The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on.
Data collection takes about 8 seconds.
If you will use Host communication to configure the Z-COM module system data (setting items) and the communication data of the function modules (Z-TIO, Z-DIO and Z-CT modules), do so after data collection is finished.

For PLC communication, set a necessary system data (setting item) via Host communication. (Station number, Register type or Register start number, etc.)

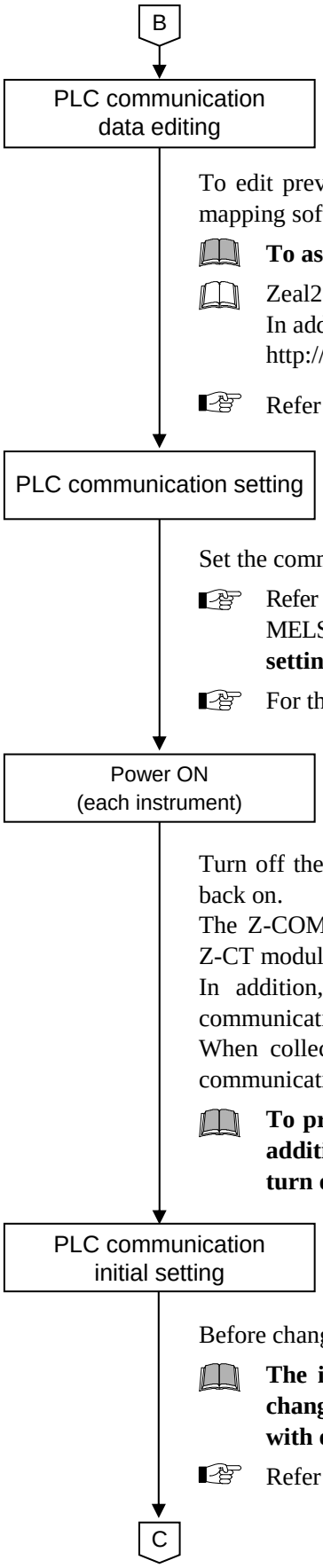
☞ For MELSEC series, refer to **6.2.3 PLC communication environment setting (P. 6-12)**. For SYSMAC series, refer to **6.3.3 PLC communication environment setting (P. 6-25)**. For FA-M3R, refer to **6.4.3 PLC communication environment setting (P. 6-38)**.

Use Host communication to configure communication data in the function modules (Z-TIO, Z-DIO and Z-CT modules) that cannot be configured by PLC communication. (Engineering data and operation data, etc.)

🕮 If the SRZ unit is set to control start (RUN), switch to control stop (STOP). Engineering data can only be set in function modules (Z-TIO, Z-DIO and Z-CT modules) when the SRZ unit is stopped.

☞ For communication data, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

☞ For function description of communication data, refer to **SRZ Instruction Manual (IMS01T04-E□)** and **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.



To edit previously assigned PLC communication data, use our "Zeal2" PLC register mapping software tool.

To assign Z-CT module data to register addresses, Zeal2 must be used.

Zeal2 communicates with the Z-COM module via Loader communication.
In addition, Zeal2 can be downloaded from the RKC official website: http://www.rkcinst.com/english/.

Refer to **6.5.4 When set register address with Zeal2 (P. 6-51)**.

Set the communication setting of PLC side by programming tool of each manufacturer.

Refer to **6.2.4 Setting on the PLC (Computer link module) (P. 6-18)** [MITSUBISHI MELSEC series], **6.3.4 PLC setting (P. 6-29)** [OMRON SYSMAC series], **6.4.4 PLC setting (P. 6-42)** [YOKOGAWA FA-M3R] or **6.7 Usage Example (P. 6-67)**.

For the PLC setting, refer to the instruction manual of each manufacturer.

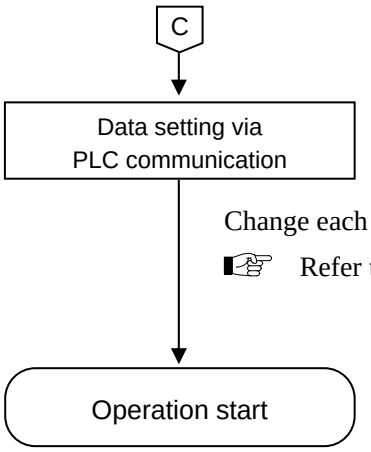
Turn off the power of the SRZ unit, the PLC, and the host computer and then turn it back on.
The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on.
In addition, writing of the system data (monitor items) begins after the PLC communication start time (factory set value is 5 seconds) has passed.
When collection of the data is completed, the Z-COM module begins writing the communication data of monitor group to the PLC.

To prevent malfunction, always turn on the power of the SRZ unit last. In addition, if there are two or more SRZ units in PLC communication, always turn on the power of the master unit last.

Before changing the SRZ unit data from PLC, always read it into the PLC once.

The initial setting must always conduct. If each set value of SRZ unit is changed from the PLC without setting the initial values, it is re-written to 0 with each set value of the PLC at that time set to 0.

Refer to **6.5 Data Transfer (P. 6-43)** or **6.7 Usage Example (P. 6-67)**.

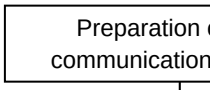


Change each SRZ unit set value data from the PLC.

☞ Refer to **6.5 Data Transfer (P. 6-43)** or **6.7 Usage Example (P. 6-67)**.

2.2 Only When Use Host Communication

Conduct necessary setting before operation according to the procedure described below.

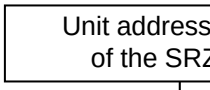


To perform Host communication, a communication program must be created. Refer to the RKC communication protocol or the Modbus communication protocol to create a communication program.

[Communication support tool]
PROTEM2: Communication tool
WinUCI-SRZ: Communication setup tool

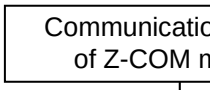
The PROTEM2 and WinUCI-SRZ can be downloaded from the RKC official website: http://www.rkcinst.com/.

☞ For the **communication** protocol, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.



Set the SRZ unit address (Z-COM module device address) and configure the module addresses of the function modules (Z-TIO, Z-DIO and Z-CT modules) that will be joined to the Z-COM module.

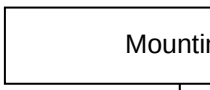
☞ Refer to **3.1.1 SRZ unit address setting (P. 3-2)** and **3.2.1 Address setting of function module (P. 3-10)**.



Set the communication settings of Z-COM module by the DIP switch.

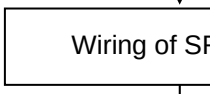
📖 When the DIP switches are used to configure settings, the selections for the Communication speed and Data bit configuration are limited. To configure settings that cannot be set with the DIP switches, use Host communication (Loader communication can also be used).

☞ For the DIP switch setting, refer to **3.1.2 Communication speed and Communication protocol setting by DIP switch (P. 3-5)**.



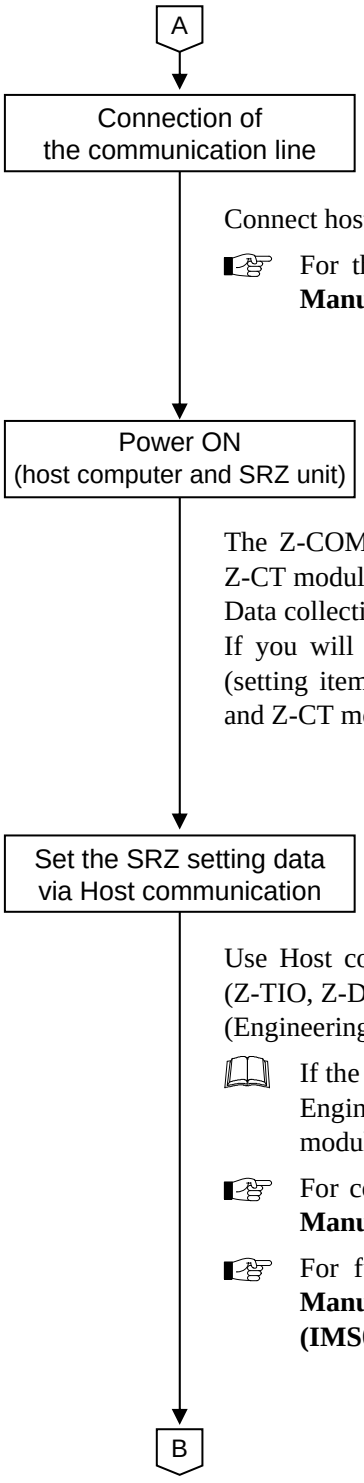
Mount the Z-COM module and function modules on the DIN rail or panel.

☞ Refer to **4. MOUNTING (P. 4-1)**.



Wire the power supply of SRZ unit and input/output of function modules (Z-TIO, Z-DIO and Z-CT modules).

☞ For power supply wiring, refer to **5. WIRING (P. 5-1)**.
For input/output wiring, refer to **SRZ Instruction Manual (IMS01T04-E□)**.
For Z-CT module, refer to **Z-CT Instruction Manual (IMS01T16-E□)**.



Connect host computer to SRZ unit.

☞ For the host computer, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

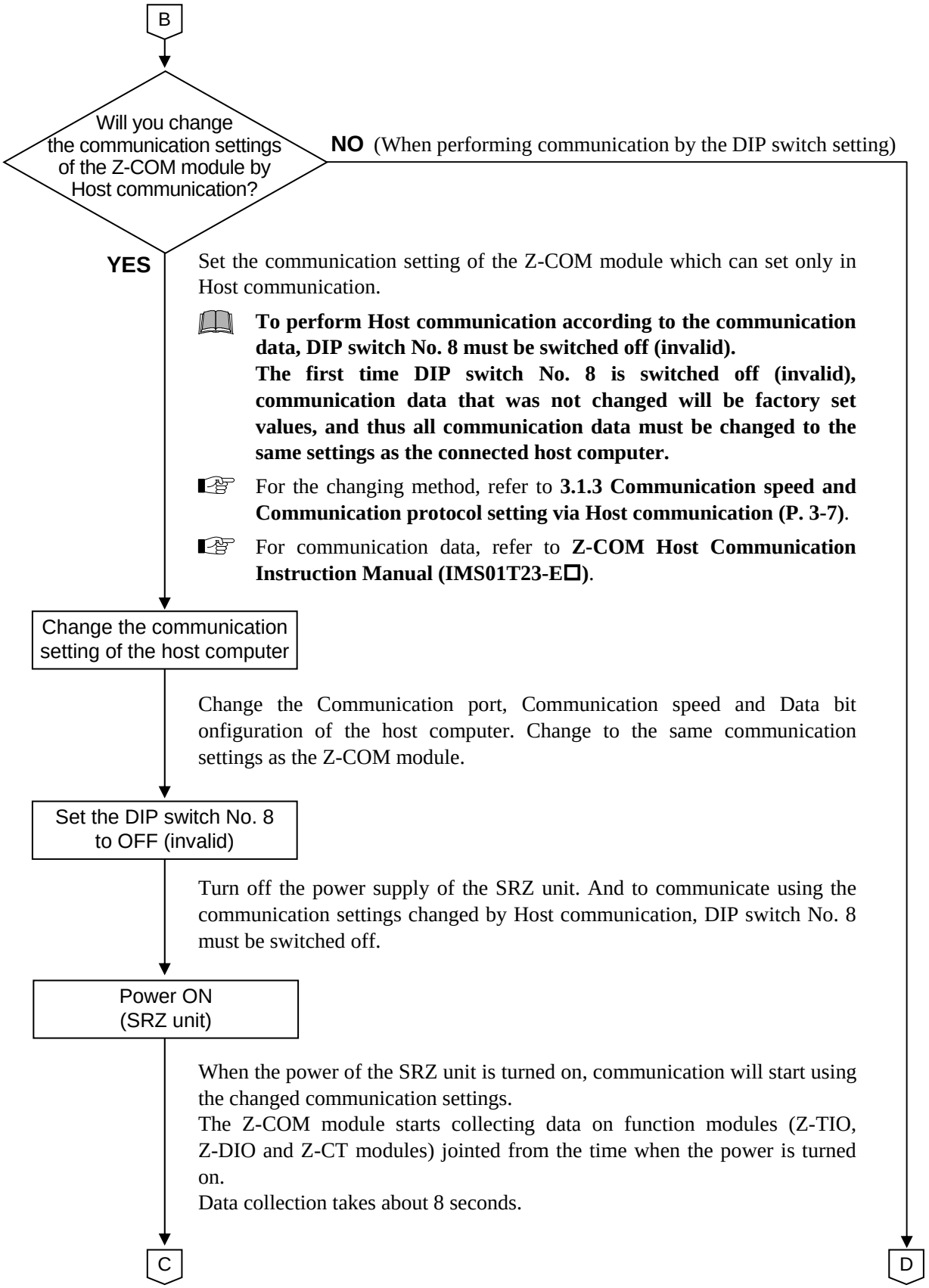
The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on.
Data collection takes about 8 seconds.
If you will use Host communication to configure the Z-COM module system data (setting items) and the communication data of the function modules (Z-TIO, Z-DIO and Z-CT modules), do so after data collection is finished.

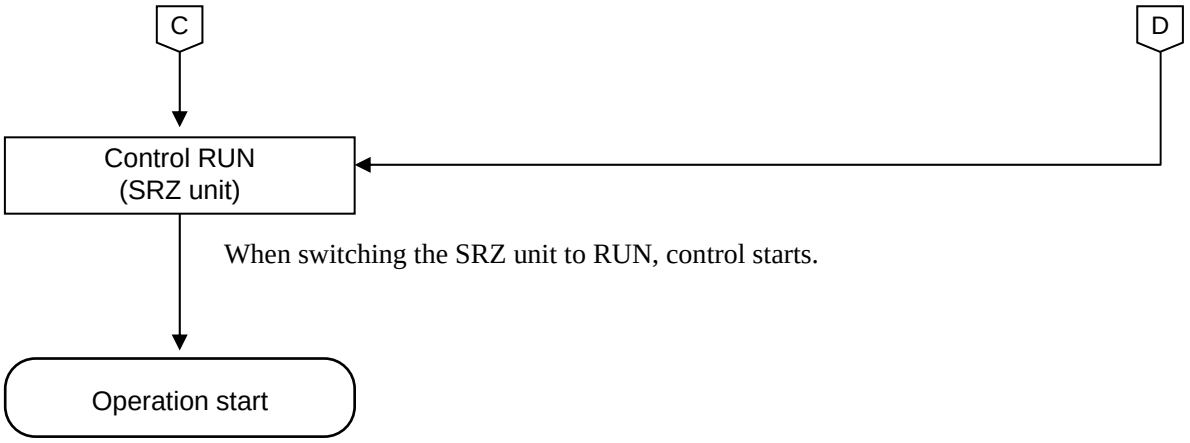
Use Host communication to configure communication data in the function modules (Z-TIO, Z-DIO and Z-CT modules) that cannot be configured by PLC communication. (Engineering data and operation data, etc.)

🕮 If the SRZ unit is set to control start (RUN), switch to control stop (STOP). Engineering data can only be set in function modules (Z-TIO, Z-DIO and Z-CT modules) when the SRZ unit is stopped.

☞ For communication data, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

☞ For function description of communication data, refer to **SRZ Instruction Manual (IMS01T04-E□)** and **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.

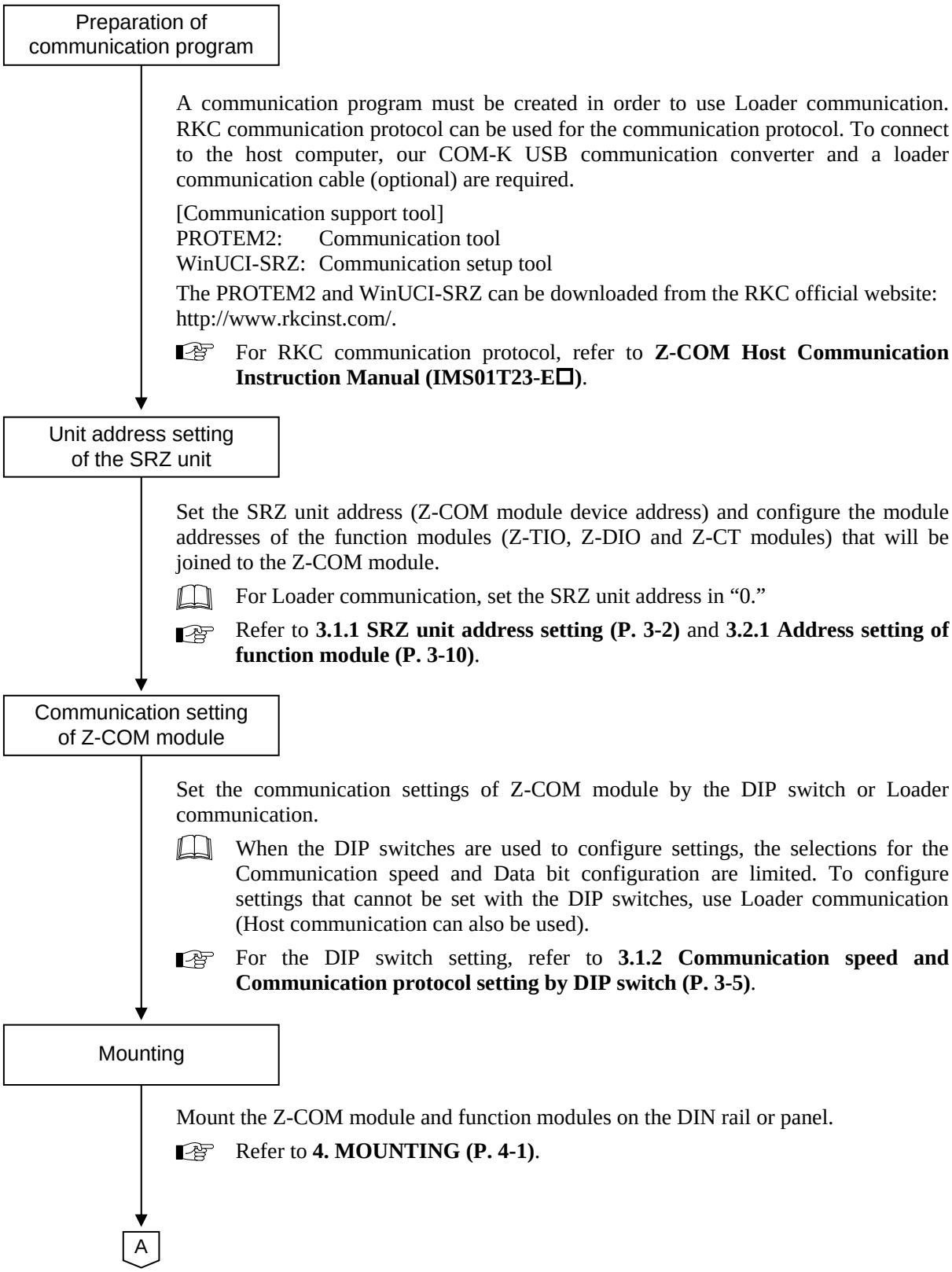

B
Will you change the communication settings of the Z-COM module by Host communication?
NO (When performing communication by the DIP switch setting)
YES
Set the communication setting of the Z-COM module which can set only in Host communication.
To perform Host communication according to the communication data, DIP switch No. 8 must be switched off (invalid).
The first time DIP switch No. 8 is switched off (invalid), communication data that was not changed will be factory set values, and thus all communication data must be changed to the same settings as the connected host computer.
For the changing method, refer to 3.1.3 Communication speed and Communication protocol setting via Host communication (P. 3-7).
For communication data, refer to Z-COM Host Communication Instruction Manual (IMS01T23-E□).
Change the communication setting of the host computer
Change the Communication port, Communication speed and Data bit onfiguration of the host computer. Change to the same communication settings as the Z-COM module.
Set the DIP switch No. 8 to OFF (invalid)
Turn off the power supply of the SRZ unit. And to communicate using the communication settings changed by Host communication, DIP switch No. 8 must be switched off.
Power ON (SRZ unit)
When the power of the SRZ unit is turned on, communication will start using the changed communication settings.
The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on.
Data collection takes about 8 seconds.
C
D

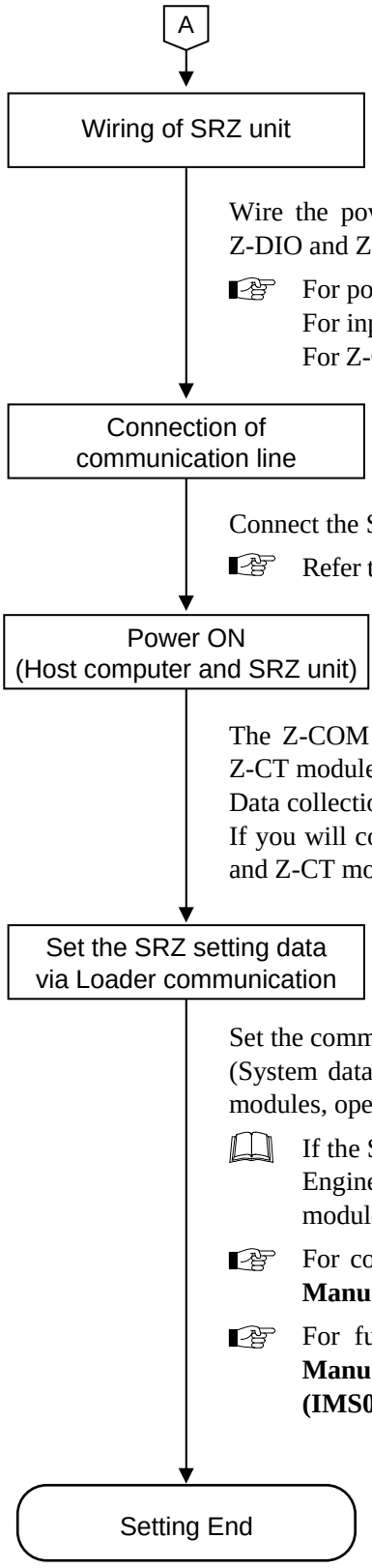

C
D
Control RUN
(SRZ unit)
When switching the SRZ unit to RUN, control starts.
Operation start

2.3 When Performing Operation Setting via Loader Communication

Conduct necessary setting before operation according to the procedure described below.

The Loader port is only for parameter setup.





Wire the power supply of SRZ unit and input/output of function modules (Z-TIO, Z-DIO and Z-CT modules).

☞ For power supply wiring, refer to **5. WIRING (P. 5-1)**.
For input/output wiring, refer to **SRZ Instruction Manual (IMS01T04-E□)**.
For Z-CT module, refer to **Z-CT Instruction Manual (IMS01T16-E□)**.

Connect the SRZ unit and the COM-K communication converter to the host computer.

☞ Refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on.
Data collection takes about 8 seconds.
If you will configure the communication data of the function modules (Z-TIO, Z-DIO and Z-CT modules), do so after data collection is finished.

Set the communication data of SRZ unit.
(System data for PLC communication, engineering data of Z-TIO, Z-DIO and Z-CT modules, operation data, etc.)

🕮 If the SRZ unit is set to control start (RUN), switch to control stop (STOP).
Engineering data can only be set in function modules (Z-TIO, Z-DIO and Z-CT modules) when the SRZ unit is stopped.

☞ For communication data, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

☞ For function description of communication data, refer to **SRZ Instruction Manual (IMS01T04-E□)** and **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.

MEMO

COMMUNICATION SETTING

3

This chapter describes communication setting of the SRZ unit. Set communication setting before mounting and wiring.

3.1 Communication Setting of Z-COM Module

⚠ WARNING

- To prevent electric shock or instrument failure, always turn off the power before setting the switch.
- To prevent electric shock or instrument failure, never touch any section other than those instructed in this manual.

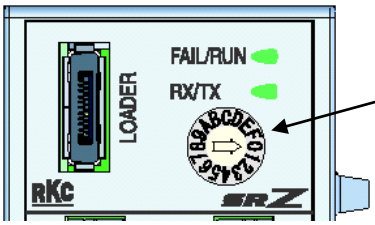
CAUTION

Do not separate the module mainframe from the base with the power turned on. If so, instrument failure may result.

3.1.1 SRZ unit address setting

When SRZ units are multi-drop connected, set an address to each Z-COM module.
This becomes the unit address of the SRZ unit. (The unit address is common to the PLC and Host communications.)
Set an address for the SRZ unit (address for Z-COM module) using a small blade screwdriver.

To avoid problems or malfunction, do not duplicate an address on the same communication line.



Address setting switch
Setting range: 0 to F
(0 to 15: Decimal number)
Factory set value: 0

For the address setting for PLC communication, refer to page 3-3.
For the address setting for Host communication, refer to page 3-4.

■ Address setting for PLC communication

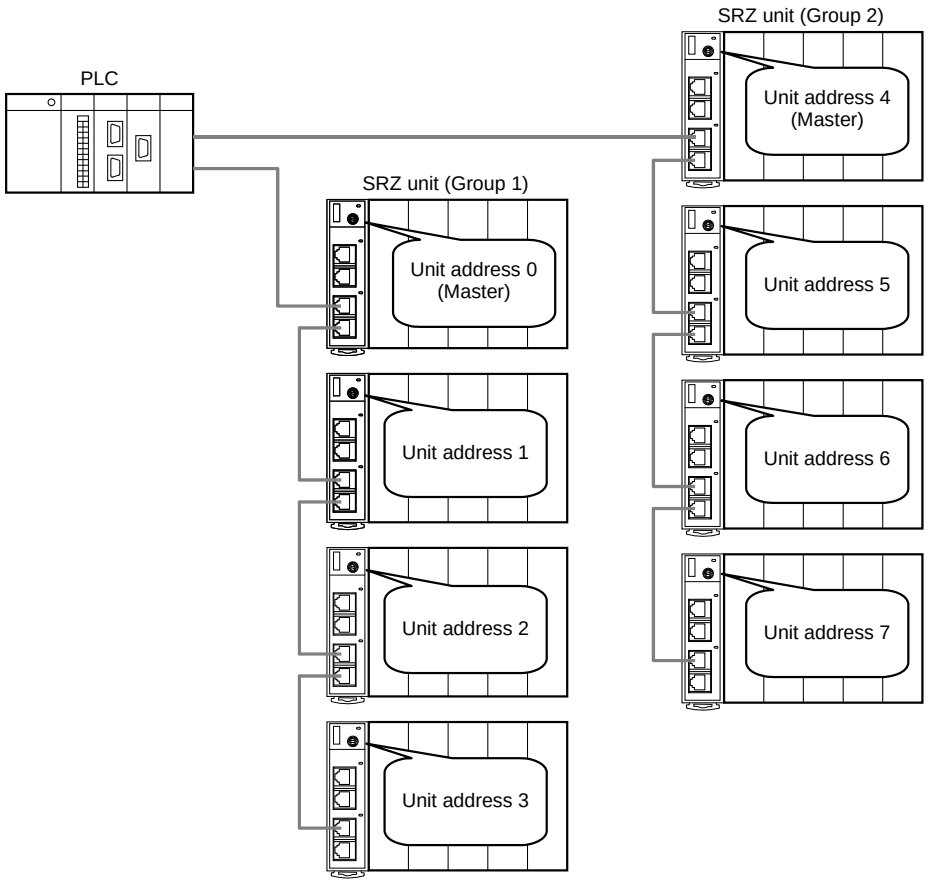
Up to four Z-COM modules can be connected to a PLC communication port. Therefore the unit address uses the four Z-COM modules as a group. For Z-COM modules which are multi-drop connected to the same PLC communication port, use successive numbers assigned to any one of four groups shown in the following table as their addresses.

Always set the unit address of each group including 0, 4, 8 or C. 0, 4, 8 or C becomes the master for communication transfer.

Group	Address setting switch
Group 1	0 (Master)
	1
	2
	3
Group 2	4 (Master)
	5
	6
	7

Group	Address setting switch
Group 3	8 (Master)
	9
	A
	B
Group 4	C (Master)
	D
	E
	F

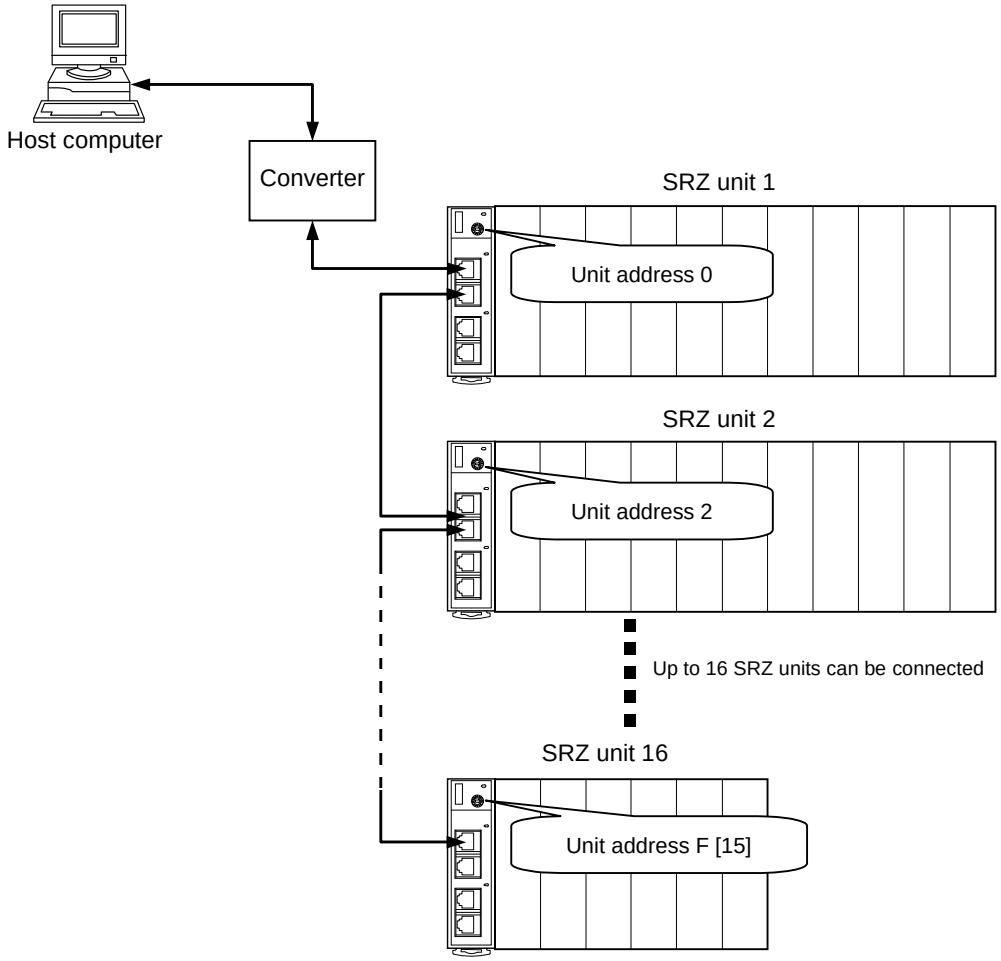
Example of unit address setting (When eight SRZ units are connected):



■ Address setting for Host communication (RKC communication or Modbus)

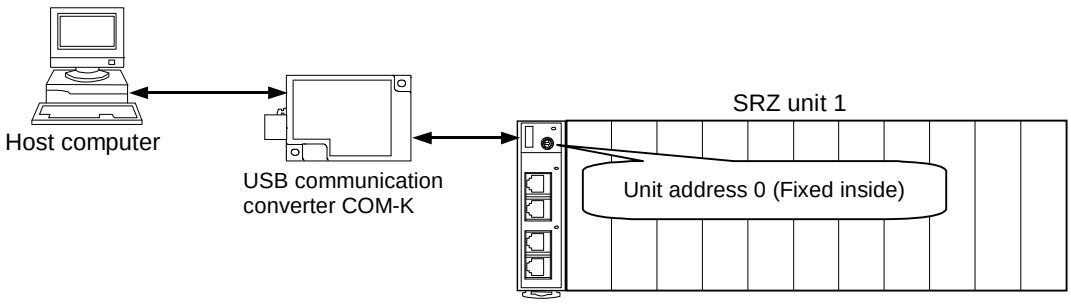
Differently from PLC communication, there are no group restrictions. Free settings can be made in the range of 0 to F.

For Modbus, the value obtained by adding "1" to the set address corresponds to the address used for the actual program.



■ Address setting for Loader communication

When Loader communication is performed, the host computer and SRZ unit communicate on a one-to-one basis, and thus the unit address is fixed at "0." Because the address is fixed in "0" inside the Z-COM module, the setting of the address setting switch is disregarded.

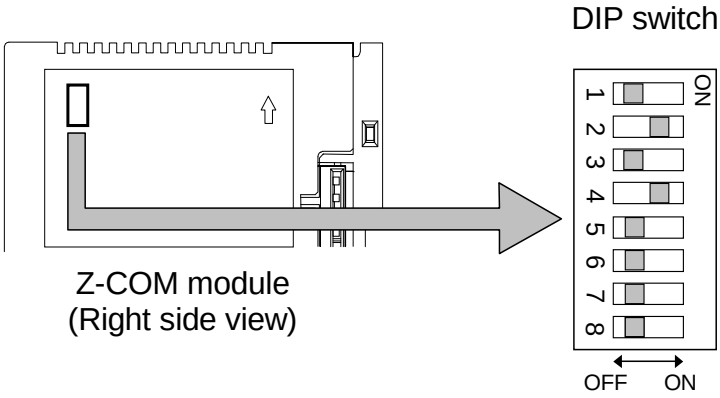


The Loader port is only for parameter setup.

3.1.2 Communication speed and Communication protocol setting by DIP switch

Use the DIP switch on the right side of Z-COM module to select Communication speed, Data bit, configuration and protocol. The data change become valid the power of the Z-COM module is turned on again or when control is switched from STOP to RUN.

When the SRZ units are multi-drop connected, set the DIP switches in all of the Z-COM modules to the same positions.



1	2	Communication speed (Communication 1)
OFF	OFF	4800 bps
ON	OFF	9600 bps
OFF	ON	19200 bps (Factory set value)
ON	ON	38400 bps

3	Communication protocol and Data bit configuration (Communication 1) [1]
OFF	Host communication (RKC communication) Data 8-bit, without parity, Stop 1-bit (Factory set value [2])
ON	Host communication (Modbus) Data 8-bit, without parity, Stop 1-bit

[1] The Data bit configuration other than the above can be changed by the Host communication or Loader communication.

[2] Factory set values when the Communication protocol is not specified at the factory.

4	Communication speed (Communication 2) *
OFF	9600 bps
ON	19200 bps (Factory set value)

* When the Communication speed of communication 2 is changed to “4800 bps” or “38400 bps,” it can be changed by the Host communication or Loader communication.

Continued on the next page.

Continued from the previous page.

5	6	7	Communication protocol and Data bit configuration [1] (Communication 2)
OFF	OFF	OFF	Host communication (RKC communication) Data 8-bit, without parity, Stop 1-bit (Factory set value [2])
ON	OFF	OFF	Host communication (Modbus) Data 8-bit, without parity, Stop 1-bit
OFF	ON	OFF	PLC communication MITSUBISHI MELSEC series special protocol • A-compatible 1C frame (format 4) AnA/AnUCPU common command (QR/QW) [AnA, AnU, QnA, Q, FX3U or FX3UC series] • QnA-compatible 3C frame (format 4) command (0401/1401) The available register is only a ZR register. [QnA or Q series] Data 7-bit, without parity, Stop 1-bit
ON	ON	OFF	PLC communication OMRON SYSMAC series special protocol C mode command (RD/WD, RE/WE) Data 7-bit, Even parity, Stop 2-bit
OFF	OFF	ON	PLC communication MITSUBISHI MELSEC series special protocol A-compatible 1C frame (format 4) ACPU common command (WR/WW) [A, FX2N, FX2NC, FX3U or FX3UC series] Data 7-bit, without parity, Stop 1-bit
ON	OFF	ON	PLC communication YOKOGAWA FA-M3R special protocol Data 8-bit, without parity, Stop 1-bit
OFF	ON	ON	**Do not set this one**
ON	ON	ON	

[1] The Data bit configuration other than the above can be changed by the Host communication or Loader communication.
[2] Factory set values when the Communication protocol is not specified at the factory.

8	DIP switch setting validate/invalidate
OFF	Validate (Factory set value)
ON	Invalidate (According to the settings in Host communication or Loader communication)

☞ For Host communication, refer to **3.1.3 Communication speed and Communication protocol setting via Host communication (P. 3-7)** and **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**. For Loader communication, refer to **3.1.4 Communication setting for Loader communication (P. 3-9)**.

3.1.3 Communication speed and Communication protocol setting via Host communication

Settings for the SRZ unit Communication speed, Communication protocol, and Data bit configuration can also be configured by Host communication. When Host communication is used, Communication speed and Data bit configuration settings that cannot be set using the DIP switches can be configured.
To change the set values indicated below by Host communication, host computer and SRZ unit communication must first be enabled in the DIP switch communication settings.

The communication data below will not take effect until the power is restarted or control is switched from STOP to RUN.

Name	RKC Identifier	Digits	Modbus register address		Attribute	Structure*	Data range	Factory set value
			HEX	DEC				
Communication 1 protocol	VK	1	8000	32768	R/W	U	0: RKC communication 1: Modbus	0
Communication 1 communication speed	VL	1	8001	32769	R/W	U	0: 4800 bps 2: 19200 bps 1: 9600 bps 3: 38400 bps	2
Communication 1 data bit configuration	VM	7	8002	32770	R/W	U	0 to 5 Refer to Table 1: Data bit configuration.	0
Communication 2 protocol	VP	1	8004	32772	R/W	U	0: RKC communication 1: Modbus 2: MITSUBISHI MELSEC series special protocol • A-compatible 1C frame (format 4) AnA/AnUCPU common command (QR/QW) [AnA, AnU, QnA, Q, FX3U or FX3UC series] • QnA-compatible 3C frame (format 4) command (0401/1401) The available register is only a ZR register. [QnA or Q series] 3: OMRON SYSMAC series special protocol 4: MITSUBISHI MELSEC series special protocol A-compatible 1C frame (format 4) ACPU common command (WR/WW) [A, FX2N, FX2NC, FX3U or FX3UC series] 5: YOKOGAWA FA-M3R special protocol	0
Communication 2 communication speed	VU	1	8005	32773	R/W	U	0: 4800 bps 2: 19200 bps 1: 9600 bps 3: 38400 bps	2
Communication 2 data bit configuration	VW	7	8006	32774	R/W	U	0 to 11 Refer to Table 1: Data bit configuration.	0

* U: Data for each SRZ unit

Table 1: Data bit configuration

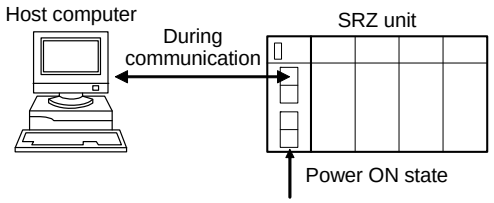
Set value	Data bit	Parity bit	Stop bit	Settable communication
0	8	Without	1	Modbus RKC communication PLC communication
1	8	Even	1	
2	8	Odd	1	
3	7	Without	1	RKC communication PLC communication
4	7	Even	1	
5	7	Odd	1	

Set value	Data bit	Parity bit	Stop bit	Settable communication
6	8	Without	2	PLC communication
7	8	Even	2	
8	8	Odd	2	
9	7	Without	2	
10	7	Even	2	
11	7	Odd	2	

■ Setting example

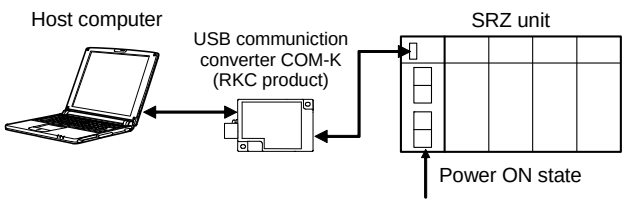
When changing the Data bit configuration of communication 1 for SRZ unit:
(Change the Data bit configuration from “data 8-bit, no parity, stop 1-bit” to “data 8-bit, even parity, stop 1-bit.”)

1. Change the Data bit configuration of SRZ unit on the host computer.
Change to “1: data 8-bit, even parity, stop 1-bit.”



Select the Data bit configuration of SRZ unit to “1: data 8-bit, even parity, stop 1-bit” with keyboard of the host computer.

Setting that uses “communication 1” port



Select the Data bit configuration of SRZ unit to “1: data 8-bit, even parity, stop 1-bit” with keyboard of the host computer.

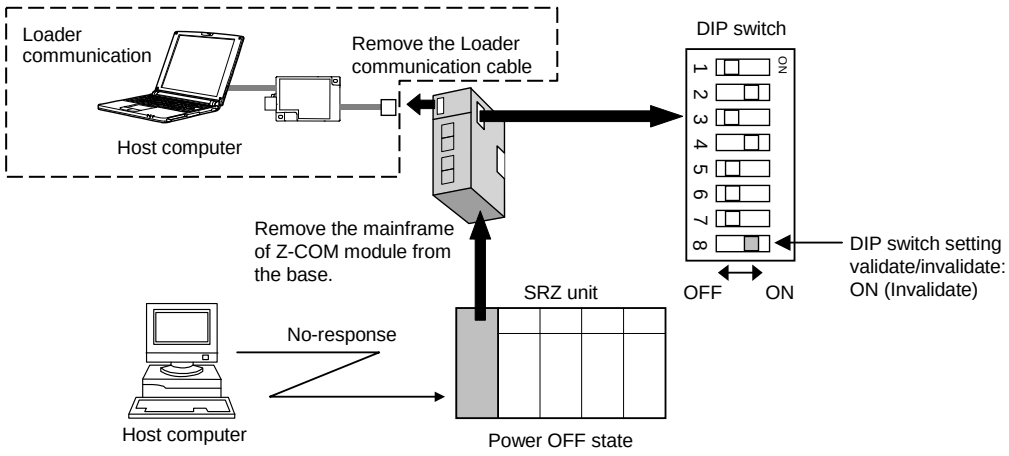
Setting by Loader communication

2. Turn off the power supply of SRZ unit.

3. Change the Data bit configuration of the host computer. Change to “1: data 8-bit, even parity, stop 1-bit.”

- Data bit configuration can be rewritten at the “Comm. Port” setting when using PROTEM2, communication tool.
- Data bit configuration can be rewritten at the Communication parameter display when using WinUCI-SRZ, communication setup tool.

4. Remove the mainframe of Z-COM module from the base. Then, set the DIP switch No.8 to “ON (Invalidate).” When Loader communication is performed, take off the cable of the Loader communication from a Z-COM module.



The first time that DIP switch No. 8 is switched off (invalidate), the following communication data will be factory set values. In addition to the communication data that is to be changed, there may be other settings that must be configured.

- Communication 1 communication speed
- Communication 1 protocol
- Communication 1 data bit configuration
- Communication 2 communication speed
- Communication 2 protocol
- Communication 2 data bit configuration

5. Mount the mainframe of Z-COM module on the base. Turn on the power supply of SRZ unit.
If the power is turned on, communication starts at the changed value.

3.1.4 Communication setting for Loader communication

When Loader communication is used, the Communication speed, Communication protocol, and Data bit configuration of the Z-COM module are fixed. There is no need to configure the communication settings of the Z-COM module.
Set the communication settings of the host computer to the same settings as the Z-COM module.

Address, Communication speed, Communication protocol, and Data bit configuration for Loader communication

Name	Data (fixed value)
Address (SRZ unit address)	0
Communication speed	38400 bps
Communication protocol	RKC communication Based on ANSI X3.28-1976 subcategories 2.5 and B1
Data bit configuration	Data bit: 8 Parity bit: Without Stop bit: 1

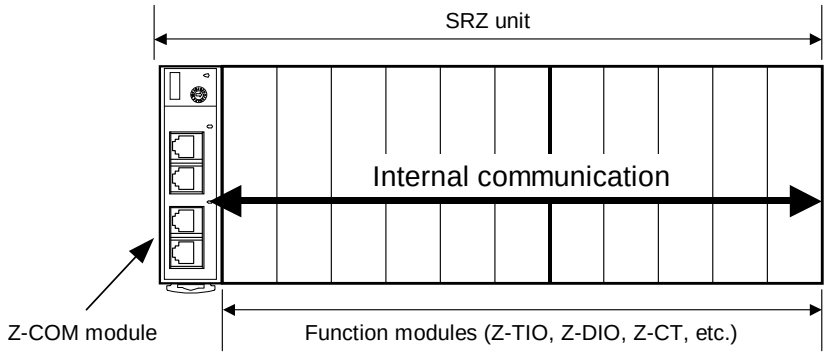
The communication settings are the same as for Host communication.

☞ For setting details, refer to **3.1.3 Communication speed and Communication protocol setting via Host communication (P. 3-7)**.

- Communication speed can be rewritten when using PROTEM2, communication tool.
- Communication speed can be rewritten at the Communication parameter display when using WinUCI-SRZ, communication setup tool.

3.2 Communication Setting of the Function Modules

Only make the module address setting to make the function module (Z-TIO, Z-DIO and Z-CT, etc.) communication settings. The SRZ unit performs internal communication between the Z-COM module and the function module, so the Communication protocol, Communication speed, and Data bit configuration do not need to be set.



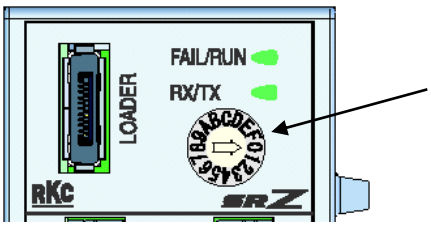
Setting the Z-TIO module address determines the temperature control channel No. used for communication.

☞ For details of module address setting and channel number, refer to following pages.
- **3.2.2 Temperature control channel of the SRZ unit (P. 3-11)**
- **3.2.3 Digital input/output channel of Z-DIO module (P. 3-12)**
- **3.2.4 Current transformer (CT) input channel of Z-CT module (P. 3-13)**

3.2.1 Address setting of the function modules

Set the address of the function modules. When using two or more function modules, set the desired module address to each module. For this setting, use a small blade screwdriver.

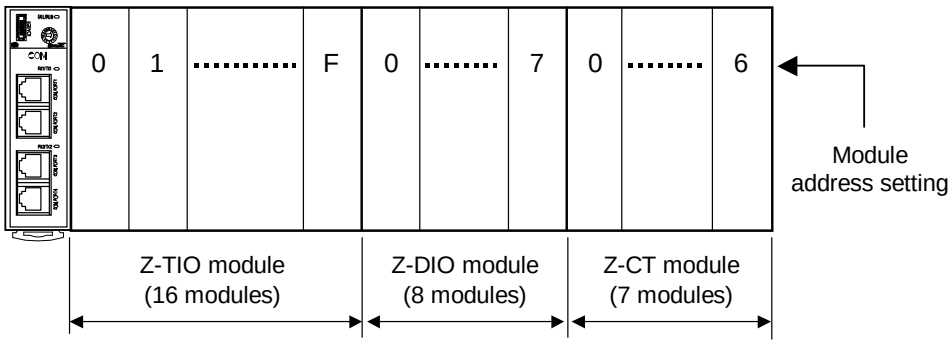
To avoid problems or malfunction, do not duplicate a module address on the same communication line.



Address setting switch
Setting range: 0 to F
(0 to 15: Decimal number)
Factory set value: 0

The maximum number of function modules (Z-TIO, Z-DIO and Z-CT modules) described in the following can be joined per Z-COM module.
- When joining function modules of the same type: Up to 16 modules
- When joining function modules of two or more different types: Up to 31 modules
  (However, the maximum joinable number of function modules of the same type is 16.)

Address setting example of function module (16 Z-TIO module, 8 Z-DIO module, 7 Z-CT module):



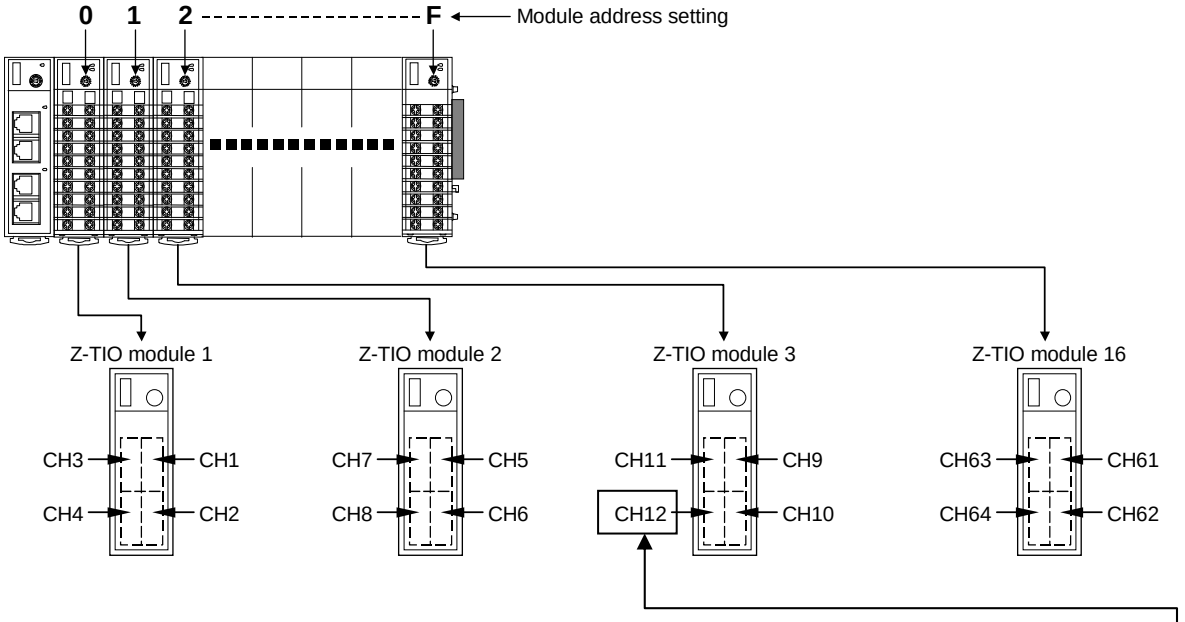
3.2.2 Temperature control channel of the SRZ unit

Setting the Z-TIO module address determines the temperature control channel number used for communication. To each Z-TIO module address, the relevant temperature control channel is assigned. Each temperature control channel number can be calculated from the following equation.

Temperature control channel number of communication =
[Module address setting [a]] × [Maximum channel number of the function module [b]]
+ [Channel number in a module]

[a] When the setting is A to F, it is a decimal number.
[b] For the Z-TIO module, it is calculated by "4."

Example: When 16 Z-TIO modules (4-channel type) are joined



- Z-TIO module 3: The temperature control channel number used for communication of channel 4
  $2 \times 4 + 4 = 12$

3.2.3 Digital input/output channel of Z-DIO module

Setting the Z-DIO module address determines the digital input/output channel number of SRZ unit. To each Z-DIO module address, the relevant digital input/output channel is assigned. Each digital input/output channel can be calculated from the following equation.

Digital input/output channel number =

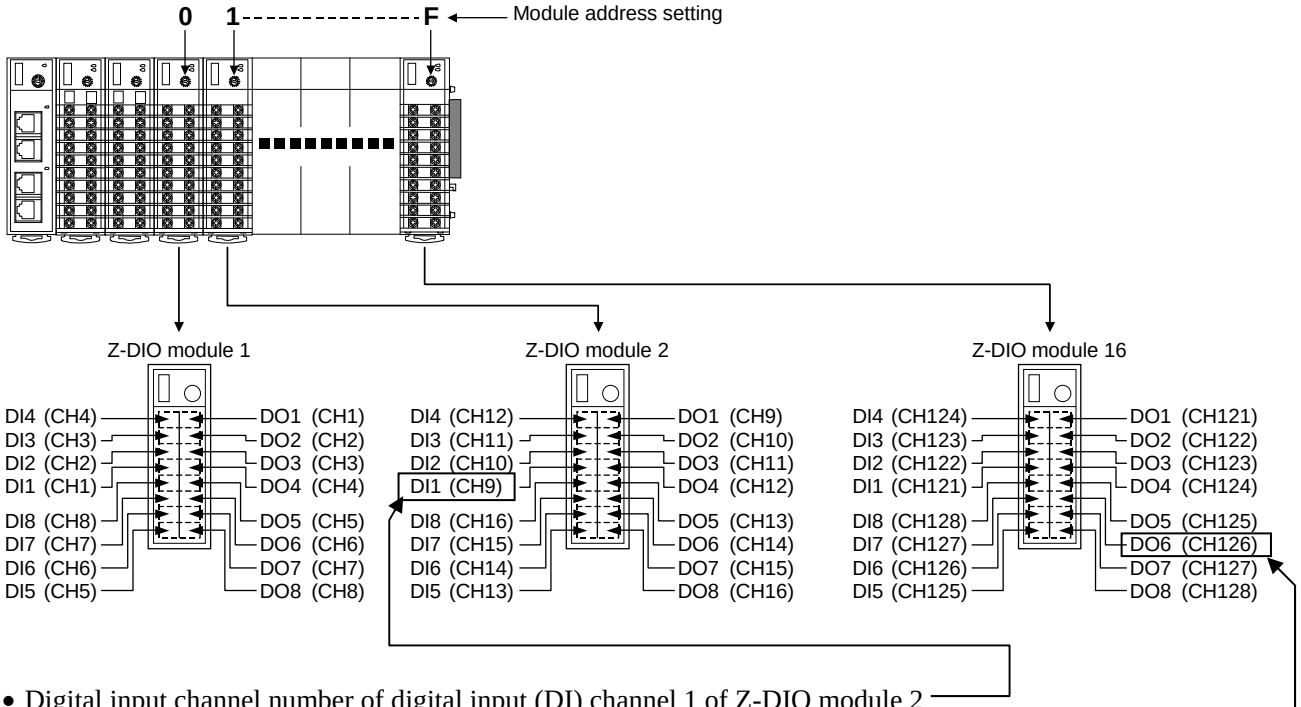
[Module address setting [a]] × [Maximum channel number of the function module [b]]

+ [Input (or output) channel number in a module]

[a] When the setting is A to F, it is a decimal number.

[b] For the Z-DIO module, it is calculated by "8."

Example: When 16 Z-DIO modules are joined



- Digital input channel number of digital input (DI) channel 1 of Z-DIO module 2
  $1 \times 8 + 1 = 9$
- Digital output channel number of digital output (DO) channel 6 of Z-DIO module 16
  $15 \times 8 + 6 = 126$

3.2.4 Current transformer (CT) input channel of Z-CT module

Setting the Z-CT module address determines the current transformer (CT) input channel number of SRZ unit. To each Z-CT module address, the relevant current transformer (CT) input channel is assigned. Each current transformer (CT) input channel can be calculated from the following equation.

Current transformer (CT) input channel number =

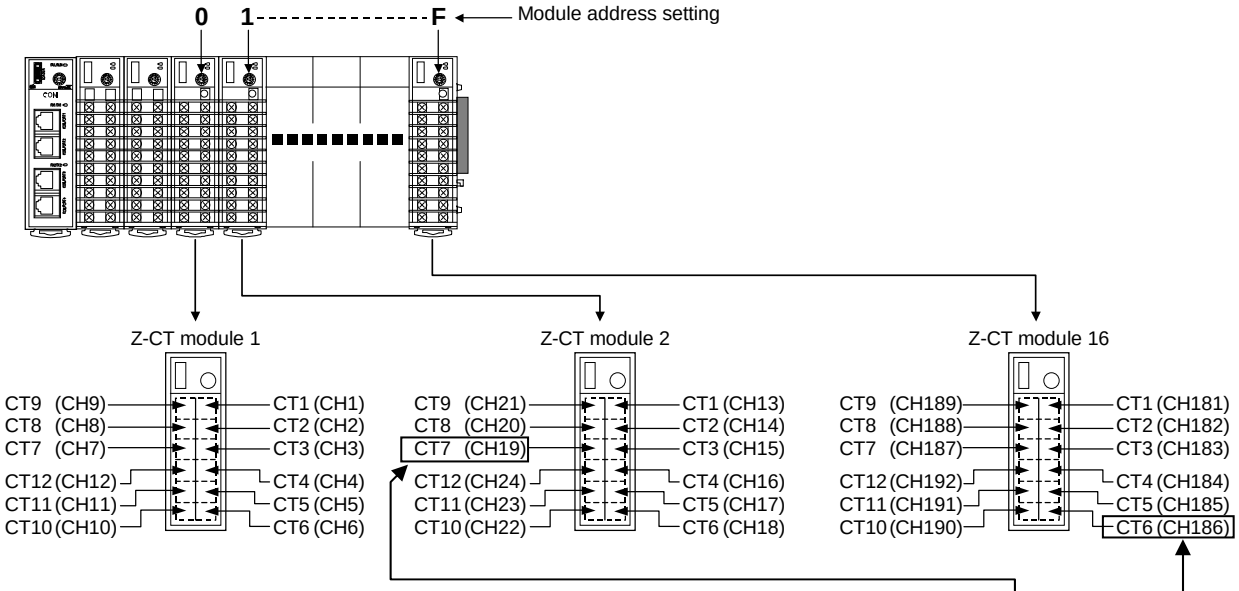
[Module address setting [a]] × [Maximum channel number of the function module [b]]

+ [Channel number in a module]

[a] When the setting is A to F, it is a decimal number.

[b] For the Z-CT module, it is calculated by "12."

Example: When 16 Z-CT modules are joined



- Channel number of current transformer (CT) input channel 7 of Z-CT module 2
  $1 \times 12 + 7 = 19$
- Channel number of current transformer (CT) input channel 6 of Z-CT module 16
  $15 \times 12 + 6 = 186$

MEMO

4 MOUNTING

This chapter describes method of module joining and the SRZ unit mounting.

4.1 Mounting Cautions

⚠ WARNING

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

(1) This instrument is intended to be used under the following environmental conditions.
(IEC 61010-1) [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/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:

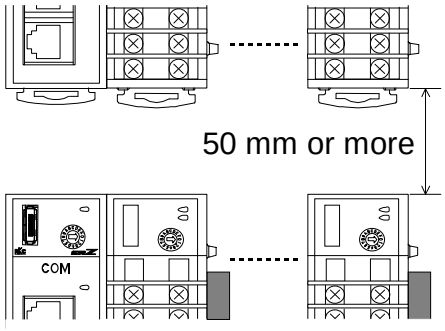
- Rapid changes in ambient temperature which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.
- Water, oil, chemicals, vapor or steam splashes.
- Excessive dust, salt or iron particles.
- Excessive induction noise, static electricity, magnetic fields 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:

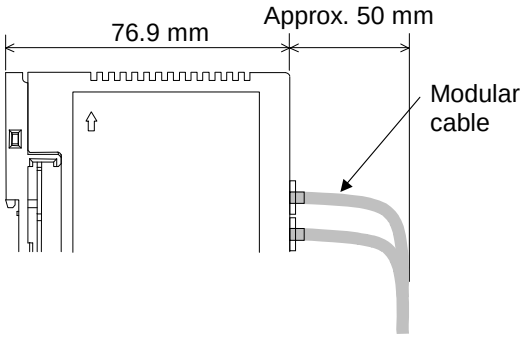
- Provide adequate ventilation space so that heat does not build up.
- Do not mount this instrument directly above the equipment that generates large amount of heat (heaters, transformers, semi-conductor functional devices, large-wattage resistors).
- If the ambient temperature rises above 50 °C, cool 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

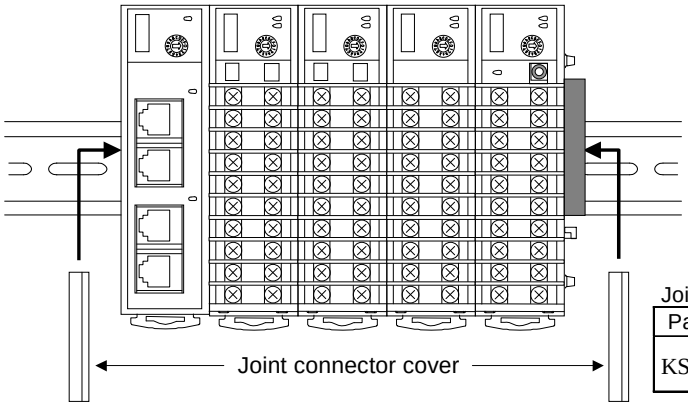
- Space required between each module vertically
  When the module is mounted on the panel, allow a minimum of 50 mm at the top and bottom of the module to attach the module to the mainframe.



- Depth for modular cables mount type module
  Space for modular cables must be considered when installing.



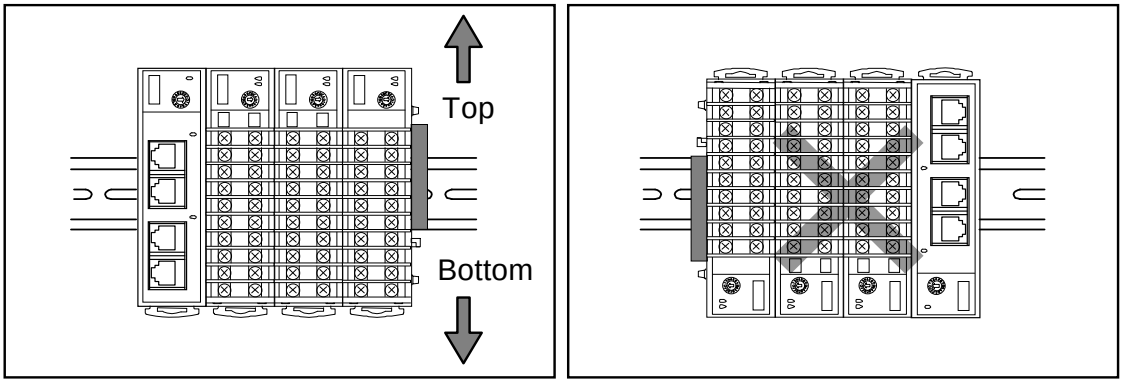
- It is recommended to use a plastic cover on the connector on both sides of the mounted modules for protection of connectors.



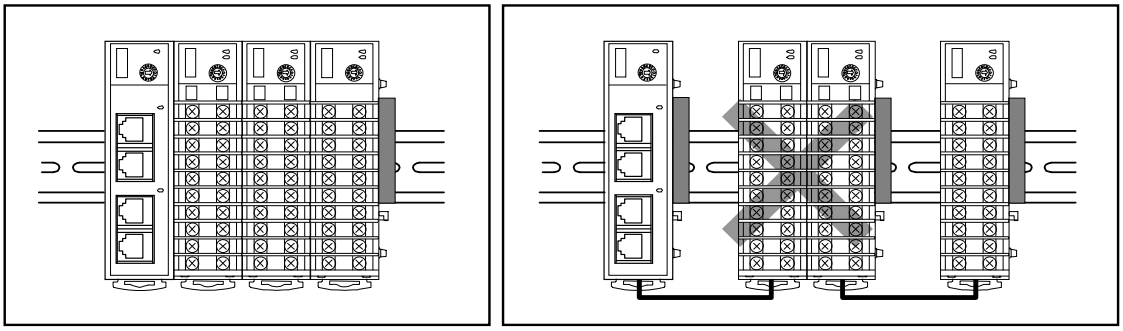
Joint connector cover (Standard equipment)

Parts code	Ordering code	Q'ty
KSRZ-517A	00433384	2

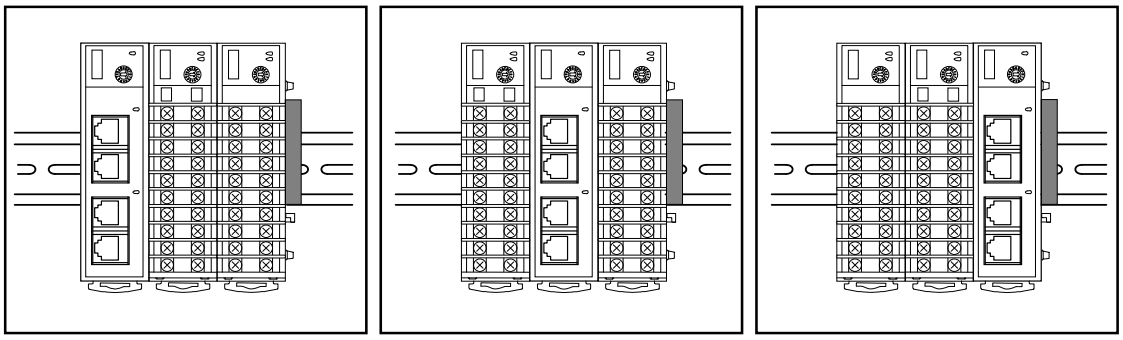
- Installing direction of SRZ unit
  Mount the SRZ unit in the direction specified as shown below.



- Be sure the Z-COM module and function modules (Z-TIO, Z-DIO and Z-CT modules) are joined when using them.



- Joining position of Z-COM module
  Z-COM module connected inside the same unit can be placed in any position.

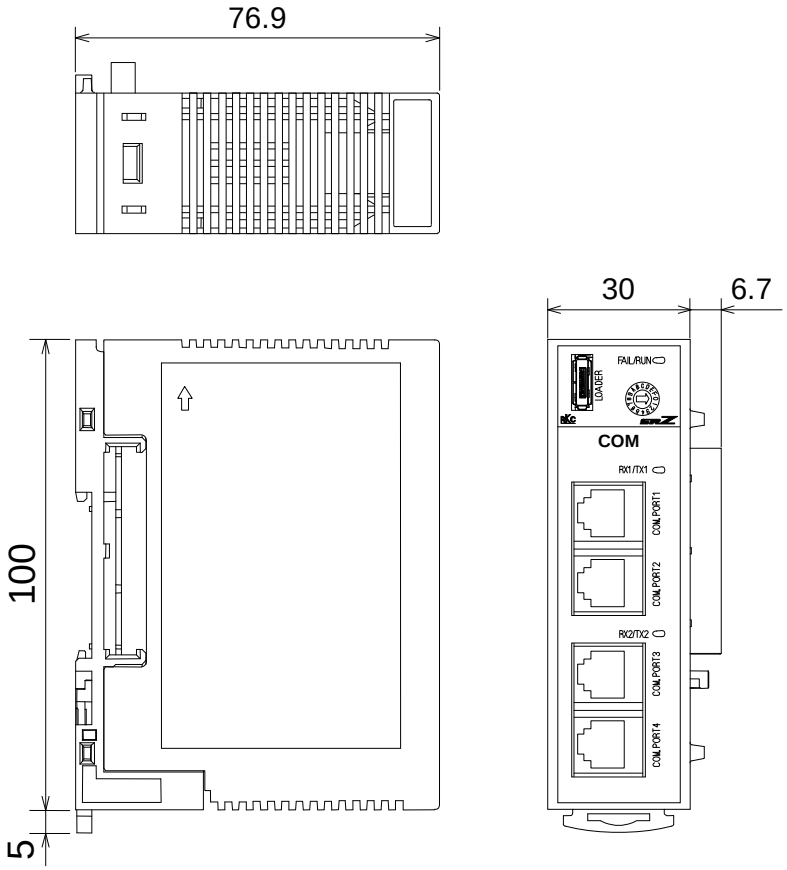


(5) If this instrument is permanently connected to equipment, it is important to include a switch or circuit-breaker into the installation. This should be in close proximity to the equipment and within easy reach of the operator. It should be marked as the disconnecting device for the equipment.

4.2 Dimensions

■ **Z-COM module**

(Unit: mm)



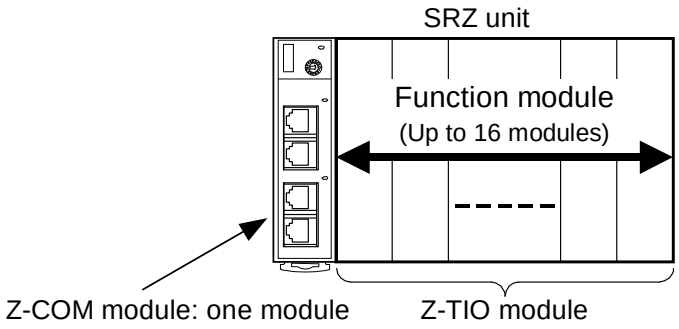
☞ For dimension of the function module, refer to Instruction Manual of each function module.

4.3 Joinable Number of Modules

The maximum number of function modules (Z-TIO, Z-DIO and Z-CT modules) described in the following can be joined per Z-COM module.

■ When joining function modules of the same type: Up to 16 modules

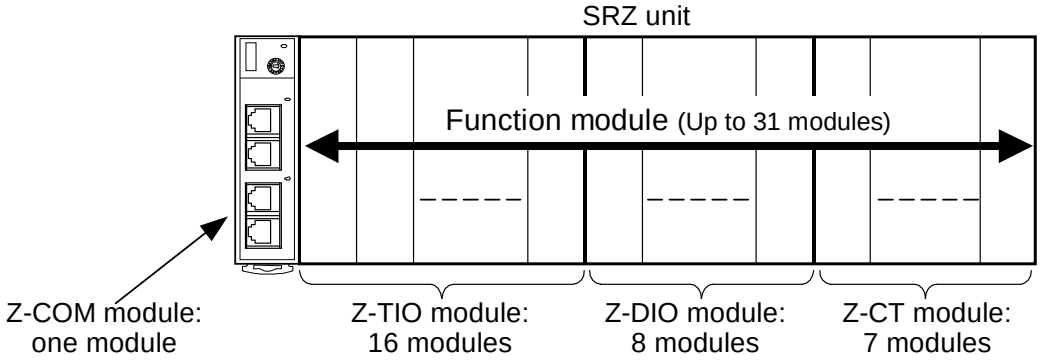
[Example] When only the Z-TIO module is jointed



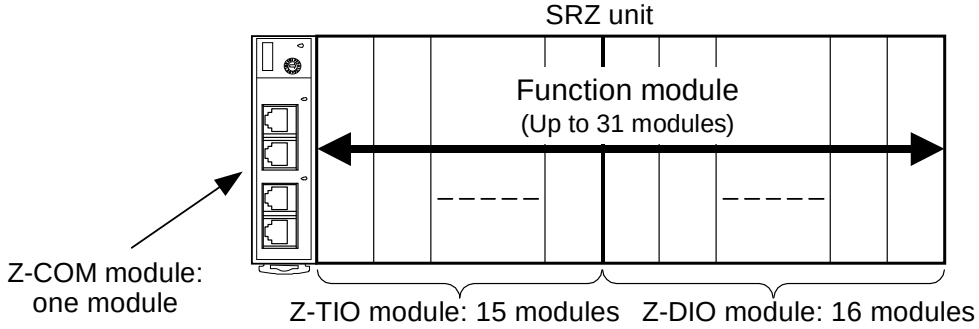
■ When joining function modules of two or more different types: Up to 31 modules

(However, the maximum joinable number of function modules of the same type is 16.)

[Example 1] When 16 Z-TIO modules, 8 Z-DIO modules and 7 Z-CT modules are jointed



[Example 2] When 15 Z-TIO modules and 16 Z-DIO modules are jointed

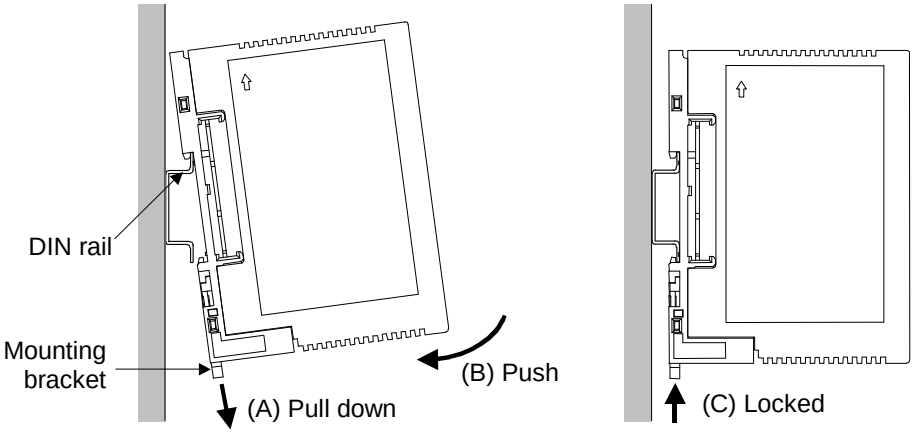


4.4 DIN Rail Mounting and Removing

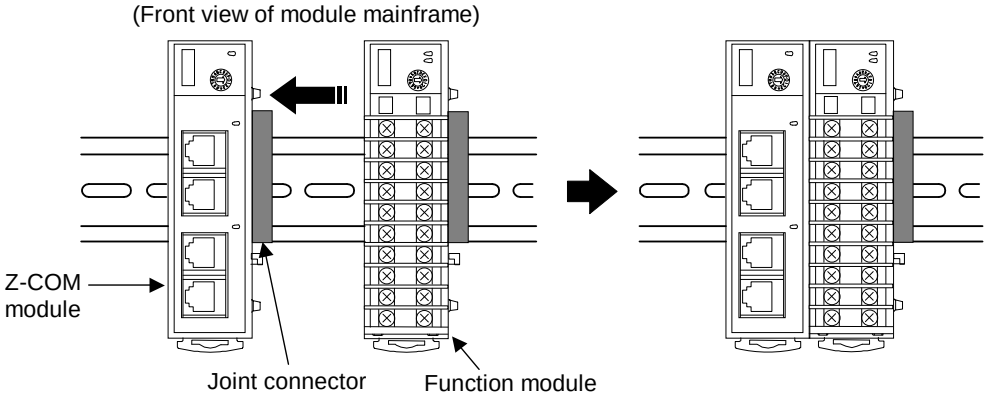
■ Mounting procedures

1. Pull down the mounting bracket at the bottom of the module (A). Attach the hooks on the top of the module to the DIN rail and push the lower section into place on the DIN rail (B).

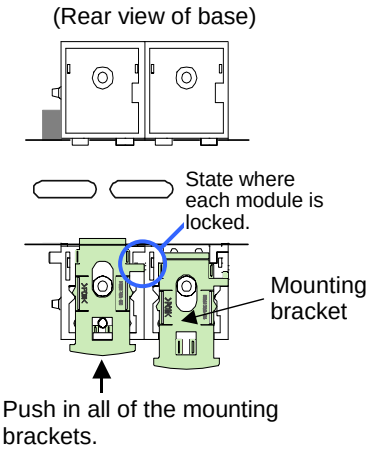
2. Slide the mounting bracket up to secure the module to the DIN rail (C).



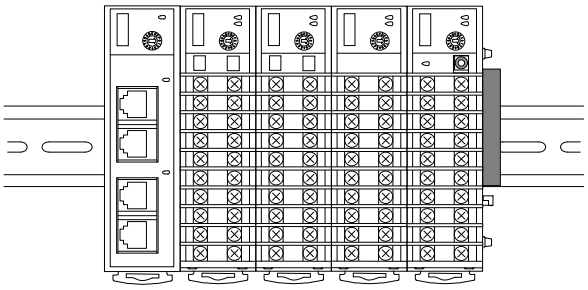
3. Mount the modules on the DIN rail. Slide the modules until the modules are closely joined together and the joint connectors are securely connected.



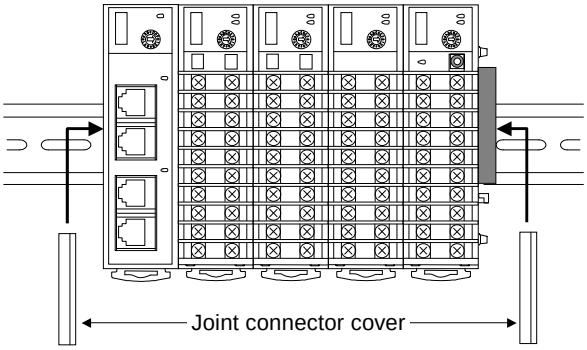
4. Push in the mounting brackets to lock the modules together and fix to the DIN rail.



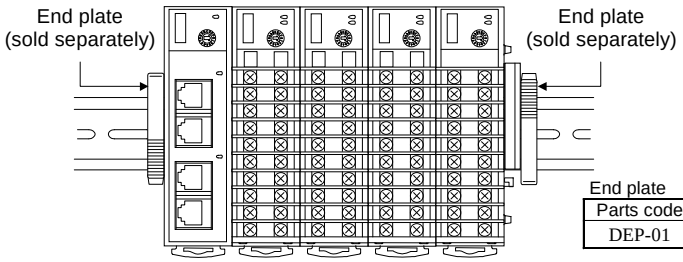
5. Connect the required number of function modules.



6. Install a plastic cover on the connector on both sides of the mounted modules for protection of connectors.



To firmly fix the modules, use end plates on both sides of the mounted modules.

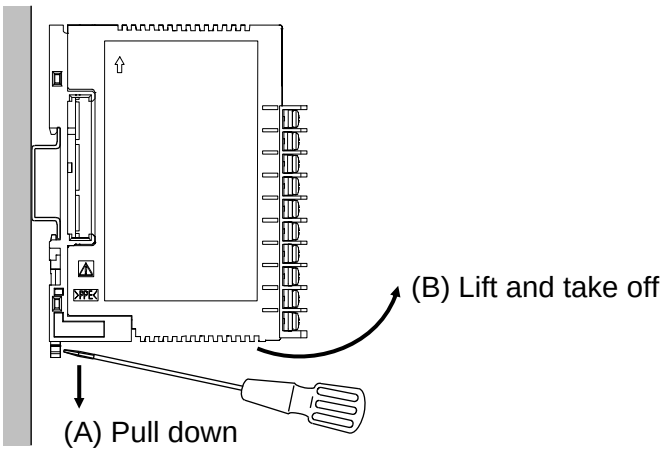


End plate

Parts code	Ordering code	Q'ty
DEP-01	00434944	2

■ Removal procedures

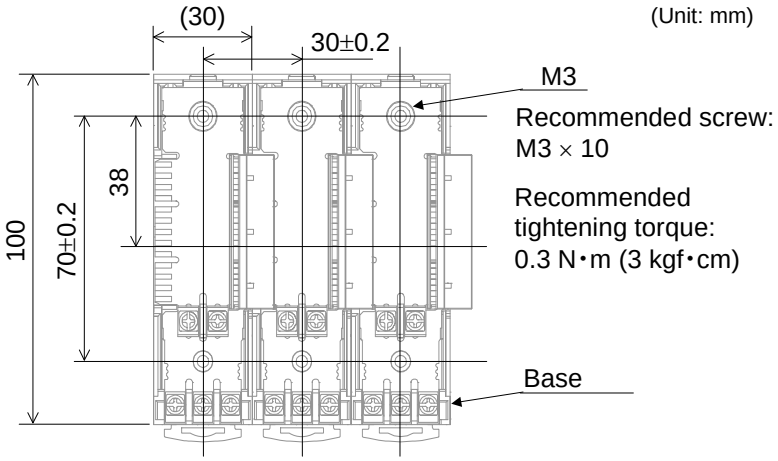
1. Pull down a mounting bracket with a blade screwdriver (A).
2. Lift the module from bottom, and take it off (B).



4.5 Panel Mounting

■ Mounting procedures

1. Refer to the mounting dimensions below when selecting the location.



Mounting dimensions

2. Remove the base from the module (B) while the lock is pressed (A). (Fig.1)

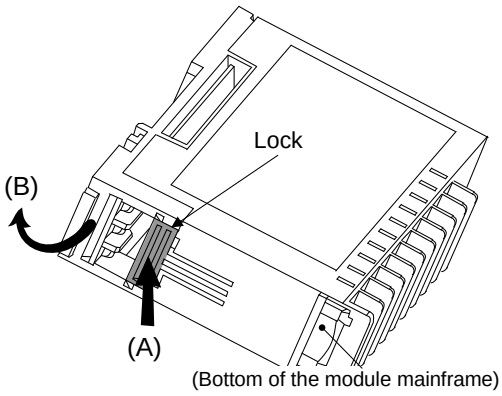


Fig 1: Removing the base

3. Join bases. Then, lock them by pushing in the mounting brackets.

☞ Refer to step *4* on **page 4-7**.

4. Fix the base to its mounting position using M3 screws. Customer must provide the screws.

5. Mount the module on the base. (Fig.2)

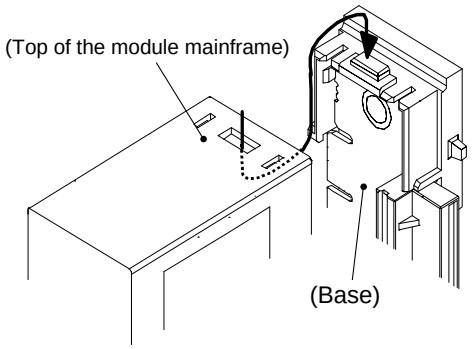


Fig 2: Mounting the module mainframe

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5 WIRING

This chapter explains the procedures for connecting the power supply wiring to the SRZ unit.

☞ For information on connecting input/output wiring to function modules, refer to the manual for each function module.

☞ For the wiring to Host communication and Loader communication, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

☞ For the wiring to PLC communication, refer to **6.2.2 Wiring (P. 6-5)** [MITSUBISHI MELSEC series], **6.3.2 Wiring (P. 6-21)** [OMRON SYSMAC series] or **6.4.2 Wiring (P. 6-32)** [YOKOGAWA FA-M3R].

5.1 Wiring Cautions

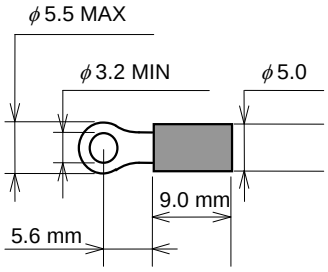
⚠ WARNING

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.

- 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 8 A).
- Supply the power to only one of the joined modules. When power is supplied to any one of the joined modules, all of the joined modules will receive power.
- Select the power capacity which is appropriate for the total power consumption of all joined modules and the initial current surge when the power is turned on.

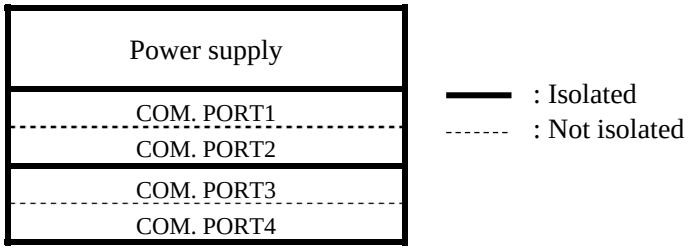
  Power consumption (at maximum load): 30 mA max. (at 24 V DC) [Z-COM module]
  Rush current: 10 A or less
- When connecting the wiring to the power supply terminals on the base, use the specified solderless terminals. Only these specified solderless terminals can be used due to the insulation between the terminals.

  Screw Size: M3 × 7 (with 5.8 × 5.8 square washer)
  Recommended tightening torque:
  0.4 N·m (4 kgf·cm)
  Applicable wire: Solid/twisted wire of 0.25 to 1.65 mm^2
  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)



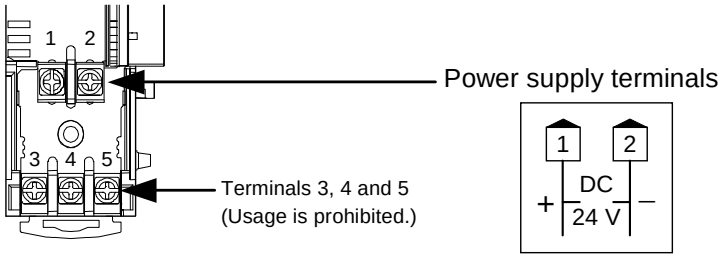
- Make sure that during field wiring parts of conductors cannot come into contact with adjacent conductive parts.

For isolated device input/output blocks, refer to the following:



5.2 Wiring of Power Supply

5.2.1 Terminal configuration (base)



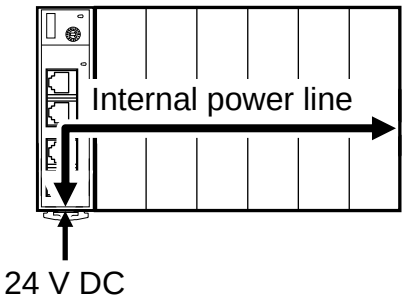
When using the Z-COM module connected to function modules, terminals 3, 4, and 5 are not used. Do not connect anything to terminals 3, 4, and 5.
In addition, do not use terminals 3, 4, and 5 of function modules.

5.2.2 Wiring method

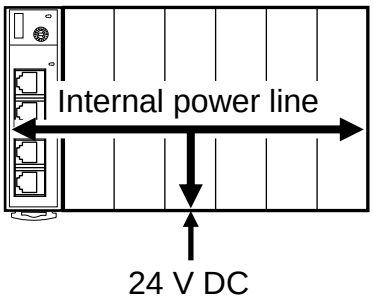
When using the Z-COM module connected to function modules, the power supply wiring is connected to any one of the modules. Power is supplied from the module with the power wiring to the other modules.

[Wiring example]

When supplied a power supply to a Z-COM module

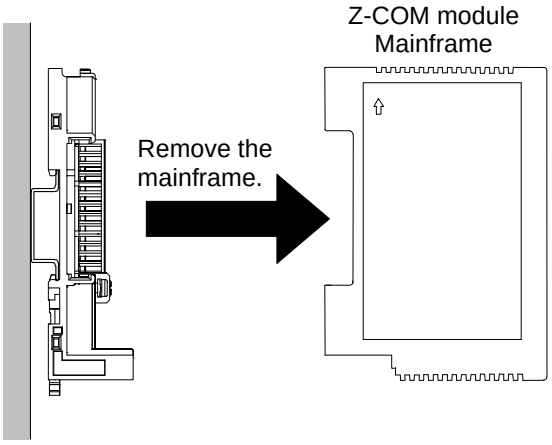


When supplied a power supply to a function module

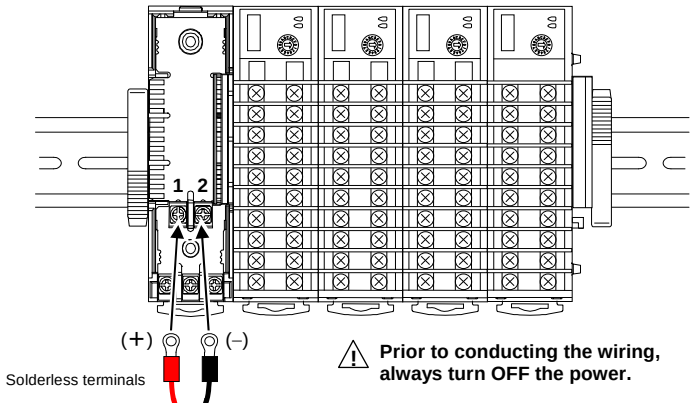


1. Remove the module mainframe to which the power wiring will be connected.

☞ For method of removing the mainframe, refer to **4.5 Panel Mounting (P. 4-9)**.



2. Attach the solderless terminals to the power terminals with a Phillips head screwdriver. When attaching the terminals, make sure that the polarity (+ and –) is correct.

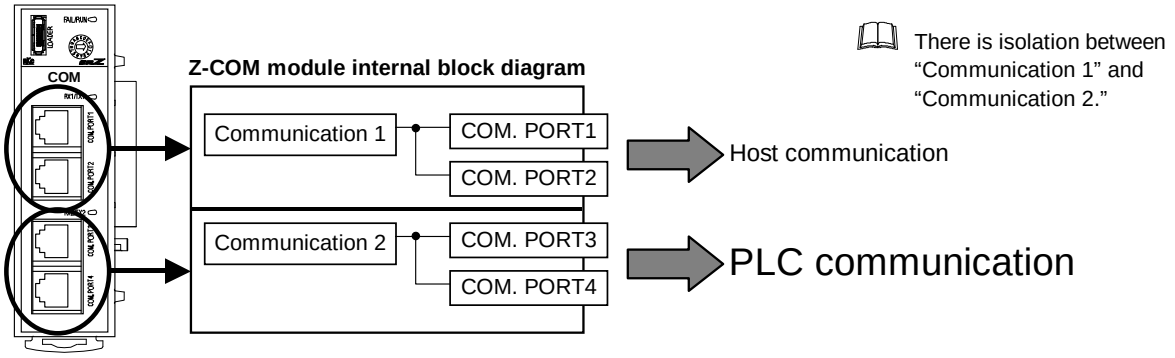


3. Return the module mainframe to the base. This completes the wiring work.

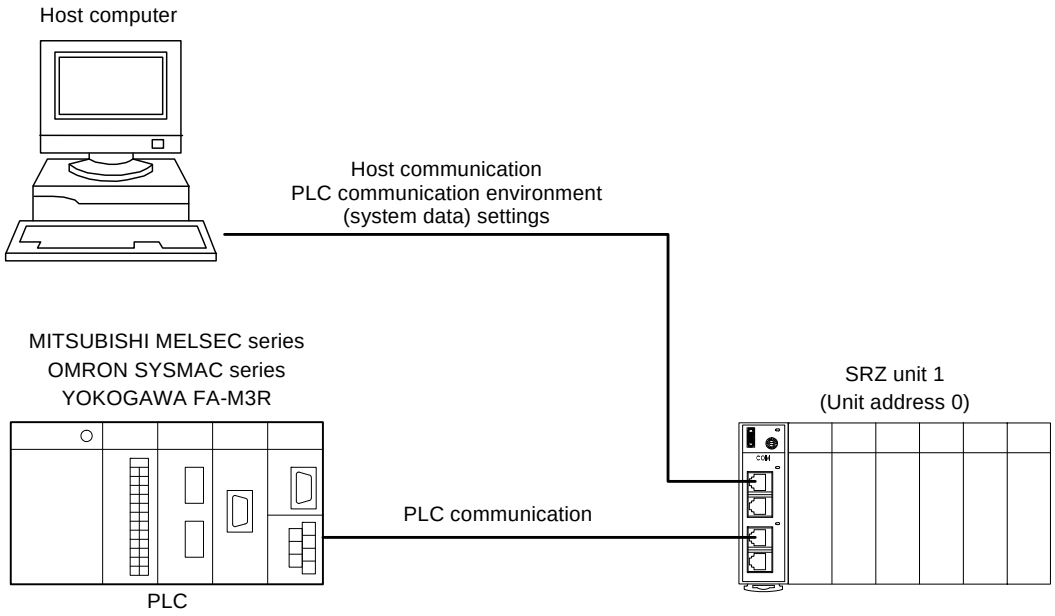
6 PLC COMMUNICATION

6.1 PLC Communication Outline

Communication system for Z-COM module contains “Communication 1 (COM. PORT1/2)” and “Communication 2 (COM. PORT3/4).” Communication 2 (COM. PORT3/4) can be used for PLC communication.



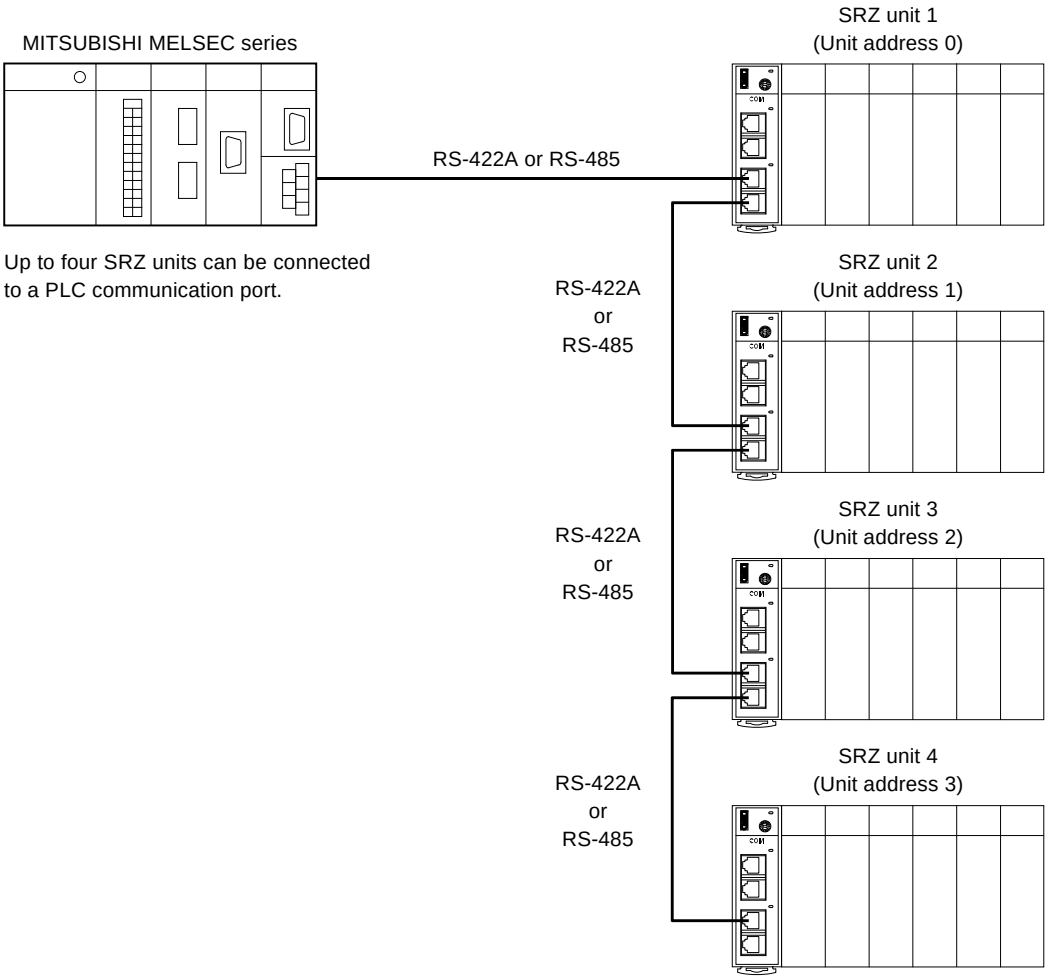
Communication is possible with a MITSUBISHI MELSEC series PLC, an OMRON SYSMAC series or a YOKOGAWA FA-M3R PLC.
The PLC communication environment (system data) settings must be made to perform PLC communication. The system data settings are made via the Host communication or Loader communication.



6.2 MITSUBISHI MELSEC Series

6.2.1 Outline

The SRZ unit can be connected to the MITSUBISHI MELSEC series computer link module without using any program.
RS-422A and RS-485 can be used as interfaces.



■ Usable PLC modules (MITSUBISHI MELSEC series)

Name	Type
Computer link module	● AJ71UC24 ● A1SJ71UC24-R4 ● A1SJ71C24-R4 The module which A-compatible 1C frame (format 4) or QnA-compatible 3C frame (format 4) can use.
Serial communication modules	● AJ71QC24N ● A1SJ71QC24N ● QJ71C24 The module which A-compatible 1C frame (format 4) or QnA-compatible 3C frame (format 4) can use.
Special adapter	● FX2NC-485ADP ● FX0N-485ADP ● FX3U-485ADP
Expanded function board	● FX2N-485BD ● FX3U-485-BD

■ Usable SRZ unit modules

Name	Type
Communication extension module	Z-COM-A
Temperature control module	Z-TIO-A (4-channel type) Z-TIO-B (2-channel type)
Digital I/O module	Z-DIO-A
Current transformer (CT) input module	Z-CT-A

Up to 31 function modules can be connected to one Z-COM module.

☞ For the joinable number of function modules, refer to **4.3 Joinable Number of Modules (P. 4-6)**.

☞ For function module, refer to Instruction Manual of the following.
- Temperature Control Module Z-TIO Instruction Manual (IMS01T01-E□)
- Digital I/O Module Z-DIO Instruction Manual (IMS01T03-E□)
- Current transformer input module Z-CT Instruction Manual (IMS01T16-E□)
- SRZ Instruction Manual (IMS01T04-E□)

6.2.2 Wiring

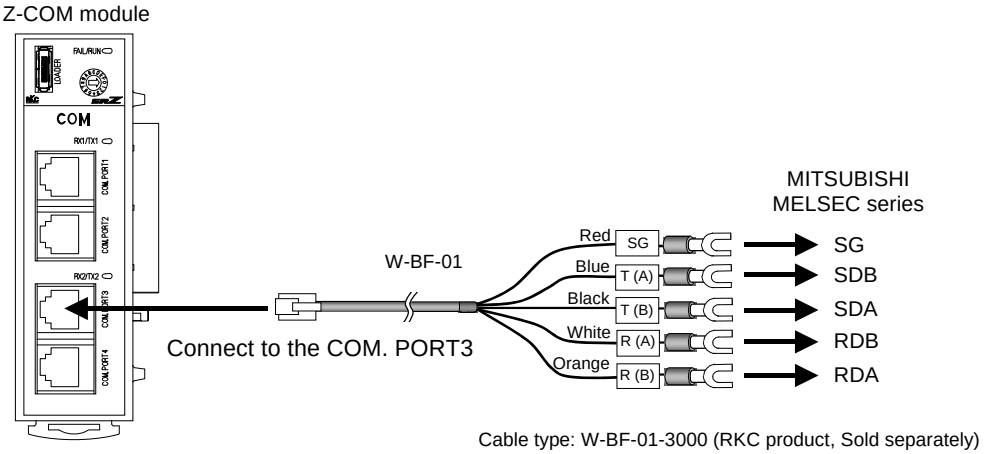
⚠ WARNING

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

CAUTION

- Connect connectors correctly in the right position. If it is forcibly pushed in with pins in the wrong positions, the pins may be bent resulting in instrument failure.
- When connecting or disconnecting the connectors, do not force it too far to right and left or up and down, but move it on the straight. Otherwise, the connector pins may be bent, causing instrument failure.
- When disconnecting a connector, hold it by the connector itself. Disconnecting connectors by yanking on their cables can cause breakdowns.
- To prevent malfunction, never touch the contact section of a connector with bare hands or with hands soiled with oil or the like.
- To prevent malfunction, connect cable connectors securely, then firmly tighten the connector fastening screws.
- To prevent damage to cables, do not bend cables over with excessive force.
- If the instrument is easily affected by noise, use the ferrite core in the both ends of the communication cable (nearest the connector).

■ RS-422A



Cable type: W-BF-01-3000 (RKC product, Sold separately)

[Standard cable length: 3 m]

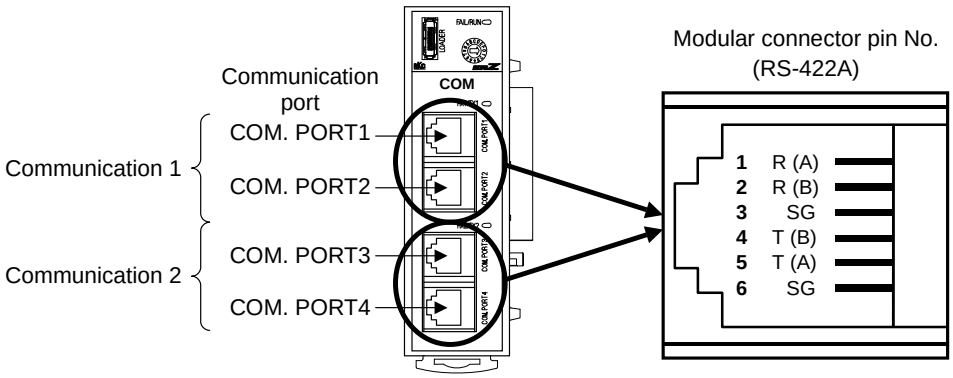
W-BF-01* communication cable (RKC product) can be used as communication cable (sold separately). If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

* Shields of the cable are connected to SG (No. 6 pin) of the COM. PORT3.

The details of the connectable connector for the PLC, refer to the instruction manual for the used PLC.

● Pin layout of modular connector

The contents of the modular connector signal are all the same from COM. PORT1 to COM. PORT4.

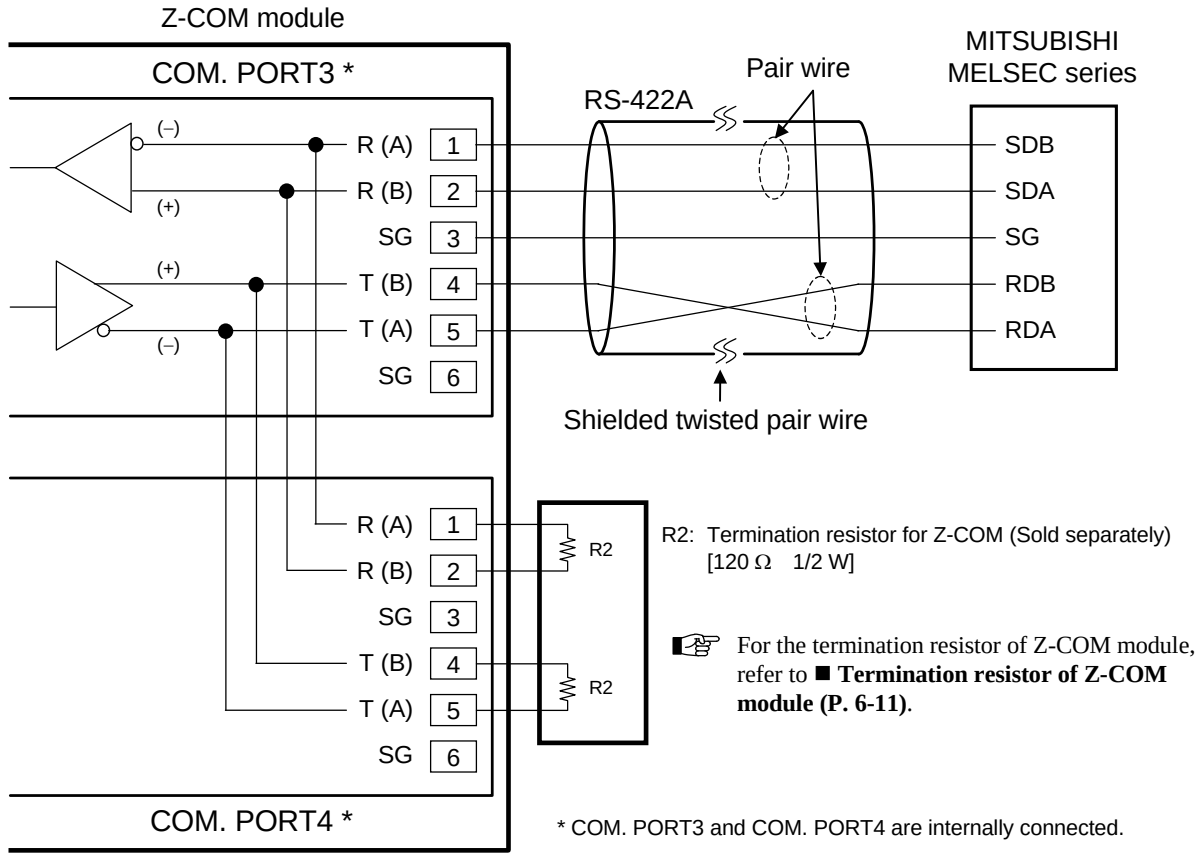


● Connector pin number and signal details

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

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

- **Diagram of RS-422A wiring**



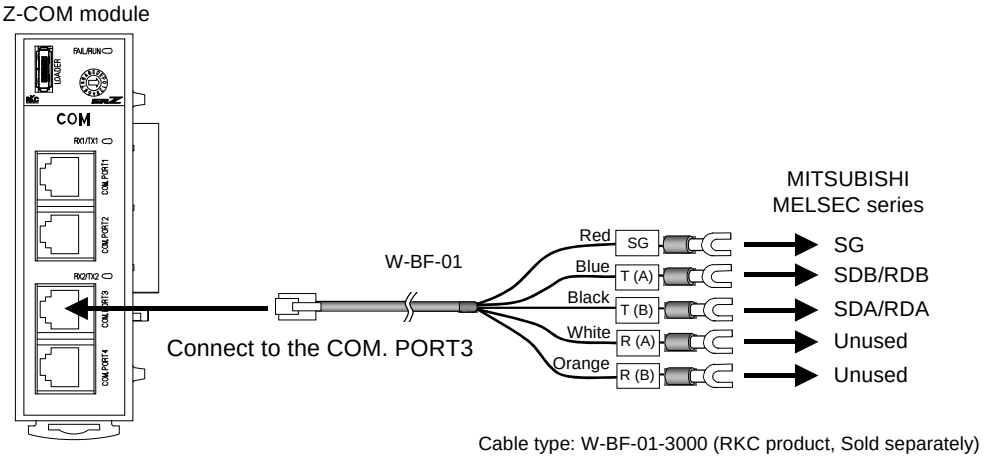
When preparing a cable of connecting the computer link module belonging to the MITSUBISHI MELSEC series to our Z-COM module, cross each pair of wires the A and B terminal positions on their terminal boards are not symmetrical.

Example: Connect the Z-COM module T (A) send data terminal to the RDB receive data terminal on the computer link module belonging to the MITSUBISHI MELSEC series.

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

Prepare a communication cable for the control unit to be connected to the PLC.

■ RS-485



Cable type: W-BF-01-3000 (RKC product, Sold separately)
[Standard cable length: 3 m]

Be sure to insulate the wires that are not used by covering them with insulating tape.

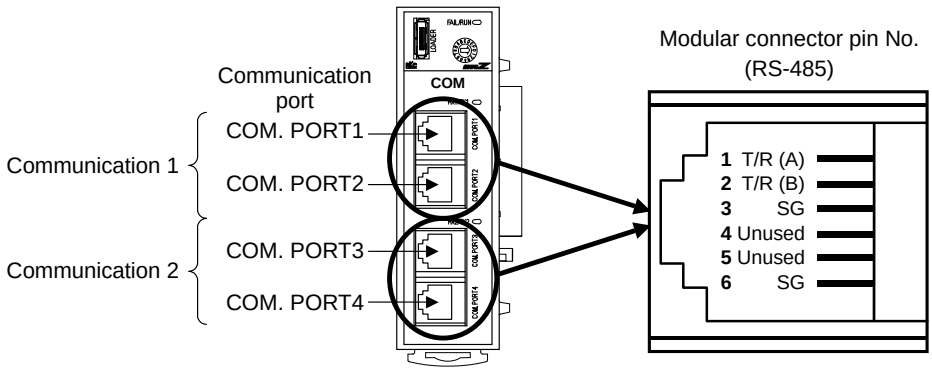
W-BF-01* communication cable (RKC product) can be used as communication cable (sold separately). If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

* Shields of the cable are connected to SG (No. 6 pin) of the COM. PORT3.
For information on terminating the cable (on the PLC side), please inquire when you place the order.

The details of the connectable connector for the PLC, refer to the instruction manual for the used PLC.

● Pin layout of modular connector

The contents of the modular connector signal are all the same from COM. PORT1 to COM. PORT4.

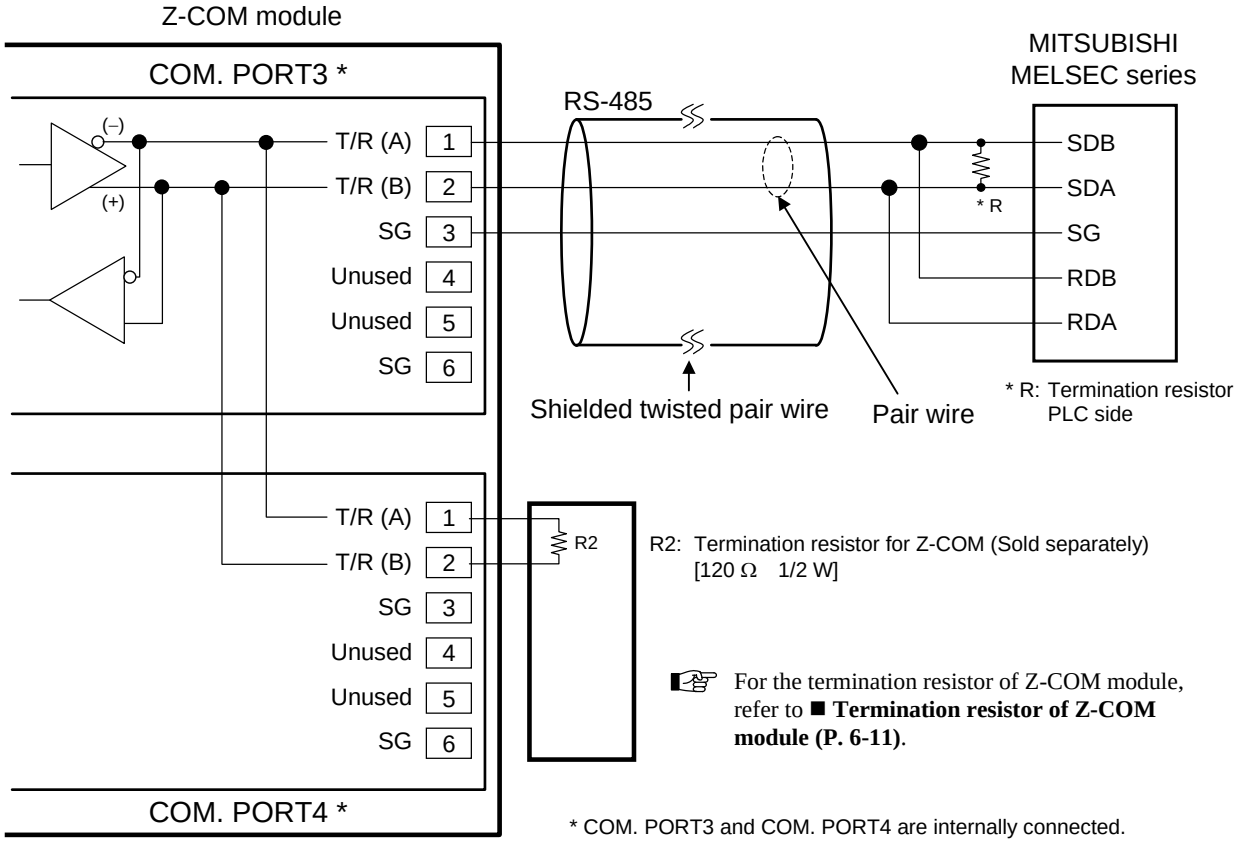


● Connector pin number and signal details

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

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

- **Diagram of RS-485 wiring**



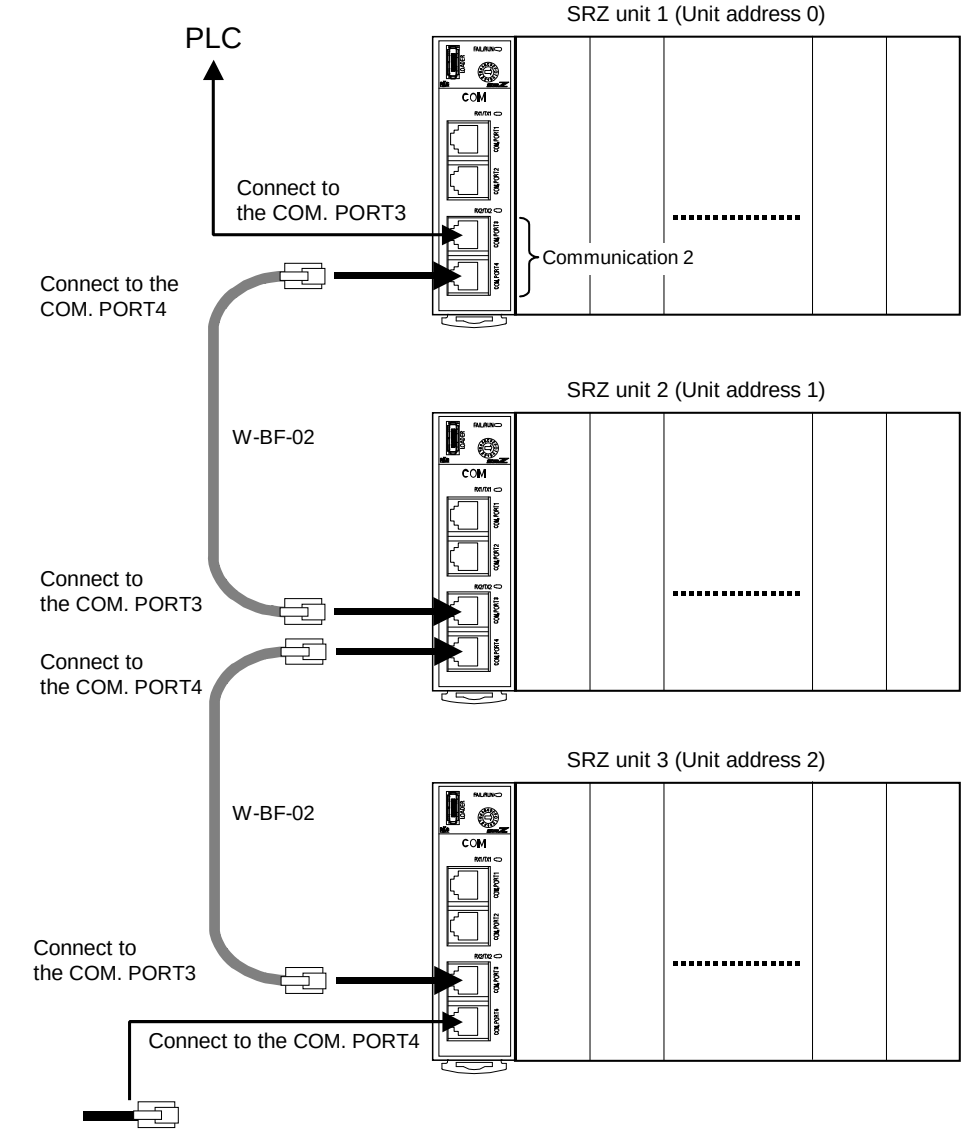
When preparing a cable of connecting the computer link module belonging to the MITSUBISHI MELSEC series to our Z-COM module, cross each pair of wires the A and B terminal positions on their terminal boards are not symmetrical.

Example: Connect the T/R (A) send data terminal on the Z-COM module to the receive data terminal (SDB, RDB) on the MITSUBISHI MELSEC series computer link module.

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

Prepare a communication cable for the control unit to be connected to the PLC.

■ Multiple SRZ unit connections



For RS-422A interface, order W-BF-02 connection cable (sold separately) to connect the SRZ unit. If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

Cable type: W-BF-02-3000 (Sold separately) [Standard cable length: 3 m]

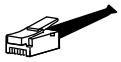
COM. PORT3 and COM. PORT4 are internally connected.

For the termination resistor of Z-COM module, refer to ■ **Termination resistor of Z-COM module (P. 6-11)**.

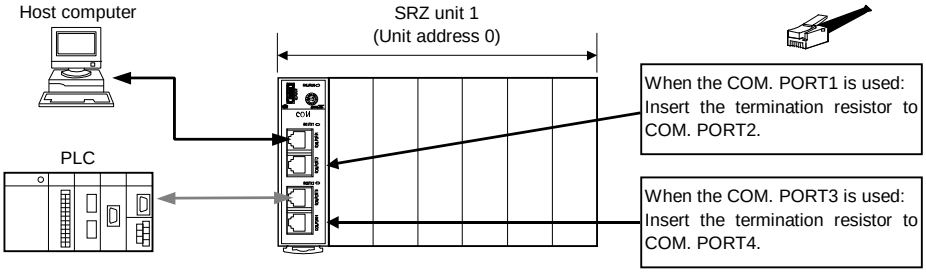
■ Termination resistor of Z-COM module

If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors to the Z-COM module and the other party unit.
For the termination resistor of the Z-COM module, connect a Z-COM termination resistor connector (sold separately).

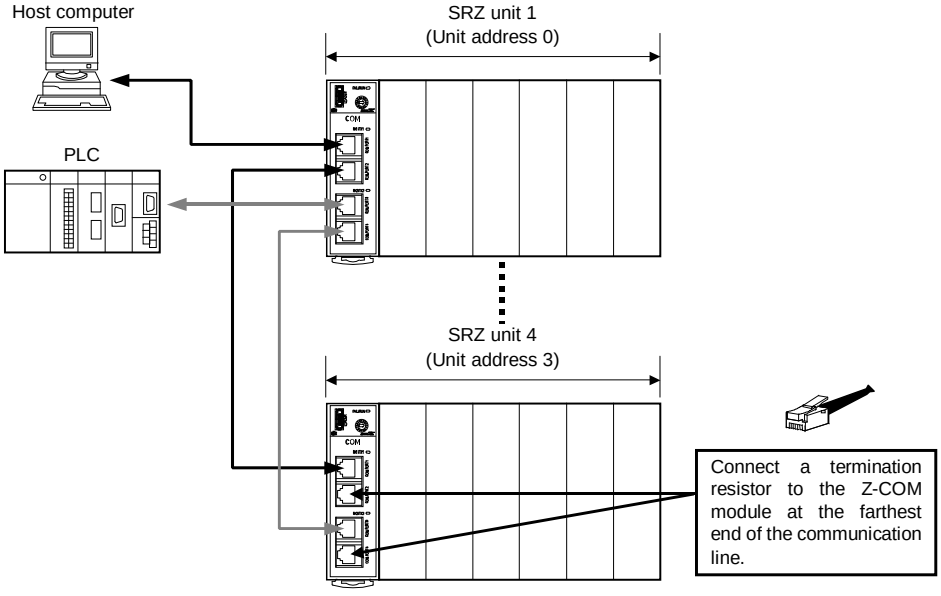
Termination resistor connector for Z-COM (Sold separately):
W-BW-01 (for RS-485) [120 Ω 1/2 W]
W-BW-02 (for RS-422A) [120 Ω 1/2 W]



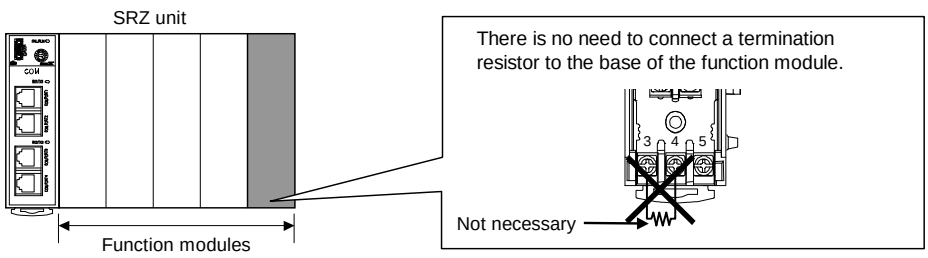
For the termination resistor of the other party unit, refer to the other party unit Instruction Manual.



When two or more SRZ units are connected, connect a termination resistor to the Z-COM module at the farthest end of the communication line.



Termination resistor of the function modules (Z-TIO, Z-DIO and Z-CT modules):
When using a Z-COM module joined together with function modules, there is no need to connect a termination resistor to the function modules.

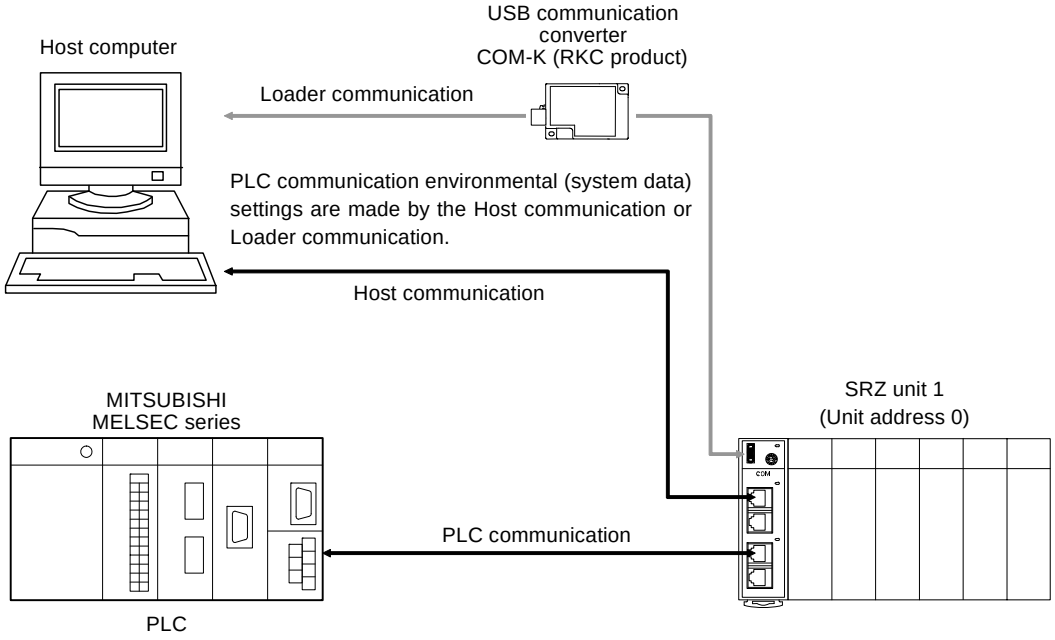


6.2.3 PLC communication environment setting

The PLC communication environment (system data) settings must be made to perform PLC communication. The system data settings are made by the Host communication or Loader communication. The system data contains setting items and monitor items. The monitor items require space (8-word) in the PLC register.

After each item of the system data is set, the power of the SRZ unit must be turned off and then on to enable the data.
The items will also become valid by switching control from STOP to RUN.

- For connection with host computer, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.
- For setting about host communication, refer to **3.1.2 Communication speed and Communication protocol setting by DIP switch (P. 3-5)**.
- For setting about loader communication, refer to **3.1.4 Communication setting for Loader communication (P. 3-9)**.



(1) System data (setting items) list

The following items are set to the SRZ unit.

The following items become valid by turning off the power of the SRZ unit once, and then turning it on again after the settings are changed.
The items will also become valid by switching control from STOP to RUN.

All of the following items can be read and written (R/W). No channel designation is required.

"Identifier" and "Digits" are used for RKC communication and "Register address" is used for Modbus.

Name	Iden-tifier	Digits	Register address		Data range	Factory set value
			HEX	DEC		
Station number	**QV**	7	8008	32776	0 to 31 Set the PLC station number. Set it to the same number as the PLC. Set same values to all Z-COM modules to be connected to the same PLC communication port.	0
PC number	**QW**	7	8009	32777	0 to 255 Set the PLC PC number. Set it to the same number as the PLC. Set same values to all Z-COM modules to be connected to the same PLC communication port.	255
Register type * (D, R, W, ZR)	**QZ**	7	800A	32778	0: D register (data register) 1: R register (file register) 2: W register (link register) 3: ZR register (Method of specifying consecutive numbers when 32767 of R register is exceeded.) 4 to 29: Unused Set the register types used in PLC communication. (Refer to **P. 6-15**)	0
Register start number * (High-order 4-bit)	**QS**	7	800B	32779	0 to 15 Set the start number of the register used in PLC communication. (QnA-compatible 3C frame only) Set this if the register address 65535 is exceeded in the ZR register. (For the setting procedure, refer to **P. 6-15**.)	0
Register start number * (Low-order 16-bit)	**QX**	7	800C	32780	0 to 9999 A-compatible 1C frame, ACPU common command (WR/WW) If a value higher than 9999 is set, a "PLC register read/write error" will result. (excluding the W register) 0 to 65535 A-compatible 1C frame, AnA/AnUCPU common command (QR/QW) and QnA-compatible 3C frame Set the start number of the register used in PLC communication. (For the setting procedure, refer to **P. 6-15**.)	1000

* Usable register ranges and types vary depending on used CPU types. For register ranges and types that can actually be used, refer to the PLC instruction manual.

Continued on the next page.

Continued from the previous page.

Name	Iden-tifier	Digits	Register address		Data range	Factory set value
			HEX	DEC		
System data address bias *	**QQ**	7	800D	32781	0 to 65535 When the SRZ unit is connected in a multi-drop connection, a bias is set for the register addresses of each unit so that no address duplication occurs. (Refer to **P. 6-16**)	2100
COM module link recognition time	**QT**	7	800E	32782	0 to 255 seconds When connecting two or more SRZ units, set the time required until a unit after the second module is recognized. Set this item to the master unit.	10
PLC scanning time	**VT**	7	800F	32783	0 to 3000 ms Set the time of waiting for a response from the PLC. Usually, no factory set values are necessary to be changed.	255
PLC communication start time	**R5**	7	8010	32784	1 to 255 seconds Time until communication with the PLC starts is set after the power is turned on. The PLC communication start time is the time that writing of the system data (monitor items) starts. Actual communication with the PLC by Request command can only take place after the System communication state (D01000: factory set value) changes to "1."	5
Slave mapping method	**RK**	7	8012	32786	0: Bias from the address setting switch [Register address + (Address setting switch coefficient × System data address bias)] 1: Bias disabled When the SRZ unit is connected in a multi-drop connection, this setting determines whether or not the bias set in "system data address bias" is applied to register addresses. (Refer to **P. 6-16**)	0

* Usable register ranges and types vary depending on used CPU types. For register ranges and types that can actually be used, refer to the PLC instruction manual.

Usable register ranges and types vary depending on used CPU types. For register ranges and types that can actually be used, refer to the PLC instruction manual.

■ Changing the register type

The register type used for PLC communication can be changed. The factory set value is set to D register (data register).

■ Setting method of the register start number

The start number of the register used for PLC communication can be changed. The factory set value is start from D01000 of the D register (data register). Refer to the example below for the procedure for changing the start number.

- When any numbers from 0 to 65535 are set the register start number

1. Set the register start number (High-order 4-bit) [identifier: QS, register address: 800B] to 0.

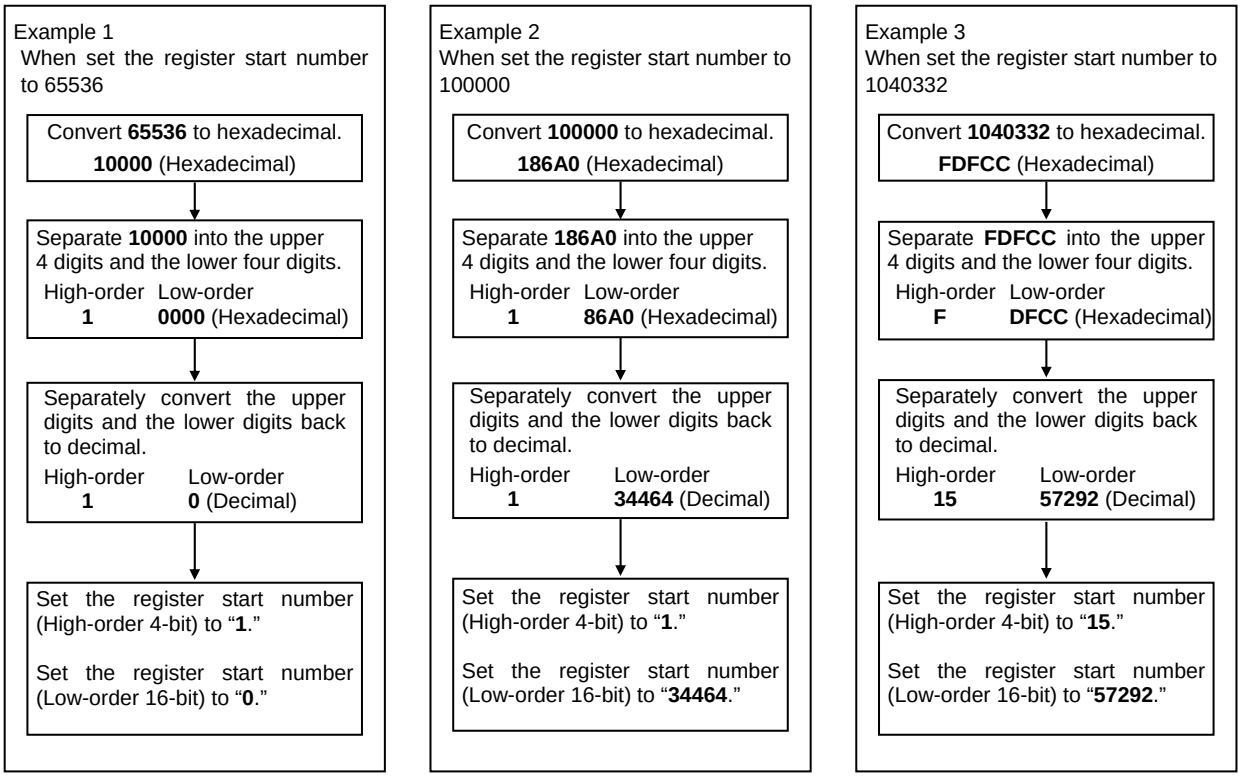
2. In the register start number (Low-order 16-bit) [identifier: QX, register address: 800C], set the register address to a value from 0 to 65535.

Example: When set the register start number to “10188”

Register start number (High-order 4-bit) Set the “0.”	Register start number (Low-order16-bit) Set the “10188.”

- When any numbers from 65536 to 1042431 are set the register start number (ZR register)

If set within the range from 65536 to 1042431, the register address must be converted. The converted register address is set in two parts in the register start number (high-order 4-bit) and the register start number (low-order 16-bit). Set the value as shown in the example below.



■ System data address bias and Slave mapping method

When the SRZ unit is connected in a multi-drop connection, a bias can be set to prevent duplication of register addresses. Setting the slave mapping method and the system data address bias prevents duplication of register addresses of each unit by the address setting switch.

- System data address bias: Set the bias value of register address.
  Factory set value is "2100."
- Slave mapping method: Sets bias validate/invalidate.
  The factory set value is "0: Bias from address setting switch" (bias enabled).

When the bias is enabled, a register address is calculated as shown below.

Register address when bias is enabled =
Register address + (Address setting switch coefficient * × System data address bias)

Register address when bias is disabled

Address setting switch	
Coefficient	Set value
0	0, 4, 8, C
1	1, 5, 9, D
2	2, 6, A, E
3	3, 7, B, F

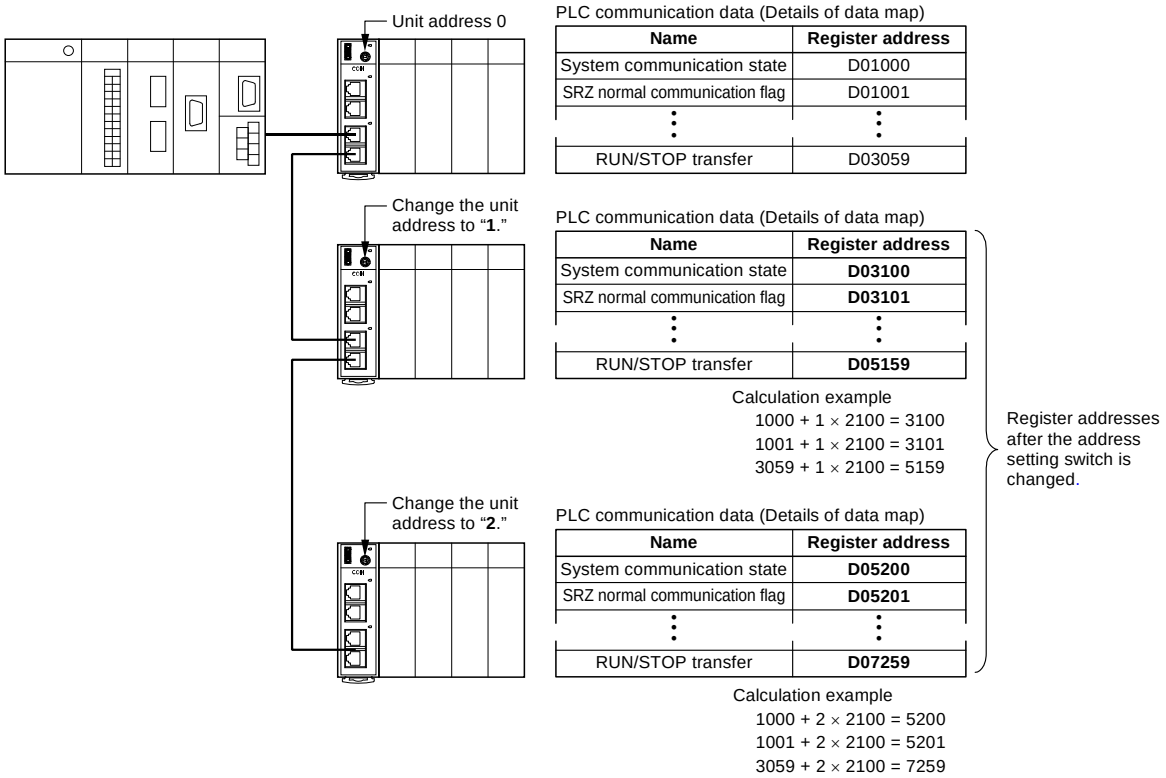
Factory set value: 2100

* In the **Z-COM Host Communication Quick Instruction Manual (IMR01T09-E□)**, this is "Remainder of set value of address setting switch/4." The result is the same in either case.

Setting example

Condition:
PLC: 1
SRZ unit: 3
System data address bias: 2100 (factory set value)
Slave mapping method: 0 (factory set value)

Change the SRZ unit address by the address setting switch. When the value of slave mapping method is 0, the register address bias is enabled and there is no longer duplication of register addresses.



(2) System data (monitor items) list

When System data (setting items) are set, the following System data (monitor items) are written to the register of the PLC when PLC communication is performed. (Following register address is the factory set value.)

All of the following items can be read and written (R/W).

Details of System data (monitor items) can be checked via Host communication or Loader communication.

For details of System data (monitor items), refer to **6.6 PLC Communication Data Map (P. 6-53)**.

Name	Register address	Structure	Attribute	Data range	Factory set value
System communication state	D01000	U	RO	Bit data Bit 0: Data collection condition Bit 1 to Bit 15: Unused Data 0: Before data collection is completed 1: Data collection is completed [Decimal number: 0, 1] This is the communication data collection state of the function module joined to the Z-COM module.	0
SRZ normal communication flag	D01001	U	RO	0/1 transfer (For communication checking) "0" and "1" are repeated for each communication period.	—
Unused	D01002	—	—	Do not use this register address as it is used for the internal processing.	—
Unused	D01003	—	—		—
PLC communication error code	D01004	U	RO	Bit data Bit 0: PLC register read/write error Bit 1: Slave communication timeout Bit 2: Unused Bit 3: Internal communication error Bit 4: Master communication timeout Bit 5 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 31]	—
Unit recognition flag	D01005	U	RO	Bit data Bit 0: SRZ unit 1 Bit 1: SRZ unit 2 Bit 2: SRZ unit 3 Bit 3: SRZ unit 4 Bit 4 to Bit 15: Unused Data 0: No unit exists 1: Unit exists [Decimal number: 0 to 15]	—
Monitor for the number of connected modules	D01006	U	RO	0 to 31	—
Number of valid groups	D01007	U	RO	0 to 128	—

6.2.4 Setting on the PLC (Computer link module)

Sets the communication items of PLC side. Set the PLC as follows. (Recommend setting example)

☞ The setting item varies depending on the PLC. For details of PLC setting procedures, refer to the instruction manual for the PLC being used.

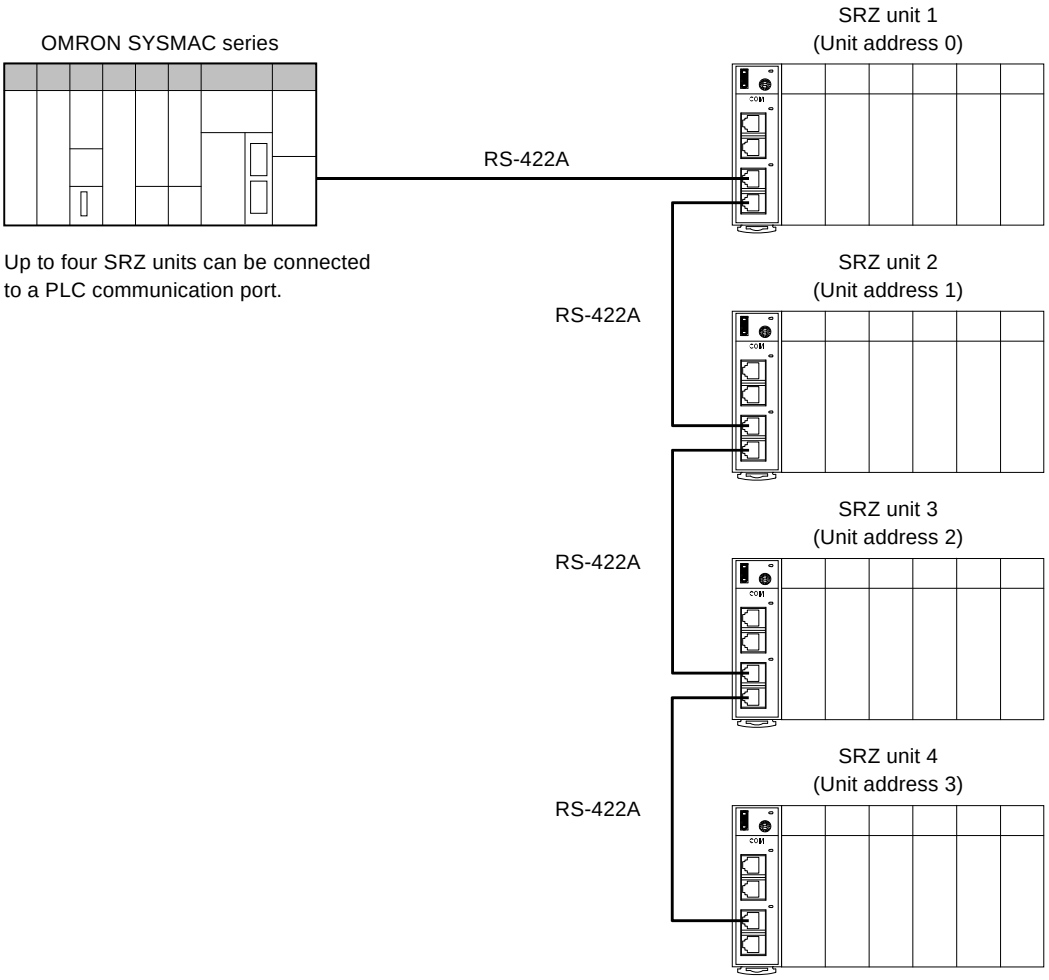
■ MELSEC-AnA/AnU/QnA/Q series

Item	Description
Protocol	Format 4 protocol mode
Station number	00
Computer link/multi-drop selection	Computer link
Communication rate	Set the same as SRZ unit (Z-COM module)
Operation setting	Independent
Data bit	7
Parity bit	Without
Stop bit	1
Sum check code	Provided
Writing during RUN	Allowed
Setting modification	Allowed
Termination resistor	Connect the termination resistor attached to the PLC

6.3 OMRON SYSMAC Series

6.3.1 Outline

The SRZ unit can be connected to the OMRON SYSMAC series computer link module without using any program.
RS-422A can be used as interfaces. (RS-485 cannot be used.)



■ Usable PLC units (OMRON SYSMAC series)

Name	Type
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 CPU unit of SYSMAC CJ1 series
Serial communication board	CS1W-SCB41 (SYSMAC CS1 series), etc.
Serial communication unit	CS1W-SCU41 (SYSMAC CJ1 series), etc.

Connection with the Z-COM module is possible only when a communication interface of the OMRON SYSMAC series is RS-422A.

■ Usable SRZ unit modules

Name	Type
Communication Extension Module	Z-COM-A
Temperature control module	Z-TIO-A (4-channel type) Z-TIO-B (2-channel type)
Digital I/O module	Z-DIO-A
Current transformer (CT) input module	Z-CT-A

Up to 31 function modules can be connected to one Z-COM module.

For the joinable number of function modules, refer to **4.3 Joinable Number of Modules (P. 4-6)**.

For function module, refer to Instruction Manual of the following.

- Temperature Control Module Z-TIO Instruction Manual (IMS01T01-E□)
- Digital I/O Module Z-DIO Instruction Manual (IMS01T03-E□)
- Current transformer input module Z-CT Instruction Manual (IMS01T16-E□)
- SRZ Instruction Manual (IMS01T04-E□)

6.3.2 Wiring

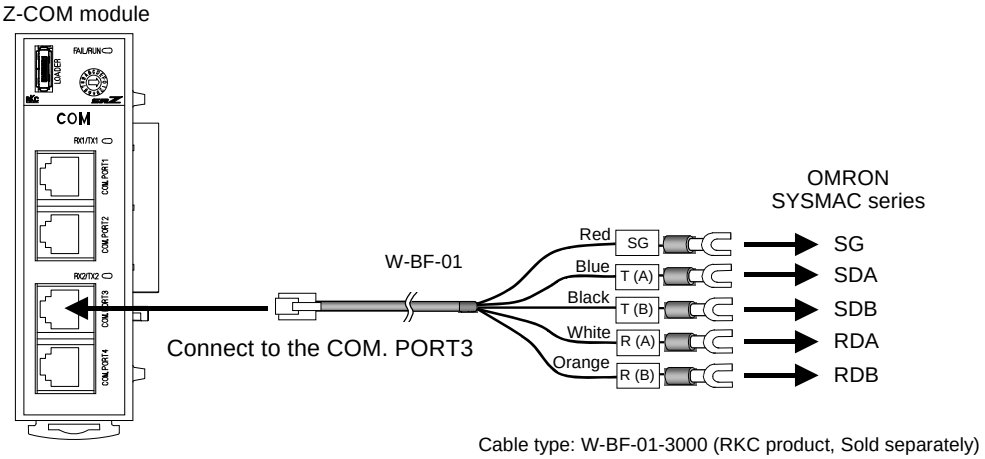
⚠ WARNING

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

CAUTION

- Connect connectors correctly in the right position. If it is forcibly pushed in with pins in the wrong positions, the pins may be bent resulting in instrument failure.
- When connecting or disconnecting the connectors, do not force it too far to right and left or up and down, but move it on the straight. Otherwise, the connector pins may be bent, causing instrument failure.
- When disconnecting a connector, hold it by the connector itself. Disconnecting connectors by yanking on their cables can cause breakdowns.
- To prevent malfunction, never touch the contact section of a connector with bare hands or with hands soiled with oil or the like.
- To prevent malfunction, connect cable connectors securely, then firmly tighten the connector fastening screws.
- To prevent damage to cables, do not bend cables over with excessive force.
- If the instrument is easily affected by noise, use the ferrite core in the both ends of the communication cable (nearest the connector).

■ RS-422A



Cable type: W-BF-01-3000 (RKC product, Sold separately)

[Standard cable length: 3 m]

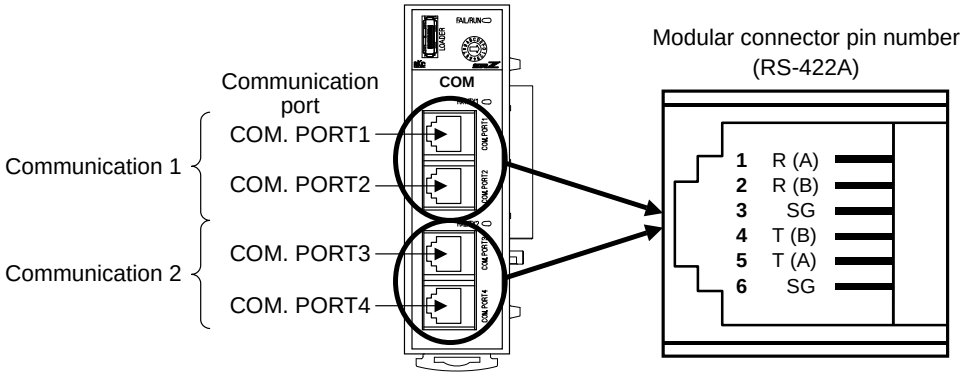
W-BF-01* communication cable (RKC product) can be used as communication cable (sold separately). If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

* Shields of the cable are connected to SG (No. 6 pin) of the COM. PORT3.

The details of the connectable connector for the PLC, refer to the instruction manual for the used PLC.

● Pin layout of modular connector

The contents of the modular connector signal are all the same from COM. PORT1 to COM. PORT4.

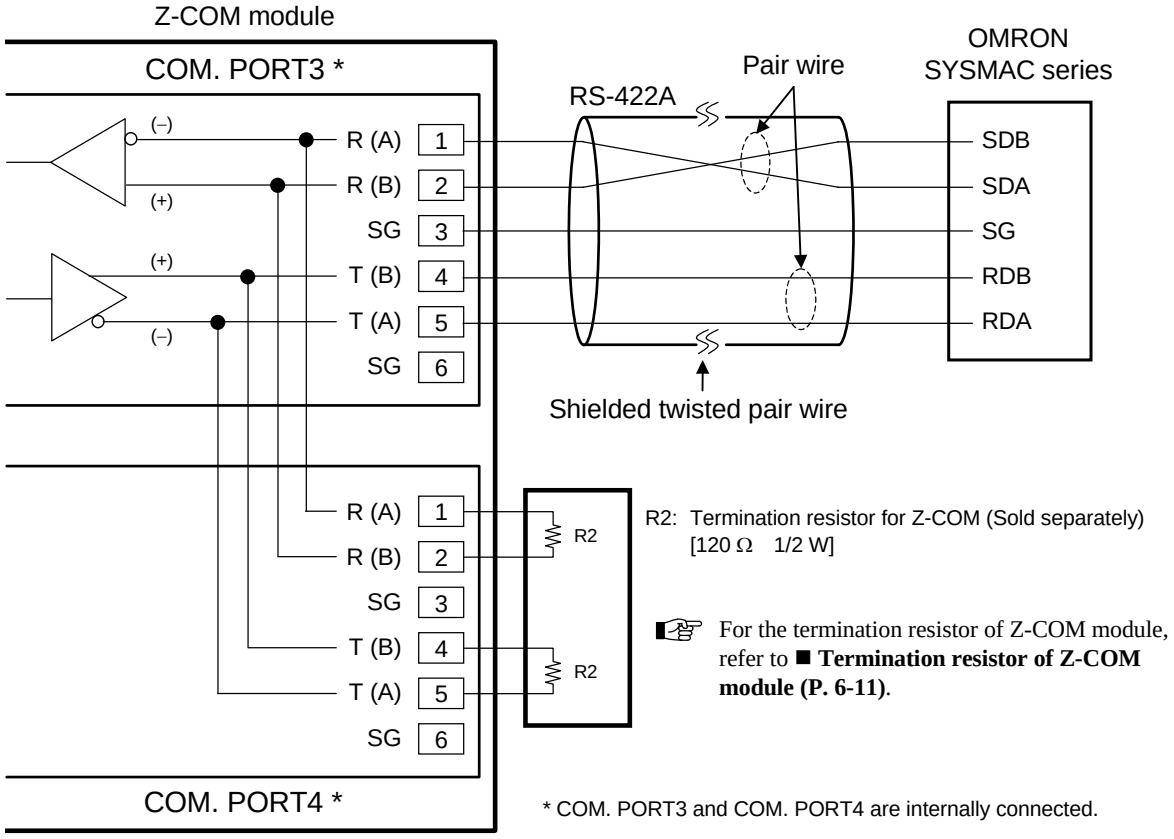


● Connector pin number and signal details

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

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

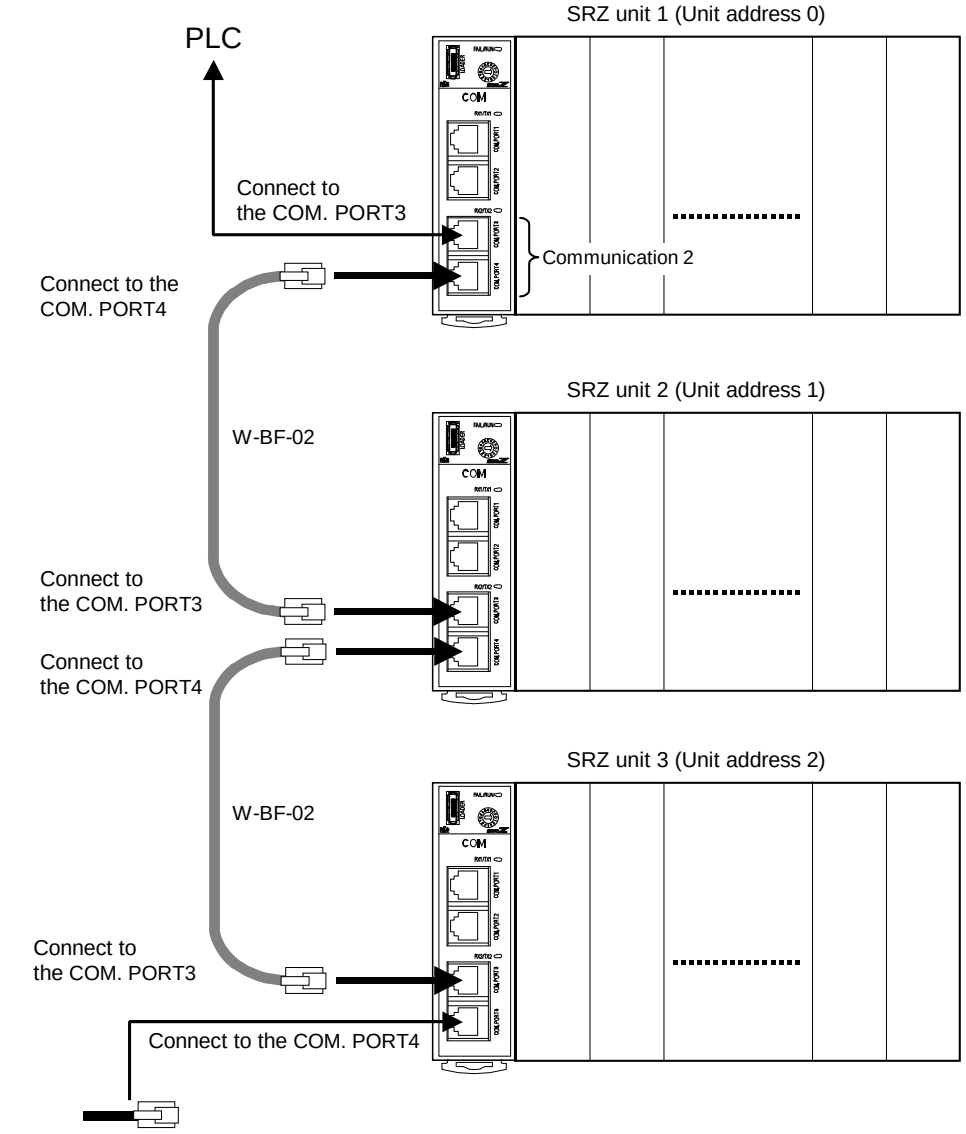
- **Diagram of RS-422A wiring**



The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

Prepare a communication cable for the control unit to be connected to the PLC.

■ Multiple SRZ unit connections



For RS-422A interface, order W-BF-02 connection cable (sold separately) to connect the SRZ unit. If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

Cable type: W-BF-02-3000 (Sold separately) [Standard cable length: 3 m]

COM. PORT3 and COM. PORT4 are internally connected.

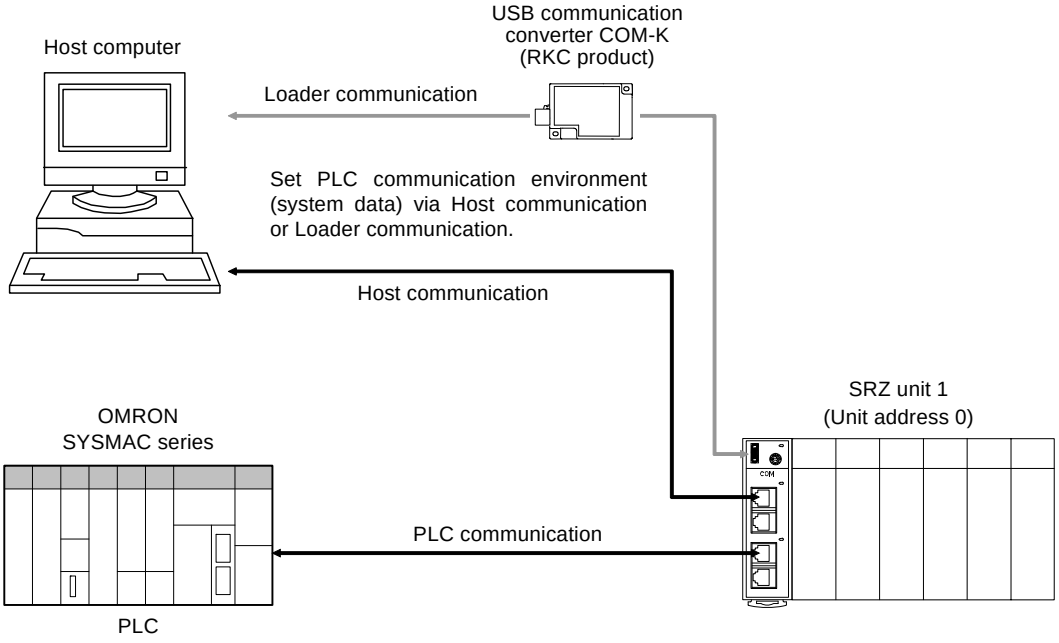
For the termination resistor of Z-COM module, refer to ■ **Termination resistor of Z-COM module (P. 6-11)**.

6.3.3 PLC communication environment setting

The PLC communication environment (system data) settings must be made to perform PLC communication. The system data settings are made by the Host communication or Loader communication. The system data contains setting items and monitor items. The monitor items require space (8-word) in the PLC register.

After each item of the system data is set, the power of the SRZ unit must be turned off and then on to enable the data.
The data can also be enabled by switching control from STOP to RUN.

- For connection with host computer, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.
- For setting about host communication, refer to **3.1.2 Communication speed and Communication protocol setting by DIP switch (P. 3-5)**.
- For setting about loader communication, refer to **3.1.4 Communication setting for Loader communication (P. 3-9)**.



(1) System data (setting items) list

The following items are set to the SRZ unit.

The following items become valid by turning off the power of the SRZ unit once, and then turning it on again after the settings are changed.
The items will also become valid by switching control from STOP to RUN.

All of the following items can be read and written (R/W). No channel designation is required.

"Identifier" and "Digits" are used for RKC communication and "Register address" is used for Modbus.

Name	Iden-tifier	Digits	Register address		Data range	Factory set value
			HEX	DEC		
Station number	**QV**	7	8008	32776	0 to 31 Set the PLC station number. Set it to the same number as the PLC. Set same values to all Z-COM modules to be connected to the same PLC communication port.	0
Register type * (DM, EM)	**QZ**	7	800A	32778	0: DM register (Data memory) 1 to 9: Unused 10 to 22: EM register (Extended data memory) [Specify the bank No.] Set the bank No.+10. 23 to 28: Unused 29: EM register (Extended data memory) [Specify the current bank] Set the register types used in PLC communication.	0
Register start number * (Low-order 16-bit)	**QX**	7	800C	32780	0 to 9999 Set the start number of the register used in PLC communication. If a value higher than 9999 is set, a "PLC register read/write error" will result. (For the setting procedure, refer to **P. 6-15**.)	1000
System data address bias *	**QQ**	7	800D	32781	0 to 9999 When the SRZ unit is connected in a multi-drop connection, a bias is set for the register addresses of each unit so that no address duplication occurs. (Refer to **P. 6-16**)	2100
COM module link recognition time	**QT**	7	800E	32782	0 to 255 seconds When connecting two or more SRZ units, set the time required until a unit after the second module is recognized. Set this item to the master unit.	10

* Usable register ranges and types vary depending on used CPU types. For register ranges and types that can actually be used, refer to the PLC instruction manual.

Continued on the next page.

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Name	Iden-tifier	Digits	Register address		Data range	Factory set value
			HEX	DEC		
PLC scanning time	**VT**	7	800F	32783	0 to 3000 ms Set the time of waiting for a response from the PLC. Usually, no factory set values are necessary to be changed.	255
PLC communication start time	**R5**	7	8010	32784	1 to 255 seconds Time until communication with the PLC starts is set after the power is turned on. The PLC communication start time is the time that writing of the System data (monitor items) starts. Actual communication with the PLC by Request command can only take place after the System communication state (DM01000: factory set value) changes to "1."	5
Slave mapping method	**RK**	7	8012	32786	0: Bias from the address setting switch [Register address + (Address setting switch coefficient × System data address bias)] 1: Bias disabled When the SRZ unit is connected in a multi-drop connection, this setting determines whether or not the bias set in System data address bias is applied to register addresses. (Refer to **P. 6-16**)	0

(2) System data (monitor items) list

When System data (setting items) are set, the following System data (monitor items) are written to the register of the PLC when PLC communication is performed. (Following register address is the factory set value.)

All of the following items can be read and written (R/W).

Details of System data (monitor items) can be checked via Host communication or Loader communication.

For details of System data (monitor items), refer to **6.6 PLC Communication Data Map (P. 6-53)**.

Name	Register address	Structure	Attribute	Data range	Factory set value
System communication state	DM01000	U	RO	Bit data Bit 0: Data collection condition Bit 1 to Bit 15: Unused Data 0: Before data collection is completed 1: Data collection is completed [Decimal number: 0, 1] This is the communication data collection state of the function module joined to the Z-COM module.	0
SRZ normal communication flag	DM01001	U	RO	0/1 transfer (For communication checking) "0" and "1" are repeated for each communication period.	—
Unused	DM01002	—	—	Do not use this register address as it is used for the internal processing.	—
Unused	DM01003	—	—		—
PLC communication error code	DM01004	U	RO	Bit data Bit 0: PLC register read/write error Bit 1: Slave communication timeout Bit 2: Unused Bit 3: Internal communication error Bit 4: Master communication timeout Bit 5 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 31]	—
Unit recognition flag	DM01005	U	RO	Bit data Bit 0: SRZ unit 1 Bit 1: SRZ unit 2 Bit 2: SRZ unit 3 Bit 3: SRZ unit 4 Bit 4 to Bit 15: Unused Data 0: No unit exists 1: Unit exists [Decimal number: 0 to 15]	—
Monitor for the number of connected modules	DM01006	U	RO	0 to 31	—
Number of valid groups	DM01007	U	RO	0 to 128	—

6.3.4 Setting on the PLC

Sets the communication items of PLC side. Set the PLC as follows. (Recommend setting example)

Item	Description
Serial communication mode	High-order link
Unit number (Model number)	0
Start bit	1
Data bit	7
Stop bit	2
Parity bit	Even
Transmission speed	Set the same as SRZ unit (Z-COM module)
I/O port selection	RS-422A
Synchronization selection	Internal synchronization
CTS selection	0 V (always ON)
5 V supply	OFF
Termination resistor	Termination resistor is inserted

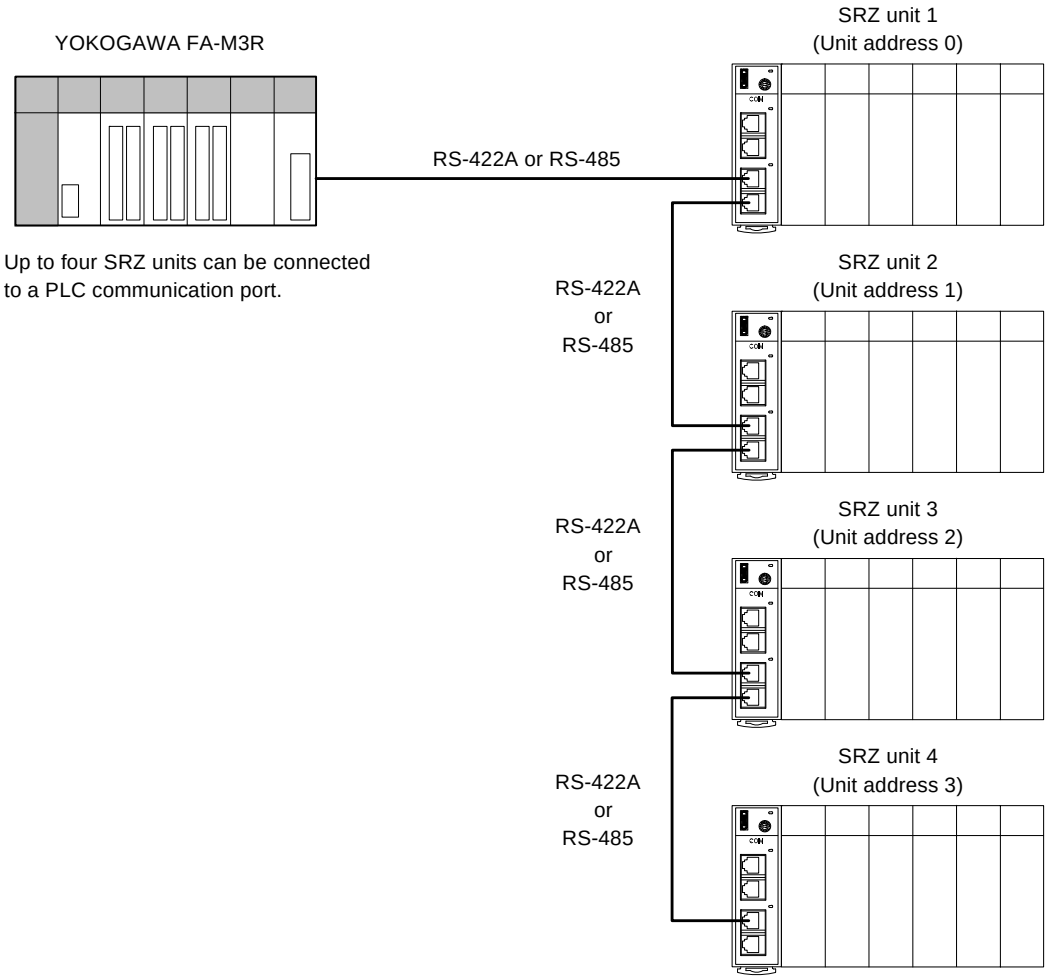
☞ The setting item varies depending on the PLC. For details of PLC setting procedures, refer to the instruction manual for the PLC being used.

🕮 If the PLC is started in RUN mode, the SRZ unit automatically switches to monitor mode and performs communication.

6.4 YOKOGAWA FA-M3R

6.4.1 Outline

The SRZ unit can be connected to the YOKOGAWA FA-M3R personal computer link module without using any program.
RS-422A and RS-485 can be used as interfaces.



■ Usable PLC units (YOKOGAWA FA-M3R)

Name	Type
Personal computer link module	F3LC11-2F F3LC11-2N
CPU module	• There are no restrictions on the type of CPU modules that can be used with personal computer link module F3LC11-2F. • The CPU module corresponding to personal computer link module F3LC11-2N: F3SP0☐, F3SP2☐, F3SP3☐, F3SP5☐, F3SP6☐, F3BP☐☐, F3FP36

Connection with the Z-COM module is possible only when a communication interface of the personal computer link module is RS-422A or RS-485.

■ Usable SRZ unit modules

Name	Type
Communication Extension Module	Z-COM-A
Temperature control module	Z-TIO-A (4-channel type) Z-TIO-B (2-channel type)
Digital I/O module	Z-DIO-A
Current transformer (CT) input module	Z-CT-A

Up to 31 function modules can be connected to one Z-COM module.

For the joinable number of function modules, refer to **4.3 Joinable Number of Modules (P. 4-6)**.

For function module, refer to Instruction Manual of the following.
- Temperature Control Module Z-TIO Instruction Manual (IMS01T01-E☐)
- Digital I/O Module Z-DIO Instruction Manual (IMS01T03-E☐)
- Current transformer input module Z-CT Instruction Manual (IMS01T16-E☐)
- SRZ Instruction Manual (IMS01T04-E☐)

6.4.2 Wiring

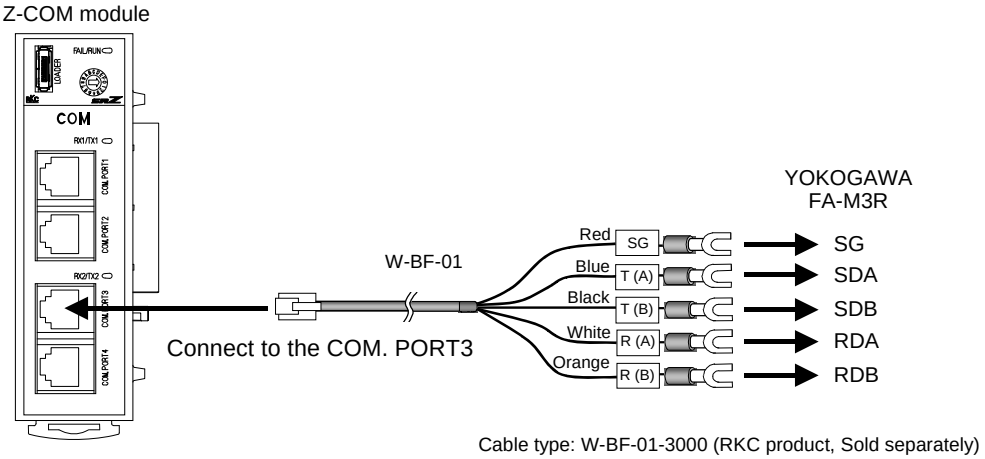
⚠ WARNING

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

CAUTION

- Connect connectors correctly in the right position. If it is forcibly pushed in with pins in the wrong positions, the pins may be bent resulting in instrument failure.
- When connecting or disconnecting the connectors, do not force it too far to right and left or up and down, but move it on the straight. Otherwise, the connector pins may be bent, causing instrument failure.
- When disconnecting a connector, hold it by the connector itself. Disconnecting connectors by yanking on their cables can cause breakdowns.
- To prevent malfunction, never touch the contact section of a connector with bare hands or with hands soiled with oil or the like.
- To prevent malfunction, connect cable connectors securely, then firmly tighten the connector fastening screws.
- To prevent damage to cables, do not bend cables over with excessive force.
- If the instrument is easily affected by noise, use the ferrite core in the both ends of the communication cable (nearest the connector).

■ RS-422A



Cable type: W-BF-01-3000 (RKC product, Sold separately)

[Standard cable length: 3 m]

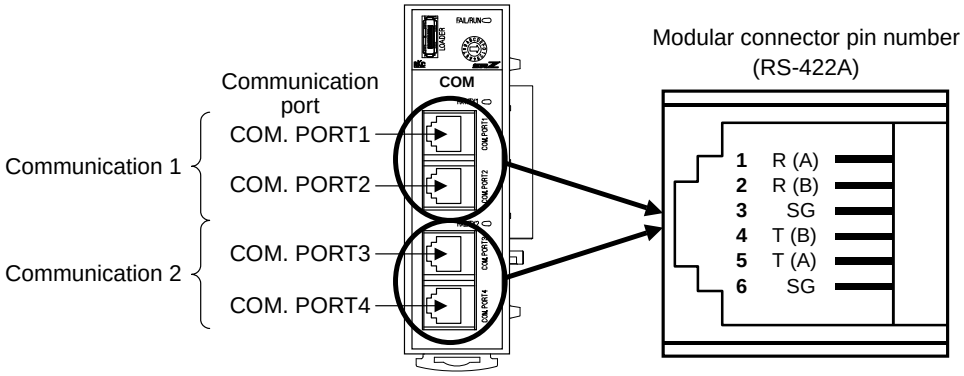
W-BF-01* communication cable (RKC product) can be used as communication cable (sold separately). If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

* Shields of the cable are connected to SG (No. 6 pin) of the COM. PORT3.

The details of the connectable connector for the PLC, refer to the instruction manual for the used PLC.

● Pin layout of modular connector

The contents of the modular connector signal are all the same from COM. PORT1 to COM. PORT4.

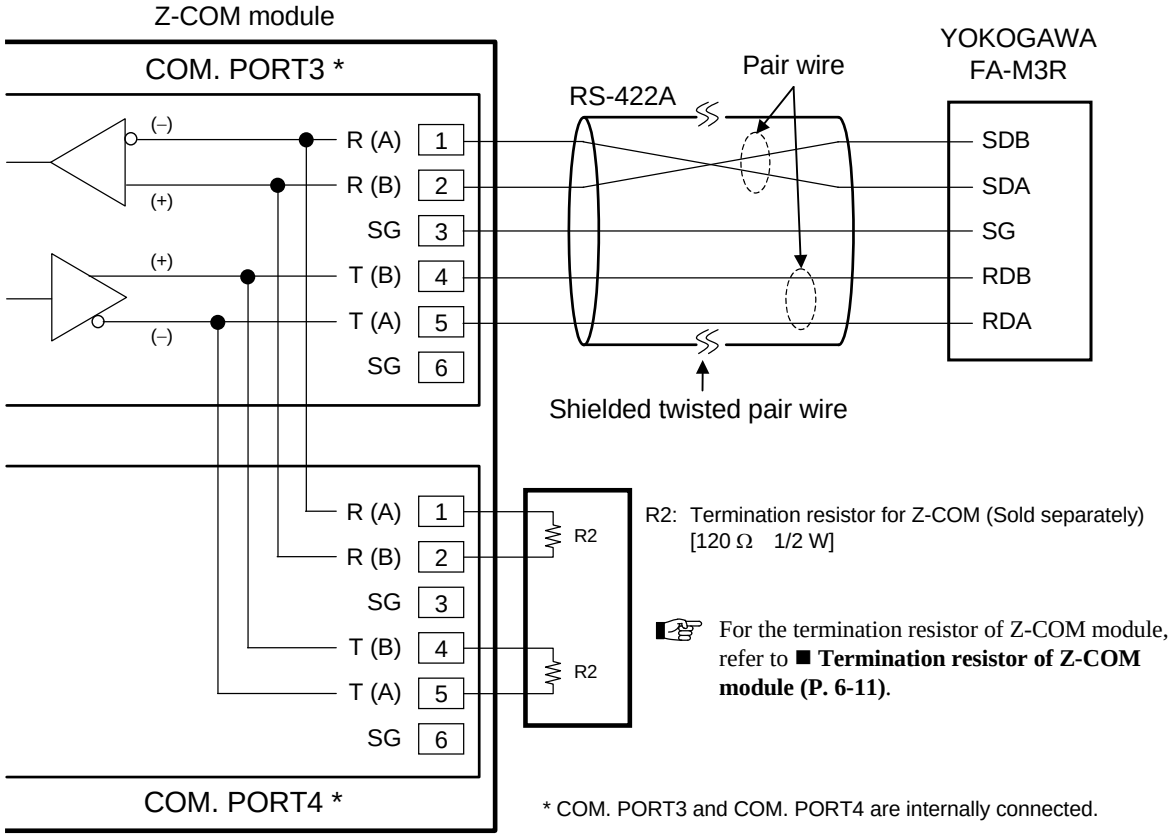


● Connector pin number and signal details

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

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

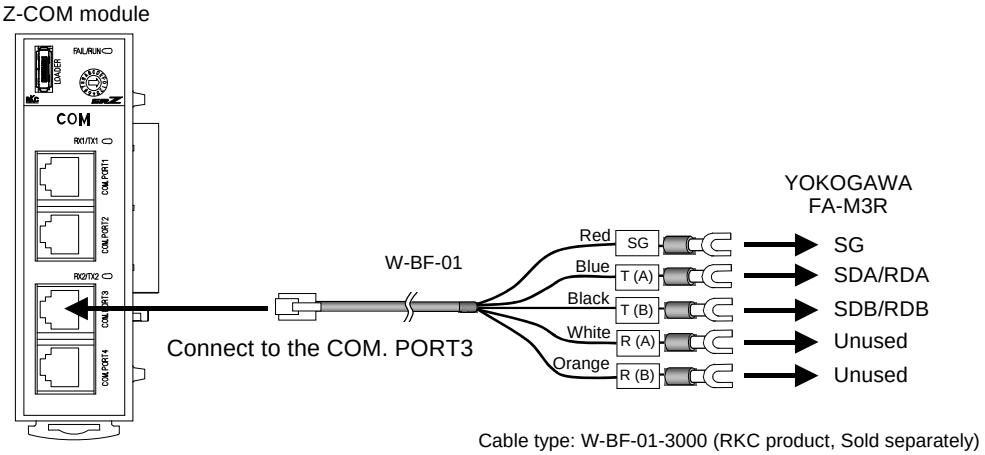
- **Diagram of RS-422A wiring**



The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

Prepare a communication cable for the control unit to be connected to the PLC.

■ RS-485



Cable type: W-BF-01-3000 (RKC product, Sold separately)
[Standard cable length: 3 m]

Be sure to insulate the wires that are not used by covering them with insulating tape.

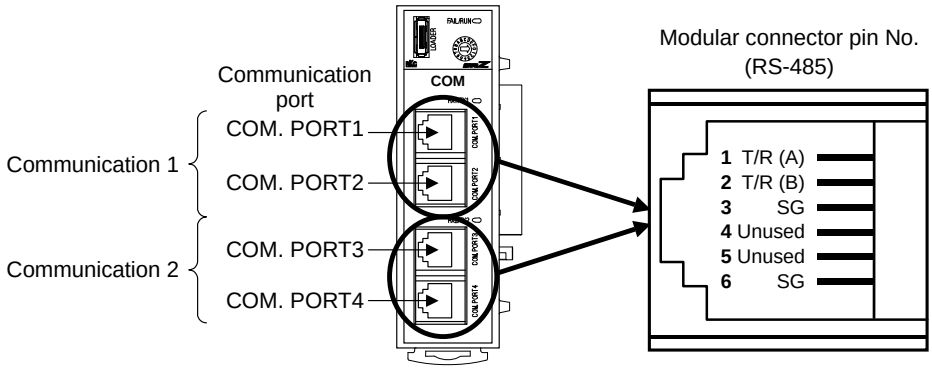
W-BF-01* communication cable (RKC product) can be used as communication cable (sold separately). If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

*Shields of the cable are connected to SG (No. 6 pin) of the COM. PORT3.
For information on terminating the cable (on the PLC side), please inquire when you place the order.

The details of the connectable connector for the PLC, refer to the instruction manual for the used PLC.

● Pin layout of modular connector

The contents of the modular connector signal are all the same from COM. PORT1 to COM. PORT4.

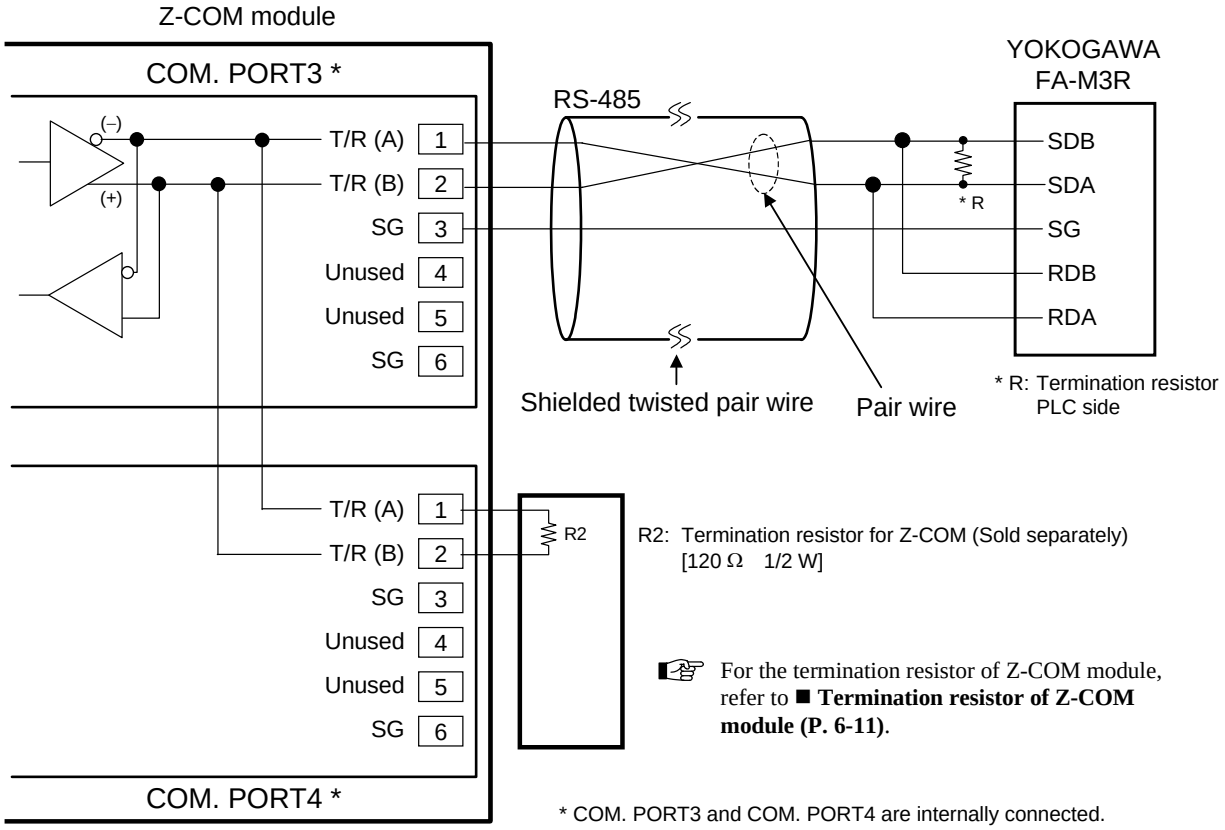


● Connector pin number and signal details

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

The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

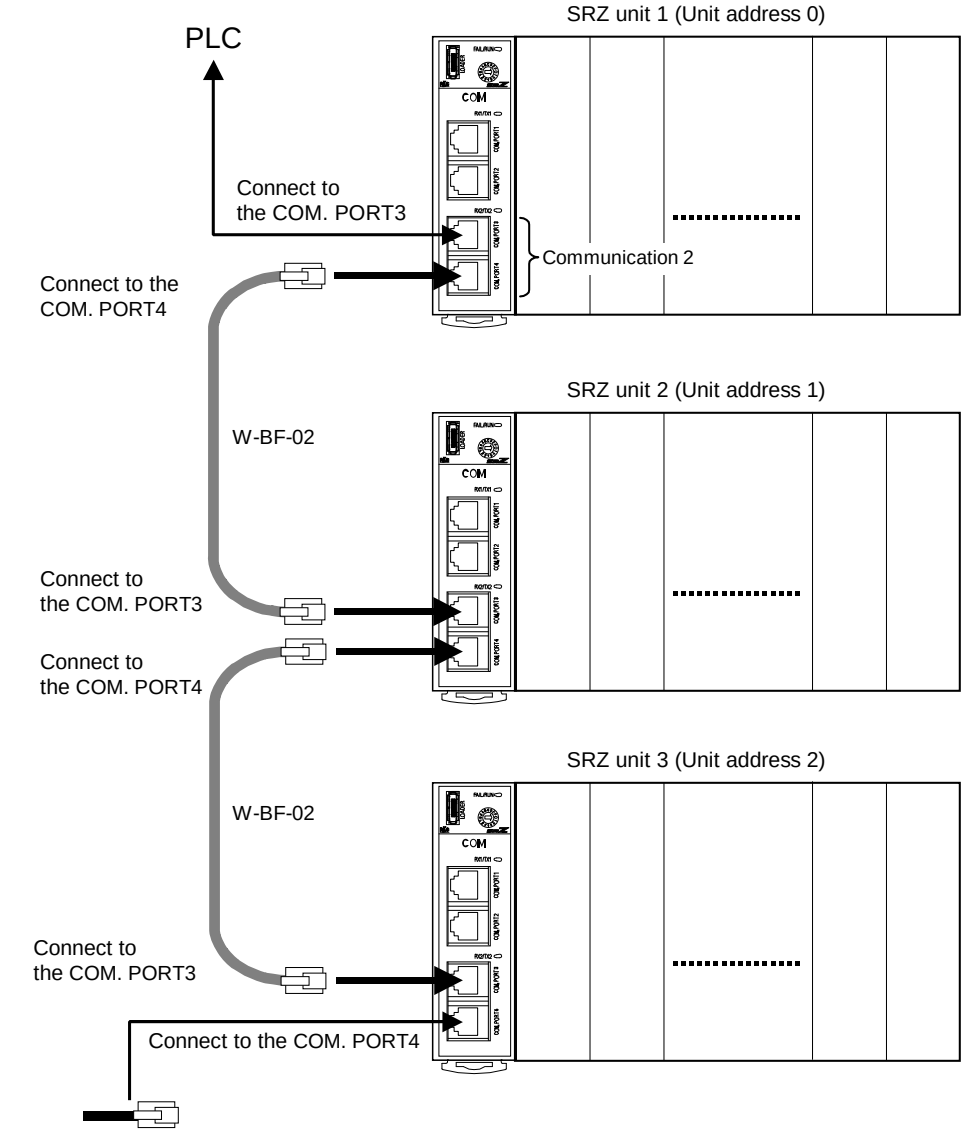
- **Diagram of RS-485 wiring**



The 6-pin type modular connector should be used for the connection to the Z-COM module.
Recommended model: TM4P-66P (Manufactured by HIROSE ELECTRIC CO., LTD.)

Prepare a communication cable for the control unit to be connected to the PLC.

■ Multiple SRZ unit connections



For RS-422A interface, order W-BF-02 connection cable (sold separately) to connect the SRZ unit. If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

Cable type: W-BF-02-3000 (Sold separately) [Standard cable length: 3 m]

COM. PORT3 and COM. PORT4 are internally connected.

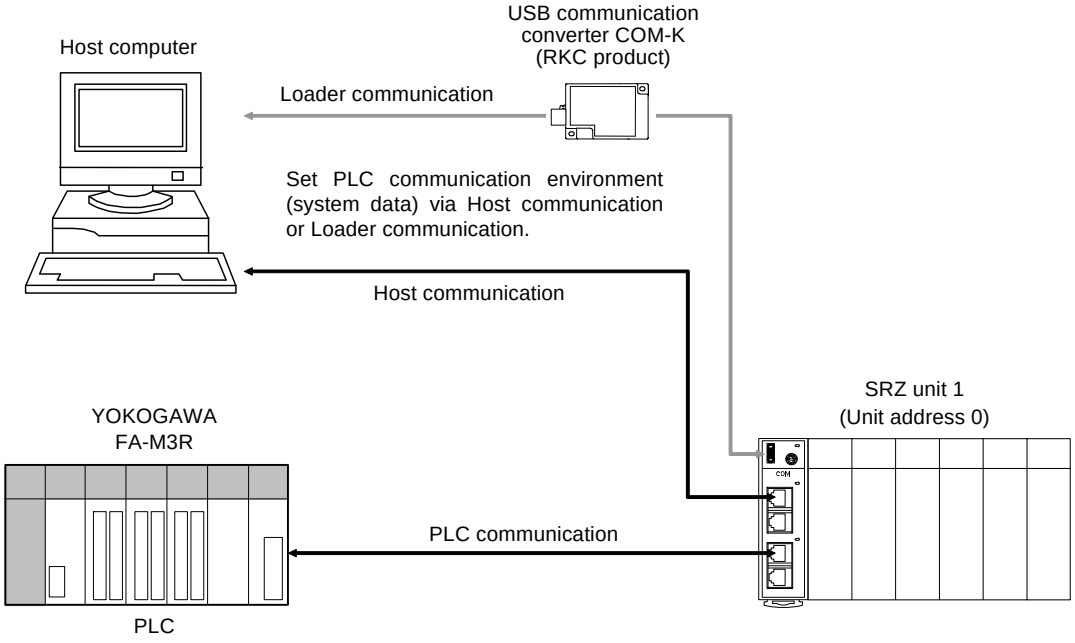
For the termination resistor of Z-COM module, refer to ■ **Termination resistor of Z-COM module (P. 6-11)**.

6.4.3 PLC communication environment setting

The PLC communication environment (system data) settings must be made to perform PLC communication. The system data settings are made by the Host communication or Loader communication. The system data contains setting items and monitor items. The monitor items require space (8-word) in the PLC register.

After each item of the system data is set, the power of the SRZ unit must be turned off and then on to enable the data.
The data can also be enabled by switching control from STOP to RUN.

- For connection with host computer, refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.
- For setting about host communication, refer to **3.1.2 Communication speed and Communication protocol setting by DIP switch (P. 3-5)**.
- For setting about loader communication, refer to **3.1.4 Communication setting for Loader communication (P. 3-9)**.



(1) System data (setting items) list

The following items are set to the SRZ unit.

The following items become valid by turning off the power of the SRZ unit once, and then turning it on again after the settings are changed.
The items will also become valid by switching control from STOP to RUN.

All of the following items can be read and written (R/W). No channel designation is required.

"Identifier" and "Digits" are used for RKC communication and "Register address" is used for Modbus.

Name	Iden-tifier	Digits	Register address		Data range	Factory set value
			HEX	DEC		
Station number	**QV**	7	8008	32776	1 to 31 Set the PLC station number. Set it to the same number as the PLC. Set same values to all Z-COM modules to be connected to the same PLC communication port.	1
CPU number	**QW**	7	8009	32777	1 to 4 Set the PLC CPU number. Set it to the same number as the PLC. Set same values to all Z-COM modules to be connected to the same PLC communication port.	1
Register type * (D, R, W, B)	**QZ**	7	800A	32778	0: D register (data register) 1: R register (shared register) 2: W register (link register) 3: Unused 4: B register (file register) 5 to 29: Unused Set the register types used in PLC communication.	0
Register start number * (Low-order 16-bit)	**QX**	7	800C	32780	1 to 65535 Set the start number of the register used in PLC communication. Setting "0" will not cause an error to the Z-COM module but will cause an error to the PLC. (For the setting procedure, refer to **P. 6-15**.)	1000
System data address bias *	**QQ**	7	800D	32781	0 to 65535 When the SRZ unit is connected in a multi-drop connection, a bias is set for the register addresses of each unit so that no address duplication occurs. (Refer to **P. 6-16**)	2100
COM module link recognition time	**QT**	7	800E	32782	0 to 255 seconds When connecting two or more SRZ units, set the time required until a unit after the second module is recognized. Set this item to the master unit.	10

* Usable register ranges and types vary depending on used CPU types. For register ranges and types that can actually be used, refer to the PLC instruction manual.

Continued on the next page.

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Name	Iden-tifier	Digits	Register address		Data range	Factory set value
			HEX	DEC		
PLC scanning time	**VT**	7	800F	32783	0 to 3000 ms Set the time of waiting for a response from the PLC. Usually, no factory set values are necessary to be changed.	255
PLC communication start time	**R5**	7	8010	32784	1 to 255 seconds Time until communication with the PLC starts is set after the power is turned on. The PLC communication start time is the time that writing of the System data (monitor items) starts. Actual communication with the PLC by Request command can only take place after the System communication state (D01000: factory set value) changes to "1."	5
Slave mapping method	**RK**	7	8012	32786	0: Bias from the address setting switch [Register address + (Address setting switch coefficient × System data address bias)] 1: Bias disabled When the SRZ unit is connected in a multi-drop connection, this setting determines whether or not the bias set in System data address bias is applied to register addresses. (Refer to **P. 6-16**)	0

(2) System data (monitor items) list

When System data (setting items) are set, the following System data (monitor items) are written to the register of the PLC when PLC communication is performed. (Following register address is the factory set value.)

All of the following items can be read and written (R/W).

Details of System data (monitor items) can be checked via Host communication or Loader communication.

For details of System data (monitor items), refer to **6.6 PLC Communication Data Map (P. 6-53)**.

Name	Register address	Structure	Attribute	Data range	Factory set value
System communication state	D01000	U	RO	Bit data Bit 0: Data collection condition Bit 1 to Bit 15: Unused Data 0: Before data collection is completed 1: Data collection is completed [Decimal number: 0, 1] This is the communication data collection state of the function module joined to the Z-COM module.	0
SRZ normal communication flag	D01001	U	RO	0/1 transfer (For communication checking) "0" and "1" are repeated for each communication period.	—
Unused	D01002	—	—	Do not use this register address as it is used for the internal processing.	—
Unused	D01003	—	—		—
PLC communication error code	D01004	U	RO	Bit data Bit 0: PLC register read/write error Bit 1: Slave communication timeout Bit 2: Unused Bit 3: Internal communication error Bit 4: Master communication timeout Bit 5 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 31]	—
Unit recognition flag	D01005	U	RO	Bit data Bit 0: SRZ unit 1 Bit 1: SRZ unit 2 Bit 2: SRZ unit 3 Bit 3: SRZ unit 4 Bit 4 to Bit 15: Unused Data 0: No unit exists 1: Unit exists [Decimal number: 0 to 15]	—
Monitor for the number of connected modules	D01006	U	RO	0 to 31	—
Number of valid groups	D01007	U	RO	0 to 128	—

6.4.4 Setting on the PLC

Sets the communication items of PLC side. Set the PLC as follows. (Recommend setting example)

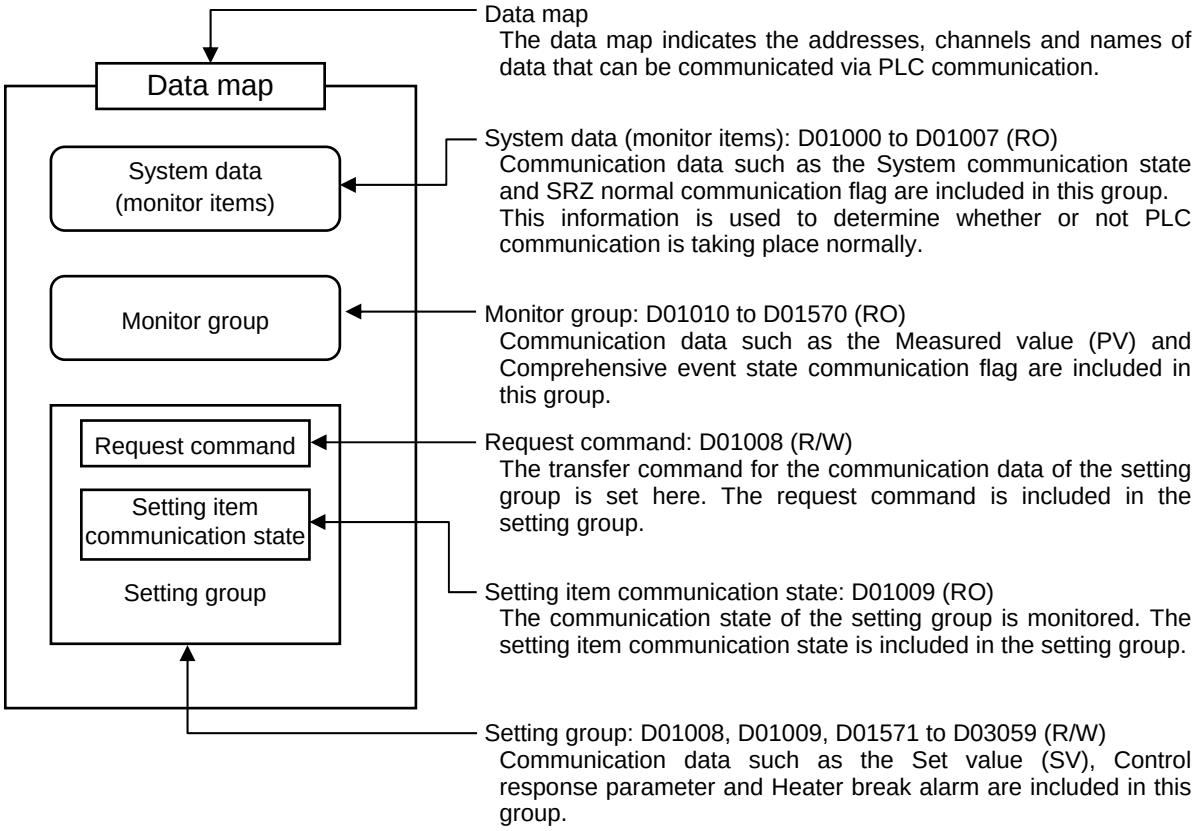
Item	Description
Station number	01
Start bit	1
Data bit	8
Stop bit	1
Parity bit	Without
Checksum	None
Transmission speed	Set the same as SRZ unit (Z-COM module)
Termination resistor	Set the termination resistor according to the connection method (4-wire system or 2-wire system)

☞ The setting item varies depending on the PLC. For details of PLC setting procedures, refer to the instruction manual for the PLC being used.

6.5 Data Transfer

6.5.1 PLC communication data transfer

The data transmitted between the PLC and the SRZ unit is compiled in the PLC communication data map (hereafter called “data map”).
In the PLC communication data map the communication data is classified into System data (monitor items), Request command, Monitor group, and Setting group. The communication data is transmitted to every group.



Register address explaining in this section is factory set value for MITSUBISHI MELSEC series.

For the communication data, refer to **6.6 PLC Communication Data Map (P. 6-53).**

■ Request command

Data transfer between PLC and SRZ unit are executed by Request command. For the Request command, both Setting request bit and Monitor request bit are available.

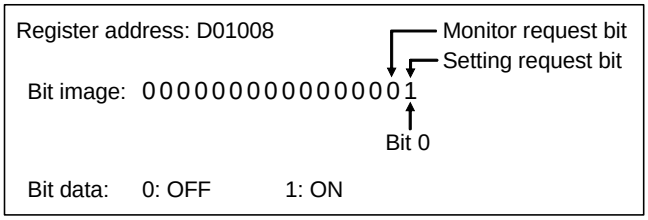
Request command	The Setting request bit and Monitor request bit of the Request command are assigned to each bit datum as a binary number. [Register address: D01008 (Factory set value)] Monitor request bit Setting request bit Bit image: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Bit 15 ---------- Bit 0 Bit data: 0: OFF 1: ON

● Setting request bit (PLC → SRZ)

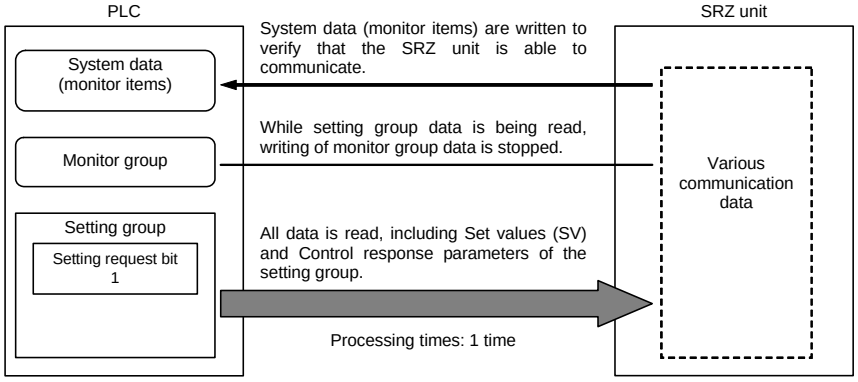
This command requests that the SRZ unit read the communication data of the setting group on the PLC side.

[Processing]

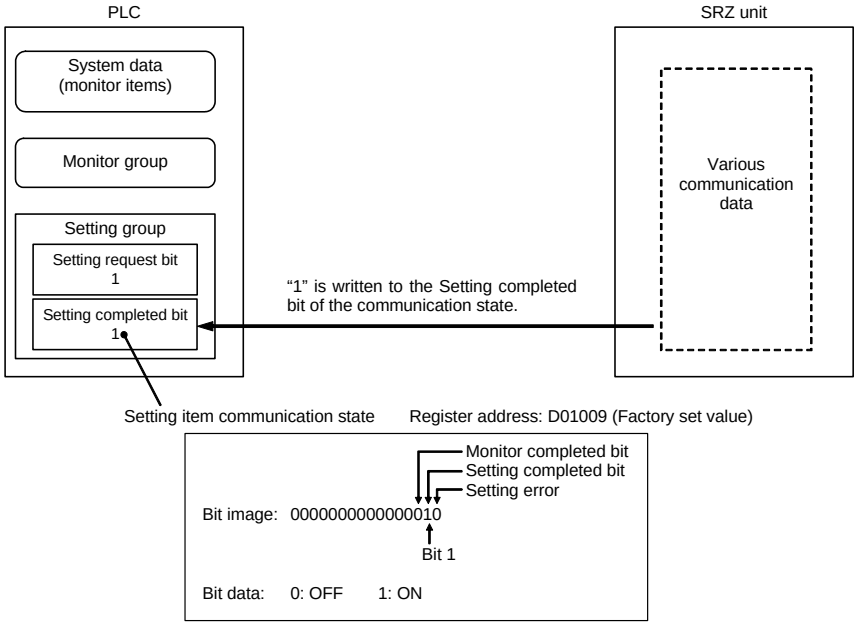
1. When the Setting request bit of the Request command (D01008) is set to "1," the SRZ unit starts to read the communication data of the setting group from the PLC.



2. All data of the setting group is transferred from PLC to the SRZ unit.

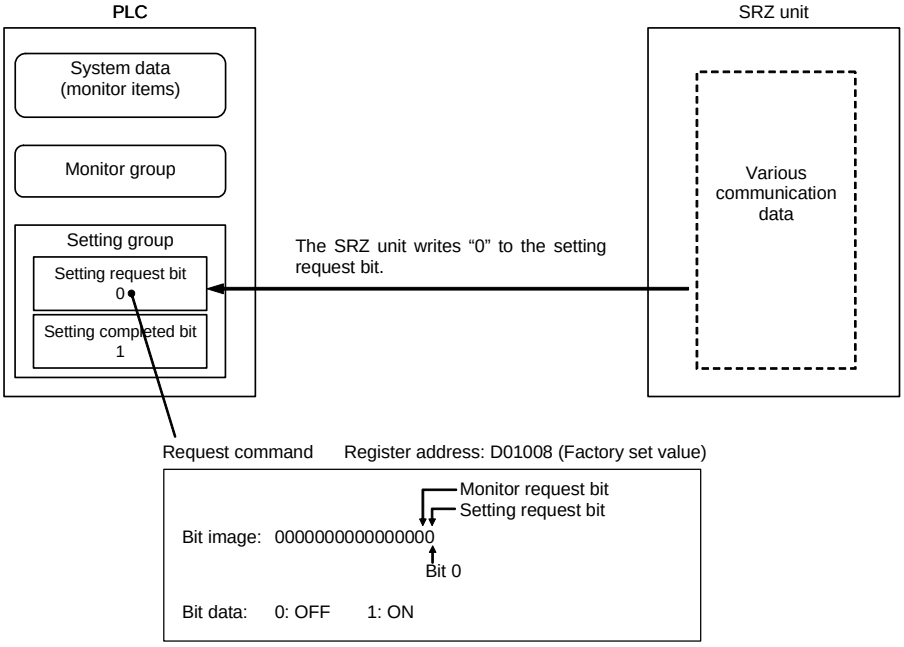


3. When reading is finished, the SRZ unit writes the communication state of the setting group to the Setting completed bit of setting item communication state.



If there is an error in the setting range of the data, the flag of Setting error will change to "1." Check and see if there is an error in the values set in the PLC register.

4. The Setting request bit will change to "0" to indicate that reading of data from the PLC is finished.

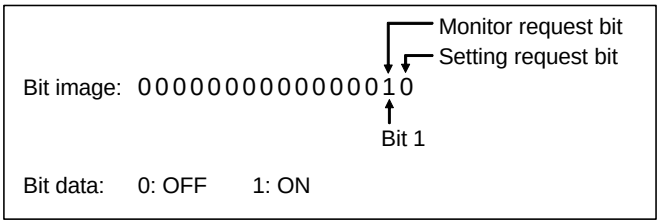


● Monitor request bit (PLC ← SRZ)

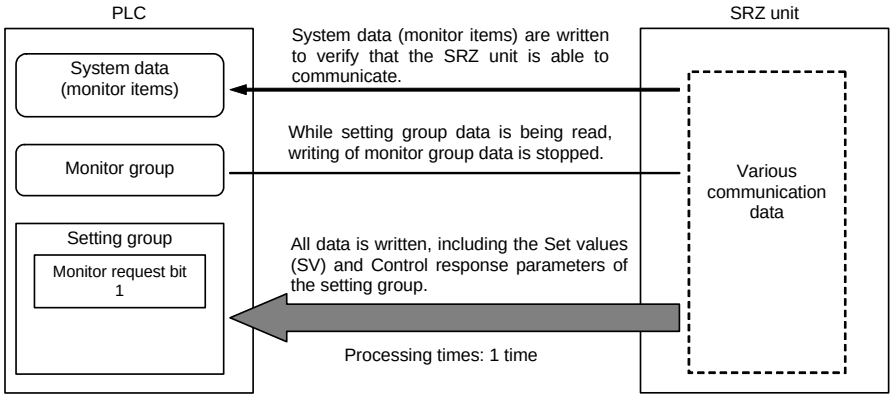
This command requests that the SRZ unit write the communication data of the setting group on the PLC side.

[Processing]

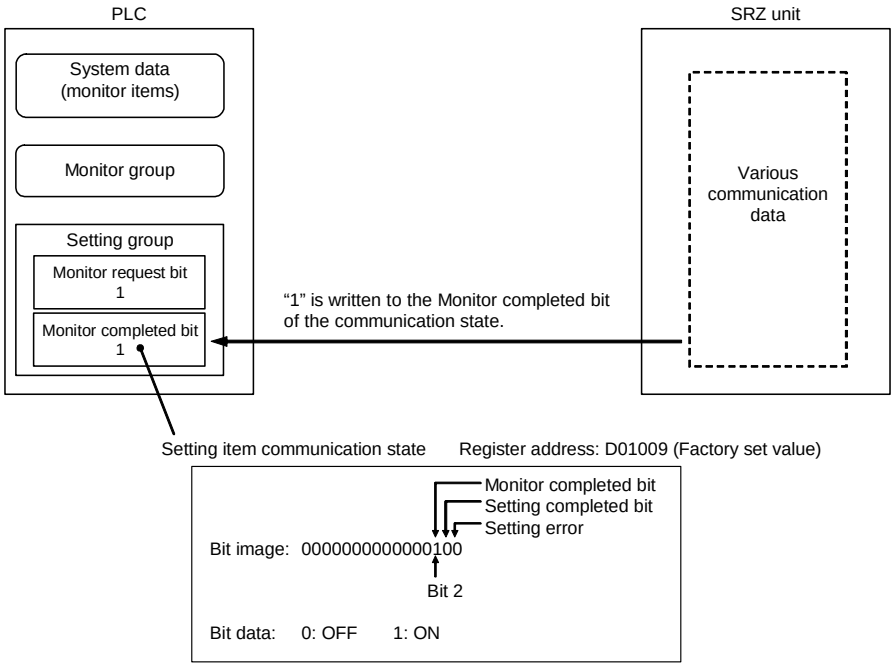
1. When the Monitor request bit of the Request command (D01008) is set to "1," the SRZ unit starts to write the communication data of the setting group to the PLC.



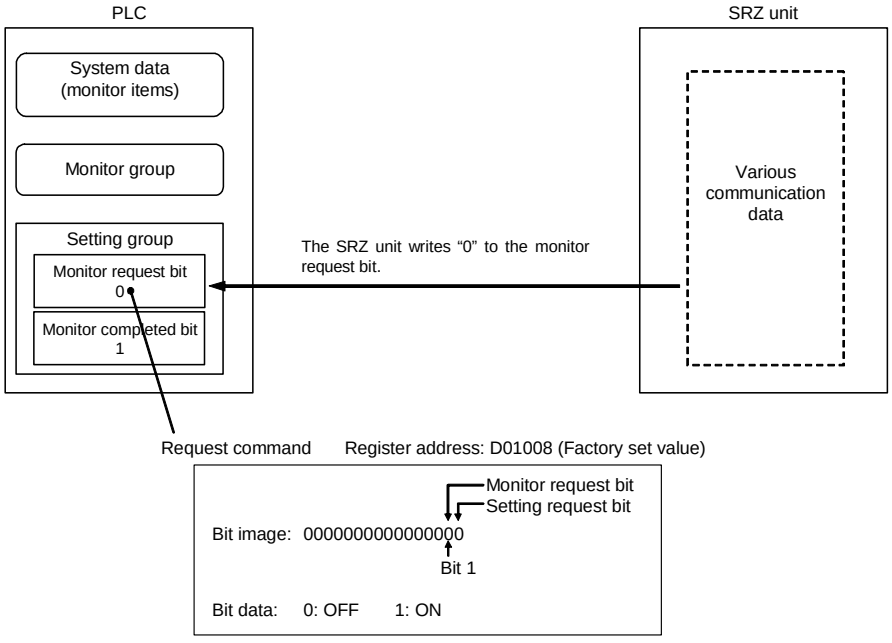
2. Setting group data is written from the SRZ unit to the PLC.



3. When writing is finished, the SRZ unit writes the communication state of the setting group to the Monitor completed bit of setting item communication state.



4. The Monitor request bit will change to "0" to indicate that writing of data to the PLC is finished.

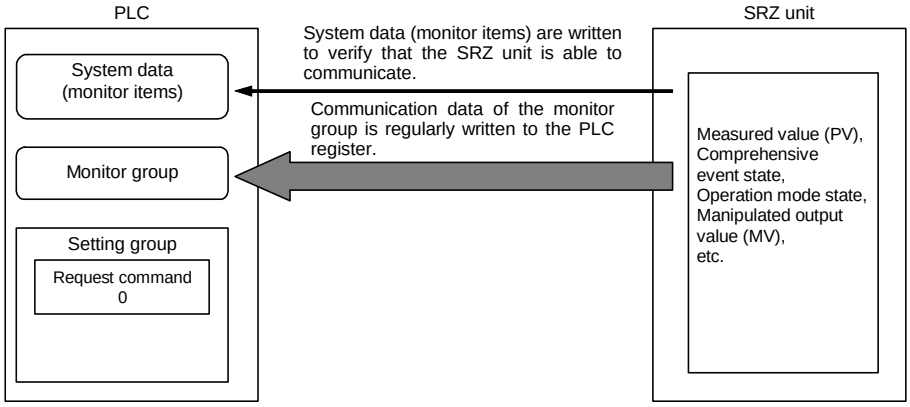


- **Caution for Request command**

The Request command is bit data, however, actual reading/writing of the register takes place in words.
For example, after the Setting request bit is set to "1," if the Monitor request bit is set to "1" before the Setting request bit returns to "0," when the Setting request bit returns to "0," the Monitor request bit will be overwritten with the state (Monitor request bit "0") that obtained when the Setting request bit was set to "1."

■ Monitor group (PLC ← SRZ)

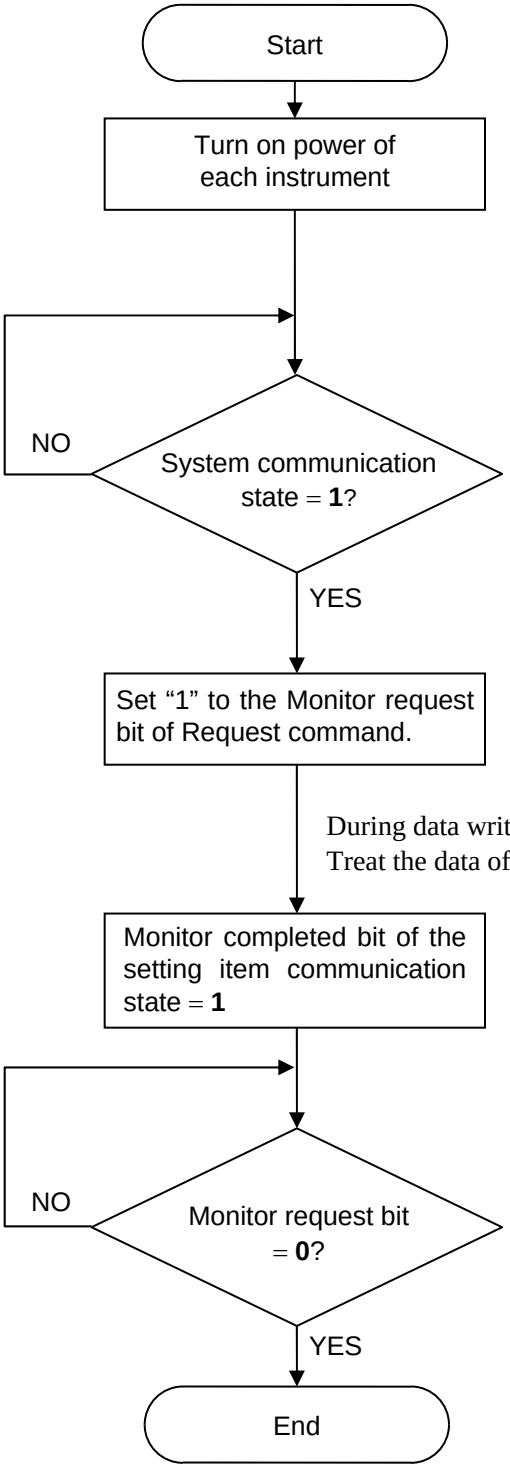
The communication data of the monitor group does not have a Request command setting. The SRZ unit regularly repeats writing of communication data to the PLC each communication period.
Note that writing of monitor group data is stopped while the setting group reads or writes by Request command.



6.5.2 Data transfer procedures

Change each set value of SRZ unit from the PLC after the initial settings is made.
If each set value of SRZ unit is changed from the PLC without setting the initial values, it is re-written to "0" with each set value of the PLC at that time set to "0."

■ Initial setting



When the power of the SRZ unit is turned on, data collection of the function modules (Z-TIO, Z-DIO and Z-CT modules) joined to the Z-COM module starts.
In addition, writing of the System data (monitor items) begins after the PLC communication start time (factory set value is 5 seconds) has passed.

When data collection is finished, the SRZ unit starts writing the communication data of the monitor group to the PLC.
When monitor group writing starts, System communication state changes to "**1**."
When the System communication state becomes "**1**," PLC communication can be performed.

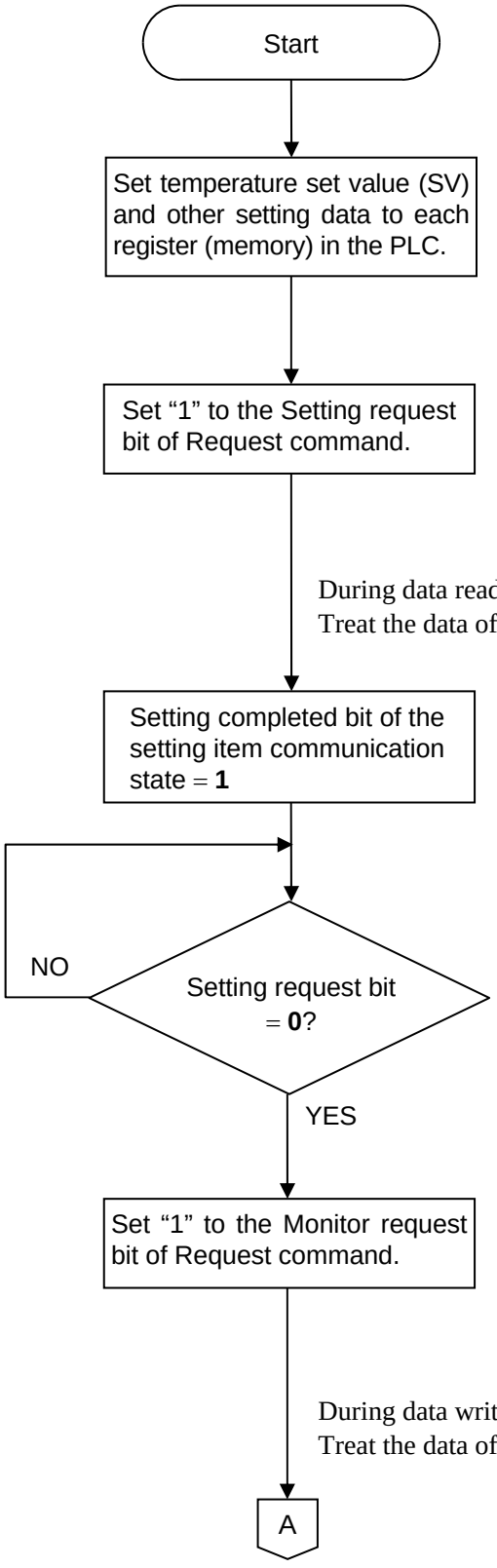
When the Monitor request bit of the Request command of the PLC register is set to "**1**," the SRZ unit starts writing the setting group data to the PLC.

During data write:
Treat the data of all items as inconsistent during the data write.

When writing is finished, the SRZ unit writes the communication state of the setting group to the Monitor completed bit of the setting item communication state of the PLC.

If the Monitor request bit of the Request command of the PLC register is "**0**," this indicates that writing of data to the PLC is finished.

■ When the setting group communication data is transferred from PLC to the SRZ unit.



[Data setting]
When the Setting request bit of the Request command of the PLC register is set to "**1**," the SRZ unit starts reading the setting group data that is set in the register (memory) of the PLC.

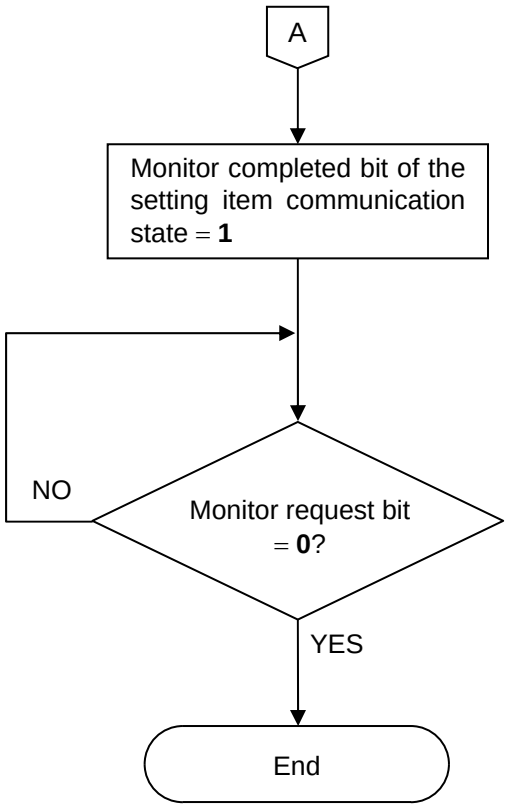
During data read:
Treat the data of all items as inconsistent during the data read.

When reading is finished, the SRZ unit writes the communication state of the setting group to the Setting completed bit of the setting item communication state of the PLC.

If the Setting request bit of the Request command of the PLC register is "0," this indicates that reading of data from the PLC is finished.

[Confirmation of setting data]
To check the data read by the SRZ unit from the PLC, the SRZ unit starts writing the setting group data to the PLC when the Monitor request bit of the Request command of the PLC register is set to "**1**."

During data write:
Treat the data of all items as inconsistent during the data write.



When writing is finished, the SRZ unit writes the communication state of the setting group to the Monitor completed bit of the setting item communication state of the PLC.

If the Monitor request bit of the Request command of the PLC register is "**0**," this indicates that writing of data to the PLC is finished.

6.5.3 Data processing precautions

- The data type is treated as binary data with a sign and without a decimal point. For this reason, carefully express and set the data.

  [Example] Setting of proportional band
  Initial value of internal data: 3.0
  Communication data: 30

- Any attempt to write to an unused channel is not processed as an error.

- Autotuning (AT) starts autotuning when PID/AT transfer is set to "1: Autotuning (AT)" and the Setting request bit is set to "1." After the autotuning function finishes its execution, PID/AT transfer returns to "0: PID control operation" and thus the PID constants are updated.

- Some communication data may become invalid depending on the module selection or the module configuration. If any one of the conditions listed below occurs and data items written are within the setting range.

6.5.4 When set register address with Zeal2

Zeal2 is a PLC register address mapping software tool for Z-COM modules.
If Zeal2 is not used, Host communication or Loader communication is used to set only the Register start number for the PLC register address. If Zeal2 is used, the following settings are possible.

- Assigning register addresses for each data item
- Group setting
- Communication mode (attribute) setting, etc.

To assign Z-CT module data to register addresses, Zeal2 must be used.

Zeal2 communicates with the Z-COM module via Loader communication.
In addition, Zeal2 can be downloaded from the RKC official website:
http://www.rkcinst.com/english/.

For the operation of Zeal2, refer to Help of Zeal2.

■ Assigning register addresses for each data item

In Zeal2, the data of each SRZ module used in PLC communication is pre-registered, and thus you select the data that you actually wish to use in PLC communication and set a register address for each selected item.

Because Zeal2 uses Loader communication, only one Z-COM module can be accessed at a time. When multiple SRZ units are connected to one PLC, a register address is set for each unit, and thus duplicate register addresses must not be set for the units.

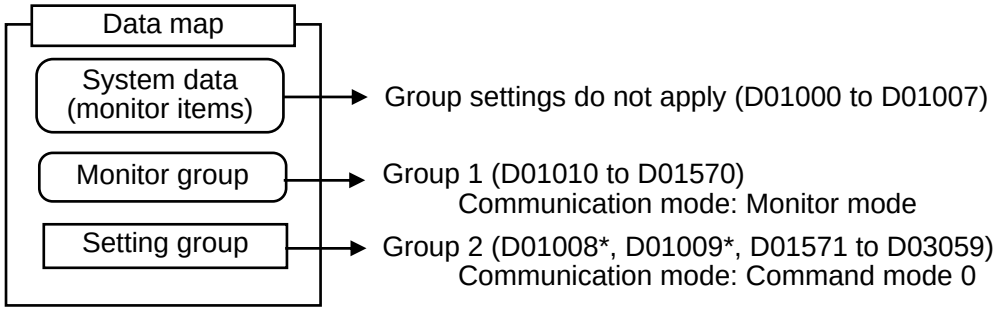
■ Group setting

When setting PLC register addresses using Zeal2, the data can be divided into groups (maximum of 128 groups).
When registering an additional register address, the register address will be added as a new group if any of the following apply:

- The Register address number does not immediately follow the previous address.
- The Communication mode (attribute) differs before and after the register address.
- The Auto update setting differs before and after the register address.

Group numbers are automatically assigned in order from 1.

Two groups are set by factory default.



* The D01008 (Request command) and D01009 (Communication state) register addresses are used to set and monitor groups. These are set separately from the other data (D01571 to D03059), and thus the same group applies even if the register address is separate.

■ Communication mode (attribute) setting

The Communication mode (attribute) stipulates the data communication direction and the number of processing times, and thus is specified when the register address is set.

Communication mode (attribute)	Request command	Communication direction	Processing times	Description
Command mode 0	Setting request bit (Cleared after communication)	PLC → SRZ	1 time	Setting communication is performed when the Setting request bit becomes "1." After communication, the Setting request bit is cleared.
	Monitor request bit (Cleared after communication)	SRZ → PLC	1 time	Monitor communication is performed when the Monitor request bit becomes "1." After communication, the Monitor request bit is cleared.
Command mode 1	Setting request bit (Cleared after communication)	PLC → SRZ	1 time	Setting communication is performed when the Setting request bit becomes "1." After communication, the Setting request bit is cleared.
	Monitor request bit (Held after communication)	SRZ → PLC	Repeat	Monitor communication is performed when the Monitor request bit becomes "1." (The Monitor request bit is not cleared after communication.)
Command mode 2	Setting request bit (Held after communication)	PLC → SRZ	Repeat	Setting communication is performed when the Setting request bit becomes "1." (The Setting request bit is not cleared after communication.)
	Monitor request bit (Cleared after communication)	SRZ → PLC	1 time	Monitor communication is performed when the Monitor request bit becomes "1." After communication, the Monitor request bit is cleared.
Command mode 3	Setting request bit (Held after communication)	PLC → SRZ	Repeat	Setting communication is performed when the Setting request bit becomes "1." (The Setting request bit is not cleared after communication.)
	Monitor request bit (Held after communication)	SRZ → PLC	Repeat	Monitor communication is performed when the Monitor request bit becomes "1." (The Monitor request bit is not cleared after communication.)
Setting mode	—	PLC → SRZ	Repeat	Setting communication is performed repeatedly regardless of the request command value.
Monitor mode	—	SRZ → PLC	Repeat	Monitor communication is performed repeatedly regardless of the request command value.

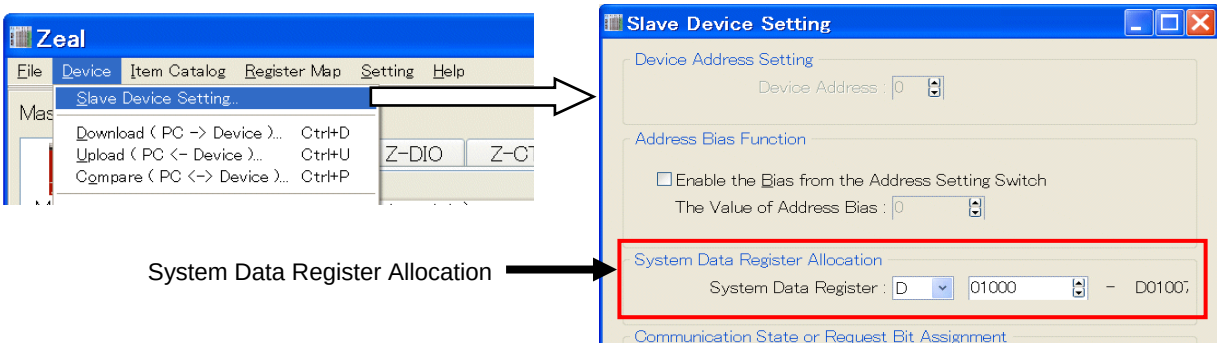
When a command mode from 0 to 3 is set, the register address of the Request command (Setting/Monitor request bit) must be specified. The register address of the command communication state is specified at the same time.

Factory set value
Group 1 (Monitor group): Monitor communication mode
Group 2 (Setting group): Command mode 0 Request command (Setting request bit): D01008, Bit 0
Request command (Monitor request bit): D01008, Bit 1
Communication state: D01009

For processing of the Request command, refer to **6.5.1 PLC communication data transfer (P. 6-43)**.

■ System data (monitor items) setting

Perform system data allocation in the system data register allocation by following the menu command sequence; "Device," "Slave Device Setting," and "System Data Register Allocation."
Do not assign system data (monitor items) by selecting from Item Catalog and adding to the Register Map. Proper communication may not be achieved.



6.6 PLC Communication Data Map

The data map summarizes data addresses, channels and names which enable PLC communication.

6.6.1 Reference to data map

(1) (2) (3) (4) (5) (6)

Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
System communication state [1]	D01000	D01000	D01000	D01000	U	RO	Bit data Bit 0: Data collection condition Bit 1 to Bit 15: Unused Data 0: Before data collection is completed 1: Data collection is completed [Decimal number: 0, 1]	—

(1) Name: Name of communication data

(2) Register address:

A register address of communication data in PLC communication
(Excluding data of the Z-CT module)

16CH: The number of correspondence channel is the register address of 16 channels
32CH: The number of correspondence channel is the register address of 32 channels
48CH: The number of correspondence channel is the register address of 48 channels
64CH: The number of correspondence channel is the register address of 64 channels

If a “Quick start code” was not specified when the order was placed, the register address is 64CH.

Register addresses in this manual are those assigned when the PLC communication environment is set as follows

- Register type: 0 (MITSUBISHI MELSEC series: D register)
- Register start number: 1000

If you are using an OMRON SYSMAC series and YOKOGAWA FA-M3R, or are using a different Register type, substitute the register you are using in the above.

The number of data handled on the SRZ unit is indicated below.

- Number of data per data item in each channel: 16CH: 16
32CH: 32
48CH: 48
64CH: 64
- Number of data per data item in each module: 16CH: 4
32CH: 8
48CH: 12
64CH: 16
- Number of data per data item in each unit: 1
- The total number of communication data: 16CH: 524 items *
32CH: 1036 items *
48CH: 1548 items *
64CH: 2060 items *

* The total number of communication data of the Z-CT module is not included.

Continued on the next page.

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Register address assignment will vary depending on the Register type, Register start number, and the Maximum channel data specified when the order was placed. However, when the Zeal2 PLC register mapping software tool is used, register addresses can be assigned freely.

For the PLC communication environment setting, refer to **6.2.3 PLC communication environment setting (P. 6-12)** [MITSUBISHI MELSEC series], **6.3.3 PLC communication environment setting (P. 6-25)** [OMRON SYSMAC series] or **6.4.3 PLC communication environment setting (P. 6-38)** [YOKOGAWA FA-M3R].

(3) Structure: C: Data for each channel [1, 2]
M: Data for each module
U: Data for each SRZ unit

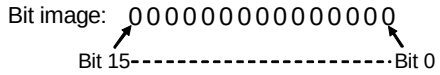
[1] On a Z-TIO module (2-channel type), the communication data of the CH3 and CH4 becomes invalid.

[2] Parameters only used for Heat/Cool PID control or Position proportioning PID control, therefore data (indicated by ♣ in the name column) for CH2 and CH4 of Z-TIO modules are unused.
[Read is possible (0 is shown), but the result of Write is disregarded.]

(4) Attribute: RO: At the time of Monitor request bit "1," SRZ unit writes in data to the PLC. (PLC ← SRZ)

R/W: At the time of Setting request bit "1," SRZ unit read out data from the PLC. At the time of Monitor request bit "1," SRZ unit writes in data to the PLC. (PLC ↔ SRZ)

(5) Data range: Read or write range of communication data



(6) Factory set value:
Factory set value of communication data

The SRZ unit occupies the number of PLC registers that corresponds to the number of channels specified for "Maximum channel data" when the order was placed. Even when the number of function modules (Z-TIO and Z-DIO modules) to be connected to the Z-COM module is small, or there is unused communication data, the number of occupied registers does not change. "0" is sent from the SRZ unit for function modules (Z-TIO and Z-DIO modules) that are not connected and for unused data.
However, if the data is edited using the Zeal2 PLC register mapping software tool, register assignments can be performed freely, including adjusting the number of registers to the actual number of channels and deleting unneeded data.

Communication data in the data map is grouped as shown below.

Maximum channel data	Data group	Register address range
16CH	System data (monitor items)	D01000 to D01007
	Monitor group	D01010 to D01150
	Setting group	D01008, D01009, D01151 to D01523
32CH	System data (monitor items)	D01000 to D01007
	Monitor group	D01010 to D01290
	Setting group	D01008, D01009, D01291 to D02035
48CH	System data (monitor items)	D01000 to D01007
	Monitor group	D01010 to D01430
	Setting group	D01008, D01009, D01431 to D02547
64CH	System data (monitor items)	D01000 to D01007
	Monitor group	D01010 to D01570
	Setting group	D01008, D01009, D01571 to D03059

6.6.2 Data map list (Z-COM, Z-TIO and Z-DIO module)

Communication data of Z-CT module is not included in this data map.
For communication data of Z-CT module, refer to **6.6.3 Data map list (Z-CT module) (P. 6-65)**.

Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
System communication state [1]	D01000	D01000	D01000	D01000	U	RO	Bit data Bit 0: Data collection condition Bit 1 to Bit 15: Unused Data 0: Before data collection is completed 1: Data collection is completed [Decimal number: 0, 1]	—
SRZ normal communication flag [2]	D01001	D01001	D01001	D01001	U	RO	0/1 transfer (For communication checking) "0" and "1" are repeated for each communication period.	—
Unused	D01002	D01002	D01002	D01002	—	RO	Internal processing Do not use the register address	—
Unused	D01003	D01003	D01003	D01003	—	RO	Internal processing Do not use the register address	—
PLC communication error code [3]	D01004	D01004	D01004	D01004	U	RO	Bit data Bit 0: PLC register read/write error Bit 1: Slave communication timeout Bit 2: Unused Bit 3: Internal communication error Bit 4: Master communication timeout Bit 5 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 31]	—

[1] When the power of the SRZ unit is turned on, the Z-COM module begins collecting the data of the connected Z-TIO and Z-DIO modules. When System communication state becomes "1," PLC communication can be performed.

[2] The SRZ unit writes alternating zeros and ones (0→1→0) to this area each communication period. By periodically monitoring this area in the PLC program, it can be determined whether or not the SRZ unit has stopped communicating.

[3] Bit 0: PLC register read/write error
To be turned on when data read and write cannot be made to/from the PLC register.
Three seconds after the normal communication state is restored, this turns OFF.

Bit 1: Slave communication timeout
To be turned on when communication with slave units is timed out during communication with the PLC with SRZ units multi-drop connected. If the slave unit detects the timeout, data send to the PLC stops to be set to the standby state. Communication re-starts after data send re-opens from the master unit.
In addition, if the master unit detects the timeout, data re-send starts.

Bit 3: Internal communication error
This turns ON when an internal communication error occurs in the SRZ unit.

Bit 4: Master communication timeout
This turns ON when a timeout occurs during communication between the PLC and the master unit.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Unit recognition flag [1]	D01005	D01005	D01005	D01005	U	RO	Bit data Bit 0: SRZ unit 1 Bit 1: SRZ unit 2 Bit 2: SRZ unit 3 Bit 3: SRZ unit 4 Bit 4 to Bit 15: Unused Data 0: No unit exists 1: Unit exists [Decimal number: 0 to 15]	—
Monitor for the number of connected modules	D01006	D01006	D01006	D01006	U	RO	0 to 31 Number of function modules connected to one Z-COM module.	—
Number of valid groups	D01007	D01007	D01007	D01007	U	RO	0 to 128	—
Request command [2]	D01008	D01008	D01008	D01008	U	R/W	Bit data Bit 0: Setting request bit Bit 1: Monitor request bit Data 0: OFF 1: ON [Decimal number: 0 to 3]	0
Setting item communication state [3]	D01009	D01009	D01009	D01009	U	RO	Bit data Bit 0: Setting error Bit 1: Setting completed bit Bit 2: Monitor completed bit Data 0: OFF 1: ON [Decimal number: 0 to 7]	—

[1] Indicates the connection state of the SRZ unit. A slave unit (other than a master unit with unit address 0, 4, 8, C) can only recognize its own state.

☞ For the unit address, refer to **3.1.1 SRZ unit address setting (P. 3-2)**.

[2] Request command

Bit 0: Setting request bit
This command requests that the SRZ unit read the communication data of the setting group on the PLC side.

Bit 1: Monitor request bit
This command requests that the SRZ unit write the communication data of the setting group on the PLC side.

[3] This is the communication state of setting group.

Bit 0: Setting error
Turns ON when the PLC data and SRZ data do not agree due to a setting range error or other error. Also turns ON when data cannot be set.
When Setting error is "1" (ON), it will return to "0" (OFF) the next time data is set normally.

Bit 1: Setting completed bit
When there is a request by Setting request bit for a PLC setting data read, this will turn ON when the PLC data read is finished.

Bit 2: Monitor completed bit
When there is a request by Monitor request bit for a SRZ unit setting data write, this will turn ON when the SRZ unit setting data write is finished.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Measured value (PV)	D01010 : D01025	D01010 : D01041	D01010 : D01057	D01010 : D01073	C	RO	Input scale low to Input scale high	—
Comprehensive event state	D01026 : D01041	D01042 : D01073	D01058 : D01105	D01074 : D01137	C	RO	Bit data Bit 0: Event 1 Bit 1: Event 2 Bit 2: Event 3 Bit 3: Event 4 Bit 4: Heater break alarm (HBA) state Bit 5: Temperature rise completion Bit 6: Burnout Bit 7 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 127]	—
Operation mode state monitor	D01042 : D01057	D01074 : D01105	D01106 : D01153	D01138 : D01201	C	RO	Bit data Bit 0: STOP Bit 1: RUN Bit 2: Manual mode Bit 3: Remote mode Bit 4 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 15]	—
Manipulated output value (MV) monitor [heat-side] [1] ♣	D01058 : D01073	D01106 : D01137	D01154 : D01201	D01202 : D01265	C	RO	PID control or Heat/Cool PID control: −5.0 to +105.0 % Position proportioning PID control with feedback resistance (FBR) input: 0.0 to 100.0 %	—
Manipulated output value (MV) monitor [cool-side] [2] ♣	D01074 : D01089	D01138 : D01169	D01202 : D01249	D01266 : D01329	C	RO	−5.0 to +105.0 %	—
Current transformer (CT) input value monitor [3]	D01090 : D01105	D01170 : D01201	D01250 : D01297	D01330 : D01393	C	RO	CTL-6-P-N: 0.0 to 30.0 A CTL-12-S56-10L-N: 0.0 to 100.0 A	—
Set value (SV) monitor	D01106 : D01121	D01202 : D01233	D01298 : D01345	D01394 : D01457	C	RO	Setting limiter low to Setting limiter high This value is a monitor of the Set value (SV) that is a desired value for control.	—
Remote setting (RS) input value monitor [4]	D01122 : D01137	D01234 : D01265	D01346 : D01393	D01458 : D01521	C	RO	Setting limiter low to Setting limiter high	—

♣ Parameters only used for Heat/Cool PID control or Position proportioning PID control, therefore data for CH2 and CH4 of Z-TIO modules are unused.

[1] Heat-side output value for PID control or Heat/Cool PID control. When feedback resistance (FBR) input is used in Position proportioning PID control, the feedback resistance (FBR) input value is monitored.

When there is feedback resistance (FBR) input and the feedback resistance (FBR) is not connected, overscale will occur and cause a burnout state.

[2] Cool-side output value of Heat/Cool PID control. This item is valid only during Heat/Cool PID control.

[3] This item is current transformer input value to use by a heater break alarm (HBA) function.

The CT input cannot measure less than 0.4 A.

[4] Input value when remote mode is used. This monitors the remote SV of the action selected by the SV selection function.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Output state monitor	D01138 ⋮ D01141	D01266 ⋮ D01273	D01394 ⋮ D01405	D01522 ⋮ D01537	M	RO	Bit data Bit 0: OUT1 Bit 1: OUT2 Bit 2: OUT3 Bit 3: OUT4 Bit 4 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 15]	—
Digital input (DI) state 1	D01142 ⋮ D01145	D01274 ⋮ D01281	D01406 ⋮ D01417	D01538 ⋮ D01553	M	RO	Bit data Bit 0: DI1 Bit 1: DI2 Bit 2: DI3 Bit 3: DI4 Bit 4: DI5 Bit 5: DI6 Bit 6: DI7 Bit 7: DI8 Bit 8 to Bit 15: Unused Data 0: Contact open 1: Contact closed [Decimal number: 0 to 255]	—
Digital output (DO) state 1	D01146 ⋮ D01149	D01282 ⋮ D01289	D01418 ⋮ D01429	D01554 ⋮ D01569	M	RO	Bit data Bit 0: DO1 Bit 1: DO2 Bit 2: DO3 Bit 3: DO4 Bit 4: DO5 Bit 5: DO6 Bit 6: DO7 Bit 7: DO8 Bit 8 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 255]	—
Error code *	D01150	D01290	D01430	D01570	U	RO	Bit data Bit 0: SRAM error [1]/ Adjustment data error [2] Bit 1: Data backup error [2] Bit 2: A/D conversion error [2] Bit 3: Unused Bit 4: Unused Bit 5: Logic output data error Bit 6: Stack overflow [1] Bit 7 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 103] [1] These are error code only of the Z-COM module [2] These are error code only of the Z-CT module	—

* Each error state of the SRZ unit is expressed in bit data items. The error condition is shown by the *OR* of each module.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
PID/AT transfer *	D01151 ⋮ D01166	D01291 ⋮ D01322	D01431 ⋮ D01478	D01571 ⋮ D01634	C	R/W	0: PID control 1: Autotuning (AT) When the Autotuning (AT) is finished, the control will automatically returns to 0: PID control.	0

* Activation or deactivation of the Autotuning (AT) function is selected.

● Caution for using the Autotuning (AT)

- When a temperature change (UP and/or Down) is 1°C or less per minute during Autotuning (AT), Autotuning (AT) may not be finished normally. In that case, adjust the PID values manually. It is possible to happen when the set value is around the ambient temperature or is close to the maximum temperature achieved by the load.
- If the Output change rate limiter is set, the optimum PID values may not be calculated by Autotuning (AT).
- When the cascade control is activated, the AT function cannot be turned on.

● Requirements for Autotuning (AT) start

Start the Autotuning (AT) when all following conditions are satisfied:
The Autotuning (AT) function can start from any state after power on, during arise in temperature or in stable control.

Operation mode state	RUN/STOP transfer	RUN
	PID/AT transfer	PID control
	Auto/Manual transfer	Auto mode
	Remote/Local transfer	Local mode
Parameter setting		Output limiter high ≥ 0.1 %, Output limiter low ≤ 99.9 %
Input value state		The Measured value (PV) is not underscale or overscale.
		Input error determination point (high) ≥ Measured value (PV) ≥ Input error determination point (low)
Operation mode (Identifier: EI)		Control

● Requirements for Autotuning (AT) cancellation

If the Autotuning (AT) is canceled according to any of the following conditions, the controller immediately changes to PID control. The PID values will be the same as before Autotuning (AT) was activated.

When the Operation mode is transferred	When the RUN/STOP mode is changed to the STOP mode.
	When the PID/AT transfer is changed to the PID control.
	When the Auto/Manual mode is changed to the Manual mode.
	When the Remote/Local mode is changed to the Remote mode.
Operation mode (Identifier: EI)	When changed to unused, monitor, or the monitor + event function.
When the parameter is changed	When the temperature set value (SV) is changed.
	When the PV bias, the PV digital filter, or the PV ratio is changed.
	When the AT bias is changed.
	When the control area is changed.
When the input value becomes abnormal	When the Measured value (PV) goes to underscale or overscale.
	When the Measured value (PV) goes to input error range. [Measured value (PV) ≥ Input error determination point (high) or Input error determination point (low) ≥ Measured value (PV)]
When the AT exceeded the execution time	When the AT does not end in two hours after AT started
Power failure	When the power failure of more than 4 ms occurs.
Instrument error	When the instrument is in the FAIL state.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Auto/Manual transfer	D01167 : D01182	D01323 : D01354	D01479 : D01526	D01635 : D01698	C	R/W	0: Auto mode Automatic control is performed. 1: Manual mode The manipulated output value can be manually changed. Use to transfer the Auto mode or Manual mode.	0
Event 1 set value	D01183 : D01198	D01355 : D01386	D01527 : D01574	D01699 : D01762	C	R/W	Deviation action, Deviation action between channels, Temperature rise completion range *: −Input span to +Input span * When temperature rise completion is selected at Event 3 action type Process action, SV action: Input scale low to Input scale high MV action: −5.0 to +105.0 % Use to set setting value of an event action.	50
Event 2 set value	D01199 : D01214	D01387 : D01418	D01575 : D01622	D01763 : D01826	C	R/W		50
Event 3 set value	D01215 : D01230	D01419 : D01450	D01623 : D01670	D01827 : D01890	C	R/W		50
Event 4 set value	D01231 : D01246	D01451 : D01482	D01671 : D01718	D01891 : D01954	C	R/W		50
Set value (SV) [Local set value (SV)]	D01247 : D01262	D01483 : D01514	D01719 : D01766	D01955 : D02018	C	R/W	Setting limiter low to Setting limiter high Set value (SV) is desired value of the control.	TC/RTD: 0 V/I: 0.0
Proportional band [heat-side] ♣	D01263 : D01278	D01515 : D01546	D01767 : D01814	D02019 : D02082	C	R/W	TC/RTD inputs: 0 (0.0) to Input span (Unit: °C [°F]) Voltage (V)/Current (I) inputs: 0.0 to 1000.0 % of Input span 0 (0.0): ON/OFF action Use to set the proportional band of the P, PI, PD and PID control.	TC/RTD: 30 (30.0) V/I: 30.0
Integral time [heat-side] ♣	D01279 : D01294	D01547 : D01578	D01815 : D01862	D02083 : D02146	C	R/W	PID control or Heat/Cool PID control: 0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PD action) Position proportioning PID control: 1 to 3600 seconds or 0.1 to 1999.9 seconds Integral action is to eliminate offset between Set value (SV) and Measured value (PV) by proportional action. The degree of Integral action is set by time in seconds.	240
Derivative time [heat-side] ♣	D01295 : D01310	D01579 : D01610	D01863 : D01910	D02147 : D02210	C	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PI action) Derivative action is to prevent rippling and make control stable by monitoring output change. The degree of Derivative action is set by time in seconds.	60

♣ Parameters only used for Heat/Cool PID control or position Proportioning PID control, therefore data for CH2 and CH4 of Z-TIO modules are unused.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Proportional band [cool-side] ♣	D01311 : D01326	D01611 : D01642	D01911 : D01958	D02211 : D02274	C	R/W	TC/RTD inputs: 1 (0.1) to Input span (Unit: °C [°F]) Voltage (V)/Current (I) inputs: 0.1 to 1000.0 % of Input span Use to set the proportional band of the P, PI, PD and PID control. The Proportional band [cool-side] is valid only during Heat/Cool PID control.	TC/RTD: 30 (30.0) V/I: 30.0
Integral time [cool-side] ♣	D01327 : D01342	D01643 : D01674	D01959 : D02006	D02275 : D02338	C	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PD action) Integral action is to eliminate offset between Set value (SV) and Measured value (PV) by proportional action. The degree of Integral action is set by time in seconds. The Integral time [cool-side] is valid only during Heat/Cool PID control.	240
Derivative time [cool-side] ♣	D01343 : D01358	D01675 : D01706	D02007 : D02054	D02339 : D02402	C	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PI action) Derivative action is to prevent rippling and make control stable by monitoring output change. The degree of Derivative action is set by time in seconds. The Derivative time [cool-side] is valid only during Heat/Cool PID control.	60
Control response parameter * ♣	D01359 : D01374	D01707 : D01738	D02055 : D02102	D02403 : D02466	C	R/W	0: Slow 1: Medium 2: Fast When the P or PD action is selected, this setting becomes invalid.	PID control, Position proportioning PID control: 0 Heat/Cool PID control: 2

♣ Parameters only used for Heat/Cool PID control or position Proportioning PID control, therefore data for CH2 and CH4 of Z-TIO modules are unused.

* The control response for the Set value (SV) change can be selected among Slow, Medium, and Fast. If a fast response is required, Fast is chosen. Fast may cause overshoot. If overshoot is critical, Slow is chosen.

Fast	Selected when rise time needs to be shortened (operation needs to started fast). However in this case, slight overshooting may not be avoided.
Medium	Middle between “Fast” and “Slow.” Overshooting when set to “Medium” becomes less than that when set to “Fast.”
Slow	Selected when no overshooting is allowed. Used when material may be deteriorated if the temperature becomes higher that the set value.

When the P or PD action is selected, this setting becomes invalid.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Overlap/Deadband [1] ♣	D01375 ⋮ D01390	D01739 ⋮ D01770	D02103 ⋮ D02150	D02467 ⋮ D02530	C	R/W	TC/RTD inputs: −Input span to +Input span (Unit: °C [°F]) Voltage (V)/Current (I) inputs: −100.0 to +100.0 % of input span	0
Setting change rate limiter (up)	D01391 ⋮ D01406	D01771 ⋮ D01802	D02151 ⋮ D02198	D02531 ⋮ D02594	C	R/W	0 (0.0) to Input span/unit time 0 (0.0): Unused Unit time: 60 seconds (factory set value)	0 (0.0)
Setting change rate limiter (down)	D01407 ⋮ D01422	D01803 ⋮ D01834	D02199 ⋮ D02246	D02595 ⋮ D02658	C	R/W	This function is to allow the Set value (SV) to be automatically changed at specific rates when a new Set value (SV).	0 (0.0)
Heater break alarm (HBA) set value [2]	D01423 ⋮ D01438	D01835 ⋮ D01866	D02247 ⋮ D02294	D02659 ⋮ D02722	C	R/W	When CT is CTL-6-P-N: 0.0 to 30.0 A (0.0: Not used) When CT is CTL-12-S56-10L-N: 0.0 to 100.0 A (0.0: Not used)	0.0
Heater break determination point	D01439 ⋮ D01454	D01867 ⋮ D01898	D02295 ⋮ D02342	D02723 ⋮ D02786	C	R/W	0.0 to 100.0 % of HBA set value (0.0: Heater break determination is invalid) Set the Heater break determination point for the heater break alarm (HBA) type B.	30.0

♣ Parameters only used for Heat/Cool PID control or Position proportioning PID control, therefore data for CH2 and CH4 of Z-TIO modules are unused.

[1] This is the overlapped range of proportional bands (on the heat and cool sides) or the deadband range when Heat/Cool PID control is performed.

Overlap (OL):
Range in which the Proportional band [heat-side] and the Proportional band [cool-side] are overlapped. If a Measured value (PV) is within the overlapped range, Manipulated output values (heat-side and cool-side) may be simultaneously output.

Deadband (DB):
This is a control dead zone existing between the Proportional band [heat-side] and the Proportional band [cool-side]. If a Measured value (PV) is within the deadband range, neither the Manipulated output value [heat-side] nor the Manipulated output value [cool-side] is output.

[2] HBA is to set the set values for the heater break alarm (HBA) function.
The HBA function detects a fault in the heating circuit by monitoring the current flowing through the load by a dedicated current transformer (CT).

For type “A” HBA [for time proportional output],
- Set the set value to approximately 85 % of the maximum reading of the CT input.
- Set the set value to a slightly smaller value to prevent a false alarm if the power supply may become unstable.
- When more than one heater is connected in parallel, it may be necessary to increase the HBA set value to detect a single heater failure.

For type “B” HBA [for continuous output],
Set the set value to the maximum CT input value. This will be the current when the control is at 100 % control output. The set value is used to calculate the width of a non-alarm range.


The heater break alarm (HBA) type sets it by Host communication or Loader communication.

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Name	Register address				Structure	Attribute	Data range	Factory set value
	16CH	32CH	48CH	64CH				
Heater melting determination point	D01455 : D01470	D01899 : D01930	D02343 : D02390	D02787 : D02850	C	R/W	0.0 to 100.0 % of HBA set value (0.0: Heater melting determination is invalid) Set the Heater melting determination point for the heater break alarm (HBA) type B.	30.0
PV bias	D01471 : D01486	D01931 : D01962	D02391 : D02438	D02851 : D02914	C	R/W	–Input span to +Input span PV bias adds bias to the Measured value (PV). The PV bias is used to compensate the individual variations of the sensors or correct the difference between the Measured value (PV) of other instruments.	0
Manual manipulated output value ♣	D01487 : D01502	D01963 : D01994	D02439 : D02486	D02915 : D02978	C	R/W	PID control: Output limiter low to Output limiter high Heat/Cool PID control: –Cool-side output limiter high to +Heat-side output limiter high Position proportioning PID control (with FBR input): Output limiter low to Output limiter high Position proportioning PID control (without FBR input): 0: Close-side output OFF, Open-side output OFF 1: Close-side output ON, Open-side output OFF 2: Close-side output OFF, Open-side output ON Use to set the output value in the manual control.	0.0
Operation mode	D01503 : D01518	D01995 : D02026	D02487 : D02534	D02979 : D03042	C	R/W	0: Unused 1: Monitor Only data monitor is performed 2: Monitor + Event function Data monitor and event action (temperature rise completion, including LBA) are performed. 3: Control	3
DO manual output 1	D01519 : D01522	D02027 : D02034	D02535 : D02546	D03043 : D03058	M	R/W	Bit data Bit 0: DO1 manual output Bit 1: DO2 manual output Bit 2: DO3 manual output Bit 3: DO4 manual output Bit 4: DO5 manual output Bit 5: DO6 manual output Bit 6: DO7 manual output Bit 7: DO8 manual output Bit 8 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 255]	0
RUN/STOP transfer (Each unit)	D01523	D02035	D02547	D03059	U	R/W	0: STOP (Control stop) 1: RUN (Control start)	0

♣ Parameters only used for Heat/Cool PID control or Position proportioning PID control, therefore data for CH2 and CH4 of Z-TIO modules are unused.

6.6.3 Data map list (Z-CT module)

The communication data of the Z-CT module is not assigned to PLC register addresses prior to shipment, and thus the customer must assign the communication data to the PLC registers.
The Zeal2 PLC register mapping software tool is used to perform register address assignment. Refer to Help in Zeal2 to assign the communication data to PLC registers.

Zeal2 communicates with the Z-COM module via Loader communication.
In addition, Zeal2 can be downloaded from the RKC official website:
http://www.rkcinst.com/english/.

Name	Register address	Structure	Attribute	Data range	Number of data *	Factory set value
Current transformer (CT) input value monitor	Not assigned prior to shipment	C	RO	CTL-6-P-Z: 0.0 to 10.0 A CTL-6-P-N: 0.0 to 30.0 A CTL-12-S56-10L-N: 0.0 to 100.0 A	192	—
Load factor conversion CT monitor	Not assigned prior to shipment	C	RO	0.0 to 100.0 A	192	—
Heater break alarm (HBA) state monitor	Not assigned prior to shipment	C	RO	0: Normal 1: Break 2: Melting	192	—
Heater overcurrent alarm state monitor	Not assigned prior to shipment	C	RO	0: Normal 1: Heater overcurrent	192	—
Automatic setting state monitor	Not assigned prior to shipment	M	RO	0: Normal state 1: Automatic setting execution 2: Automatic setting failure	16	—
Heater break/Heater overcurrent alarm automatic setting selection	Not assigned prior to shipment	C	R/W	0: Automatic setting is disabled. (Alarm set value cannot be automatically set by the push button and communication.) 1: Automatic setting for heater break alarm is enabled. 2: Automatic setting for heater overcurrent alarm set value is enabled. 3: Automatic setting for heater break alarm (HBA) and heater overcurrent alarm set values are enabled.	192	1
Automatic setting transfer	Not assigned prior to shipment	C	R/W	0: Normal state 1: Automatic setting execution 2: Automatic setting failure (RO)	192	0
Heater break alarm (HBA) set value	Not assigned prior to shipment	C	R/W	0.0 to 100.0 A 0.0: Heater break alarm function (HBA) OFF [HBA function OFF: The current transformer (CT) input value monitoring is available.]	192	0.0
Heater break alarm (HBA) selection	Not assigned prior to shipment	C	R/W	0: Heater break alarm (HBA) unused 1: Heater break alarm (HBA) 2: Heater break alarm (HBA) (With alarm interlock function)	192	1
Heater overcurrent alarm set value	Not assigned prior to shipment	C	R/W	0.0 to 105.0 A 0.0: Heater overcurrent alarm function OFF	192	0.0

* Maximum number of data (Max 12 channels per one module, Max 16 modules per one unit)

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Name	Register address	Structure	Attribute	Data range	Number of data *	Factory set value
Heater overcurrent alarm selection	Not assigned prior to shipment	C	R/W	0: Heater overcurrent alarm unused 1: Heater overcurrent alarm 2: Heater overcurrent alarm (With alarm interlock function)	192	1
Heater break alarm (HBA) interlock release	Not assigned prior to shipment	C	R/W	0: Normal state 1: Interlock release execution	192	0
Heater overcurrent alarm interlock release	Not assigned prior to shipment	C	R/W	0: Normal state 1: Interlock release execution	192	0

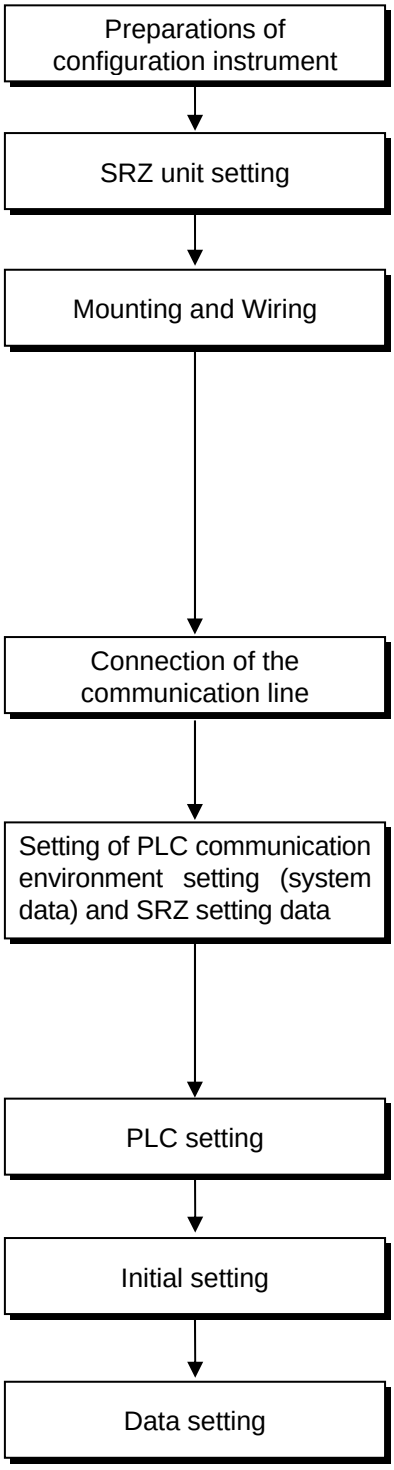
* Maximum number of data (Max 12 channels per one module, Max 16 modules per one unit)

☞ For the communication data of Z-CT module, refer to **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.

6.7 Usage Example

In this Chapter, an example of data setting procedure is explained when the SRZ unit is connected to a PLC of MITSUBISHI MELSEC series. In this example, PLC communication environment settings (system data) and SRZ setting data settings are configured by loader communication.

6.7.1 Handling procedures



☞ Refer to **6.7.2 System configuration (P. 6-68)**.

☞ Refer to **6.7.3 SRZ unit setting (P. 6-70)**.

☞ For information on joining the Z-COM module to function modules and mounting, refer to **4. MOUNTING (P. 4-1)**.

☞ For the power supply wiring, refer to **5. WIRING (P. 5-1)**.

☞ For the Input/Output wiring of Z-TIO, Z-DIO module, refer to **SRZ Instruction Manual (IMS01T04-E☐)**.
For the Input/Output wiring of Z-CT module, refer to **Z-CT Instruction Manual (IMS01T16-E☐)**.

☞ To mount the PLC and connect the wiring, refer to the manual for the PLC.

☞ For information on connecting the Loader communication, refer to **6.7.4 Connection of Loader communication (P. 6-72)**.

☞ For information on connecting the SRZ unit to a PLC, refer to **6.7.5 Connection with PLC (P. 6-72)**.

☞ Refer to **6.7.6 Setting of PLC communication environment setting and SRZ setting data (P. 6-73)**.

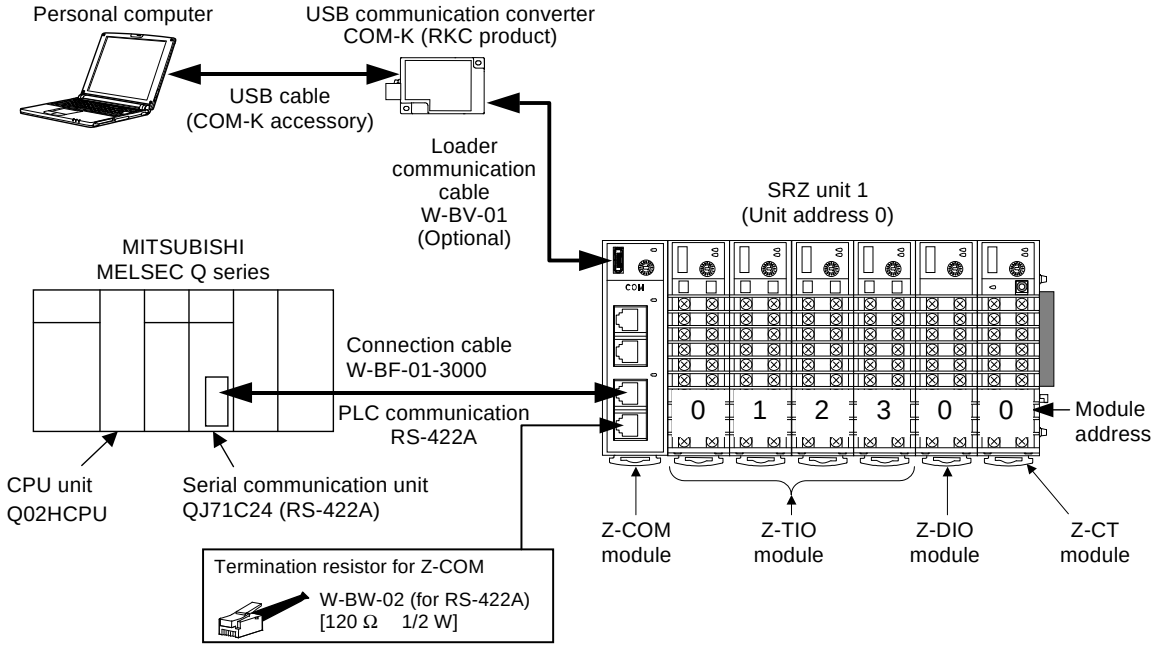
☞ For the communication data description of Z-TIO, Z-DIO module, refer to **SRZ Instruction Manual (IMS01T04-E☐)**.
For the communication data description of Z-CT module, refer to **Z-CT Instruction Manual [Detailed version] (IMS01T21-E☐)**.

☞ Refer to **6.7.7 PLC setting (P. 6-82)**.

☞ Refer to **6.7.8 Initial setting (P. 6-84)**.

☞ Refer to **6.7.9 Data setting (P. 6-85)**.

6.7.2 System configuration



■ Use instruments

- **MITSUBISHI MELSEC Q series**
  CPU unit Q02HCPU..... 1
  Serial communication unit QJ71C24 (RS-422A) 1
  Power supply, I/O module, etc.

- **SRZ unit**
  Communication extension module Z-COM-A-44/113A 1
  Temperature control module Z-TIO-A 4
  Digital I/O module Z-DIO-A 1
  Current transformer (CT) input module Z-CT-A..... 1

- **Connection cable for connecting SRZ unit and PLC**
  W-BF-01-3000 (RKC product, Sold separately) [Standard cable length: 3 m] 1

- **Communication converter**
  USB communication converter COM-K (RKC product)..... 1

- **Connection cable for connecting SRZ unit and personal computer**
  USB cable (COM-K accessory) [Cable length: 1 m]..... 1
  W-BV-01 (COM-K optional) [Cable length: 1.5 m] 1

- **Termination resistor**
  Termination resistor for Z-COM W-BW-02 [for RS-422A] (RKC product) 1

- **Personal computer**
  Software of the following must be installed in a personal computer.
  - Communication tool “PROTEM2”
  - Communication support tool “WinUCI-SRZ”
  - PLC register mapping software tool “Zeal2” (for register address assignment of Z-CT module)

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

■ Communication software

- **Communication tool “PROTEM2”**
  PROTEM2 requires Microsoft.NET Framework 4 to be installed on the computer.

- **Communication support tool “WinUCI-SRZ”**
  WinUCI-SRZ: Communication setup tool for SRZ
  This software enables setting of individual modules, except Z-CT module.

- **PLC register mapping software tool “Zeal2”**
  Z-CT module data has not been assigned to PLC register addresses, and thus this must be done using Zeal2.

  [Using a default project]
  The PLC register addresses indicated in **6.6 PLC Communication Data Map (P. 6-53)** are registered in the Zeal2 default project. The default project can be selected in the “Welcome” window to use the factory set register addresses.
  As such, when assigning Z-CT module data, the default project can be used to add only Z-CT module data, leaving the data of other modules unchanged.

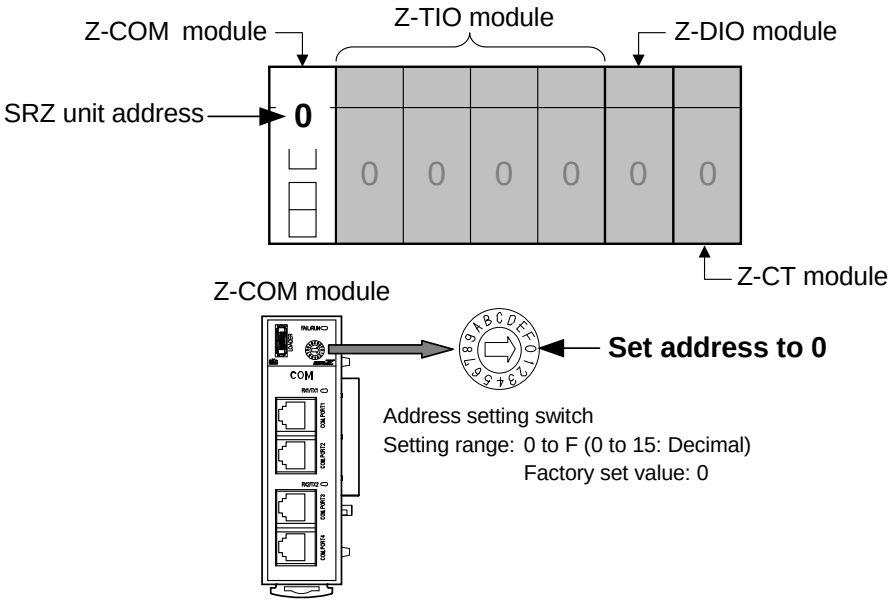
  ☞ For details, refer to Help of Zeal2.

6.7.3 SRZ unit setting

■ SRZ unit address setting

Set the SRZ unit address by address setting switch of front of Z-COM module. For this setting, use a small blade screwdriver. In this application, make the setting as follows.

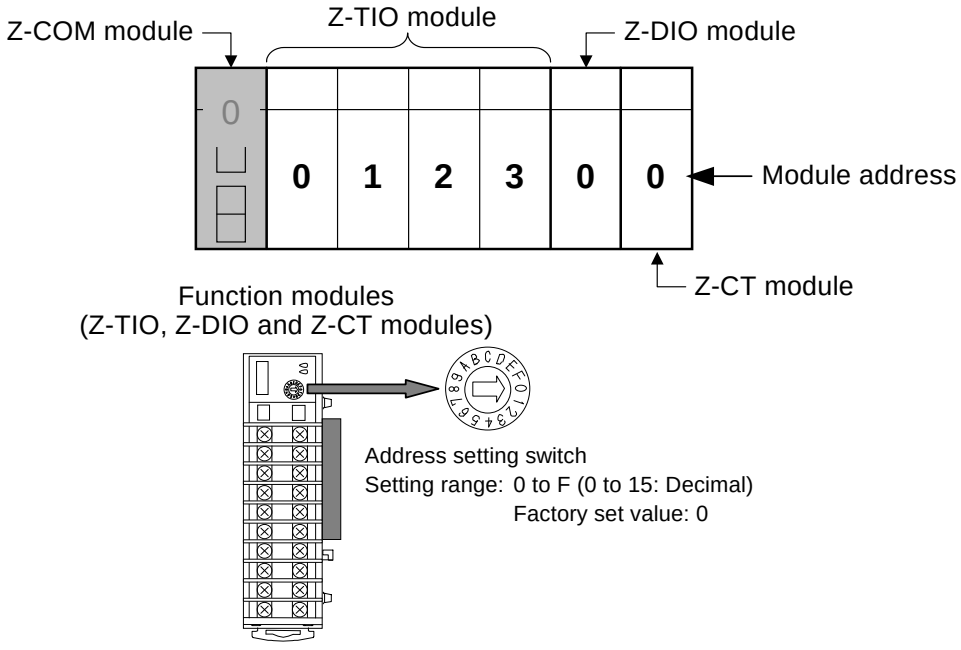
SRZ unit address: 0



■ Function modules (Z-TIO, Z-DIO and Z-CT modules) address setting

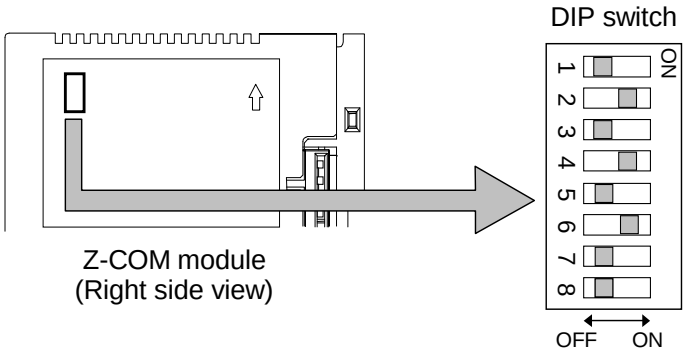
Set the module address by address setting switch of front of module. For this setting, use a small blade screwdriver. In this application, make the setting as follows.

Z-TIO module address: 0, 1, 2, 3
Z-DIO module address: 0
Z-CT module address: 0



■ Communication setting of the Z-COM module

Conduct the PLC communication settings by the DIP switch.



DIP switch		Setting contents
1	OFF *	Communication speed (Host communication): 19200 bps
2	ON *	
3	OFF *	RKC communication (Host communication) Data bit configuration: Data 8-bit, Without parity, Stop 1-bit
4	ON	Communication speed (PLC communication): 19200 bps
5	OFF	Protocol (PLC communication): MITSUBISHI MELSEC series special protocol A-compatible 1C frame (format 4) AnA/AnUCPU common command (QR/QW) Data bit configuration: Data 7-bit, Without parity, Stop 1-bit
6	ON	
7	OFF	
8	OFF	DIP switch setting validate/invalidate Validate

* The communication 1 side (Host communication) does not use this, and thus the factory set value is used.

If you wish to use a Data bit configuration that cannot be set using the DIP switches, set the configuration using Loader communication (or Host communication).

For setting details, refer to **3.1.2 Communication speed and Communication protocol setting by DIP switch (P. 3-5)** or **3.1.3 Communication speed and Communication protocol setting via Host communication (P. 3-7)**.

■ Settings for Loader communication

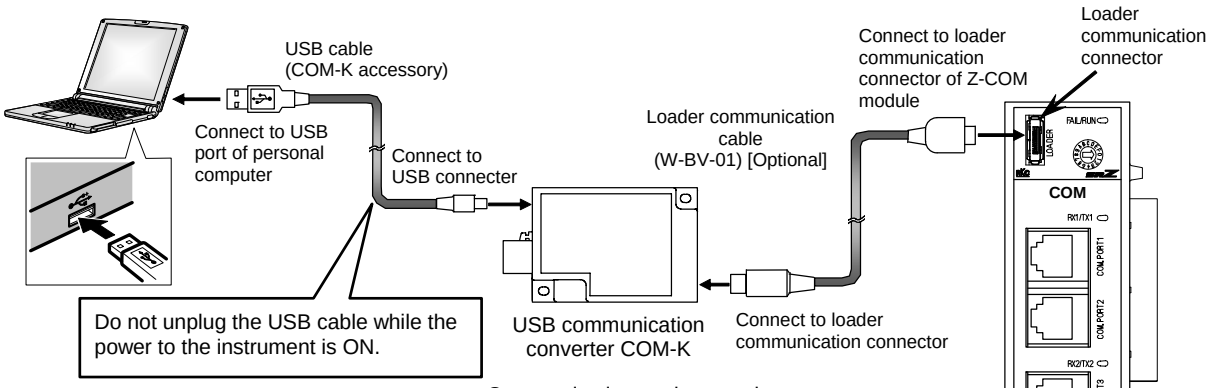
When Loader communication is used, the Communication speed, Communication protocol, and Data bit configuration of the Z-COM module are fixed. There is no need to configure the communication settings of the Z-COM module.
Set the communication settings of the host computer to the same settings as the Z-COM module.

Communication speed, Protocol, and Data bit configuration in the Loader communication

Name	Data (fixed value)
Communication speed	38400 bps
Protocol	RKC communication Based on ANSI X3.28-1976 subcategories 2.5 and B1
Data bit configuration	Data bit configuration: Data 8-bit, Without parity, Stop 1-bit

6.7.4 Connection of Loader communication

Connect a personal computer, COM-K and SRZ unit (Z-COM module).



- Communication tool: PROTEM2
- Communication support tool: WinUCI-SRZ
- PLC register mapping software tool: Zeal2
- Communication port of host computer
  USB port: Based on USB Ver. 2.0

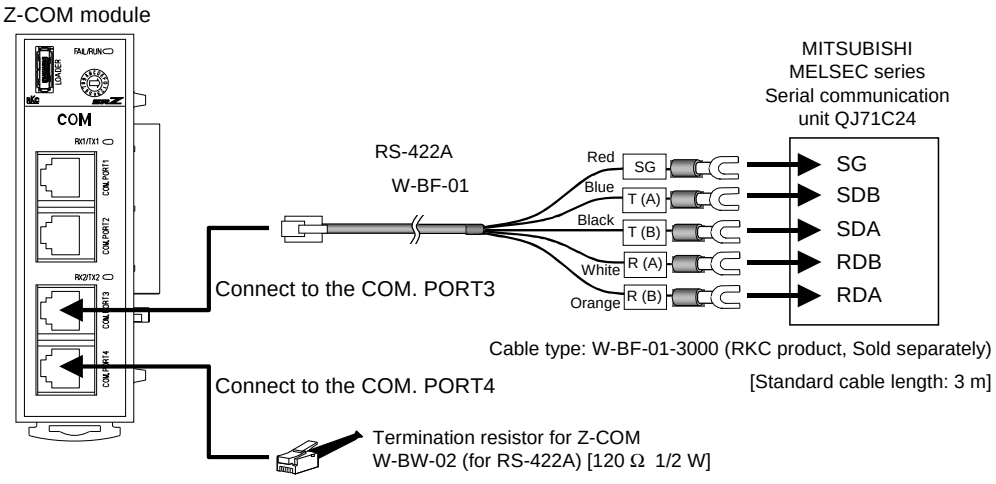
- Communication settings on the computer
  (The following values are all fixed)
  Communication speed: 38400 bps
  Start bit: 1
  Data bit: 8
  Parity bit: Without
  Stop bit: 1

The Loader port is only for parameter setup.

For the COM-K, refer to the **COM-K Instruction Manual (IMR01Z01-E□)**.

6.7.5 Connection with PLC

Connect a SRZ unit to PLC (serial communication unit QJ71C24) by our cable (Sold separately: W-BF-01-3000).



W-BF-01* communication cable (RKC product) can be used as communication cable (sold separately). If noise is a factor, customer should use a twisted pair cable (not included) or something to that effect.

* Shields of the cable are connected to SG (No. 6 pin) of the COM. PORT3.

The details of the connectable connector for the PLC, refer to the instruction manual for the used PLC.

When be prepared cable with a customer, refer to **6.2.2 Wiring (P. 6-5)**.

6.7.6 Setting of PLC communication environment setting and SRZ setting data

■ Turn on the power of the personal computer and SRZ unit

The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on. Data collection takes about 8 seconds.
If you will use Loader communication to configure the Z-COM module System data (setting items) and the communication data of the function modules (Z-TIO, Z-DIO and Z-CT modules), do so after data collection is finished.

■ Set the PLC communication environment setting (system data)

Set the PLC communication environment setting (system data) via Loader communication. In this application, use the factory set value.

Setting items	Identifier	Set value (Factory set value)	
Station number	QV	0	
PC number	QW	255	
Register type (D, R, W, ZR)	QZ	0 (D register)	
Register start number (High-order 4 bit)	QS	0	These values can be changed to change the starting number of the PLC communication data register.
Register start number (Low-order 16 bit)	QX	1000	
System data address bias	QQ	2100	
COM module link recognition time	QT	10 seconds	
PLC scanning time	VT	255 ms	
PLC communication start time *	R5	5 seconds	
Slave mapping method	RK	0	

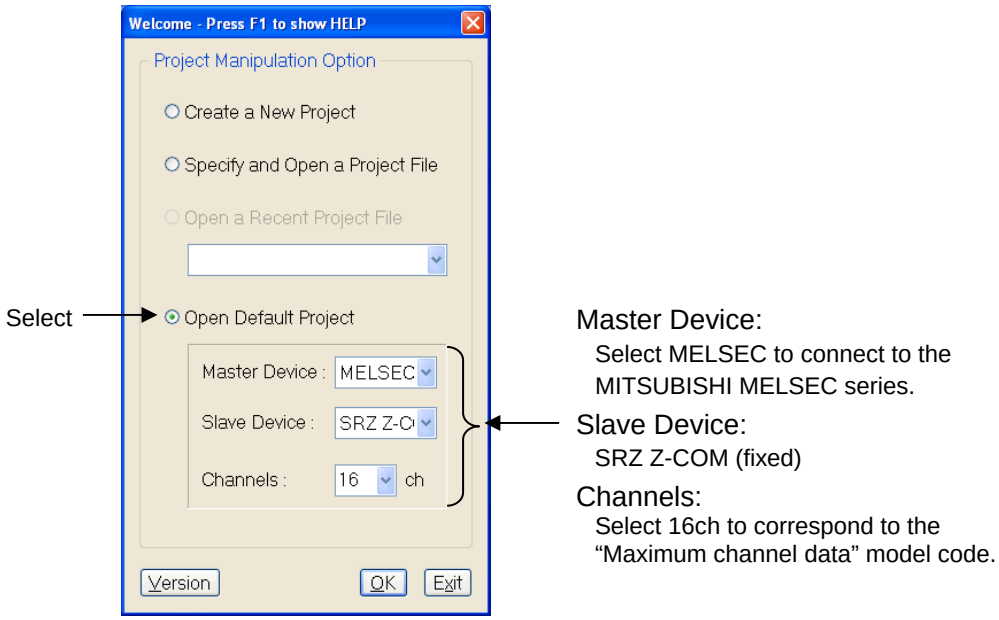
* The PLC communication start time is the time that writing of the System data (monitor items) starts. Actual communication with the PLC by Request command can only take place after the System communication state (D01000) changes to "1."

■ Assigning Z-CT module data

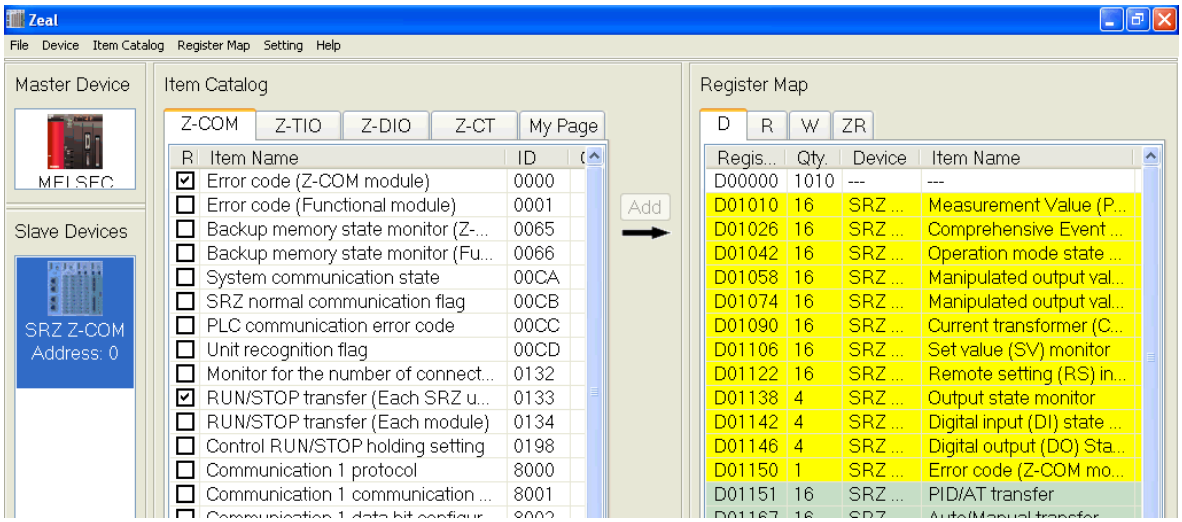
Z-CT module data has not been assigned to PLC register addresses, and thus this must be done using Zeal2. An example of assigning Z-CT module data using Zeal2 is shown below.

☞ Refer to **6.5.4 When set register address with Zeal2 (P. 6-51)**.

1. Start Zeal2. The "Welcome" window will appear.
For data other than that of the Z-CT module, the factory set values will be used, so select Open Default Project and click the [OK] button. If the Master Device or Channels setting is different from the connection configuration, change the setting and click the [OK] button.



2. The main window will open. The Item Catalog and Register Map appear in the main window.
The Item Catalog shows the data for which PLC communication is possible for each module type.
The Register Map shows the register addresses of registered (factory set value) PLC communication data. At this point, Z-CT module data has not been registered.



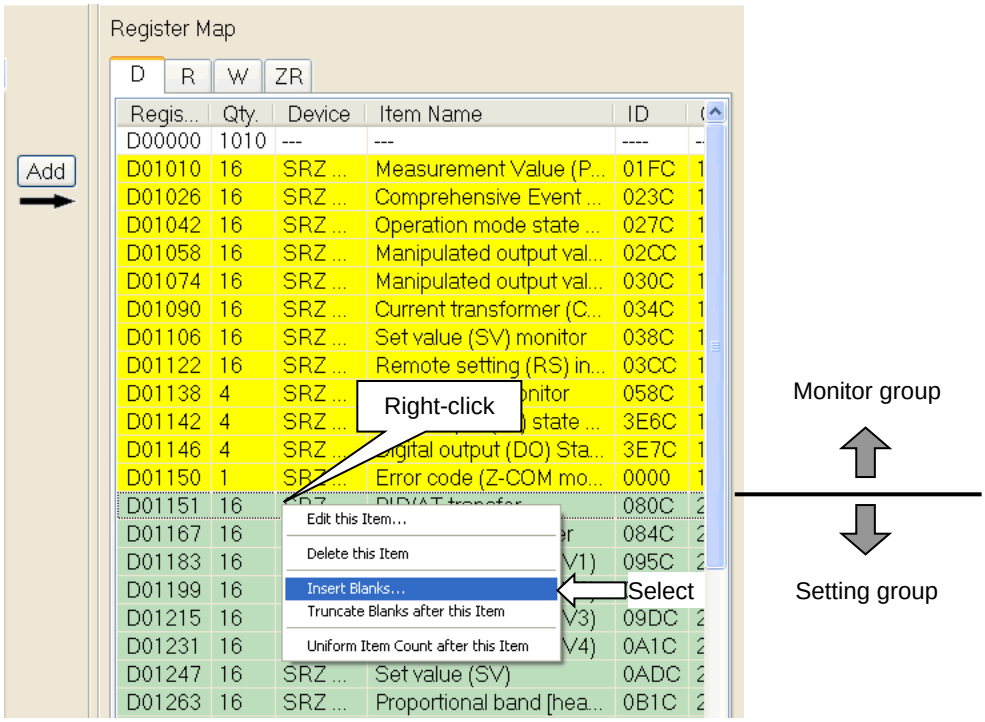
3. Click a Z-CT tab of Item Catalog, and display data of the Z-CT module.
Register the following data here.

Name	Q'ty	Communication mode (attribute)	Group
Current transformer (CT) input value monitor [1]	12	Monitor mode	Monitor group
Heater break alarm (HBA) state monitor [1]	12	Monitor mode	
Automatic setting state monitor [1]	4	Monitor mode	
Heater break/Heater overcurrent alarm automatic setting selection [2]	12	Command mode 0	Setting group
Automatic setting transfer [2]	12	Command mode 0	
Heater break alarm (HBA) set value [2]	12	Command mode 0	
Heater break alarm (HBA) selection [2]	12	Command mode 0	
Heater break alarm (HBA) interlock release [2]	12	Command mode 0	

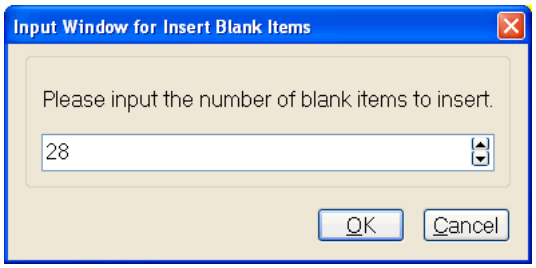
[1] This is added to the monitor group of the registered register map.
[2] This is added to the setting group of the registered register map.

☞ For data items, refer to **6.6.3 Data map list (Z-CT module) (P. 6-65)** or **Z-CT Instruction Manual [Detailed version] (IMS01T21-E☐)**.
For attribute and groups, refer to **6.5.4 When set register address with Zeal2 (P. 6-51)** or **Help of Zeal2**.

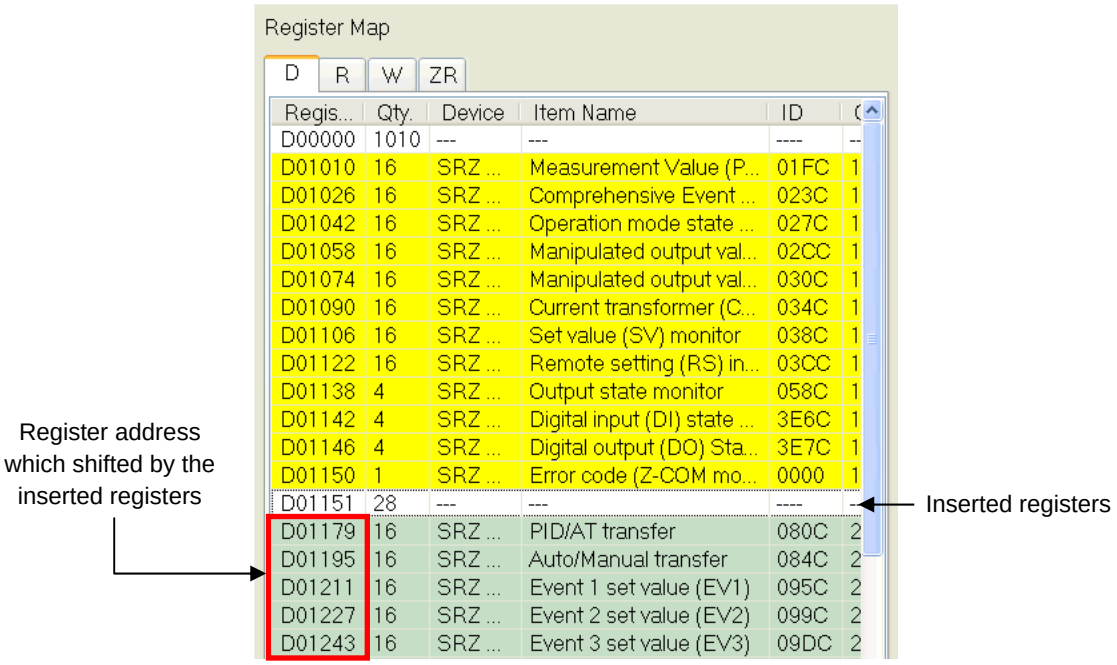
4. To add the [Current transformer (CT) input value monitor], [Heater break alarm (HBA) state monitor], and [Automatic setting state monitor] monitor items of the Z-CT module to the registered register map, blank registers for the monitor items to be added must be inserted between the monitor group and setting group in the register map.
Right-click the communication item (at the top of the setting group) immediately under the monitor group in the register map and select "Insert Blanks…".



5. The Input Window for Insert Blank Items dialog box appears. Enter “28” (12+12+4) for the number of register addresses of the monitor items to be inserted, and click [OK].

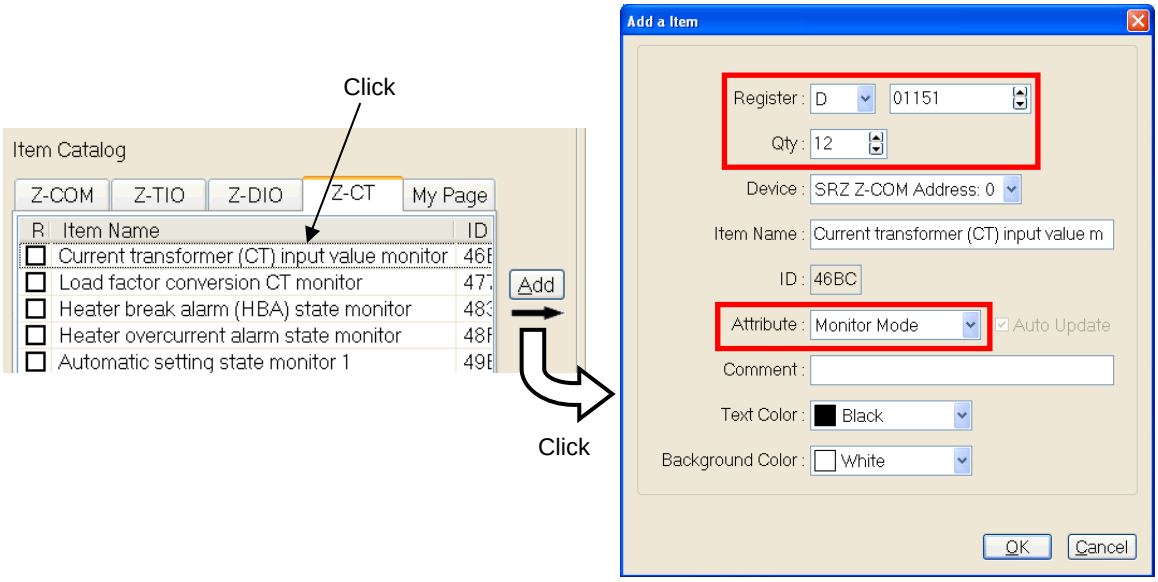


6. Blank registers for 28 items are allocated between the monitor group and setting group. The register addresses of the setting group automatically shift by an amount equal to the inserted registers.

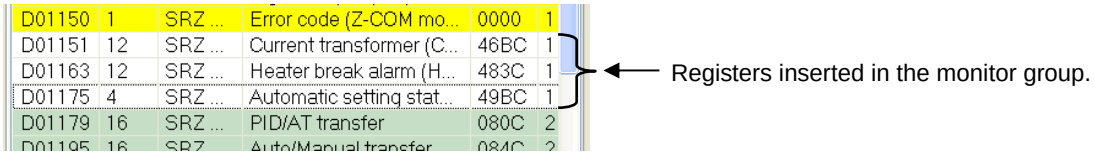


7. Add the data of the monitor group.
Click Current transformer (CT) input value monitor in the Item Catalog and click [Add]. The Add a Item window opens. Set the values below and click [OK].

Register: Set D01151, the first address of the inserted registers.
Qty: Set 12 for the quantity of register address data.
Attribute: Select Monitor Mode
Other items are used as they appear.



8. Set Heater break alarm (HBA) state monitor and Automatic setting state monitor similarly.
Set the register addresses so that they follow in succession after Current transformer (CT) input value monitor.



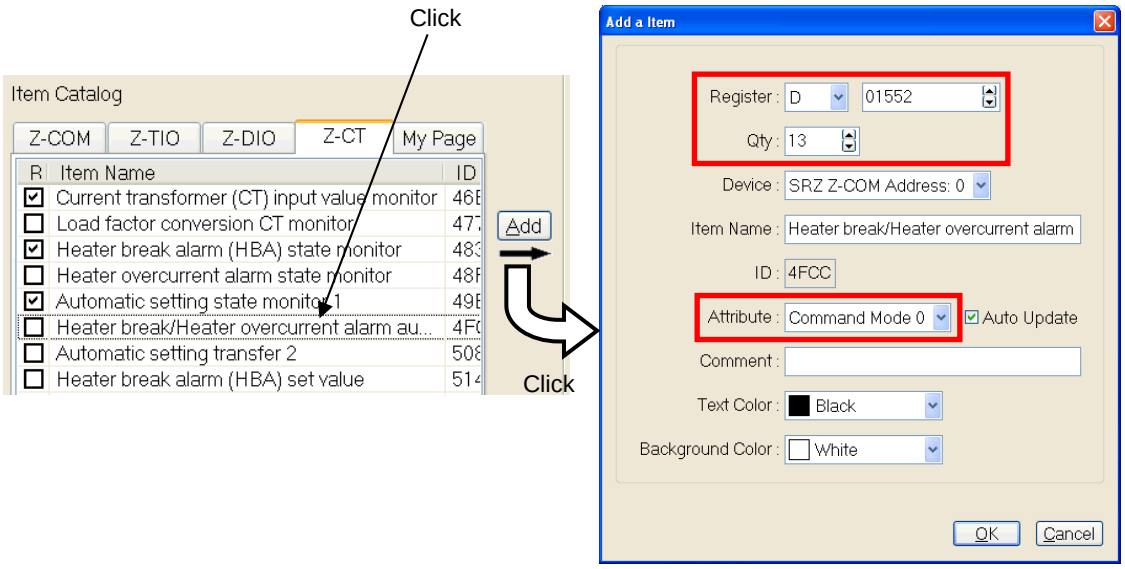
9. Add the data of the setting group.
Click Heater break/Heater overcurrent alarm automatic setting selection in the Item Catalog and click [Add]. The Add a Item window opens. Set the values below and click [OK].

Register: The subsequent address (the next address after the last address of the setting group) of the registered register map appears automatically. Use that address.

Qty: Set 12 for the quantity of register address data.

Attribute: Select Command Mode 0

Other items are used as they appear.



10. Enter the remaining items, referring to the table in step ***3***.

11. After entering the items, check the connection to the device. If there is no problem, the edited data will be downloaded to the SRZ unit.
Select Device → Download (PC -> Device)(D)… in the menu bar to check the data. If there is no problem, downloading begins. A window will open to show the progress of the download.

12. When the download is finished, disconnect the loader cable. Turn off the power of the SRZ unit and then turn it back on to make the downloaded data take effect.

■ PLC communication register address

When the register type is set to “D register” and the register start number is set to “1000” in the system data (setting item), the register addresses of the data in PLC communication after the addition of the Z-CT module data using Zeal2 are as shown below.

In this example, the “Maximum channel data” of the Z-COM module is specified as 16 channels, and thus the register addresses of PLC communication are based on the 16CH specification (refer to **6.6 PLC Communication Data Map, P. 6-53**); however, because Z-CT module data was added in Zeal2, the register addresses of PLC communication differ from the 16CH specification.

Register address	Communication items		Group
D01000	System communication state		System data (monitor items)
D01001	SRZ normal communication flag		
D01002	Do not use this register address as it is used for the internal processing.		
D01003			
D01004	PLC communication error code		
D01005	Unit recognition flag		
D01006	Monitor for the number of connected modules		
D01007	Number of valid groups		
D01008	Request command		Setting group
D01009	Setting item communication state		
D01010 to D01025	Measured value (PV)	CH1 to CH16	Monitor group
D01026 to D01041	Comprehensive event monitor	CH1 to CH16	
D01042 to D01057	Operation mode state monitor	CH1 to CH16	
D01058 to D01073	Manipulated output value (MV) monitor [heat-side]	CH1 to CH16	
D01074 to D01089	Manipulated output value (MV) monitor [cool-side]	CH1 to CH16	
D01090 to D01105	Current transformer (CT) input value monitor	CH1 to CH16	
D01106 to D01121	Set value (SV) monitor	CH1 to CH16	
D01122 to D01137	Remote setting (RS) input value monitor	CH1 to CH16	
D01138 to D01141	Output state monitor	CH1 to CH4	
D01142	Digital input (DI) state 1	CH1*	
D01143 to D01145	Unused	CH2 to CH4	
D01146	Digital output (DO) state 1	CH1*	
D01147 to D01149	Unused	CH2 to CH4	
D01150	Error code	CH1	
D01151 to D01162	Current transformer (CT) input value monitor	CH1 to CH12	
D01163 to D01174	Heater break alarm (HBA) state monitor	CH1 to CH12	
D01175 to D01178	Automatic setting state monitor	CH1 to CH4	
D01179 to D01194	PID/AT transfer	CH1 to CH16	Setting group
D01195 to D01210	Auto/Manual transfer	CH1 to CH16	
D01211 to D01226	Event 1 set value	CH1 to CH16	
D01227 to D01242	Event 2 set value	CH1 to CH16	
D01243 to D01258	Event 3 set value	CH1 to CH16	

* The data of one Z-DIO module (DI: 8 channels, DO: 8 channels) is handled in 1 channel, and thus CH2 to CH4 are not used.

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Register address	Communication items		Group
D01259 to D01274	Event 4 set value	CH1 to CH16	Setting group
D01275 to D01290	Set value (SV)	CH1 to CH16	
D01291 to D01306	Proportional band [heat-side]	CH1 to CH16	
D01307 to D01322	Integral time [heat-side]	CH1 to CH16	
D01323 to D01338	Derivative time [heat-side]	CH1 to CH16	
D01339 to D01354	Proportional band [cool-side]	CH1 to CH16	
D01355 to D01370	Integral time [cool-side]	CH1 to CH16	
D01371 to D01386	Derivative time [cool-side]	CH1 to CH16	
D01387 to D01402	Control response parameter	CH1 to CH16	
D01403 to D01418	Overlap/Deadband	CH1 to CH16	
D01419 to D01434	Setting change rate limiter (up)	CH1 to CH16	
D01435 to D01450	Setting change rate limiter (down)	CH1 to CH16	
D01451 to D01466	Heater break alarm (HBA) set value	CH1 to CH16	
D01467 to D01482	Heater break determination point	CH1 to CH16	
D01483 to D01498	Heater melting determination point	CH1 to CH16	
D01499 to D01514	PV bias	CH1 to CH16	
D01515 to D01530	Manual manipulated output value	CH1 to CH16	
D01531 to D01546	Operation mode	CH1 to CH16	
D01547	DO manual output 1	CH1*	
D01548 to D01550	Unused	CH2 to CH4	
D01551	RUN/STOP transfer (Each unit)	CH1	
D01552 to D01563	Heater break/Heater overcurrent alarm automatic setting selection	CH1 to CH12	
D01564 to D01575	Automatic setting transfer	CH1 to CH12	
D01576 to D01587	Heater break alarm (HBA) set value	CH1 to CH12	
D01588 to D01599	Heater break alarm (HBA) selection	CH1 to CH12	
D01600 to D01611	Heater break alarm (HBA) interlock release	CH1 to CH12	

* The data of one Z-DIO module (DI: 8 channels, DO: 8 channels) is handled in 1 channel, and thus CH2 to CH4 are not used.

In this example, since "Open default project" is selected at the beginning, system data (monitor items) are already assigned.
Do not assign system data (monitor items) by selecting from Item Catalog and adding to the Register Map. Proper communication may not be achieved.

For how to assign system data (monitor items), refer to ■ **System data (monitor items) setting (P. 6-52)**.

■ Setting SRZ setting data by Loader communication

Communication data of function modules (Z-TIO, Z-DIO and Z-CT modules) that cannot be set using PLC communication are set using Loader communication (engineering data, operation data, etc.).

If the control is the control start (RUN), transfer the control stop (STOP).
Engineering data can only be set in Z-TIO, Z-DIO and Z-CT modules when the SRZ unit is stopped.

For the communication data range of function modules (Z-TIO, Z-DIO and Z-CT modules), refer to **Z-COM Host Communication Instruction Manual (IMS01T23-E□)**.

For the function description of Z-TIO and Z-DIO modules communication data, refer to **SRZ Instruction Manual (IMS01T04-E□)**.
For the function description of Z-CT module communication data, refer to **Z-CT Instruction Manual [Detailed version] (IMS01T21-E□)**.

■ Turn off the power of the host computer and SRZ unit

To make the newly configured system data (settings) take effect, turn off the power of the host computer and SRZ unit.
The settings will take effect the next time the power is turned on.

6.7.7 PLC setting

Set the serial communication module of MITSUBISHI MELSEC Q series as follows.

Setting item	Description
Operation setting	Independent
Data bit	7
Parity bit	NO
Even/odd parity	Odd
Stop bit	1
Sum check code	YES

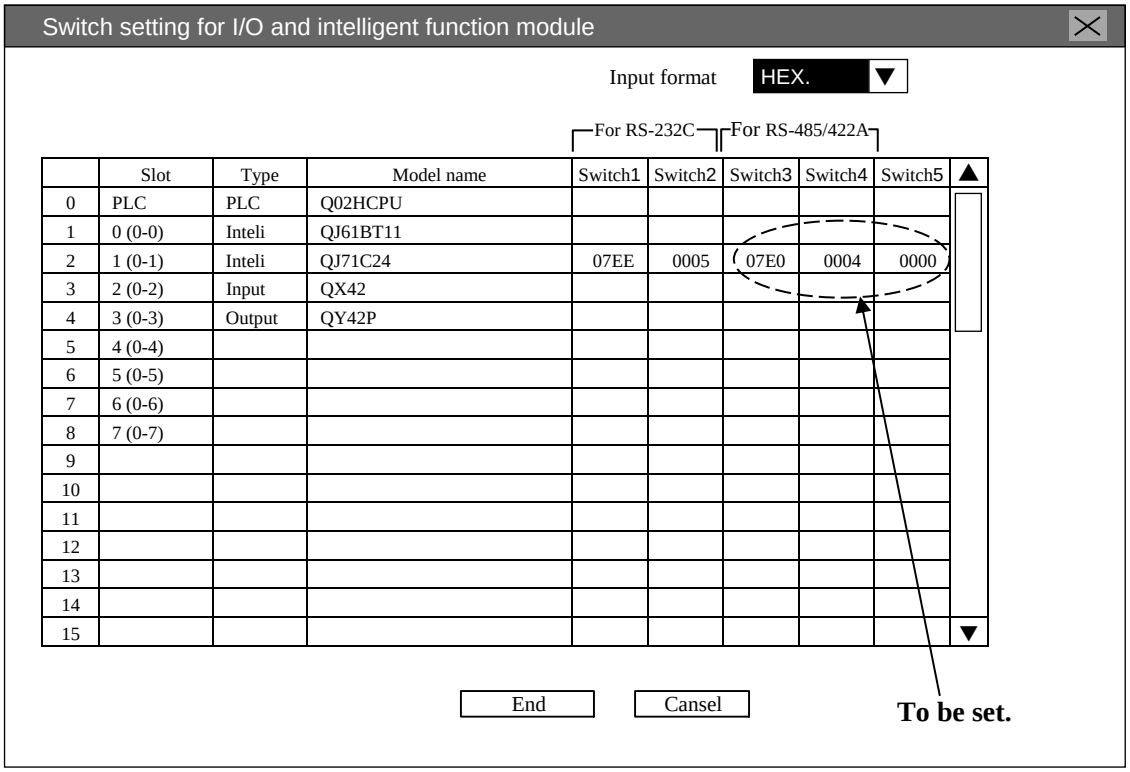
Setting item	Description
Writing during RUN	Allowed
Setting modification	Allowed
Communication rate	19200 bps
Communication protocol	MC protocol, Format 4
Station number	0

Setting in the serial communication module (QJ71C24) belonging to the MITSUBISHI MELSEC Q series do with the GX Developer of the MITSUBISHI MELSEC PLC programming software (SW□D5C-GPPW-E).
Setting set the following set value with switch setting for I/O and intelligent function module.

Switch 3: **07E0** * Switch 4: **0004** * Switch 5: **0000** * * Hexadecimal

[Setting procedure]
[GX Developer] → [PLC parameters] → [I/O assignment setting] → **Switch setting**

[Setting screen]



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- **Description Switches 1 to 5**

Switch number	Description	
Switch 1	b15 to b8	b7 to b0
	CH1 Communication rate setting	CH1 Transmission setting
Switch 2	CH1 Communication protocol setting	
Switch 3	b15 to b8	b7 to b0
	CH2 Communication rate setting	CH2 Transmission setting
Switch 4	CH2 Communication protocol setting	
Switch 5	Station number setting	

Set the transmission specifications and communication protocol of each interface using the combinations of setting values for each switch with 16-bit binary data.

- **Setting on switch 3 (CH2 Transmission setting)**

Bit	Description	OFF (0)	ON (1)	Setting	Set value
b0	Operation setting *	Independent	Link	0	0
b1	Data bit	7	8	0	
b2	Parity bit	No	Yes	0	
b3	Even/Odd parity	Odd	Even	0	
b4	Stop bit	1	2	0	E
b5	Sum check code	No	Yes	1	
b6	Write during RUN	Prohibited	Allowed	1	
b7	Setting modifications	Prohibited	Allowed	1	

* Must be set to OFF (0) on CH1

- **Setting on switch 3 (CH2 Communication rate setting)**

Communication rate (Unit: bps)	Bit position b15 to b8	Communication rate (Unit: bps)	Bit position b15 to b8
300	00H	14400	06H
600	01H	19200	07H
1200	02H	28800	08H
2400	03H	38400	09H
4800	04H	57600	0AH
9600	05H	115200	0BH

Set 19200 bps on communication rate. (Set value: 07H)

- **Setting on switch 4 (CH2 Communication protocol setting)**

Set number	Description	
0H	GX Developer connection	
1H	MC protocol	Format 1
2H		Format 2
3H		Format 3
4H		Format 4
5H		Format 5

Set number	Description
6H	Non procedure protocol
7H	Bidirectional protocol
8H	For linked operation setting
9H to DH	Setting prohibited
EH	ROM/RAM/switch test
FH	Individual station loopback test

Set MC protocol Format 4 on communication protocol setting. (Set value: 4H)

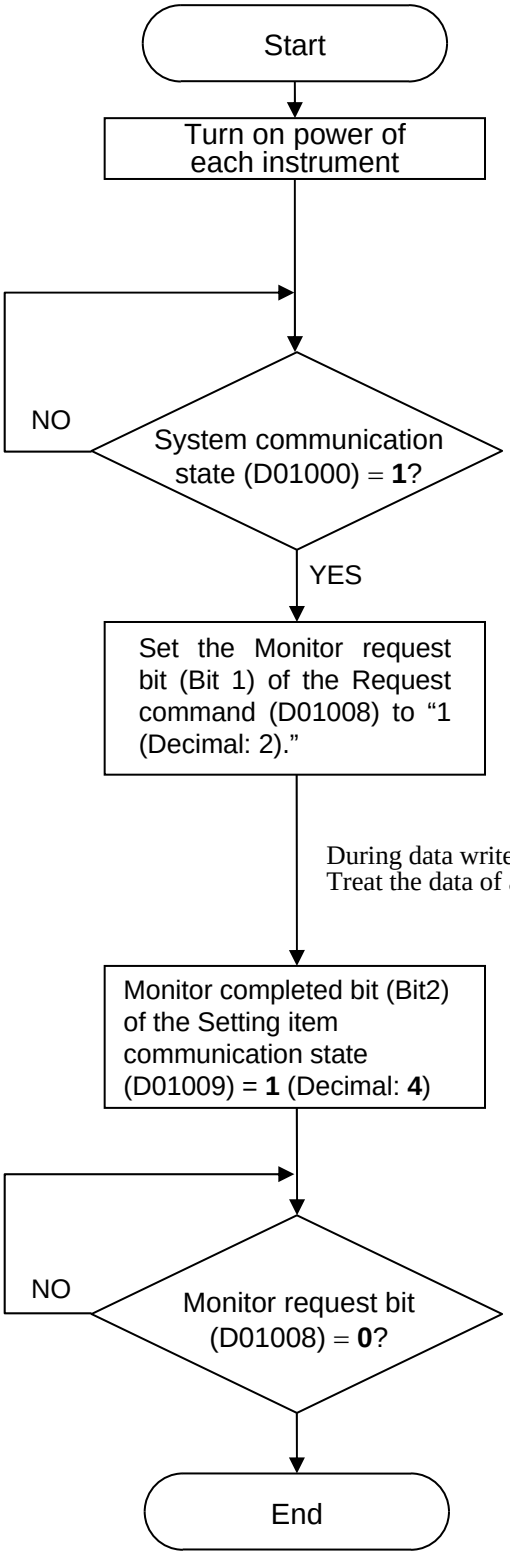
- **Setting on switch 5 (Station number setting)**

This setting is common for both CH1 and CH2 sides.
Set the station number to 0.

☞ The details of the switch setting for the PLC, refer to the instruction manual for the PLC being used.

6.7.8 Initial setting

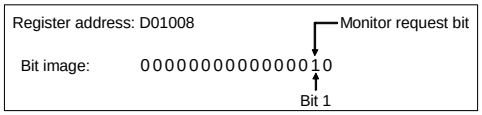
Change each set value of SRZ unit from the PLC after the initial settings are made.



Turn on the power of the SRZ unit, the PLC, and the host computer. The Z-COM module starts collecting data on function modules (Z-TIO, Z-DIO and Z-CT modules) jointed from the time when the power is turned on.
In addition, writing of the System data (monitor items) begins after the PLC communication start time (factory set value is 5 seconds) has passed.

When data collection is finished, the SRZ unit starts writing the communication data of the monitor group to the PLC.
When monitor group writing starts, System communication state changes to "**1**."
When the System communication state becomes "**1**," PLC communication can be performed.

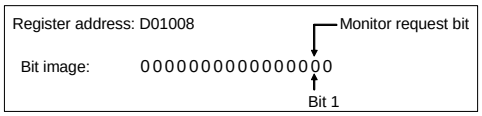
When the Monitor request bit (Bit 1) of Request command (**D01008)** of the PLC register is set to "**1** (Decimal: **2**)," the SRZ unit begins writing the setting group to the PLC.



During data write:
Treat the data of all items as inconsistent during the data write.

When writing is finished, the SRZ unit writes the communication state of the setting group to the Monitor completed bit (Bit 2) of the Setting item communication state (**D01009**) of the PLC.

If the Monitor request bit (Bit 1) of the Request command (**D01008**) of the PLC register is "**0**," this indicates that writing of data to the PLC is finished.



6.7.9 Data setting

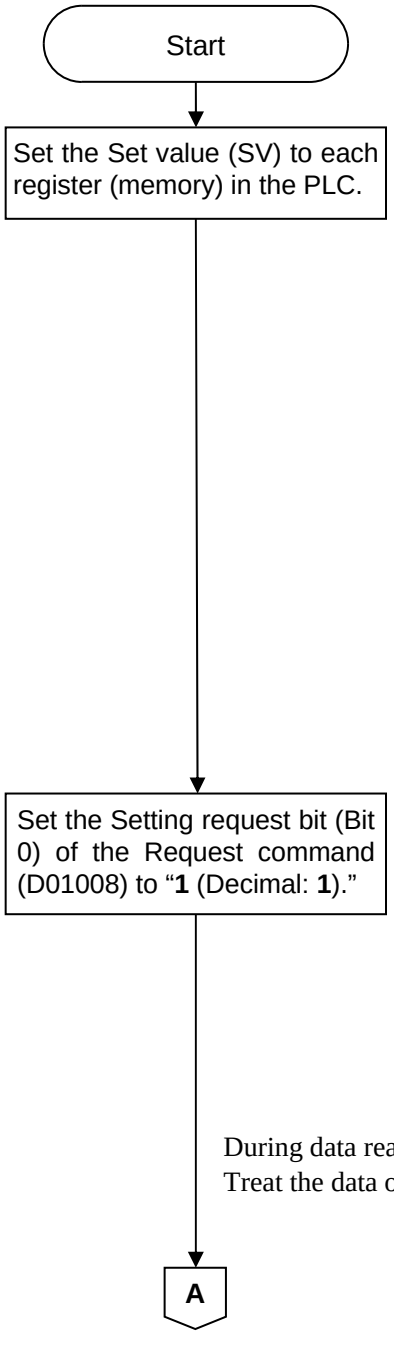
It is assumed that initial setting is finished.

If each set value of SRZ unit is changed from the PLC without setting the initial values, it is re-written to 0 with each set value of the PLC at that time set to 0.

■ Setting example

When set the Set value (SV) of SRZ unit as follows:

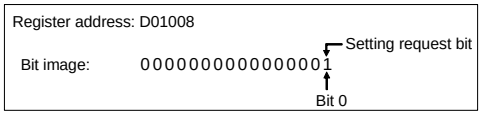
Set value (SV): CH1 = 100 CH2 = 100 CH3 = 110 CH4 = 110 CH5 = 120 CH6 = 120
CH7 = 130 CH8 = 130 CH9 = 140 CH10 = 140 CH11 = 150 CH12 = 150
CH13 = 80 CH14 = 80 CH15 = 50 CH16 = 50



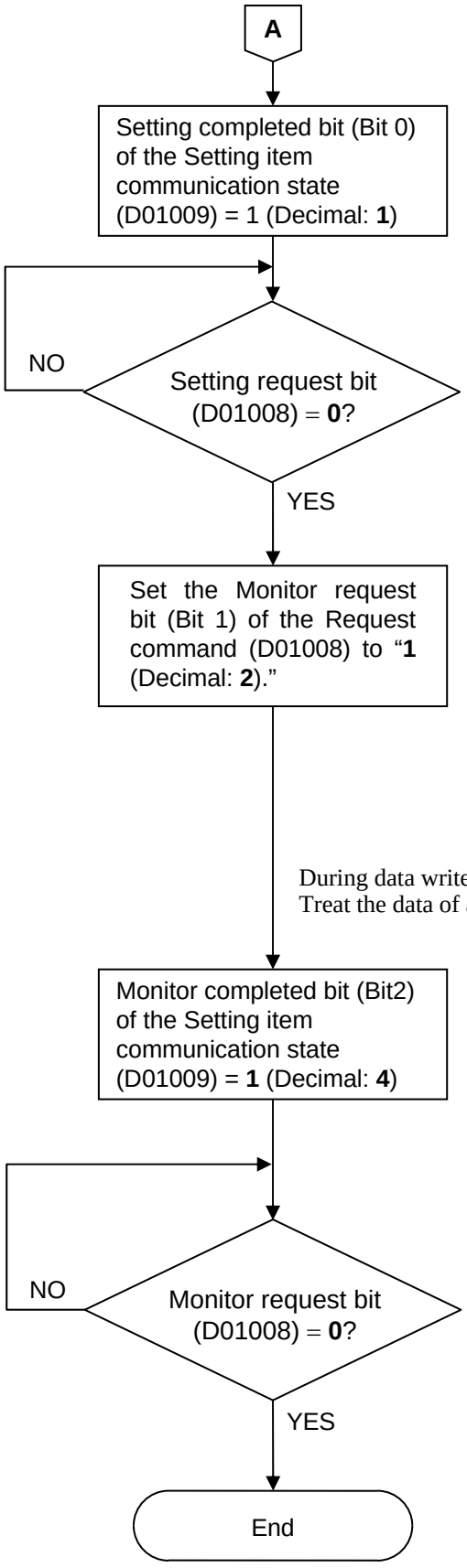
Register address of Set value (SV) (refer to P. 6-80)

Register address	Communication item	Set value
D01275	Set value (SV) CH1	100
D01276	Set value (SV) CH2	100
D01277	Set value (SV) CH3	110
D01278	Set value (SV) CH4	110
D01279	Set value (SV) CH5	120
D01280	Set value (SV) CH6	120
D01281	Set value (SV) CH7	130
D01282	Set value (SV) CH8	130
D01283	Set value (SV) CH9	140
D01284	Set value (SV) CH10	140
D01285	Set value (SV) CH11	150
D01286	Set value (SV) CH12	150
D01287	Set value (SV) CH13	80
D01288	Set value (SV) CH14	80
D01289	Set value (SV) CH15	50
D01290	Set value (SV) CH16	50

When the Setting request bit (Bit 0) of Request command (**D01008**) of the PLC register is set to "**1** (Decimal: **1**) ," the SRZ unit begins reading the setting group data set in the PLC register (memory).

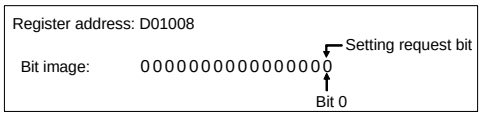


During data read:
Treat the data of all items as inconsistent during the data read.

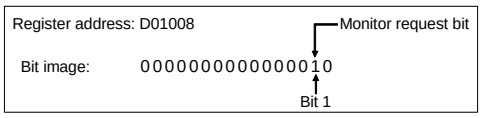


When reading of the setting group data ends, the SRZ unit writes the setting group communication state to the Setting completed bit (Bit 1) of PLC setting item communication state (**D01009**).

If the Setting request bit (Bit 0) of the Request command (**D01008**) of the PLC register is "**0**," this indicates that reading of data from the PLC is finished.



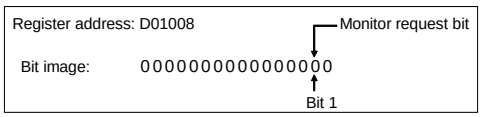
[Confirmation of setting data]
To confirm the data read by the SRZ unit from the PLC, the SRZ unit will begin writing the setting group data to the PLC when "**1**" (Decimal: **2**) is set in Monitor request bit (Bit 1) of Request command (**D01008)** of the PLC register.



During data write:
Treat the data of all items as inconsistent during the data write.

When writing is finished, the SRZ unit writes the communication state of the setting group to the Monitor completed bit (Bit 2) of the Setting item communication state (**D01009**) of the PLC.

If the Monitor request bit (Bit 1) of the Request command (**D01008**) of the PLC register is "**0**," this indicates that writing of data to the PLC is finished



TROUBLE SHOOTING

7

Solutions for Problems

This section explains possible causes and solutions if any abnormality occurs in the instrument. For any inquiries or to confirm the specifications of the product, please contact RKC sales office or the agent.

If it is necessary to replace a device, always strictly observe the warnings below.

⚠ WARNING

- To prevent electric shock or instrument failure, always turn off the system power before replacing the instrument.
- To prevent electric shock or instrument failure, always turn off the power before mounting or removing the instrument.
- 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.
- To prevent electric shock or instrument failure, do not touch the inside of the instrument.
- All wiring must be performed by authorized personnel with electrical experience in this type of work.

CAUTION

All wiring must be completed before power is turned on to prevent electric shock, instrument failure, or incorrect action. The power must be turned off before repairing work for input break and output failure including replacement of sensor, contactor or SSR, and all wiring must be completed before power is turned on again.

When replacing the module with a new one, always use the module with the same model code. If the module is replaced, it is necessary to re-set each data item.

■ Each module

Problem	Possible cause	Solution
FAIL/RUN lamp does not light up	Power not being supplied	Check external breaker etc.
	Appropriate power supply voltage not being supplied	Check the power supply
	Power supply terminal contact defect	Retighten the terminals
	Power supply section defect	Replace module
RX1/TX1 or RX2/TX2 lamp does not flash	Wrong connection, no connection or disconnection of the communication cable	Confirm the connection method or condition and connect correctly
	Breakage, wrong wiring, or imperfect contact of the communication cable	Confirm the wiring or connector and repair or replace the wrong one
	CPU section defect	Replace module
The FAIL/RUN lamp flashes (green): FAIL status	Data backup error	Turn the module's power OFF and ON again.
The FAIL/RUN lamp is lit (red): FAIL status	CPU section or power section defect	Replace module

■ PLC communication

Problem	Possible cause	Solution
• Even if "1" is set to the sitting request bit or monitor request bit in request command, transfer is not finished. Request command does not return to "0: Monitor" • RX1/TX1 lamp or RX2/TX2 lamp is lit, and it can be seen to communicate normally, but monitor value is not transferred to PLC • No response	Wrong connection, no connection or disconnection of the communication cable	Confirm the connection method or condition and connect correctly
	Breakage, wrong wiring, or imperfect contact of the communication cable	Confirm the wiring or connector and repair or replace the wrong one
	Mismatch of the setting data of Communication speed, Data bit configuration and protocol with those of the PLC	• Confirm the communication settings of Z-COM module DIP switch and set them correctly • If the communication settings of Z-COM module are set via Host or Loader communications, confirm the communication settings of Host communication and set them correctly.
	Wrong setting of PLC communication data	Confirm the PLC communication settings and set them correctly
		Setting of termination resistor in accordance with PLC or the insertion is done
	Setting of PLC becomes write inhibit	Setting of PLC is turned into write enable (Write enable in RUN, shift to monitor mode, etc.)
	Accesses outside the range of memory address of PLC (wrong setting of address)	Confirm the PLC communication environment setting and set them correctly
If two or more units are connected, no units after the second unit are recognized	COM module Link recognition time is short	Lengthen COM module link recognition time
When the setting request command of request command is set in "1," setting error (Bit 0 of setting item communication state) is become	Data rang error	Confirm the setting range of set value and set them correctly

☞ For the "PLC communication environment setting" and "COM module link recognition time," refer to **6.2.3 PLC communication environment setting (P. 6-12)** [MITSUBISHI MELSEC series], **6.3.3 PLC communication environment setting (P. 6-25)** [OMRON SYSMAC series] or **6.4.3 PLC communication environment setting (P. 6-38)** [YOKOGAWA FA-M3R].

■ RKC communication

Problem	Possible cause	Solution
No response	Wrong connection, no connection or disconnection of the communication cable	Confirm the connection method or condition and connect correctly
	Breakage, wrong wiring, or imperfect contact of the communication cable	Confirm the wiring or connector and repair or replace the wrong one
	Mismatch of the setting data of Communication speed and Data bit configuration with those of the host computer	Confirm the settings and set them correctly
	Wrong address setting	
	Error in the data format	Reexamine the communication program
	Transmission line is not set to the receive state after data send	
EOT return	The specified identifier is invalid	Confirm the identifier is correct or that with the correct function is specified. Otherwise correct it
	Error in the data format	Reexamine the communication program
NAK return	Error occurs on the line (parity bit error, framing error, etc.)	Confirm the cause of error, and solve the problem appropriately. (Confirm the transmitting data, and resend data)
	BCC error	
	The data exceeds the setting range	Confirm the setting range and transmit correct data
	The block data length of the transmission exceeds 129 bytes	Divide the block using ETB before sending it
	The specified identifier is invalid	Confirm the identifier is correct or that with the correct function is specified. Otherwise correct it

■ Modbus

Problem	Possible cause	Solution
No response	Wrong connection, no connection or disconnection of the communication cable	Confirm the connection method or condition and connect correctly
	Breakage, wrong wiring, or imperfect contact of the communication cable	Confirm the wiring or connector and repair or replace the wrong one
	Mismatch of the setting data of Communication speed and Data bit configuration with those of the host computer	Confirm the settings and set them correctly
	Wrong address setting	
	There is length of query message exceeds set range	
	A transmission error (overrun error, framing error, parity error or CRC-16 error) is found in the query message	Re-transmit after time-out occurs or verify communication program
	The time interval between adjacent data in the query message is too long, exceeding 24-bit time	
Error code 1	Function cod error (Specifying nonexistent function code)	Confirm the function code
Error code 2	When the mismatched address is specified	Confirm the address of holding register
Error code 3	• When the specified number of data items in the query message exceeds the maximum number of data items available • When the data written exceeds the setting range	Confirm the setting data
Error code 4	Self-diagnostic error	Turn off the power to the instrument. If the same error occurs when the power is turned back on, please contact RKC sales office or the agent.

8

SPECIFICATIONS

8.1 Communication Specifications

■ PLC communication

Interface: Communication 2 (COM. PORT3, COM. PORT4):
Based on EIA, RS-422A standard
Based on EIA, RS-485 standard *
* OMRON SYSMAC series cannot be used.

Connection method: RS-422A 4-wire system, half-duplex multi-drop connection
RS-485 * 2-wire system, half-duplex multi-drop connection
* OMRON SYSMAC series cannot be used.

Synchronous method: Start/Stop synchronous type

Communication speed: 4800 bps. 9600 bps, 19200 bps, 38400 bps

Data bit configuration: Start bit: 1
Data bit: 7 or 8
Parity bit: Without, Odd or Even
Stop bit: 1 or 2

Protocol:
- MITSUBISHI MELSEC series special protocol
  - A-compatible 1C frame (format 4), AnA/AnUCPU common command (QR/QW)
    [AnA, AnU, QnA, Q, FX3U or FX3UC series]
  - QnA-compatible 3C frame (format 4), command (0401/1401)
    The available register is only a ZR register.
    [QnA or Q series]
  - A-compatible 1C frame (format 4), ACPU common command (WR/WW)
    [A, FX2N, FX2NC, FX3U or FX3UC series]
- OMRON SYSMAC series special protocol
  - C mode command (RD/WD, RE/WE)
- YOKOGAWA FA-M3R special protocol
  - Usage command: WRD/WWR
    Checksum: None

Maximum connections: Four SRZ units per communication port of PLC
(Up to one Z-COM module can be connected to one SRZ unit)

Usable PLC type:
- MITSUBISHI MELSEC series
  - Computer link unit
    AJ71UC24, A1SJ71UC24-R4, A1SJ71C24-R4, etc.
    The module which A-compatible 1C frame (format 4) or QnA-compatible 3C frame (format 4) can use.
  - Serial communication unit
    AJ71QC24N, A1SJ71QC24N, QJ71C24, etc.
    The module which A-compatible 1C frame (format 4) or QnA-compatible 3C frame (format 4) can use.
  - Adapter
    FX0N-485ADP, FX2NC-485ADP, FX3U-485ADP
  - Expanded function board
    FX2N-485BD, FX3U-485-BD

- 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), etc.
  - Serial communication unit
    CJ1W-SCU41 (SYSMAC CJ1 series), etc.

- YOKOGAWA FA-M3R
  - Personal computer link module
    F3LC11-2F, F3LC11-2N

■ RKC communication (Host communication)

Interface: Communication 1 (COM. PORT1, COM. PORT2):
Based on EIA, RS-422A standard
Based on EIA, RS-485 standard
Communication 2 (COM. PORT3, COM. PORT4):
Based on EIA, RS-422A standard
Based on EIA, RS-485 standard

Connection method: RS-422A 4-wire system, half-duplex multi-drop connection
RS-485 2-wire system, half-duplex multi-drop connection

Synchronous method: Start/Stop synchronous type

Communication speed: 4800 bps, 9600 bps, 19200 bps, 38400 bps

Data bit configuration: Start bit: 1
Data bit: 7 or 8
Parity bit: Without, Odd or Even
Stop bit: 1

Protocol: Based on ANSI X3.28-1976 subcategories 2.5 and B1
Polling/Selecting type

Error control: Vertical parity (with parity bit selected)
Horizontal parity (BCC check)

Data types: ASCII 7-bit code

Interval time: 0 to 250 ms

Maximum connections: 16 SRZ units per communication port of host computer
(Up to one Z-COM module can be connected to one SRZ unit)

■ Modbus (Host communication)

Interface: Communication 1 (COM. PORT1, COM. PORT2):
Based on EIA, RS-422A standard
Based on EIA, RS-485 standard
Communication 2 (COM. PORT3, COM. PORT4):
Based on EIA, RS-422A standard
Based on EIA, RS-485 standard

Connection method: RS-422A 4-wire system, half-duplex multi-drop connection
RS-485 2-wire system, half-duplex multi-drop connection

Synchronous method: Start/Stop synchronous type

Communication speed: 4800 bps, 9600 bps, 19200 bps, 38400 bps

Data bit configuration: Start bit: 1
Data bit: 8
Parity bit: Without, Odd or Even
Stop bit: 1

Protocol: Modbus

Signal transmission mode:
Remote Terminal Unit (RTU) mode

Function codes: 03H Read holding registers
06H Preset single register
08H Diagnostics (loopback test)
10H Preset multiple registers

Error check method: CRC-16

Error codes: 1: Function code error
(An unsupported function code was specified)
2: When the mismatched address is specified.
3: • When the data written exceeds the setting range.
• When the specified number of data items in the query message exceeds the maximum number of data items available
4: Self-diagnostic error response

Interval time: 0 to 250 ms

Maximum connections: 16 SRZ units per communication port of host computer
(Up to one Z-COM module can be connected to one SRZ unit)

■ Loader communication function

Interface:	Connection with a Loader communication cable for our USB converter COM-K (sold separately).
Synchronous method:	Start/Stop synchronous type
Communication speed:	38400 bps
Data bit configuration:	Address: 0 Start bit: 1 Data bit: 8 Parity bit: Without Stop bit: 1
Protocol:	Based on ANSI X3.28-1976 subcategories 2.5 and B1
Maximum connections:	1 module

8.2 Product Specifications

■ Indication lamp

Number of indicates: 3 points

Indication contents:
- Operation state indication (1 point)
  - When normal (RUN): A green lamp is on
  - Self-diagnostic error (FAIL): A green lamp flashes
  - Instrument abnormality (FAIL): A red lamp is on
- Communication state indication (2 points)
  - During data send or receive (RX1/TX1): A green lamp is on
  - During data send or receive (RX2/TX2): A green lamp is on

■ Self-diagnostic function

Function stop: Data backup error
(It can be checked by communication item “Error code.”)

Action stop (Error state is not communicated [Operation: Impossible]):
Power supply voltage monitoring
Watchdog timer

Instrument status: Display:
- A green lamp flashes
  (Function stop by self-diagnostic function)
- A red lamp is on
  (Action stop by self-diagnostic function)

■ Power

Power supply voltage: 21.6 to 26.4 V DC [Including power supply voltage variation]
(Rating 24 V DC)

Power consumption (at maximum load):
30 mA max. (at 24 V DC)
Rush current: 10 A or less

■ Standard

Safety standards:
- UL: UL 61010-1
- cUL: CAN/CSA-C22.2 No.61010-1

CE marking:
- LVD: EN61010-1
  OVERVOLTAGE CATEGORYII,
  POLLUTION DEGREE 2,
  Class II (Reinforced insulation)
- EMC: EN61326-1

RCM: EN55011

■ General specifications

Insulation resistance: 20 MΩ or more at 500 V DC (Between each insulation block)

Withstand voltage:

Time: 1 min.	①	②	③
①Grounding terminal			
②Power terminal	750 V AC		
③COM. PORT1, COM. PORT2	750 V AC	750 V AC	
④COM. PORT3, COM. PORT4	750 V AC	750 V AC	750 V AC

Power failure: A power failure of 4 ms or less will not affect the control action.

Memory backup: Backed up by non-volatile memory (FRAM)
Number of writing: Approx. ten billion times or more
Data storage period: Approx. 10 years

Allowable ambient temperature: −10 to +50 °C

Allowable ambient humidity: 5 to 95 %RH
(Absolute humidity: MAX.W.C 29.3 g/m^3 dry air at 101.3 kPa)

Installation environment conditions:
Indoor use
Altitude up to 2000 m

Transportation and Storage environment conditions:
Vibration:
- Amplitude: < 7.5 mm (2 to 9 Hz)
- Acceleration: < 20 m/s^2 (9 to 150 Hz)

Each direction of XYZ axes

Shock: Height 800 mm or less
Temperature:
- At storage: −25 to +70 °C
- At transport: −40 to +70 °C

Humidity: 5 to 95 %RH (Absolute humidity: MAX.W.C 29.3 g/m^3 dry air at 101.3 kPa)
Non condensing
Storage period: Within the warranty period

Mounting and Structure: Mounting method: DIN rail mounting or Panel mounting
Case material: PPE [Flame retardancy: UL94 V-1]
Panel sheet material: Polyester

Weight: Approx. 110 g

MEMO

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