MECHATROLINK Communication Converter

COM-MY Instruction Manual

IMR02E02-E2

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

This manual describes the operation method of the COM-MY. For the installation and the communication data, please read if necessary the following separate manuals.

- COM-MY Installation Manual (IMR02E01-E□): Enclosed with COM-MY
- COM-MY Communication Data List (IMR02E03-E□): Enclosed with COM-MY
- COM-MY SRZ Communication Data List (IMR02E04-E□): Separate (Download or sold separately)

The above manuals can be downloaded from our website:
URL: http://www.rkcinst.com/english/manual_load.htm

1. HANDLING PROCEDURES

Communication setting of COM-MY
→ See **2. COMMUNICATION SETTING OF COM-MY**

Address setting of the SRZ function module
→ See **3. COMMUNICATION SETTING OF SRZ FUNCTION MODULE**

Mounting and wiring
- See **COM-MY Installation Manual (IMR02E01-E□)**
- See **Z-TIO INSTRUCTION MANUAL (IMS01T01-E□)**

PLC (master) Self-configuration
→ See **4.3 Preparing Programming Software MPE720**
→ See **4.4 MP2300 (Master) Self-configuration**

Data setting
→ See **4.5 I and O Registers Read/Write**

2. COMMUNICATION SETTING OF COM-MY

Set communication setting before mounting and wiring of the COM-MY.

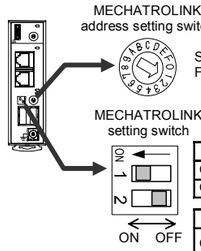
CAUTION

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

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

2.1 Station Address and Transmission Bytes Setting

Set a station address and number of transmission bytes of MECHATROLINK. For this setting, use a small blade screwdriver.



Station address low-order digit setting (Set value × 1H)
Factory set value: 1

1	Number of transmission bytes
OFF	17 bytes
ON	32 bytes [Factory set value]

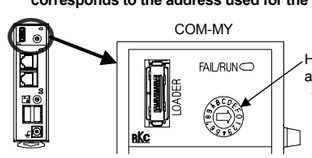
2	Station address high-order digit setting
OFF	60H (Station address = 60H+ address setting switch set value) [Factory set value]
ON	70H (Station address = 70H+ address setting switch set value)

Station address setting range:
60H to 7FH [96 to 127: Decimal] (Factory set value: 61 H)

2.2 Unit Address Setting

Set a unit address of host communication. For this setting, use a small blade screwdriver.

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

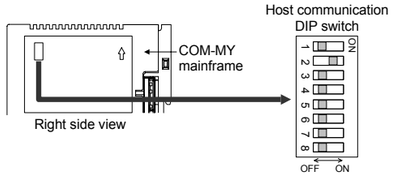


Host communication address setting switch
Setting range: **0 to F** [0 to 15: Decimal]
Factory set value: **0**

2.3 Host Communication DIP Switch Setting

Use the host communication DIP switch on the right side of COM-MY to select communication speed, data bit configuration, protocol and host communication DIP switch setting validity/invalidity.

The data change of switch No. 1 to 3 become valid the power of the COM-MY is turned on again or when control is switched from STOP to RUN. The data change of switch No. 7, 8 become valid the power of the COM-MY is turned on again.



1	2	Host communication speed	
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	
OFF	RKC communication Data 8-bit, without parity, Stop 1-bit	[Factory set value]
ON	Modbus Data 8-bit, without parity, Stop 1-bit	

7	MECHATROLINK communication speed	
OFF	10 Mbps (MECHATROLINK-II)	[Factory set value]
ON	4 Mbps (MECHATROLINK-I)	

8	Host communication DIP switch (excluding the switch No.7) setting validity/invalidity	
OFF	Valid (Host communication DIP switch settings are valid)	[Factory set value]
ON	Invalid (Settings via host communication or loader communication are valid)	

Switch No. 7 is always valid, regardless of the setting of Switch No. 8.

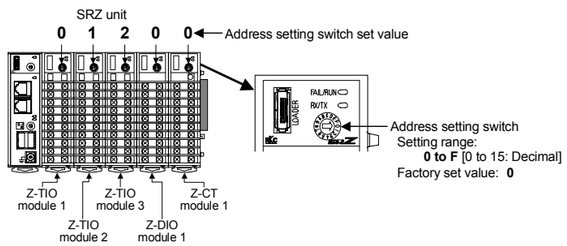
4	5	6	
OFF	OFF	OFF	Fixed (Do not change)

3. COMMUNICATION SETTING OF SRZ FUNCTION MODULE

3.1 Address Setting of SRZ Function Module

Only make the module address setting to make the Z-TIO, Z-DIO and Z-CT module communication settings. The SRZ unit performs internal communication (RS-485) between the COM-MY and the function module (Z-TIO, Z-DIO, Z-CT module), so the communication protocol, communication speed and data bit configuration do not need to be set. A module address is set for each function module type.

To avoid problems or malfunction, do not duplicate an address in a function module of the same type on the same communication line.



Address setting switch
Setting range:
0 to F [0 to 15: Decimal]
Factory set value: **0**

3.2 For the SRZ Unit's Channel

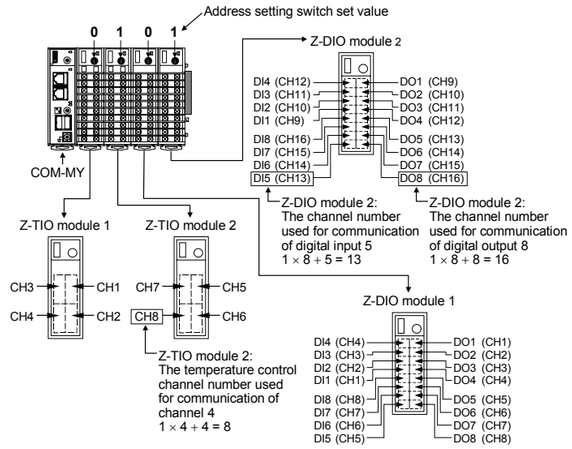
Setting the function module (Z-TIO, Z-DIO, Z-CT module) address determines the channel number used for communication. To each function module address, the relevant channel is assigned.

Each channel number can be calculated from the following equation.

Channel number of communication =
[Address setting switch set value [a]] × [Max. 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."
For the Z-DIO module, it is calculated by "8."
For the Z-CT module, it is calculated by "12."

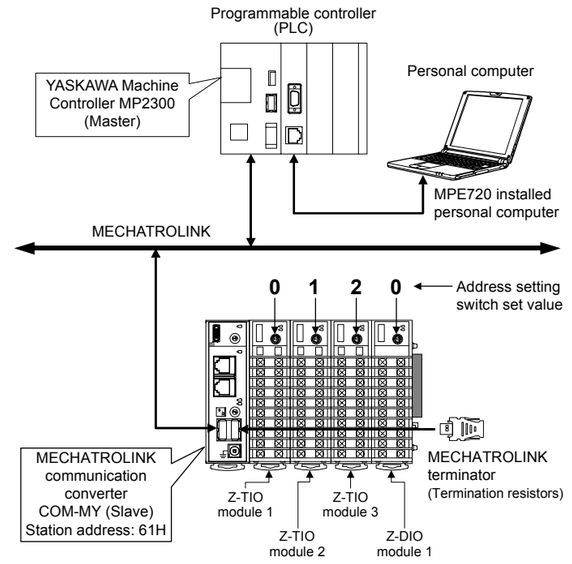
Example: When 2 Z-TIO modules (4-channel type) and 2 Z-DIO modules are joined



4. USAGE EXAMPLE

In this usage example, described the following system configuration.

4.1 System Configuration



■ Use instruments

- MECHATROLINK communication converter: COM-MY 1
- Module type controller SRZ: Z-TIO module ..... 3 (4-channel type: 2, 2-channel type: 1)
  Z-DIO module 1
- YASKAWA Machine Controller MP2300
  - Basic module MP2300 (JEPMC-MP2300)
  - Communication module 218IF-01 (JAPMC-CM2300)
- MECHATROLINK cable (JEPMC-W6002-01, YASKAWA product)
- MECHATROLINK terminator (JEPMC-W6022, YASKAWA product)
- Personal computer
  Software of the following must be installed in a personal computer.
  - Programming software MPE720 (Version 4.41A or later, YASKAWA product)
- Communication cable (for RS-232C connection, JEPMC-W5311-03, YASKAWA product)

For the personal computer to be connected to the PLC, see Instruction Manual of MP2300 and MPE720.

4.2 Use Instruments Setting

Set the COM-MY and Z-TIO/Z-DIO module as the following.

■ COM-MY setting

Station address: 61H [Factory set value]
Number of transmission bytes: 32 bytes [Factory set value]
Communication speed: 10 Mbps (MECHATROLINK-II) [Factory set value]

For setting method, see **2. COMMUNICATION SETTING OF COM-MY**.

■ Z-TIO/Z-DIO module setting

Module address: Z-TIO module: 4-channel type: 0, 1
2-channel type: 2
Z-DIO module: 0

For setting method, see **3. COMMUNICATION SETTING OF SRZ FUNCTION MODULE**.

4.3 Preparing Programming Software MPE720

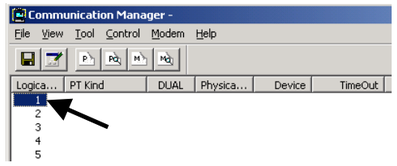
In order to connect a computer to the MP2300, configure the PLC folder and the communication process of the programming software MPE720.
These settings are not required if the communication settings have already been made.

■ Communication process settings

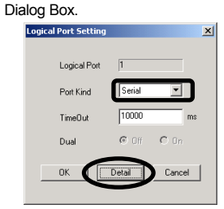
The example of connecting by serial communication is described below.

1. Open the **YE_Applications** Folder and double-click the **Communication Manager** icon. When the Communication Manager is started, the **Communication Process** icon will be displayed on the task tray at the right bottom of the screen. Double-click the **Communication Process** icon to open the **Communication Manager** Window.

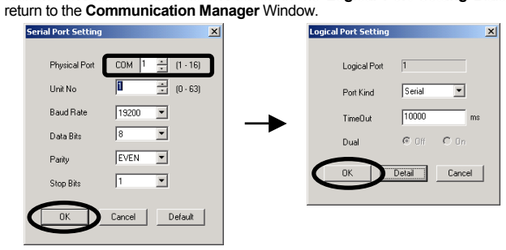
2. Double-click *Logical PT* number **1** in the **Communication Manager** Window.



3. Select **Serial** under *Port Kind* and then click **Detail** Button in the **Logical Port Setting** Dialog Box.



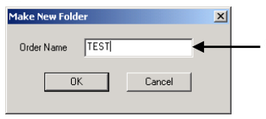
4. Specify the COM port that will be used for serial communication in the *Physical Port* and click the **OK** button. Click the **OK** button in the **Logical Port Setting** Dialog Box to return to the **Communication Manager** Window.



5. Select the menu command **File** → **Save** to save the communication port settings.
6. Exit the **Communication Manager** Window and restart to validate the settings.

■ Create the order folder and controller folder

1. Start the MPE720.
2. Select **(root)** at the left of the **File Manager** Window. Right-click the mouse and select **New** → **Order Folder**.
3. Enter an Order Folder name and click the **OK** Button in the **Make New Folder** Dialog Box.

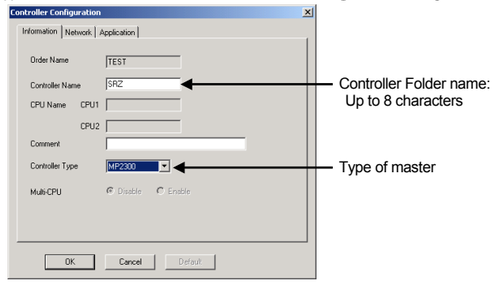


Order Folder name:
Up to 8 characters

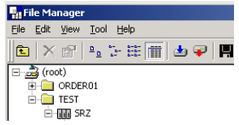
4. Select the Order Folder created in step *3*. Right-click the mouse and select **Create New Folder** → **Controller Folder**.

(Continued on the next page ➔)

5. Enter a Controller Folder name under *Controller Name*, select **MP2300** under *Controller Type*, and click the **OK** Button in the **Controller Configuration** Dialog Box.



6. A new Controller Folder will be created for MP2300.



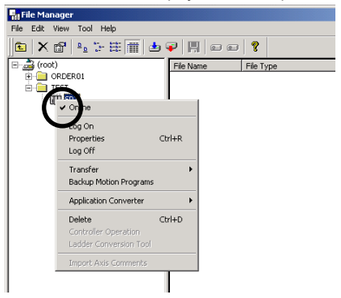
4.4 MP2300 (Master) Self-configuration

Execute self-configuration of the MP2300 (master) machine controller to make the MP2300 recognize the COM-MY (slave).
Self configuration is executed from the programming software MPE720.

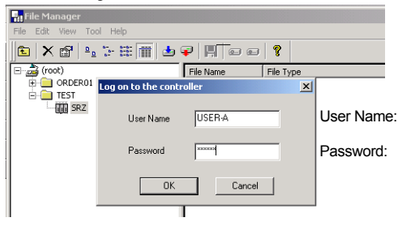
■ Execute self-configuration

1. Connect the MP2300 and the COM-MY with MECHATROLINK, and switch on the power of the MP2300 and the COM-MY.
2. Start the MPE720.
3. Right-click Controller Folder in the **File Manager** Window, select the **Online** checkbox, and select **Log On**.

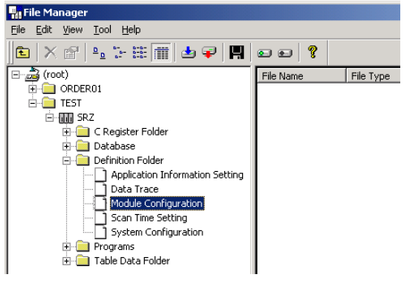
   Online (**Online** checkbox is selected):
   References the MP2300 main unit.
   Offline (**Online** checkbox is not selected):
   References the project in the computer.



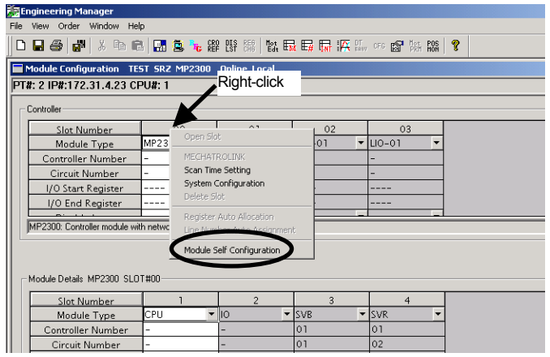
4. Enter User Name and Password, and click the **OK** Button in the **Log on to the controller** Dialog Box.



5. In the **File Manager** Window, select the Controller folder → **Definition folder** → **Module Configuration**. Double-click the **Module Configuration**.



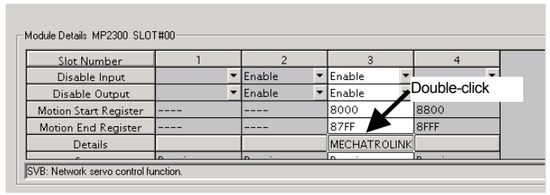
6. Right-click the numeric cell (No. 00 in the illustration below) on the *Slot Number* line where the *Module Type* line is MP2300 in the *Controller* area of the **Engineering Manager** Window. Select **Module Self Configuration** in the menu that appears to execute self-configuration.



7. Executing self-configuration causes the MP2300 to automatically recognize the connected COM-MY (slave). Self-configuration ends after several seconds.
8. Select the menu command **File** → **Save & Save to Flash** to save the module configuration definitions.

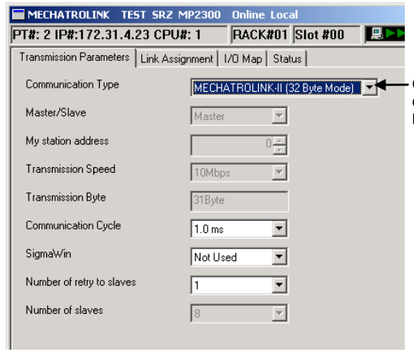
■ Checking the connection

1. Double click the **MECHATROLINK** cell on the *Details* line where the *Module Type* line is SVB (COM-MY) in the *Module Details* area of the **Engineering Manager** Window.

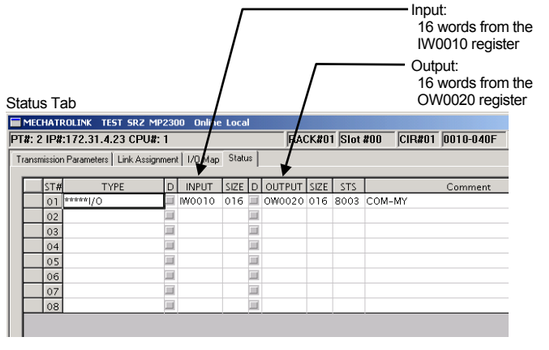


2. The **MECHATROLINK** window will open to let you check the connection status.
   In the following illustration, COM-MY is connected by MECHATROLINK-II, and input of 16 words (MECHATROLINK response) from the IW0010 register and output of 16 words (MECHATROLINK command) from the OW0020 register are assigned.

Transmission Parameter Tab



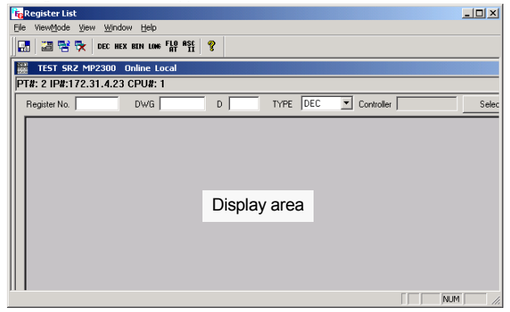
Status Tab



4.5 I and O Registers Read/Write

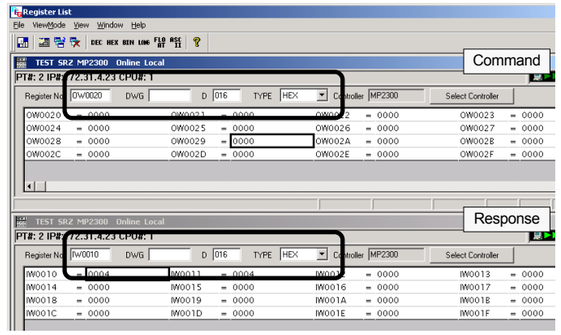
After self-configuration is executed in section **4.4** (IW0010 to IW001F, OW0020 to OW002F), the procedure for register (I/O) read/write by Register List is indicated.

1. Log on online to the MPE720.
   ☞ See Step *1* to *4* of ■ **Execute self-configuration**.
2. In the **File Manager** Window, select the menu command **Tool** → **Register List**.
   The **Register List** Window appears.



3. Set the following parameters in the **Register List** Window and then click anywhere in the display area. The contents of the registers will be displayed.
   Register No.: Sets the register number to start the display.
   D: Sets the number of registers to display.
   TYPE: Sets the display type (BIN, DEC, HEX or ASCII).

   Setting example:
   Upper section: Register No.: OW0020 D:16 TYPE: HEX
   → OW0020 to OW002F (MECHATROLINK command)
   Lower section: Register No.: IW0010 D:16 TYPE: HEX
   → IW0010 to IW001F (MECHATROLINK response)



4. Read and write of data.

■ Data read

Example: Reading the measured value (PV) in a configuration with one Z-TIO module (4 channels) connected.

1. Set 01FCH (measured value CH1) in OW0021 (2nd word: DATA_NO data item specification).
   ☞ For the data set in the data item specification, see Register Address in the **COM-MY Communication Data List (IMR02E03-E□)**.
2. Set 0010H in OW0020 (lower byte of 1st word: SUB_COM sub-command).
   0010H (0000000000010000: Binary):
   Data size 000, Sequence number 01, Read specification 0

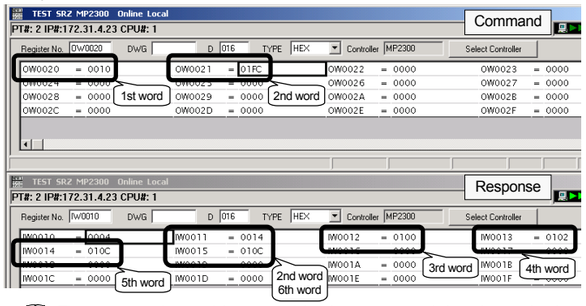
   📖 The upper byte of the command 1st word is reserved by the system. Do not write to this byte.

   Sub command (SUB_COM) bit configuration (The lower byte of the command 1st word)

Bit No.	Name	Data range
b0 to 3	SIZE	17 byte-mode: 0 to 6 32 bye-mode: 0 to 13 (0 or value exceeding the maximum number: Maximum number is read or written) Specify the data size.
b4, b5	SEQ_NO	0 to 3 Specify a sequence number different from the current sequence number. In the example, if the current number is 0, specify 1.
b6	Unused	
b7	RW	0: Read specification 1: Write specification Specify read/write attribute of data.

3. The data is displayed in the response.

Example of data read



📖 The response 1st word is reserved by the system, and thus the read value should be disregarded.

In this example, the response below is displayed.
IW0011 (2nd word: STATUS): 0014H *
IW0012 (3rd word: READ_DATA1) : CH1 measured value
IW0013 (4th word: READ_DATA2) : CH2 measured value
IW0014 (5th word: READ_DATA3) : CH3 measured value
IW0015 (6th word: READ_DATA4) : CH4 measured value

* 0014H (0000000000010100: Binary):
Alarm (0: Normal), Warning (0: Normal), Can accept command 1, Sequence number 01, Setting write normal end 0, Read specification 0

STATUS bit configuration

Bit No.	Name	Data range
b0	ALARM	0: Normal 1: Error (Communication error or Instrument abnormality) Alarm states.
b1	WARNG	0: Normal 1: Warning (Controller communication error) Warning states.
b2	CMDRDY	0: Cannot accept command (Busy: during processing) 1: Can accept command (Ready) Command states.
b3	Unused	
b4, b5	SEQ_NO	0 to 3 Sequence number.
b6	SETERR	0: Setting write normal end 1: Setting write error end (abnormal data corruption) State of last executed setting processing.
b7	RW	0: Read specification 1: Write specification Read/write attribute of data.
b8 to 15	Unused	

■ Data wirite

Example: Writing 200 °C to the set values (SV) of CH1-4 in a configuration with one Z-TIO module (4 channels) connected.

1. Set 0ADCH (set value CH1) in OW0021 (2nd word: DATA_NO data item specification).
   ☞ For the data set in the data item specification, see Register Address in the **COM-MY Communication Data List (IMR02E03-E□)**.
2. Set 00C8H (200 °C) in OW0022 to OW0025 (3rd to 6th words: WRITE_DATA1 to WRITE_DATA4).
3. Set 00A4H in OW0020 (lower byte of 1st word: SUB_COM sub-command).
   00A4H (0000000010100100: Binary):
   Data size 4 (0100: Binary), Sequence number 02 (10: Binary), Write specification 1

   📖 The upper byte of the command 1st word is reserved by the system. Do not write to this byte.
4. The written data is displayed in the response.

■ Exception operation

● When power is turned ON

During initialization after the power is turned on, CMDRDY bit (b2) of STATUS is 0 (commands cannot be accepted). If an I/O write is attempted at this time, it will be disregarded. If an I/O read is attempted, 0 will be returned.

● When a device error occurs

When ALARM (error code) is other than 00H, or the WARNG bit (b1) or ALARM bit (b1) of STATUS is 1 (error), this indicates that the device is in an error condition. If an I/O write is attempted at this time, it will be disregarded. If an I/O read is attempted, 0 will be returned.

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