


5. POLLING I/O COMMUNICATION

COM-JH has supported "Polling I/O communication" and "Explicit message communication" as a communication method of DeviceNet. Details of polling I/O communication are shown below.

 For Explicit message communication, see **COM-JH [For SRZ] Instruction Manual (IMR01Y36-E□)**.

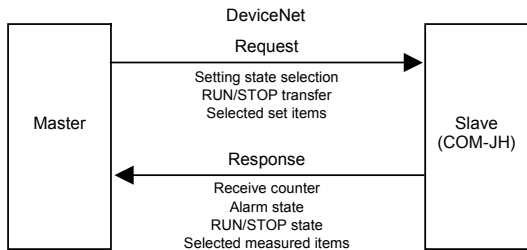
■ Communication outline

Polling I/O communication is the communication that master and slave always execute transmission and reception of data. Set the following items before communication start.

- Communication items (setting items and measured items)
- Number of communication controllers
- Number of communication data items

Polling made once enables the following data items to be read or written via polling I/O communication.

Request: setting data items (OUT)	Response: measured data items (IN)
Setting state selection	Receive counter
RUN/STOP transfer	Alarm state
Selected set items	RUN/STOP state
	Selected measured items



Outline of polling I/O communication



For data processed in actual communication, its decimal point is ignored. In addition, data with a minus sign is expressed as 2's complement data.

■ Request: setting data items (OUT)

A master transmits data of the following for slave (COM-JH).

Communication data (setting data items) contents

No.	Items	Data range
1	Setting state selection (All controller)	Bit data b0: Data setting disabled/enabled 0: Depending on the setting contents of communication data No. 2 and No. 3 1: All-controller setting enabled (include RUN/STOP) b1 to 15: Unused [Decimal number: 0 to 1]
2	Setting state selection (Controller 1 to 16)	Bit data b0 to 15: Data setting disabled/enabled (Controller 1 to 16) 0: Setting disabled 1: Setting enabled [Decimal number: 0 to 65535]
3	Setting state selection (Controller 17 to 31, RUN/STOP)	Bit data b0 to 14: Data setting disabled/enabled (Controller 17 to 31) b15: RUN/STOP transfer disabled/enabled 0: Setting disabled 1: Setting enabled [Decimal number: 0 to 65535]
4	RUN/STOP transfer (Controller 1 to 16)	Bit data b0 to 15: RUN/STOP transfer * (Controller 1 to 16) 0: STOP 1: RUN [Decimal number: 0 to 65535]
5	RUN/STOP transfer (Controller 17 to 31)	Bit data b0 to 14: RUN/STOP transfer * (Controller 17 to 31) 0: STOP 1: RUN b15: Unused [Decimal number: 0 to 32767]
On and after 6	Selected set items Setting items are set by the configuration tool or via Explicit message communication are assigned by the number of controllers similarly set. [Factory set value: Set value (SV)]	Same as the range of setting items selected

* It is possible to change the logic of RUN/STOP by Explicit message communication.



- Communication data Nos. 1 to 5 (corresponding to 5 words) are fixed communication data items.
- In order to validate data after communication data No. 6, it is necessary to set the controllers corresponding to communication data Nos. 2 and 3 to "1: Setting enabled" or to communication data No. 1 to "1: All-controller setting enabled."



For setting procedure and detail of setting items, see **COM-JH [For SRZ] Instruction Manual (IMR01Y36-E□)**.

■ Response: measured data items (IN)

A master transmits data of the following for slave (COM-JH).

Communication data (measured data items) contents

No.	Items	Data range
1	Receive counter ¹	0 to 65535 Increments each time the COM-JH receives the setting item (OUT) data.
2	Alarm state (Controller 1 to 16)	Bit data b0 to 15: Alarm state (Controller 1 to 16) 0: Alarm OFF 1: Alarm ON [Decimal number: 0 to 65535]
3	Alarm state (Controller 17 to 31, Setting update flag / Flag during polling I/O communication updating)	Bit data b0 to 14: Alarm state (Controller 17 to 31) 0: Alarm OFF 1: Alarm ON b15: Setting update flag / Flag during polling I/O communication updating ² 0: Setting update is completed 1: During setting update [Decimal number: 0 to 65535]
4	RUN/STOP state (Controller 1 to 16)	Bit data b0 to 15: RUN/STOP state ³ (Controller 1 to 16) 0: STOP 1: RUN [Decimal number: 0 to 65535]
5	RUN/STOP state (Controller 17 to 31)	Bit data b0 to 14: RUN/STOP state ³ (Controller 17 to 31) 0: STOP 1: RUN b15: Unused [Decimal number: 0 to 32767]
On and after 6	Selected measured items Measured items set by the configuration tool or via Explicit message communication are assigned by the number of controllers similarly set. [Factory set value: Measured value (PV)]	Same as the range of measured items selected

¹ The counter is reset when the power is turned on or when it exceeds 65535.

² OR operation is performed to the "Setting update flag" and the "Flag during polling I/O communication updating."

³ It is possible to change the logic of RUN/STOP by Explicit message communication.



Communication data Nos. 1 to 5 (corresponding to 5 words) are fixed communication data items.



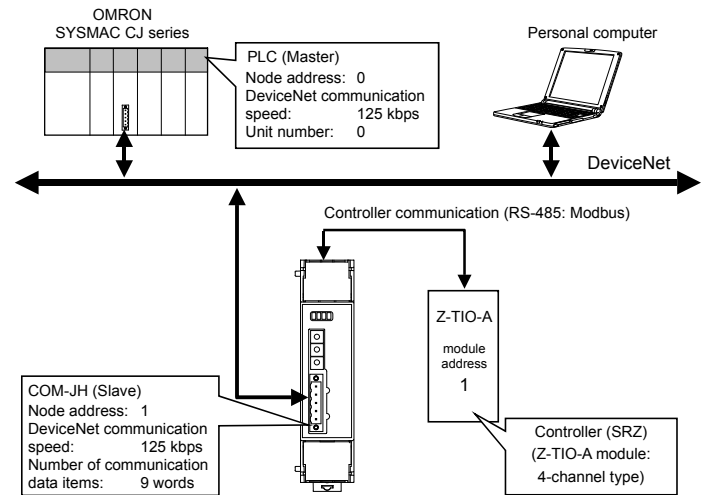
For setting procedure and detail of measured items, see **COM-JH [For SRZ] Instruction Manual (IMR01Y36-E□)**.

6. APPLICATION EXAMPLE

An example of using DeviceNet communication is explained when the COM-JH is connected to a PLC as a master.

6.1 System Configuration

This application example is described according to the following system configuration.



■ Use instruments

- DeviceNet communication converter: COM-JH
- Controller (SRZ): Z-TIO-A module (4-channel) type
- OMRON SYSMAC C.J series: CPU unit: CJ1M
DeviceNet master unit: CJ1W-DRM21
- Personal computer: The configuration tool must be installed in a personal computer.

6.2 Setting of Use Instruments

Setting of the PLC, COM-JH and controller is shown in the following

■ PLC setting

[DeviceNet communication requirement]

- Node address: 0
- DeviceNet communication speed: 125 kbps
- Unit number: 0
- Communication cycle time:
(Number of COM-JH communication data items× 1.2 + 50) [ms] or more
= 9 × 1.2 + 50 = 60.8 [ms] or more



For setting procedure, see PLC Instruction Manual.

■ COM-JH setting

[DeviceNet communication requirement]

- Node address: 1
- DeviceNet communication speed: 125 kbps
- Number of communication data items: 9 words



For setting procedure, see 3. COMMUNICATION SETTING.

■ Controller (SRZ Z-TIO-A module) setting

- Protocol: Modbus
- Module address: 1 (Address setting switch: 0)
- Communication speed: 19200 bps (factory set value)
- Data bit configuration: Data 8-bit, without parity, stop 1-bit



For setting procedure, see **Z-TIO Host Communication Quick Instruction Manual (IMS01T02-E□)**.

6.3 Details of Communication

The following shows the details of communication when conducting communication via polling I/O communication.



Polling I/O communication is called "Remote I/O communication" in OMRON PLC related instruction manuals.

■ Contents of communication parameter setting

- Communication items:
Measured data item (IN): Measured value (PV) [Attribute ID: 1] (factory set value)
Setting data item (OUT): Set value (SV) [Attribute ID: 45] (factory set value)
- Number of communication controllers: 1 controller
- Number of communication date items: 9 words



It is possible to set the above communication parameter with Explicit message communication or the configuration tool. For setting procedure, see **COM-JH [For SRZ] Instruction Manual (IMR01Y36-E□)**.

■ Memory allocation

Allocate the memory by using the configuration tool.

- Allocation method: Manual allocation
- Data area: Measured data item (IN) area: D00000 to D00008 (9 words)
Setting data item (OUT) area: D10000 to D10008 (9 words)

■ Response: measured data items (IN)

No.	Items	Storage location of read data
1	Receive counter	D00000
2	Alarm state (Controller 1 to 16)	D00001
3	Alarm state (Controller 17 to 31), Setting update flag	D00002
4	RUN/STOP state (Controller 1 to 16)	D00003
5	RUN/STOP state (Controller 17 to 31)	D00004
6	Measured value (PV) [CH1 of controller 1]	D00005
7	Measured value (PV) [CH2 of controller 1]	D00006
8	Measured value (PV) [CH3 of controller 1]	D00007
9	Measured value (PV) [CH4 of controller 1]	D00008

■ Request: setting data items (OUT)

No.	Items	Data contents	Storage location of write data
1	Setting state selection (All controller)	0	D10000
2	Setting state selection (Controller 1 to 16)	As there is one controller, only bit 0 (controller 1) can be used. [Decimal number: 0 to 1]	D10001
3	Setting state selection (Controller 17 to 31, RUN/STOP)	Only bit 15 (RUN/STOP transfer disabled/enabled) can be used. [Decimal number: 0 to 32768]	D10002

(Continued on the next column)

No.	Items	Data contents	Storage location of write data
4	RUN/STOP transfer (Controller 1 to 16)	As there are one controller, only bit 0 (controller 1) can be used. [Decimal number: 0 to 1]	D10003
5	RUN/STOP transfer (Controller 17 to 31)	0	D10004
6	Set value (SV) [CH1 of controller 1]	100	D10005
7	Set value (SV) [CH2 of controller 1]	150	D10006
8	Set value (SV) [CH3 of controller 1]	200	D10007
9	Set value (SV) [CH4 of controller 1]	250	D10008

■ Sample program (ladder)

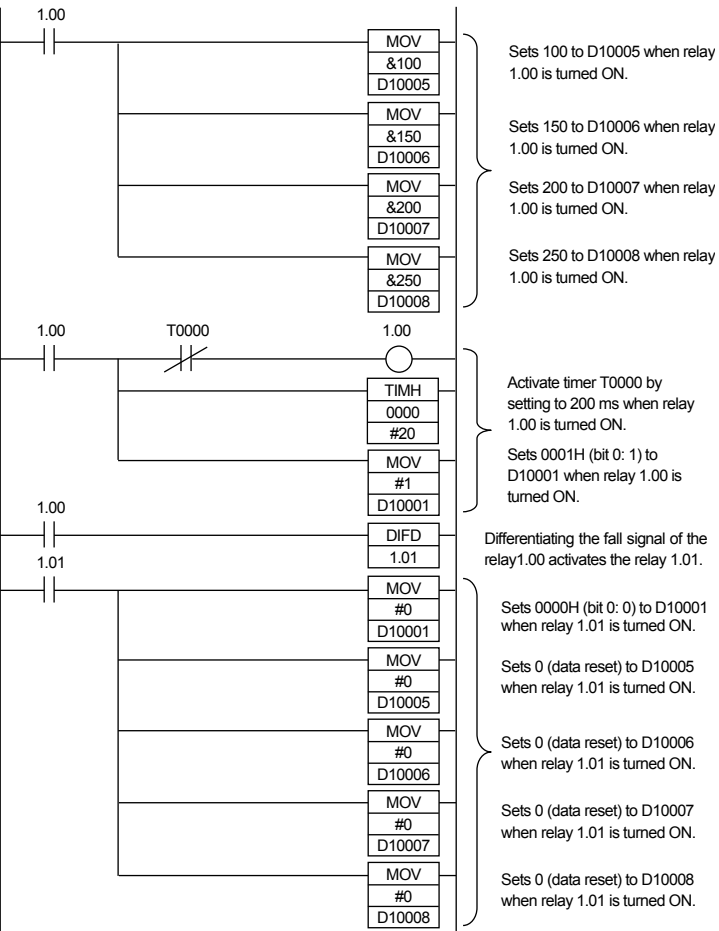
● Measured data items (IN)

Data corresponding to the measured data item (IN) can be checked only by reading the data storage register assigned by the configuration tool.

● Setting data items (OUT)

The following procedure is required for setting data to the controller.

1. Sets 100 to CH1 "Set value (SV): D10005" of Controller 1.
2. Sets 150 to CH2 "Set value (SV): D10006" of Controller 1.
3. Sets 200 to CH3 "Set value (SV): D10007" of Controller 1.
4. Sets 250 to CH4 "Set value (SV): D10008" of Controller 1.
5. Set bit 0 (Controller 1) for "Setting state selection: D10001" to "1: Setting enabled."
6. Set bit 0 (Controller 1) for "Setting state selection: D10001" to "0: Setting disabled" after a lapse of preset time* (Example: 200 ms).
* Sets any time longer than the "communication cycle time" set to the PLC.
7. Sets 0 (reset) to CH1 "Set value (SV): D10005" of Controller 1.
8. Sets 0 (reset) to CH2 "Set value (SV): D10006" of Controller 1.
9. Sets 0 (reset) to CH3 "Set value (SV): D10007" of Controller 1.
10. Sets 0 (reset) to CH4 "Set value (SV): D10008" of Controller 1.



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