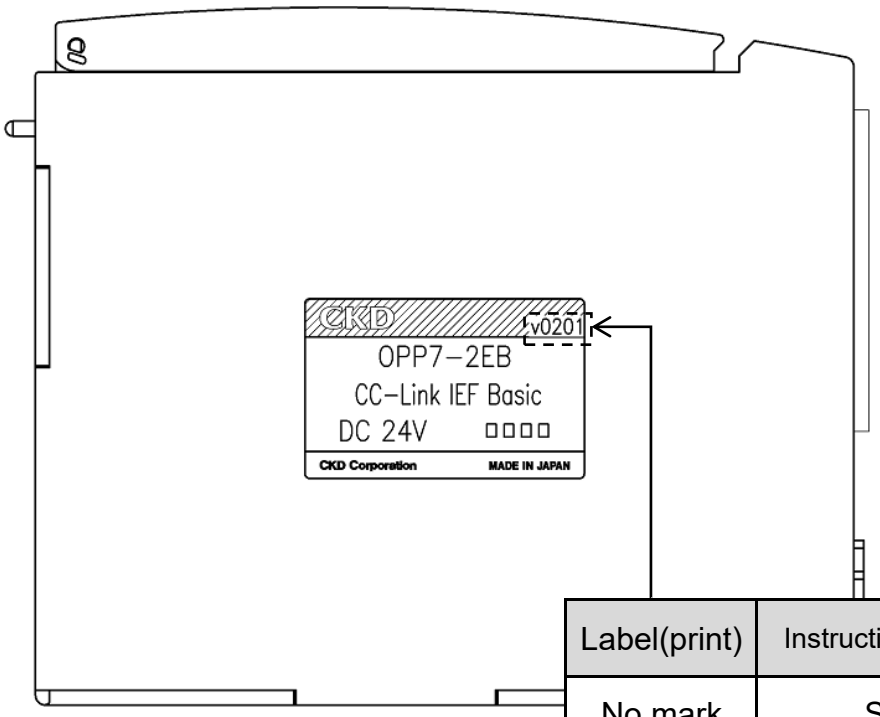
How to check the Instruction Manual to be read

Check the product label on the device and read the Instruction Manual corresponding to the device version.



Label(print)	Instruction Manual to be read
No mark	SM-P00131-A
v0201	SM-A75436-A

CKD

Serial Transmission Device

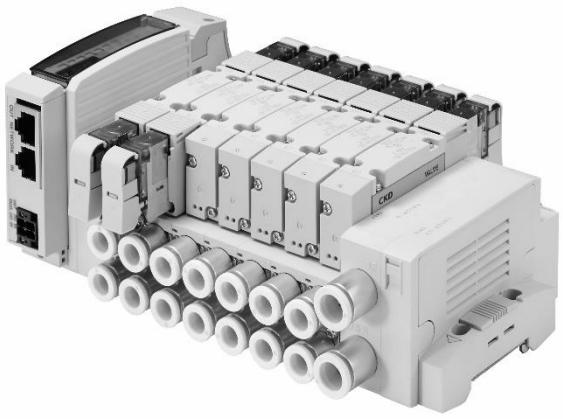
4GR series T8EB
(4GR-OPP7-*EB)

Device Rev 2.1

CC-Link IEF Basic compatible

INSTRUCTION MANUAL

SM-A75436-A



Read this Instruction Manual before using the product.
Read the safety notes carefully.
Keep this Instruction Manual in a safe and convenient place for future reference.

CKD Corporation

PREFACE

Thank you for purchasing **CKD's serial transmission device**. This Instruction Manual contains basic matters such as installation and usage instructions in order to ensure optimal performance of the product. Please read this Instruction Manual thoroughly and use the product properly.
Keep this Instruction Manual in a safe place and be careful not to lose it.

Product specifications and appearances presented in this Instruction Manual are subject to change without notice.

- The product, which uses control valves such as solenoid valves, motor valves, and air operated valves, is intended for users who have basic knowledge about materials, fluids, piping, and electricity. CKD shall not be responsible for accidents caused by persons who selected or used the product without knowledge or sufficient training with respect to control valves.
- Since there are a wide variety of customer applications, it is impossible for CKD to be aware of all of them. Depending on the application or usage, the product may not be able to exercise its full performance or an accident may occur due to fluid, piping, or other conditions. It is the responsibility of the customer to check the product specifications and decide how the product shall be used in accordance with the application and usage.

SAFETY INFORMATION

When designing and manufacturing any device incorporating the product, the manufacturer has an obligation to ensure that the device is safe. To that end, make sure that the safety of the machine mechanism of the device, the fluid control circuit, and the electric system that controls such mechanism is ensured.

To ensure the safety of device design and control, observe organization standards, relevant laws and regulations, which include the following:

ISO4414, JIS B8370, JFPS2008 (the latest edition of each standard),
the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards relevant laws and regulations.

In order to use our products safely, it is important to select, use, handle, and maintain the products properly.
Observe the warnings and precautions described in this Instruction Manual to ensure device safety.

Although various safety measures have been adopted in the product, customer's improper handling may lead to an accident. To avoid this:

Thoroughly read and understand this Instruction Manual before using the product.

To explicitly indicate the severity and likelihood of a potential harm or damage, precautions are classified into three categories: "DANGER", "WARNING", and "CAUTION".

⚠ **DANGER**	Indicates an imminent hazard. Improper handling will cause death or serious injury to people.
⚠ **WARNING**	Indicates a potential hazard. Improper handling may cause death or serious injury to people.
⚠ **CAUTION**	Indicates a potential hazard. Improper handling may cause injury to people or damage to property.

Precautions classified as "CAUTION" may still lead to serious results depending on the situation.
All precautions are equally important and must be observed.

Other general precautions and tips on using the product are indicated by the following icon.

	Indicates general precautions and tips on using the product.

Precautions on Product Use

⚠ WARNING

The product must be handled by a qualified person who has extensive knowledge and experience.

The product is designed and manufactured as a device or part for general industrial machinery.

Use the product within the specifications.

The product must not be used beyond its specifications. Also, the product must not be modified and additional work on the product must not be performed.

The product is intended for use in devices or parts for general industrial machinery. It is not intended for use outdoors or in the conditions or environment listed below.

(An exception will be made if the customer consults with CKD prior to use and understands the specifications of the product. However, even in that case, safety measures must be taken to avoid danger in case of a possible failure.)

- In applications for nuclear power, railroad system, aviation, ship, vehicle, medical equipment, and equipment that directly touches beverage or food.
- For special applications that require safety including amusement equipment, emergency shut-off circuit, press machine, brake circuit, and safety measures.
- For applications where life or properties may be adversely affected and special safety measures are required.

Do not handle the product or remove pipes and devices until confirming safety.

- Inspect and service the machine and devices after confirming the safety of the entire system. Also, turn off the energy source (air supply or water supply) and power to the relevant facility. Release compressed air from the system and use extreme care to avoid water or electric leakage.
- Since there may be hot or live parts even after operation has stopped, use extreme care when handling the product or removing pipes and devices.
- When starting or restarting a machine or device that incorporates pneumatic components, make sure that a safety measure (such as a pop-out prevention mechanism) is in place and system safety is secured.

CONTENTS

1. PRODUCT OVERVIEW

1.1 System Overview

1.1.1 System features

Make sure to read the instruction manual for each product.
This Instruction Manual describes the device T8EB (4GR-OPP7-□EB) for 4GR.
For the master unit and other remote stations that are connected in the same system, refer to the instruction manuals issued by each manufacturer.
For manifold solenoid valves, make sure to read both this Instruction Manual and the solenoid valve's instruction manual to fully understand the functions and performance in order to use them correctly.

■ T8EB(4GR-OPP7-□EB)

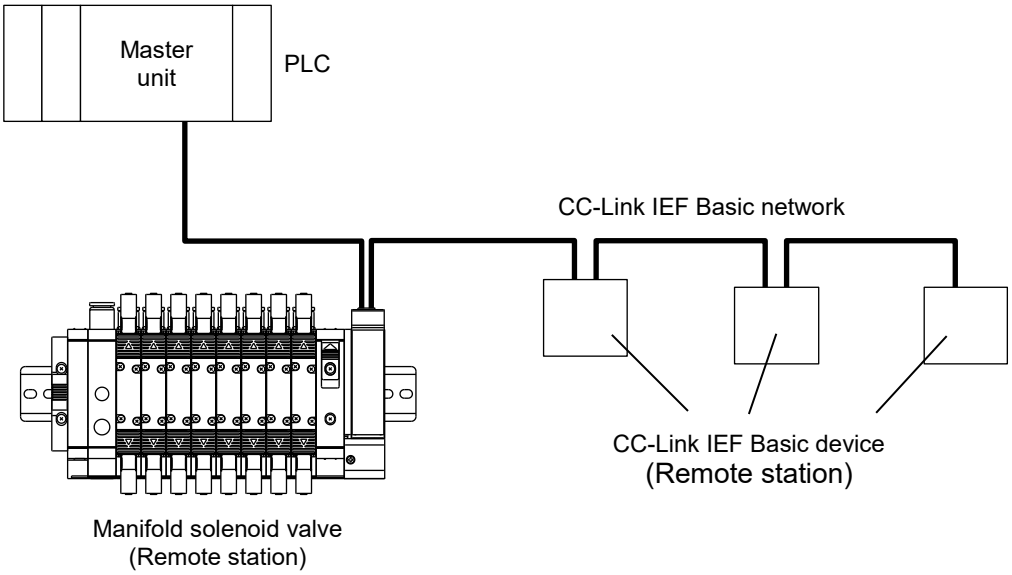
This is a device for 4GR which can be connected to the open industrial Ethernet network CC-Link IEF Basic.
It has the following features:

- The device is connected to PLC with only a network cable (Category 5 or higher), allowing significant reduction in wiring man-hours.
- The unit power and the valve power are separated, ensuring easy maintenance.
- The IP address settings of the device can be selected by a hardware switch.
- The device output status in the event of a communication error can be set by switches. (Hold all points output/ all points OFF).
- The device is available in +COM or -COM specification and 16-point or 32-point output, allowing wide variety of applications.
- The device is a slot-in structure and is fixed with just one screw, allowing reduction in maintenance man-hours.

1.1.2 System structure

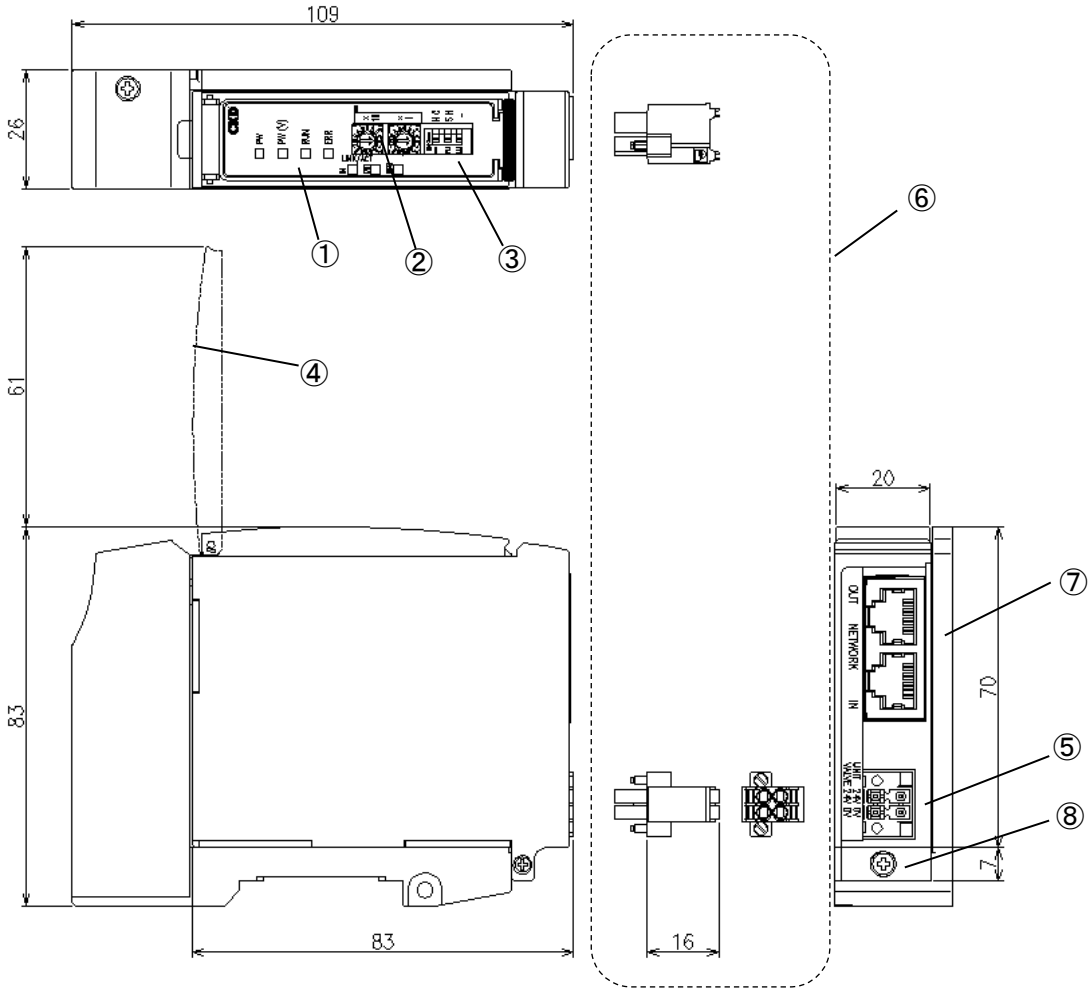
This system mainly consists of a PLC, master unit, T8EB(4GR-OPP7-□EB) mounted manifold solenoid valve, and peripheral equipment.

■ Example of basic structure of the system



1.2 Part Name

1.2.1 Parts of the device



No.	Part name	Description
①	LED indicators	Indicates the status of the device and network with RUN, ERR, LINK ACT(IN,OUT), INFO,PW, and PW(V).
②	Rotary switch	Set the device IP address or operation mode settings (IP address setting) by rotary switches.
③	DIP switch	Set the operation mode settings (IP address setting mode) and the action taken on the output in the event of a communication error by DIP switches.
④	Cover	Protects the LED Indicators and setting switches. It is hinged and can be flipped open and closed.
⑤	Unit/valve power socket	Connects the unit/valve power plug.
⑥	Unit/valve power plug (included item)	Connect the unit/valve power cables (24 V).
⑦	Network connector socket [RJ45×2 ports【IN, OUT】] (Network plug is not included)	Ports transmit CC-Link IEF Basic communication to the next device or receive it from the previous device. * There is no difference in the function between input(IN) and output(OUT) ports which only named to distinguish each port.
⑧	Device fixing screw (M2.5 tapping screw)	Secures the device to the device connecting block.

1.2.2 Switches and LED indicators

⚠CAUTION

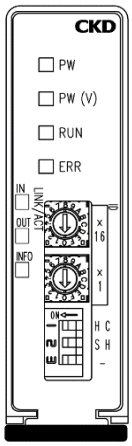
Discharge static electricity from your body before touching the product.
Static electricity may cause damage to the product.

■ Switches

The switches are used to set the IP address of the device and the output status in the event of a communication error. The device operates according to the switch settings when the power is turned on.

Switch		Settings
ID ×16	IP address setting switch	Set the IP address of the device. * No duplicate settings.
ID ×1		
H C	Communication error output setting switch	Set the output status in the event of a communication error. ON : Hold (hold all points output) OFF : Clear (all points OFF)
S H	Operation mode setting switch	Set the operation mode. ON : Software setting OFF : Hardware setting

* DIP switch No. 3 has no function.



The IP address settings differ depending on each operation mode.
Refer to the following table for the settings. (Refer to "3.1.1 IP address settings" for details.)

Operation mode setting	ID value		Mode	IP address setting	IP address Initial value
	ID×16	ID×1	S H		
Basic	0	0	H	Basic communication	192.168.3.250
HardWare	0 to F	0 to F	H	Set by ID switch value	192.168.3.[ID value]
DHCP	F	F	H	DHCP server	0.0.0.0
SLMP	Setting disable		S	Basic communication and SLMP communication	192.168.3.250

■ LED indicators

The LEDs indicate the status of the product and network.
Refer to the following table for the description of LED indicators.

Part name	Function	Status	
RUN	CC-Link IEF Basic Communication status	Off	Preparing system
		Green blinking	Waiting for receiving IEF Basic communication
		Green on	Communicating normally
ERR	CC-Link IEF Basic Communication status	Off	Communicating normally
		Red slow blinking	A system error has occurred or the system has stopped*1
		Red fast blinking	IEF Basic communication time out
		Red on	Duplicate IP address
L/A IN	CC-Link IEF Basic link status IN side	Off	Link not established
		Green blinking	Link established
		Green fast blinking	Link established, transferring data
L/A OUT	CC-Link IEF Basic link status OUT side	Off	Link not established
		Green on	Link established
		Green fast blinking	Link established, transferring data
INFO	Device	Off	Normal condition
		Red double flash	Change notice of operation setting*2
		Red slow blinking	Maintenance notice*3
		Red on	Backup error notice
PW	Unit power status	Off	Unit power OFF
		Green on	Unit power ON
PW(V)	Valve power status	Off	Valve power OFF
		Green on	Valve power ON

* 1 The master unit may not be operating. Check the master unit.
* 2 Refer to “The Flag of Change Monitor at Next Startup” of "3.2.1 Function" for more information.
* 3 It is enabled when the notification of maintenance information is set.
Refer to “3.3 Maintenance information” for details.

1.3 Specifications

1.3.1 Communication specifications

Item	Specifications
Communication protocol	CC-Link IEF Basic
Baud rate	Supports 100Mbps only
Communication media	Ethernet cable (Category 5 or higher) Shielded twisted pair cable
Unit type	Remote station
Number of occupied stations	1 station
Network topology	Line, star type
Distance between stations	Maximum of 100 m

1.3.2 Device specifications

The product must be used within the following specifications.

Item		Specifications			
Model		T8EB1 (4GR-OPP7-1EB)	T8EB2 (4GR-OPP7-2EB)	T8EBP1 (4GR-OPP7-1EB-P)	T8EBP2 (4GR-OPP7-2EB-P)
Unit power voltage		21.6 VDC to 26.4 VDC (24 VDC ±10%)			
Unit power current consumption		90 mA or less (at 24.0 VDC with all points ON)			
Valve power voltage		22.8 VDC to 26.4 VDC (24 VDC +10%, -5%)			
Valve power current consumption		10 mA or less (with all points OFF) 15 mA or less (under no load with all points ON)			
Output type		+COM (NPN)		-COM (PNP)	
Number of output points		16 points	32 points	16 points	32 points
Output setting at communication error		Hold (all outputs are maintained)/ Clear (all points OFF)			
Insulation resistance		Between external terminals and case: 30 MΩ or more with 500 VDC			
Withstand voltage		Between external terminals and case: 500 VAC for 1 minute			
Shock resistance		294.0 m/s^2 for 3 times in 3 directions			
Storage ambient temperature		-20°C to 70°C			
Storage humidity		30% to 85% RH (no dew condensation)			
Ambient temperature		-5°C to 55°C			
Ambient humidity		30% to 85% RH (no dew condensation)			
Atmosphere		No corrosive gas			
Communication protocol		CC-Link IEF Basic			
Baud rate/ Communication method		Supports 100Mbps only			
Output insulation		Photo coupler insulation			
Max. load current		40 mA/1 point			
Leakage current		0.1 mA or less			
Residual voltage		0.5 V or less			
Fuse		Valve power: 24V, 3A /Unit power 24V, 2A (both fuses are non-replaceable)			
Operation indicator		LED (communication status, unit power and valve power status)			
Degree of protection		IP30			
Vibration resistance	Durability	10 Hz to 55 Hz to 10 Hz, 1 octave/min., 15 sweeps each in X, Y, Z directions with 0.75 mm half-amplitude or 98.0 m/s^2, whichever smaller.			
	Malfunction	10 Hz to 55 Hz to 10 Hz, 1 octave/min., 4 sweeps each in X, Y, Z directions with 0.5 mm half-amplitude or 68.6 m/s^2, whichever smaller.			

* For the delay time, refer to the instruction manual for the master unit. Transmission delay as a system varies depending on the PLC scan time and other devices connected to the same network.
* For the response time of the solenoid valve, check the solenoid valve specifications.
* Solenoid valve Off time is delayed by approximately 20 msec due to the surge absorbing circuit integrated in the device.

2. INSTALLATION

2.1 Mounting

⚠CAUTION

Before handling a CC-LINK IEF Basic device, touch a grounded metal part to discharge static electricity from your body.
Static electricity may cause damage to the product.

Do not apply tension or shocks to the power cable or network cable.
If the wiring is long, the cable weight or shocks may cause an unexpected force and result in damage to the connector or device.
Take appropriate measures; for example, secure the wiring to the machine or device midway.

When wiring, be careful of the following points to prevent problems caused by noise.

- If noise could have an effect, prepare power for each manifold solenoid valve and wire independently.
- Wire the power cable as short as possible.
- Wire the power cables for the product separately from the power cables for noise-generating devices such as inverter motors.
- Wire the power cable and network cable away from other power lines as much as possible.

Wire the power cable and network cable properly within its specifications.
Incorrect wiring may cause the device to malfunction or break.

Check that cables and connectors are securely connected before turning on the power.

1 Connect the network cable and power cable.
Check both this Instruction Manual and instruction manuals for PLC and each unit in the system and connect them properly.
Incorrect connection may cause not only a system failure but also serious fault to the other devices.

2 Keep 200 mm or more away from high-voltage lines and power lines, or wire the high-voltage lines and power lines in metal tubing and ground it before mounting this device.

2.2 Wiring

2.2.1 Connecting and wiring to the network connector socket

⚠ WARNING

Turn off the power before wiring.
An electric shock may occur by touching the electrical wiring connection (bare live part).

Do not touch live parts with bare hands.
An electric shock may occur.

Thoroughly read and understand this Instruction Manual before working on electrical wiring.

⚠ CAUTION

Check the working voltage and polarity before wiring and energizing.

Take measures against lightning surges on the device side.
The product has no resistance to lightning surges.

Use a dedicated network cable that complies with CC-Link IEF Basic specifications.

Provide sufficient bending radius for the network cable and do not bend it forcibly.

Separate the network cable from power lines and high-voltage lines.

Although the CC-Link IEF Basic network uses a standard Ethernet cable and has flexible wiring methods, there are limits depending on the wiring material and equipment (master unit, hub, and other devices) used. Always understand their specifications thoroughly before wiring. For more information, refer to the instruction manuals issued by the master unit manufacturer or CLPA (CC-Link Partner Association).

The network plug is not supplied with the product. Separately purchase a network plug that satisfies the specifications.
By wiring the network cable to a network plug, that plug can be connected to the network connector socket on the device.

Recommended cable with plug [Cat.5e]

Manufacturer	Cable	Model
JMACS Japan Co., Ltd.	Industrial Ethernet cable (double shielded)	IETP-SB-S***□
		***: Length, □: M = meter or C = centimeter

Recommended assembly type RJ45 connector [Cat 6]

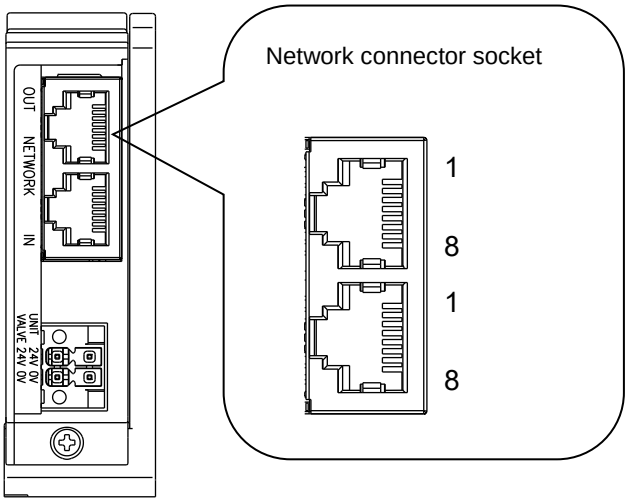
Manufacturer	Connector	Model
HARTING Co., Ltd.	Assembly type RJ45 connector	09 45 151 1560
HARTING Co., Ltd.	Assembly type RJ45 connector (45° angled)	09 45 151 1561

■ Connecting the network cable

Follow the steps below to connect the network cables to the network plug.

1 After confirming safety, stop network communication and turn off all the peripheral equipment.

2 Refer to the following figure to wire the CC-Link IEF Basic compliant cable to the RJ45 plug (CC-Link IEF Basic compliant).



Port	Pin	Signal	Function
IN/ OUT	1	TD+	Transmission data, plus
	2	TD-	Transmission data, minus
	3	RD+	Reception data, plus
	4	Unused	Unused
	5	Unused	Unused
	6	RD-	Reception data, minus
	7	Unused	Unused
	8	Unused	Unused

2.2.2 Connecting and wiring to the unit/valve power socket

⚠CAUTION

Always check the polarity and rated voltage thoroughly before connecting cables.

Calculate the current consumption to select the power cable.

Consider the voltage drop due to cables when selecting and wiring the cables if power is supplied to more than one device from one power supply.

Take measures to secure the specified power supply voltage if voltage drop cannot be avoided.

For example, wire the power cables in multiple systems or install other power supplies to secure the specified power supply voltage.

Install a terminal block if multi-drop wiring of the power cables is needed.

Install the terminal block so that it comes before the power plug.

The power plug is supplied with the product.
The unit/valve power cables are wired to the supplied power plug and that the plug is connected to the power socket on the device.

Unit power
This electrical power is for operating the device. Use 21.6 VDC to 26.4 VDC power with the least noise.

Valve power
This electrical power is for operating the solenoid valve. Use 22.8 VDC to 26.4 VDC power with the least noise.

Supplied power plug

Part name	Model	Manufacturer
4-pin connector	DFMC1,5/2-STF-3,5(1790292)	PHOENIX CONTACT

Recommended ferrules and crimp tools

Part name	Model	Manufacturer
Ferrule (without sleeve)	A 0,5-10 to 1,5-10	PHOENIX CONTACT
Ferrule (with sleeve)	AI 0,25-10 to 0,75-10	PHOENIX CONTACT
Crimping tool (in common)	CRIMPFOX6(1212034)	PHOENIX CONTACT

■ Connecting the power cables

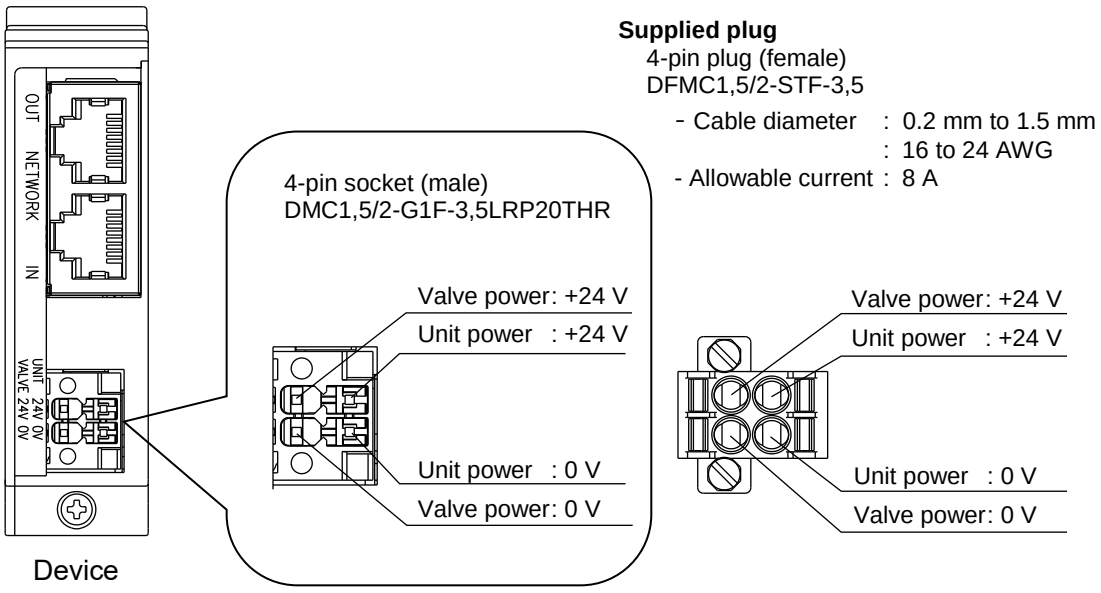
Follow the steps below to connect the unit/valve power cables to the power plug.

1 After confirming safety, turn off the power to be connected to the device.

2 Attach a terminal such as a ferrule to the cable to be connected as necessary.

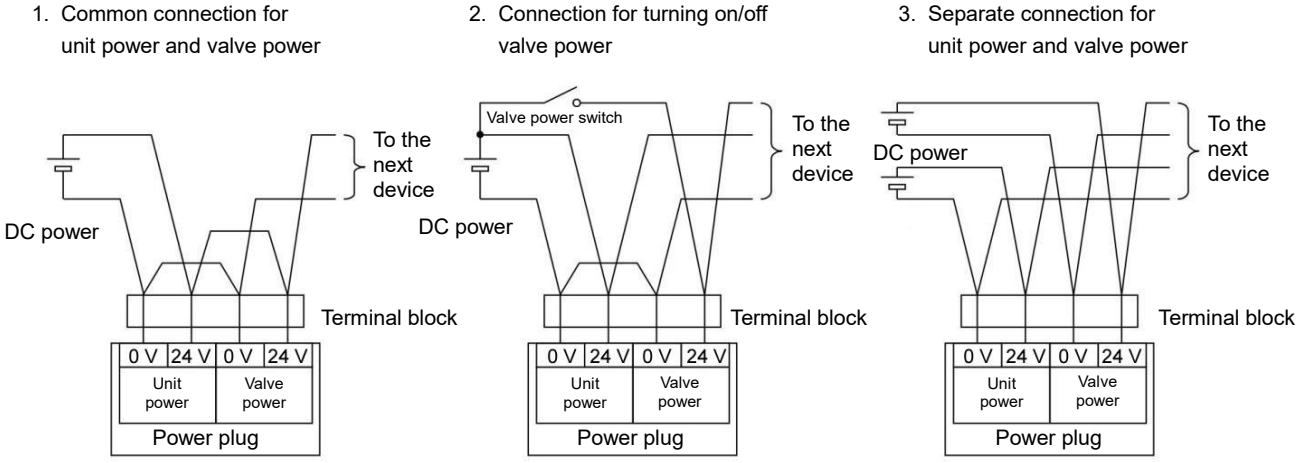
3 Refer to the figure below and wire the cables to the correct terminals on the power plug (24 V to 24 V, 0 V to 0 V).

4 Connect the power plug to the power socket and secure the plug flange with the appropriate tightening torque (0.2 to 0.25 N·m).



■ Wiring the power cable

Figures 1 to 3 are examples of the wiring for the power plug.
Change the circuit configuration as necessary.



3. USAGE

⚠ WARNING

Consult CKD about the specifications before using the product outside the designated specifications or for special applications.

⚠ CAUTION

Thoroughly read and understand the instruction manual for the network system to be used before using the serial transmission device.

Check the address setting value of serial transmission device carefully before use.
Improper address setting value may cause valves or cylinders to malfunction.

Be careful of the surroundings and ensure safety before turning on or off the power.
The system or solenoid valve (cylinder) may operate suddenly.

3.1 Switch settings

⚠ CAUTION

Discharge static electricity from your body before touching the product.
Static electricity may cause damage to the product.

Set switches while the unit power is turned off.
Since switch settings are read when the power is turned on, changes made to the settings after turning on the power are not recognized.

Keep the cover of serial transmission device closed except when setting the switches.
The cover may become damaged or foreign matters may enter inside and cause unexpected failure.

Be careful not to allow any foreign matter to enter inside when setting the switches.
Unexpected failure may result.

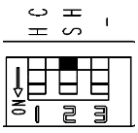
Do not handle switches roughly.
Switches are precision devices and can be easily damaged.

Do not touch the internal circuit board when setting the switches.
The internal circuit board can be easily damaged.

3.1.1 IP address setting

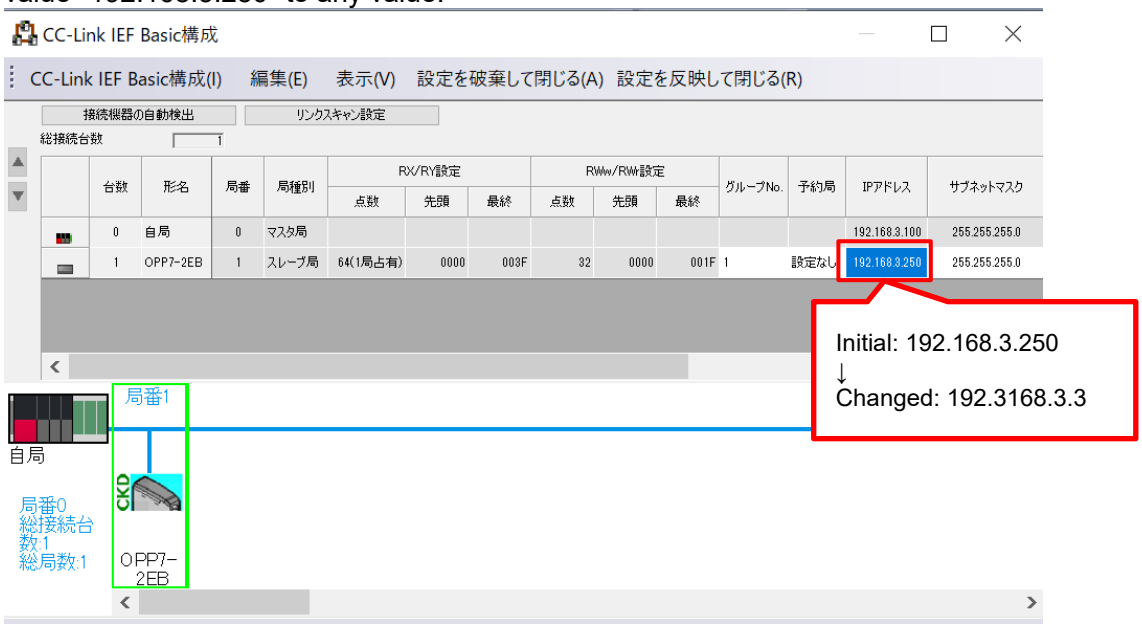
Set the IP address of the device.
Since it varies depending on the operation mode settings of the device, proceed the settings according to the operation mode.
* Refer to "1.2.2 Switches and LED indicators" for the operation mode settings.

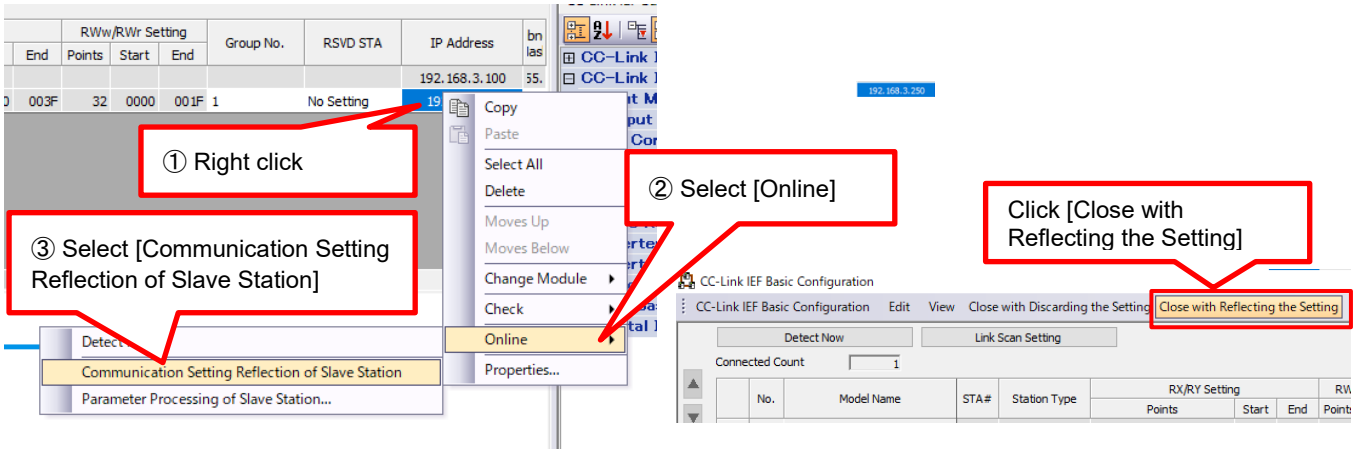
Operation mode setting switch (DIP switch No.2)

Switch	Settings
S H [Operation mode setting] 	Sets the operation mode. ON : Software setting OFF : Hardware setting

1) Basic mode
Change the IP address in the Basic communication of the engineering tool (GX Works3).
The initial value of IP address is: 192.168.3.250

Step (1)
Set the rotary switch to “00” and the operation mode setting to “H”.
Step (2)
After connecting to the PLC, set the IP address assigned to the product using GX Works3.
Open the CC-Link IEF Basic configuration and change the IP address of the product from the initial value "192.168.3.250" to any value.

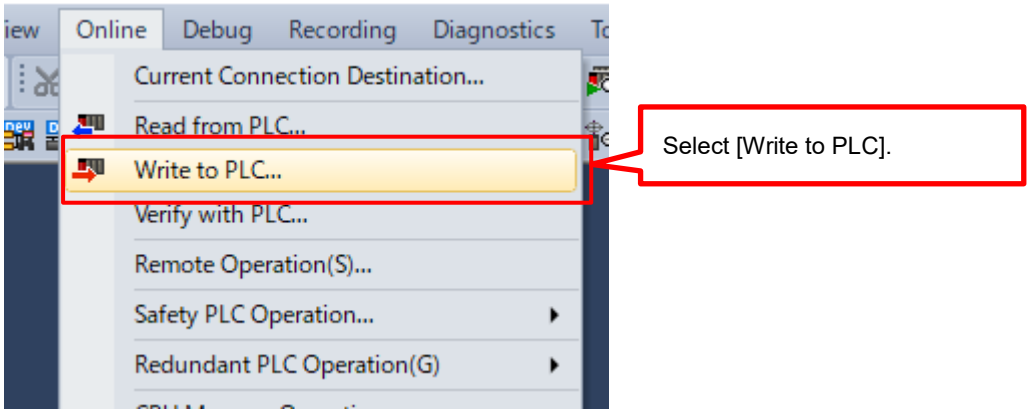


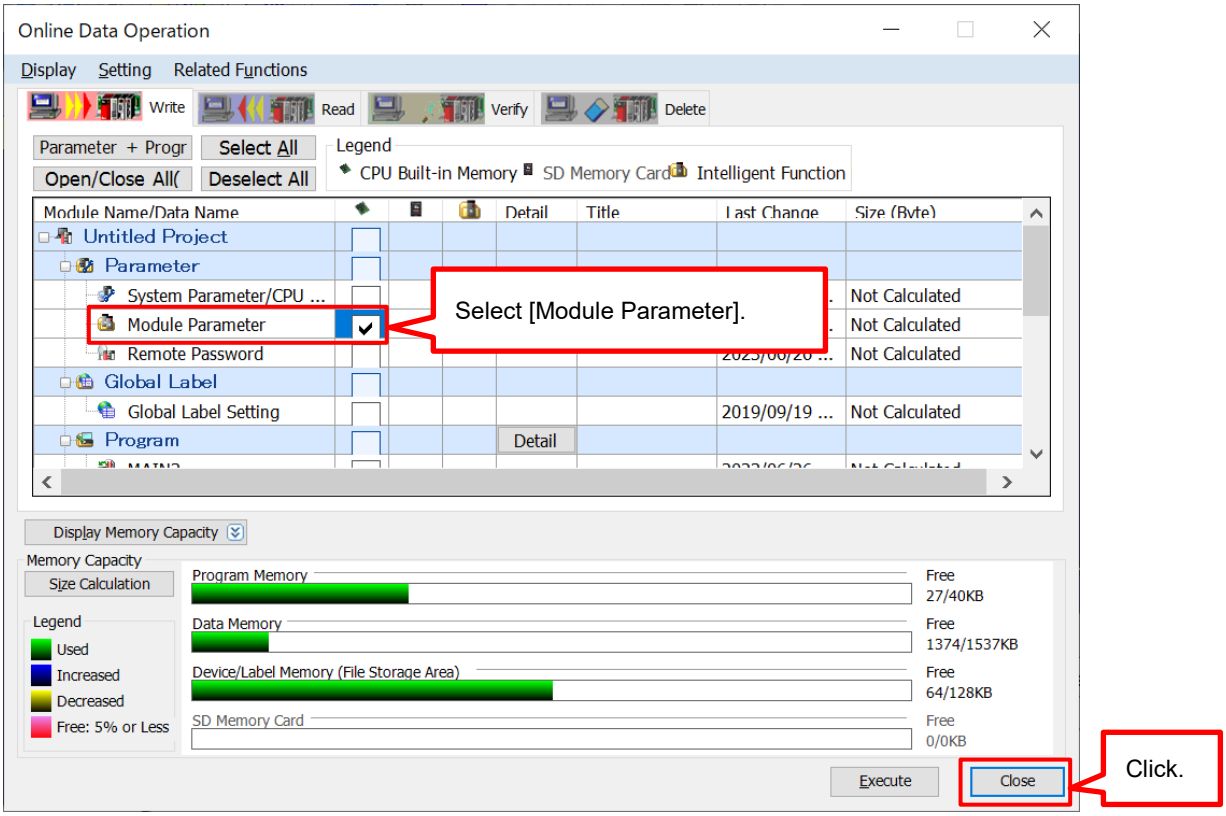


Step (3)

Reflect the settings to the PLC.

Refer to the instruction manual for the PLC software for details on the settings.





Step (4)

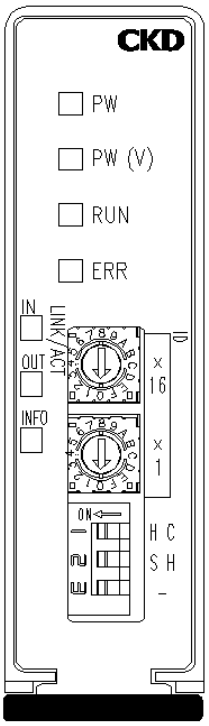
Restart the PLC power supply.

Check that the IP address of the product is set.

* Check the network diagnosis of the engineering tool or the CC-Link IEF Basic configuration screen.

2) HardWare mode
Set the IP address using the setting switches.
Set the fourth octet of 192.168.3.xxx for the IP address.

Step (1)
Set the address switch setting to "01 to FE" and the operation mode setting to "H".
Step (2)
Connect with PLC and check if communication is established.



Address switch setting table (ID x16, ID x1)

x16: Upper digit		
Set value (hexadecimal)	⇔	Decimal
0	⇔	0
1	⇔	16
2	⇔	32
3	⇔	48
4	⇔	64
5	⇔	80
6	⇔	96
7	⇔	112
8	⇔	128
9	⇔	144
A	⇔	160
B	⇔	176
C	⇔	192
D	⇔	208
E	⇔	224
F	⇔	240

x1: Lower digit		
Set value (hexadecimal)	⇔	Decimal
0	⇔	0
1	⇔	1
2	⇔	2
3	⇔	3
4	⇔	4
5	⇔	5
6	⇔	6
7	⇔	7
8	⇔	8
9	⇔	9
A	⇔	10
B	⇔	11
C	⇔	12
D	⇔	13
E	⇔	14
F	⇔	15

Example: Setting the IP address to 71 (decimal)
Since 71 = 64+7 and 64 is 4 and 7 is 7 according to the table above, set the upper digit to 4 and lower digit to 7 (47 in hexadecimal).

3) DHCP mode
Set IP address using DHCP server.
The initial value of IP address is: 0.0.0.0
An IP address is assigned by the DHCP server.

Step (1)
Set the rotary switch to “FF” and the operation mode setting to “H”.
Step (2)
Refer to the instruction manual of DHCP server for details.

4) SLMP mode

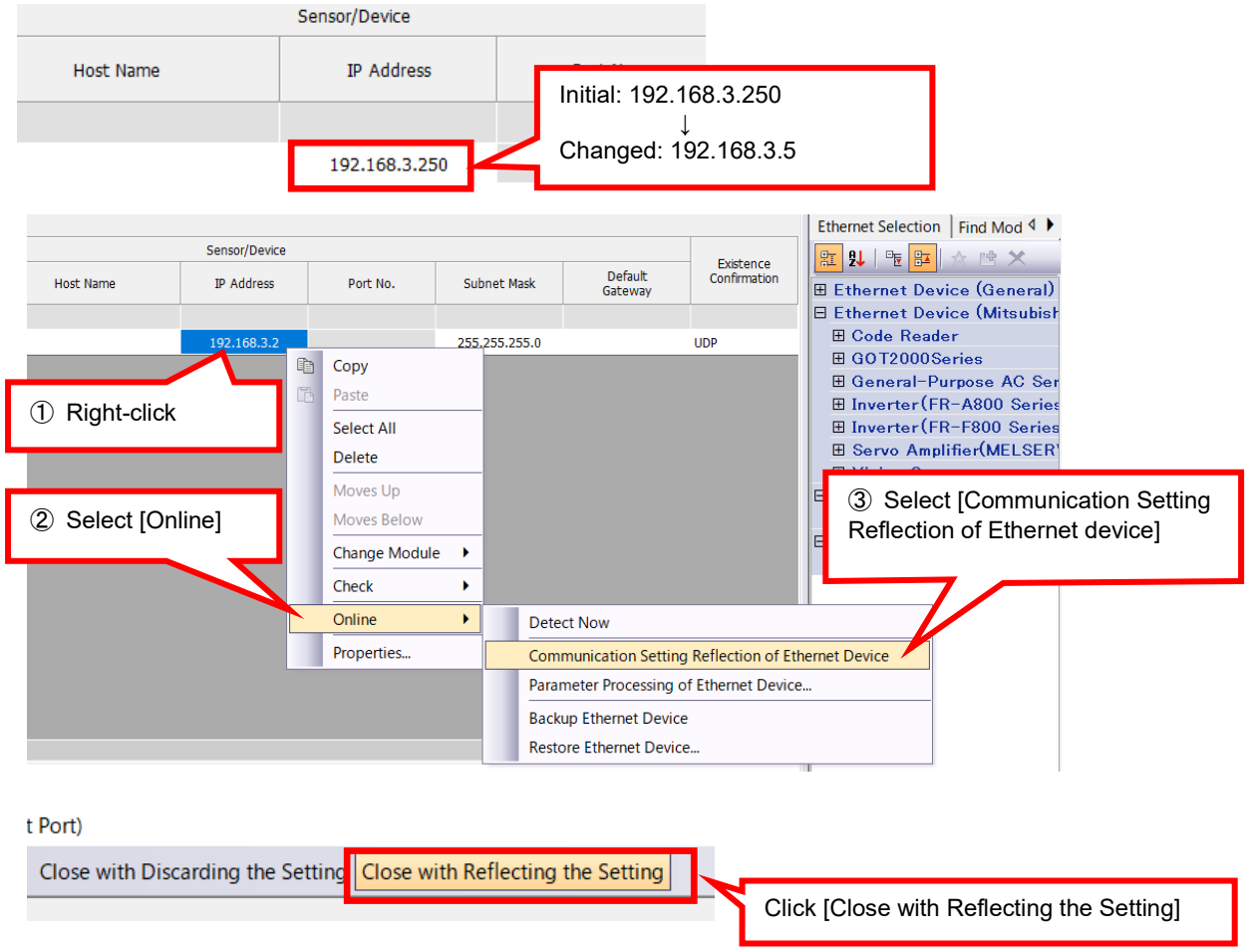
Change the IP address with Basic communication or SLMP communication using PLC software.
The initial value of IP address is: 192.168.3.250

Step (1)

Set the operation mode setting to “S”. (The rotary switch value is disabled.)

Step (2)

Set the IP address assigned to the product using GX Works3.
Open the CC-Link IEF Basic configuration and change the IP address of the product from the initial value "192.168.3.250" to any value.

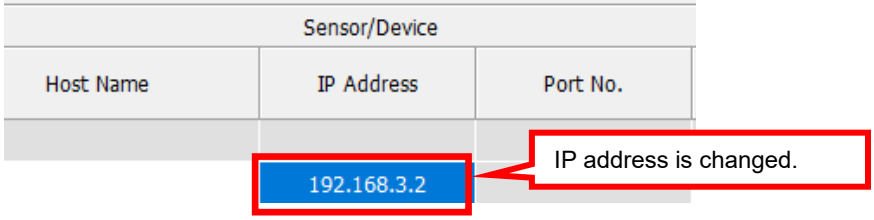


Step (3)

Reflect the settings to the PLC. The writing method is the same as the Basic mode Step (3).

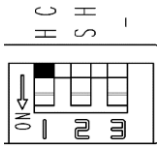
Step (4)

Restart the PLC power supply.
Check if IP address is set by GX Works3.



3.1.2 Other switch settings

Set the output status in the event of a communication error.

Switch	Settings
H C (DIP switch No.1) [Output mode setting] 	Sets the output status in the event of a communication error (such as disconnection and timeout). This switch is enabled when the operation mode is "H". ON : Hold (hold all points output) OFF : Clear (all points OFF)

* DIP switch No. 3 has no function.

3.2 Settings by CSP+ system profile

Using the CSP+ file makes the product setting easy with engineering tool.
Refer to the manual of the engineering tool for handling CSP+ file.

CSP+ file name: 0x0104_OPP7- EB_2.10_en_cspp (zip file)
* The CSP+ files of 4 models as following table are included. Make sure to register the configuration by matching it with the device to be used.

Specifications and model names in the CSP+ file

Item	Specifications			
Manifold Model No.	T8EB1	T8EB2	T8EBP1	T8EBP2
Product Name	OPP7-1EB	OPP7-2EB	OPP7-1EB-P	OPP7-2EB-P
Output type	+COM (NPN)		-COM (PNP)	
Number of output points	16-point output	32-point output	16-point output	32-point output
CSP+ file name	0x0104_OPP7-1EB_2.10_en.cspp	0x0104_OPP7-2EB_2.10_en.cspp	0x0104_OPP7-1EB-P_2.10_en.cspp	0x0104_OPP7-2EB-P_2.10_en.cspp

3.2.1 Function

Basic or SLMP communication (*1) is used for function setting and monitoring.
Note that the function varies depending on the IP address setting mode.

No.	Item	Description	Operation mode (IP address setting mode)			
			Basic	HardWare	DHCP	SLMP
1	Product information	Monitoring the product information of the device.	Y	Y	Y	Y
2	Operation information	Monitoring IP address and communication status.	Y	Y	Y	Y
3	Maintenance information	Maintenance setting and Monitoring.	Y	Y	Y	Y
4	Output information	Monitoring and setting the output status.	Y *2	Y *2	Y *2	Y

*1: Refer to "5.2 Example of Parameter Setting" for operation.
*2: Use the DIP switch to set the output status in the event of a communication error.

Product information

No.	Part name	Description
1	Vender Name	Indicate vendor name.
2	Vender ID	Indicate vendor ID.
3	Product Name	Indicate product name
4	HW Version	Indicate hardware version.
5	SW Version	Indicate software version.
6	Item Code	Indicate model name code.
7	ProtocolVersion:slave station	Indicate the protocol version of this product

Operation information

No.	Item	Description	Remarks
1	The Flag of Change Monitor at Next Startup	Notify the operation change at the next startup.	Refer to the next page
2	IP Address Setting Monitor	Indicates the operation mode settings (IP address setting mode) "Basic" "HW" "DHCP" "SLMP"	-
3	IP Address Setting Mode Monitor at Next Startup	Indicate the IP address setting mode at the next startup. "Basic" "HW" "DHCP" "SLMP"	-
4	Operating IP Address Monitor	Indicate the current IP address.	-
5	IP address at Next Startup	Indicate the IP address at the next startup.	-
6	Operation SubNetmask Monitor	Indicate subnet mask.	-
7	Baud Rate Communication Method Monitor	indicate baud rate and communication method.	-
8	Communication Port Monitor	indicate communication port status.	-
9	Output Setting Monitor at Communication Error	Indicate the output setting when a communication error occurs.	-
10	Output Setting Monitor at Communication Error at Next Startup	Indicate the output setting in the event of a communication error at the next startup.	Refer to the next page
11	Value setting monitor at communication error	Indicate the output status when a communication error occurs.	
12	Value setting monitor at communication error at Next Startup	Indicate the output status in the event of a communication error at the next start up.	-
13	Energization Time Monitor *1	Indicate energizing time.	-
14	Output point Monitor	Indicate the maximum number of output points.	-
15	Input point Monitor	Indicate the maximum number of input points.	-
16	Output Type Monitor	Indicate output type.	-
17	Output data monitor	Indicate the output status of the pneumatic valve.	-
18	ProtocolVersion:master station	indicate the protocol version of the master unit.	-

*1: As initial status, energization time at factory delivery inspection may be added.

■ The Flag of Change Monitor at Next Startup

No.	Indication
1	Changed
2	No change

"Changed" is indicated when there is a change with any of following items.

No.	Item	Remarks
1	Operation mode setting (IP address setting mode)	Check the settings with Basic and SLMP communication.
2	IP address	
3	Switch for IP address setting Operation mode setting switch Communication error output setting switch	Check each switch.

Turning the unit power from OFF to ON changes the settings of the device.
As the device operates according to the new settings after powered on, the output of the valve and such may be changed. Confirm the safety of surroundings before powering on.

■ Output Setting Monitor at Communication Error / Value setting monitor at communication error

Operation mode setting: [Basic]

Communication error output setting switch	Output points	Output Setting Monitor at Communication Error	Value setting monitor at communication error
H	16	0xFFFF	HLD (Status right before communication error occurs)
	32	0xFFFFFFFF	
C	16	0x0000	CLR(0x0000)
	32	0x00000000	CLR(0x00000000)

Operation mode setting: [HW]

Operation mode setting switch	Output points	Output Setting Monitor at Communication Error	Value setting monitor at communication error
H	16	0xFFFF	HLD (Status right before communication error occurs)
	32	0xFFFFFFFF	
C	16	0x0000	CLR(0x0000)
	32	0x00000000	CLR(0x00000000)

Operation mode setting: [DHCP]

Operation mode setting switch	Output points	Output Setting Monitor at Communication Error	Value setting monitor at communication error
H	16	0xFFFF	HLD (Status right before communication error occurs)
	32	0xFFFFFFFF	
C	16	0x0000	CLR(0x0000)
	32	0x00000000	CLR(0x00000000)

Operation mode setting: [SLMP]

Operation mode setting switch	Output points	Output Setting Monitor at Communication Error	Value setting monitor at communication error
H	16	Output setting value at communication error *1 (Initial value: 0 (output OFF))	Value setting at communication error *1 (Initial value: 0 (output OFF))
	32		
C	16		
	32		

*1: With [SLMP] setting, "Output setting at communication error" and "Value setting at communication error" can be set using the engineering tool. Due to the initial value 0 for both “Output setting at communication error” and “Value setting at communication error” (16 points: 0x0000 and 32 points : 0x00000000), Clear (16 points: 0x0000 and 32 points : 0x00000000) is applied when a communication error occurs.

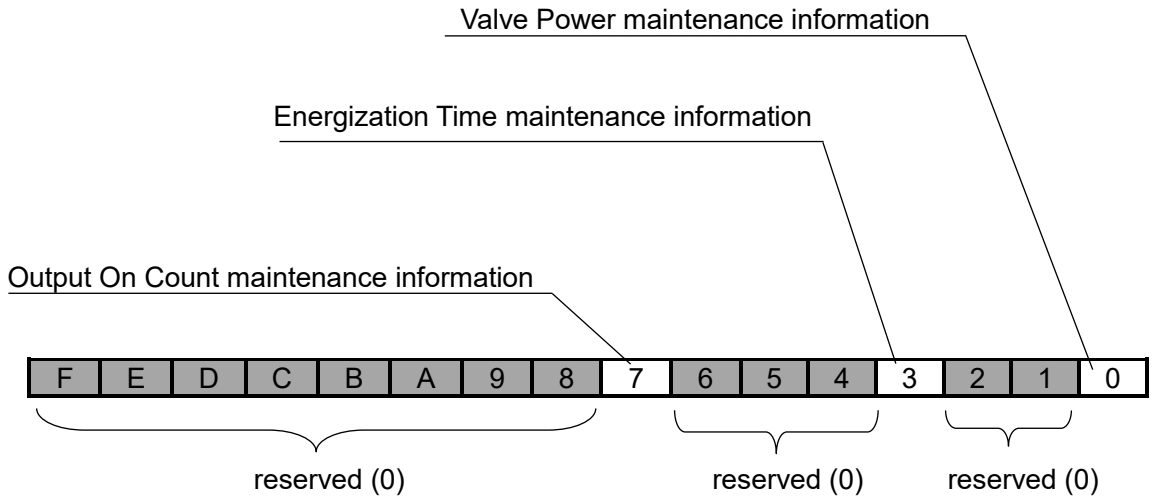
3.3 Maintenance Information

Use the maintenance function after enabling [Maintenance setting].

No.	Item	Description	Remarks
1	Maintenance Monitor	Notifies maintenance information.	Refer to "3.3.1 ".
2	Maintenance Setting	Sets the maintenance items which to inform. (Initial value: 0x0000 (no maintenance information notice))	Refer to "3.3.2 "
3	Energization time Maintenance threshold	Sets the energizing time for the device that notifies maintenance information.	-
4	Output On Count Threshold	Sets the valve output ON count that notifies maintenance information. Set this threshold when using the maintenance function. (maintenance function is disable due to the initial value 0)	-

3.3.1 Maintenance Monitor

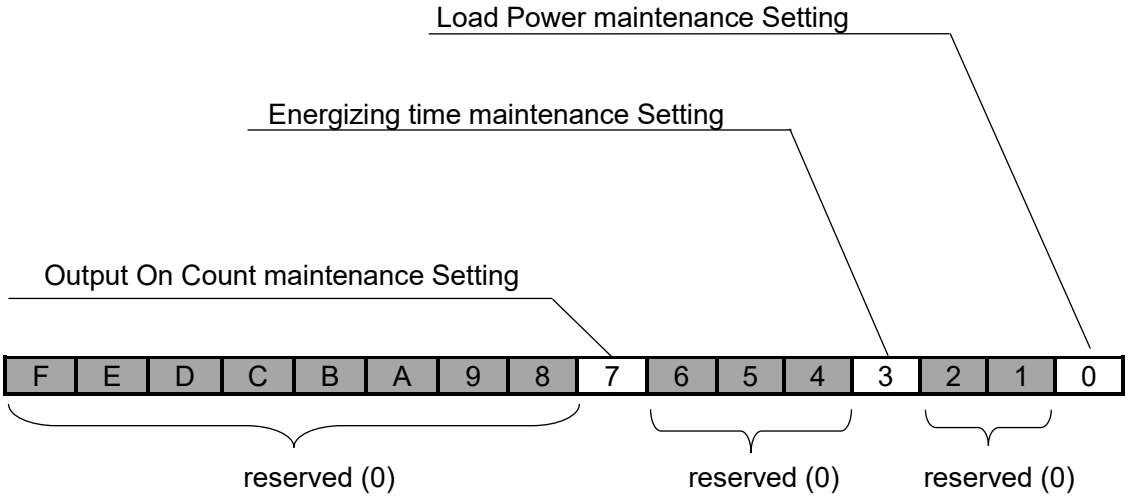
[Maintenance Monitor] is 2 bytes data.
Check the maintenance status of each device when [Maintenance Monitor] indicates “1: Need maintenance”.



Bit	Item	Description
0	Valve Power maintenance information	Notifies the valve power status. 0: Valve power ON (normal operation) 1: Valve power OFF
1	Reserve	0
2	Reserve	0
3	Energization Time maintenance information	Notifies the energizing time status. 0: No need maintenance 1: Need maintenance * "Energization Time Monitor value” and "Energization time Maintenance threshold" are compared.
4	Reserve	0
5	Reserve	0
6	Reserve	0
7	Output On Count maintenance information	Notifies the status of the valve output ON count. 0: No need maintenance 1: Need maintenance (ON counts ≥ threshold) * Set the [Output On Count Monitor] and [Output On Count Threshold] for each valve to notify.
8-F	Reserve	0

3.3.2 Maintenance Setting

Maintenance setting is 2 bytes data.
Use the function by changing the bit of the maintenance item to be used from “0”: Disable to “1”: Enable.



Bit	Item	Description
0	Load Power maintenance Setting	Sets whether to monitor the load power supply status. 0: Disable 1: Enable
1	Reserve	0
2	Reserve	0
3	Energization Time maintenance Setting	Sets whether to monitor the energizing time. 0: Disable 1: Enable
4	Reserve	0
5	Reserve	0
6	Reserve	0
7	Output On Count maintenance Setting	Sets whether to monitor the valve output ON Count. 0: Disable 1: Enable
8-F	Reserve	0

3.4 Output information (whole)

Valve output 16-point or 32-point can be set altogether or individually.
However, each valve's settings will be enable if the settings were made for each valve. Refer to "3.4.4 Output information (each valve)".

No.	Item	Description	Remarks
1	Cyclic Output Data	Indicates the data received by cyclic communication from the master unit.	-
2	Compulsion Output Data	Sets the output value when the forced output is set for the valve. 0: OFF 1: ON	Refer to "3.4.1 "
3	Compulsion Output Setting	Sets whether to output the valve outputs forcibly. 0: Cyclic output data - enable 1: Forced output data - enable	
4*1	Output setting at communication error	Set output status when communications error occurs. 0: Value data 1: Last data The value set with [No.5: Value setting at communication error] or the last value are selectable.	Refer to "3.4.2"
5*1	Value setting at communication error	Sets output value when a communication error occurs. 0: OFF 1: ON Sets "0: Value data" with [No.4: Output setting at communication error] to enable this settings.	
6	Output On Count Maintenance Monitor	Monitor the maintenance status of valves altogether. 0: No need maintenance 1: Need maintenance * If No.7 [Output On Count Maintenance Setting] is set to "1: Execute maintenance monitor", this will be "1: Need maintenance" when [Output On Count] exceeds [Output On Count Threshold].	Refer to "3.4.3"
7	Output On Count Maintenance Setting	Sets whether to monitor the valve output ON Count. 0: Stop maintenance monitor 1: Execute maintenance monitor * When [Output On Count maintenance information (bit 7)] of "3.3.2 Maintenance Setting" is enable, it will be notified to [Output On Count maintenance information] of "3.3.1 Maintenance Monitor".	
8	Load power supply monitor	Indicates the load power (valve power) status. Power ON: Valve power is ON. Power OFF: Valve power is not turned on.	-

*1 When the operation mode is set to [SLMP], "Output setting at communication error" setting is reflected to the "Output setting monitor at communication error" of the operation information. In addition, "Value setting at communication error" is reflected to "Value setting monitor at communication error".

3.4.1 Forced(Compulsion) output setting

Valve output can be changed temporarily.
* Forced output data is canceled when a communication error occurs. Reconfigure the setting as it is canceled when the unit power is turned OFF.

No.	Item	Description
1	Compulsion Output Data	Sets the output status of the valve. 0: OFF 1: ON “-“: Not set (“Don't Care”)
2	Compulsion Output Setting	Sets the point to output arbitrarily. 0: Cyclic communication output data - enable 1: Forced output data - enable

Example: Following tables show the case when the solenoid output s1 is set to OFF, the output s16 is set to ON, and the data transmitted by cyclic communication is used for the rest outputs s1.

Forced output data:

MSB															LSB
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

0: OFF, 1: ON, "-": “Don't Care”

Forced output setting:

MSB															LSB
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

0: Cyclic output data - Enable, 1: Forced output data - Enable

Solenoid valve output (output data monitor):

MSB															LSB
1	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	“C“	0

0: OFF, 1: ON, “C”: Cyclic output data

The bit set to [1: Forced output data - enable] for [Compulsion Output Setting] becomes the set value of [Compulsion Output Data].
The bit set to [0: Cyclic communication output data - enable] is output as cyclic communication output data sent from the master unit.

3.4.2 Settings in the event of communication error (when the operation mode is set to SLMP).

The valve output can be set to an arbitrary output state when a communication error occurs.
The unconfigured port holds the last output value.

No.	Item	Description
1	Output setting at communication error	Sets the point to output arbitrarily when a communication error occurs. 0: Value set by [value] 1: Maintain the last output status (Last data)
2	Value setting at communication error	Sets the output status (Value data) when a communication error occurs. 0: Output OFF 1: Output ON "-": Not set ("Don't Care")

Example: Following tables show the case when the solenoid output s1 is set to OFF, the output s16 is to ON, and the last output status is held for the rest outputs when a communication error occurs. (for 16-point output)

Output setting at communication error:

MSB															LSB
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

0: Value data 1: Last data

Value setting at communication error:

MSB															LSB
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

0: OFF, 1: ON, "-": "Don't Care"

Valve output when communication error occurs:

MSB															LSB
1	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	"C"	0

0: OFF, 1: ON, "C": Cyclic output data(Last data)

3.4.3 Maintenance (output On count)

No.	Item	Description
1	Output On Count Maintenance Monitor	Notifies the maintenance information of the valve's output ON count. 0: No need maintenance 1: Need maintenance (ON counts ≥ threshold) * Monitors when the [No.2: Output On Count Maintenance Setting] is set to "1: Execute maintenance monitor". In addition, set [Output On Count Threshold] in "Maintenance information" to notify.
2	Output On Count Maintenance Setting	Sets the monitoring status of the valve output ON count. 0: Stop maintenance monitor 1: Execute maintenance monitor * This can be set for each valve. If maintenance is needed, it will be reflected on the [Maintenance Monitor] and INFO LED.

Example: 16-point output
Notify the maintenance when the valve ON count of any solenoid valve among s1 to s8 becomes 0x0000FFFF or more.
The valve ON count s1 and s8 became 0x0000FFFF or more.

Output ON count maintenance setting

MSB LSB

0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

0: Stop maintenance monitor 1: Execute maintenance monitor

[Output On Count Threshold] : 0x0000FFFF
[Output On Count Threshold] is in common to all the valves.

Output On Count Maintenance Monitor

MSB LSB

0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1

0: No need maintenance 1: Need maintenance
When the valve ON count of s1 and s8 are 0x0000FFFF or more.

3.4.4 Output information (each valve)

The following items can be set and checked for each valve.
If the setting is made for each valve, it will be applied to the settings overall.

[Output ON count] can be checked for each valve.

No.	Item	Description
1	Cyclic Output Data	Indicates the data received by cyclic communication from the master unit.
2	Compulsion Output Data	Sets the output value when the forced output is set for this valve. 0: OFF 1: ON
3	Compulsion Output Setting	Sets whether to output the valve outputs forcibly. 0: Cyclic output data - enable 1: Forced output data - enable
4*1	Output setting at communication error	Set output status when communications error occurs. 0: Value data 1: Last data The value set with [No.5: Value setting at communication error] or the last value are selectable.
5*1	Value setting at communication error	Sets output value when a communication error occurs. 0: OFF 1: ON Sets “0: Value data” with [No.4: Output setting at communication error] to enable this setting.
6	Output On Count Maintenance Monitor	Monitor the maintenance status of valves altogether. 0: No need maintenance 1: Need maintenance * If [No.7: Output On Count Maintenance Setting] is set to "1: Execute maintenance monitor", this will be "1: Need maintenance" when [Output On Count] exceeds [Output On Count Threshold].
7	Output On Count Maintenance Setting	Sets whether to monitor the valve output ON Count. 0: Stop maintenance monitor 1: Execute maintenance monitor * When [Output On Count maintenance information (bit 7)] of “3.3.2 Maintenance Setting” is enable, it will be notified to [Output On Count maintenance information] of "3.3.1 Maintenance Monitor".
8	Output On Count Monitor	Indicates the number that the output of this valve turned ON.

*1 When the operation mode is set to [SLMP], “Output setting at communication error” setting is reflected to the “Output setting monitor at communication error” of the operation information. In addition, “Value setting at communication error” is reflected to “Value setting monitor at communication error”.

3.5 Correspondence between Device Output Number and PLC Address Number

3.5.1 RY(remote output)

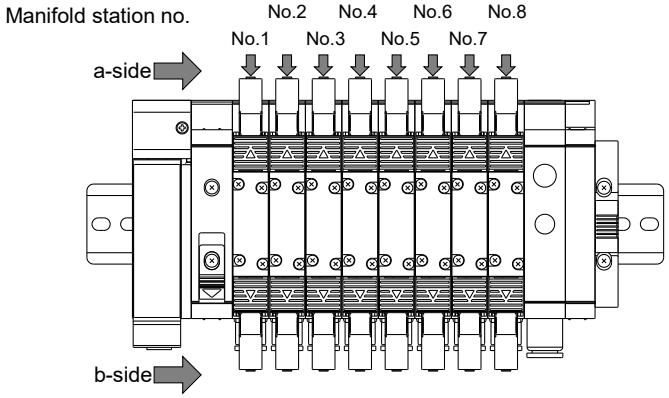
RY(remote output) data sent from the master unit to the remote unit.
Refer to the table below for the solenoid output number and RY(remote output) number.

Remote output	Solenoid output no.	
	T8EB□1	T8EB□2
	OPP7-1EB□	OPP7-2EB□
RY□0	s1	s1
RY□1	s2	s2
RY□2	s3	s3
RY□3	s4	s4
RY□4	s5	s5
RY□5	s6	s6
RY□6	s7	s7
RY□7	s8	s8
RY□8	s9	s9
RY□9	s10	s10
RY□A	s11	s11
RY□B	s12	s12
RY□C	s13	s13
RY□D	s14	s14
RY□E	s15	s15
RY□F	s16	s16
RY(□+1)0	-	s17
RY(□+1)1	-	s18
RY(□+1)2	-	s19
RY(□+1)3	-	s20
RY(□+1)4	-	s21
RY(□+1)5	-	s22
RY(□+1)6	-	s23
RY(□+1)7	-	s24
RY(□+1)8	-	s25
RY(□+1)9	-	s26
RY(□+1)A	-	s27
RY(□+1)B	-	s28
RY(□+1)C	-	s29
RY(□+1)D	-	s30
RY(□+1)E	-	s31
RY(□+1)F	-	s32

3.5.2 Example of valve number array corresponding to solenoid output number

In the table below, each valve number (Valve No.) consists of a number (the station number) and an alphabet (a for a-side solenoid and b for b-side solenoid). For example, “1a” refers to 1st station a-side solenoid. Also, “V” stands for “Vacant”.
Manifold stations are numbered in order from left to right with the piping port towards the user (refer to the figure below).
As appearance and maximum number of stations differ depending on the solenoid valve model, check individual specifications.

< T8EB1, T8EBP1 (16-point output)>



The figure on the left is an example of mounting eight stations of double-solenoid type manifold valves.
There is no solenoid on the b-side for single-solenoid types.

Standard wiring

- Single solenoid valve

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a

- Double solenoid valve

Solenoid output no.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b

- Mixed (both single and double solenoid valves are mounted) [example]

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16
Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	7a	7b	8a	(V)	(V)	(V)	(V)	(V)

Double wiring

- Single solenoid valve

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16
Valve No.	1a	(V)	2a	(V)	3a	(V)	4a	(V)	5a	(V)	6a	(V)	7a	(V)	8a	(V)

- Double solenoid valve

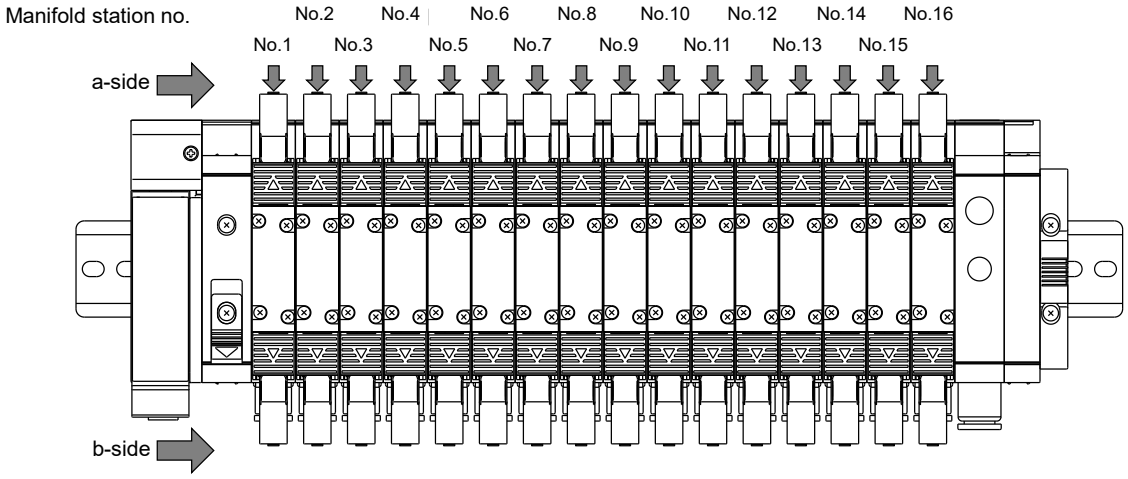
Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b

- Mixed (both single and double solenoid valves are mounted) [example]

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16
Valve No.	1a	(V)	2a	(V)	3a	3b	4a	4b	5a	(V)	6a	(V)	7a	7b	8a	(V)

< T8EB2, T8EBP2 (32-point output)>

The figure below is an example of mounting sixteen stations of double-solenoid type manifold valves. There is no solenoid on the b-side for single-solenoid types.



Standard wiring

- Single solenoid valve

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	s22	s23	s24	s25	s26	s27	s28	s29	s30	s31	s32
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a	17a	18a	19a	20a	21a	22a	23a	24a	25a	26a	27a	28a	29a	30a	31a	32a

- Double solenoid valve

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	s22	s23	s24	s25	s26	s27	s28	s29	s30	s31	s32
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b

- Mixed (both single and double solenoid valves are mounted) [example]

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	s22	s23	s24	s25	s26	s27	s28	s29	s30	s31	s32
Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	7a	7b	8a	9a	10a	10b	11a	11b	12a	13a	14a	14b	15a	15b	16a	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)	(V)

Double wiring

- Single solenoid valve

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	s22	s23	s24	s25	s26	s27	s28	s29	s30	s31	s32
Valve No.	1a	(V)	2a	(V)	3a	(V)	4a	(V)	5a	(V)	6a	(V)	7a	(V)	8a	(V)	9a	(V)	10a	(V)	11a	(V)	12a	(V)	13a	(V)	14a	(V)	15a	(V)	16a	(V)

- Double solenoid valve

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	s22	s23	s24	s25	s26	s27	s28	s29	s30	s31	s32
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b

- Mixed (both single and double solenoid valves are mounted) [example]

Solenoid output No.	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12	s13	s14	s15	s16	s17	s18	s19	s20	s21	s22	s23	s24	s25	s26	s27	s28	s29	s30	s31	s32
Valve No.	1a	(V)	2a	(V)	3a	3b	4a	4b	5a	(V)	6a	(V)	7a	7b	8a	(V)	9a	(V)	10a	(V)	11a	11b	12a	12b	13a	(V)	14a	(V)	15a	15b	16a	(V)

3.6 Programming

The master unit handles this device as a remote station (T8EB□1 for 16-point output, T8EB□2 for 32-point output).

There are two types of I/O data: RY (remote output) data sent from the master unit to the remote station (this product) and RX (remote input) data sent from the remote station to the master unit.
This product is an output device that receives remote output data from the master unit and output to the valve.
Refer to the instruction manual issued by the PLC manufacturer when programming.
Refer to the following table to program the mapping of RY data.
The setting made to specify which action to take on the output in the event of an error is a unique function of this device. This output status setting does not affect the program.

Mapping for RY data

Number of output points		RY	Bit															
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
32 points	16 points	2 bytes	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
	-	4 bytes	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

4. MAINTENANCE AND INSPECTION

⚠ WARNING

Turn off the power, stop the supply of compressed air and make sure that there is no residual pressure before performing maintenance.

Do not disassemble, modify, or repair the product.
These may cause failure or malfunction.

⚠ CAUTION

Plan and perform daily and periodic inspections so that maintenance can be managed properly.
If maintenance is not properly managed, the product's functions may deteriorate significantly and this may lead to faults (such as short service life, damage, and malfunction) or accidents.

Do not drop or apply excessive vibrations or shocks to the product.
These may cause damage because parts inside the product are made to precise specifications.

4.1 Periodic Inspection

This section describes the cleaning and inspection of the device for daily maintenance and what to do when replacing the device. In order to use the product under optimum conditions, clean and inspect the product periodically.

■ Cleaning

1. For daily cleaning, wipe the product with a soft dry cloth.
2. When stains cannot be removed by wiping with a dry cloth, moisten the cloth with diluted neutral detergent (2%), wring it out well, and wipe off the stains.
3. Objects such as rubber, vinyl, or tape may stain the device if they are left in contact with the device for a long period. Remove such objects when cleaning if they are leaving stain on the product.

■ Inspection

Perform inspection once or twice a year.
Conduct inspections at a shorter interval if using the product in an environment where temperature or humidity is extremely high or in a dusty environment.

<Inspection item>
Inspect the following items to make sure that each item satisfies the criteria.
If any item does not meet the criteria, improve the surrounding environment or adjust the device.

Inspection item	Description	Criteria	Inspection method
Environment	Is the surrounding and in-panel temperature appropriate?	Refer to "1.3.2 Device specifications".	Thermometer
	Is the surrounding and in-panel humidity appropriate?	Refer to "1.3.2 Device specifications".	Hygrometer
	Is there any accumulated dust?	No dust	Visual inspection
Installation	Is the device fixed securely?	No looseness	Phillips screwdriver
	Is the power cable connector fully inserted?	No looseness	Flat blade screwdriver
	Is the network cable connector fully inserted?	No looseness	Visual inspection
	Is the connection cable not broken?	No abnormality in appearance	Visual inspection

■ Checking the device before/after replacing

Each unit (master and device) is a component that constitutes a part of a network.
If any unit fails, immediately perform recovery work to prevent the entire network from being affected. To restore the network function as fast as possible, it is recommended to prepare spare devices.

<Inspection item>
If a fault is detected and the device is replaced with a new one, check if the new device has no abnormality. Also, confirm the device settings.

<Settings for replacement device>
For the switches on the replacement device, confirm the specifications and set the same settings as the previous one.

4.2 Removing and Mounting

⚠ WARNING

Turn off the power and completely release the pressure before removing or adding a manifold solenoid valve.

Thoroughly read and understand this Instruction Manual before removing and adding the manifold solenoid valve.

Do not touch the electrical wiring connection (bare live part).
An electric shock may occur.

Do not touch live parts with bare hands.
An electric shock may occur.

⚠ CAUTION

Check the device IP address and the output setting at communication error, before turning on the unit power.

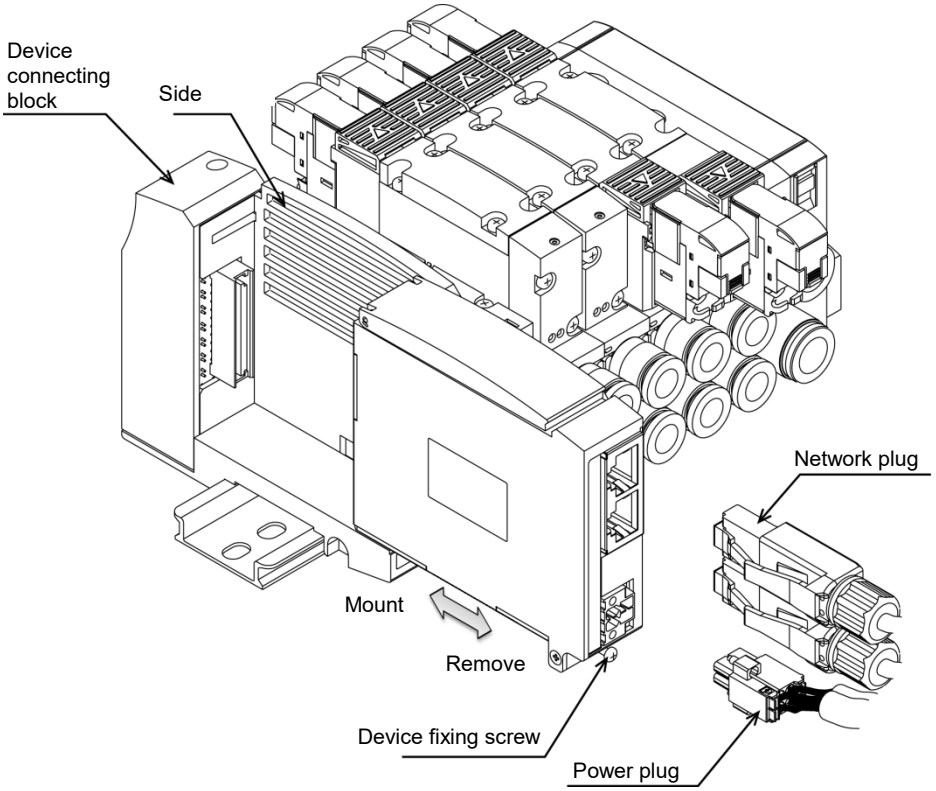
Do not attach or detach the plug while the power is turned on.
These may cause failure or malfunction.

Do not pull out the device by pulling the cable or connector.
A cable disconnection or damage may occur.

Fully loosen the plug fixing screws before removing the plug.
After inserting the plug, tighten the plug fixing screws securely.

4.2.1 Removing the product (device)

1. After confirming safety, stop network communication as necessary and turn off all peripheral equipment.
2. After confirming safety, turn off the unit power and valve power as necessary.
3. Remove the network plug and power plug.
4. Loosen the device fixing screw.
   * Be careful not to lose the fixing screw.
5. Hold and pull out the product slowly in the direction of the arrow.



4.2.2 Mounting the product (device)

1. Set the IP address of the product.
2. Turn off the power (for unit/valve) and connect the network plug and power plug.
   The system may start operating suddenly if the plug is connected while the power is turned on.
   Be careful of the surroundings and secure safety before connecting the plugs.
   Power plug. (Appropriate tightening torque:0.25 N·m)
3. Hold the product and insert it slowly in the direction of the arrow.
4. Check that the product and device connecting block are properly connected and tighten the device fixing screw firmly.
   (Appropriate tightening torque: 0.5 N·m)
5. Confirm safety and turn on each power.

5. Troubleshooting

5.1 Problems, Causes, and Solutions

Troubleshooting for this device must be performed not only for the single unit but for the entire system. The system may start operating suddenly depending on the communication state. Use extreme care and ensure safety during maintenance.

■ Fault 1: PW, PW(V) does not light up.

- Check that the power cable is properly connected and in good condition.
- Check that the supplied power voltage is used within the specified range.

■ Fault 2: ERR LED is blinking.

- Check that the power to the PLC is turned on.
- Check that there are no problems (such as damage or disconnection) with the network cable or connector connection.
- Check that the network cable is compatible with CC-Link IEF Basic network.
- Check that transmission distance is compatible with CC-Link IEF Basic network.
- Check that there are no noise-generating devices or high-voltage lines near the communication line.

■ Fault 3: INFO LED is blinking.

- Check the maintenance status. (Refer to "3.3 Maintenance information".)
- Check if the setting has changed by hardware switch or Basic/SLMP communication.

■ Fault 4: INFO LED lights up.

- Replace the device unit. (A system error has occurred, and recovery is not possible)

■ Fault 5: RUN LED does not light up.

- Check that the PLC configuration settings and the connected device are matched.
- Check that the network cable is properly connected and not broken.

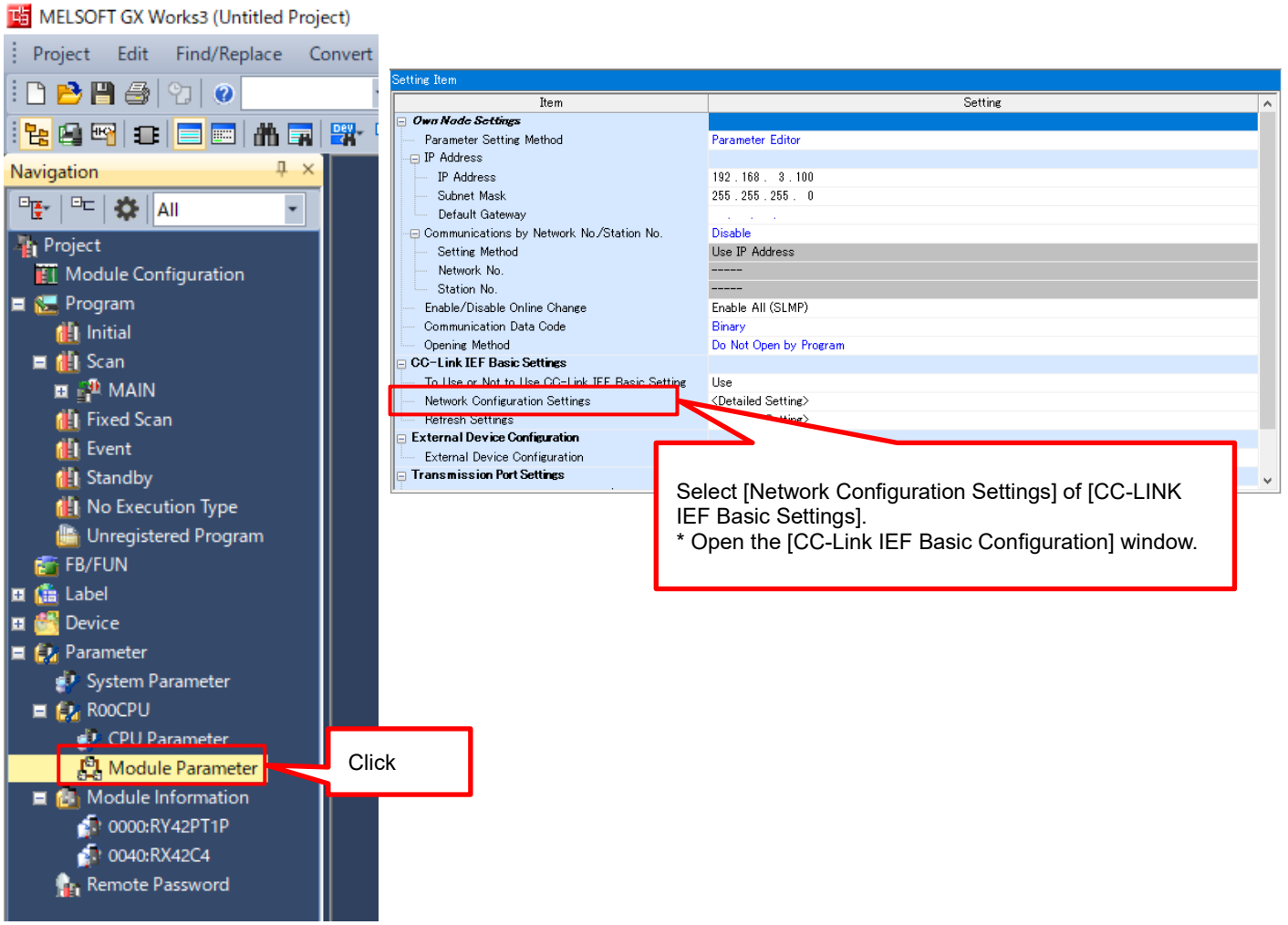
■ Fault 6: The device does not perform according to the specified output mode setting when a communication error occurs.

- Turn off the power and turn on again after setting the switches.
  Or check the settings in the event of a communication error. (Refer to "3.4.2 Settings in the event of communication error (when the operation mode is set to SLMP)".)

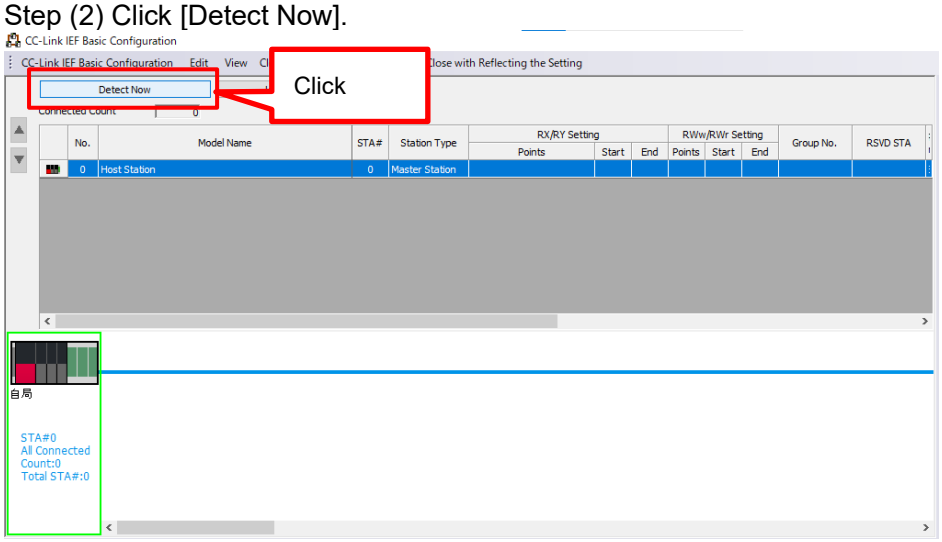
5.2 Example of Parameter Setting

Following is the example of monitoring and setting of items defined by CSP+ file.
For engineering tools, install the CSP+ file in advance.
(A device error will occur in step (2))
* Reference engineering tool: GX Works3 by Mitsubishi Electric Corporation

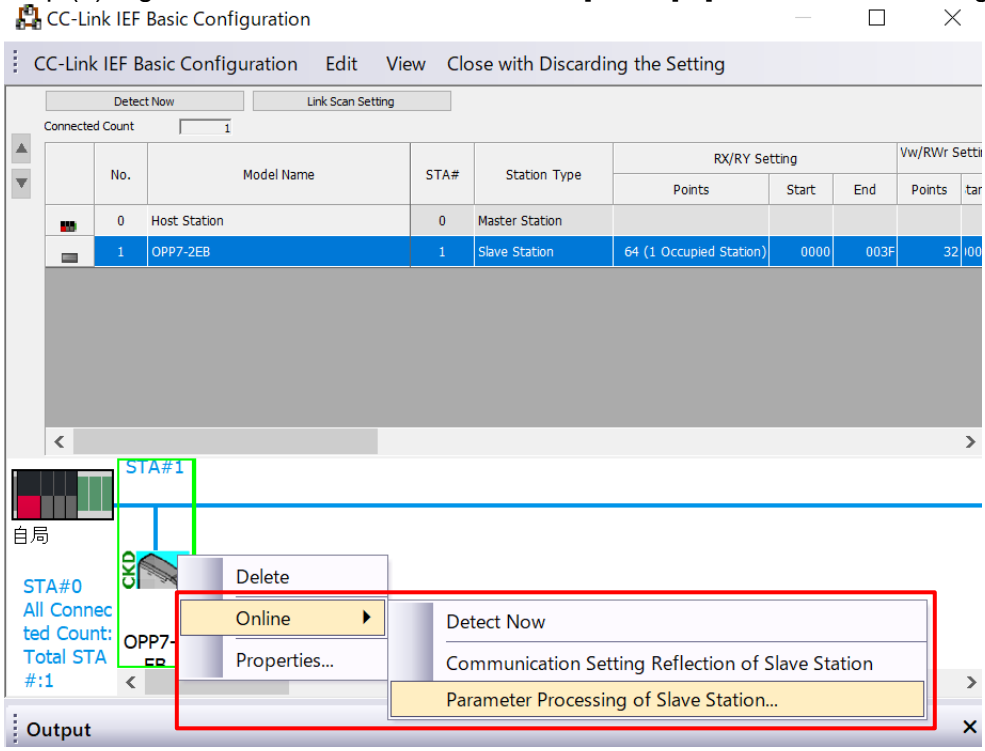
Step(1) Select [Module Parameter] in the navigation window.



Step (2) Click [Detect Now].

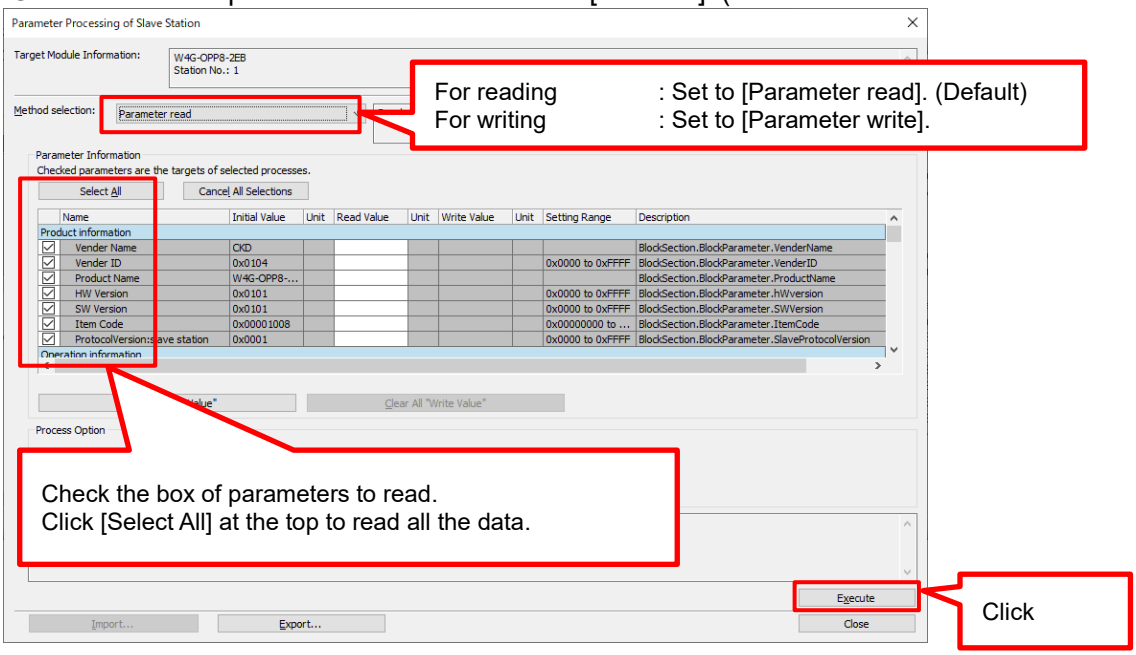


Step (3) Right-click the read device and select [Online] - [Parameter Processing of Slave Station].



■ Reading and writing parameters

・Check the box of parameters to read and click [Execute]. (It will be reflected to the read value.)



6. WARRANTY PROVISIONS

6.1 Warranty Conditions

■ Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified below, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD's facilities free of charge.
However, following failures are excluded from this warranty:

- Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or this Instruction Manual.
- Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
- Failure not caused by the product.
- Failure caused by use not intended for the product.
- Failure caused by modifications/alterations or repairs not carried out by CKD.
- Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
- Failure caused by acts of nature and disasters beyond control of CKD.
- Failure caused by incorrect use such as careless handling or improper management.
- Failure that could have been avoided if the customer's machinery or device, into which the product is incorporated, had functions and structures generally provided in the industry.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.

■ Confirmation of product compatibility

It is the responsibility of the customer to confirm compatibility of the product with any system, machinery, or equipment used by the customer.

■ Others

The terms and conditions of this warranty stipulate basic matters.
When the terms and conditions of the warranty described in individual specification drawings or the Specifications are different from those of this warranty, the specification drawings or the Specifications shall have a higher priority.

6.2 Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.