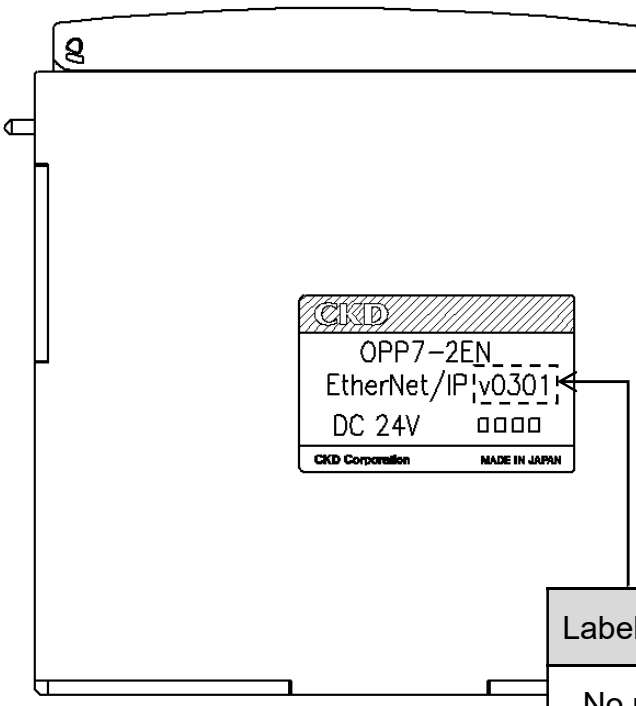
How to check the Instruction Manual to be read

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-A29252-A
V0202	
v0301	SM-A59223-A

CKD

SM-A29252-A

INSTRUCTION MANUAL

Serial Transmission Slave Unit 4GR Series T8EN*

Compatible with EtherNet/IP

Device Rev 2.2

- Please read this instruction manual thoroughly before using the product.
- In particular, carefully read the contents related to safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

CKD Corporation

Safety precautions

All customers designing and manufacturing a device which uses CKD products have the responsibility to, and are expected to, manufacture a device that is safe by checking that the safety of the system operated by the following components is secured: the device mechanism, the pneumatic or fluid control circuit, and the electrical control that controls these components.

It is important to select, use, handle, and maintain CKD products appropriately to ensure that each CKD product is used safely.

Please observe all warnings and precautions for each CKD product to ensure the safety of not only the CKD products but also your device containing CKD products.

⚠ WARNING

1. This product has been designed and manufactured as a component for general industrial machinery. It must only be handled by persons with sufficient knowledge and experience in using this product.

2. Use this product within its specifications.

This product must be used within its stated specifications. Do not attempt to modify or perform additional work on the product.

Moreover, this product is intended to be used as a component for general industrial machinery. It is not intended for use outdoors or in the applications listed below. (However, this product may be used under some unintended conditions if the customer consults CKD prior to use, understands and agrees to the product specifications, and provides safety measures that avoid risks in the event of failures.)

Not intended for following applications:

(1) Applications that require safety, which include nuclear power applications, railroad systems, aviation systems, ships, vehicles, medical equipment, any equipment or application that involves direct contact with food and beverage, amusement equipment, emergency shutoff circuits, press machines, brake circuits, and safeguards

(2) Applications where serious risks to human life and/or property are expected and safety is especially required

3. Observe all applicable rules and regulations, such as organization standards and laws, to ensure safety in such matters as device design and control.

Applicable organization standards and regulations include:

— ISO 4414 and JIS B8370, Pneumatic fluid power – General rules relating to systems

— JFPS 2008, Guidelines for selection and use of pneumatic cylinders

— High Pressure Gas Safety Law, Occupational Safety and Health Act, and other rules, organization standards, and laws concerning safety

4. Do not install or use this product or remove any equipment until safety is confirmed.

(1) Conduct inspection and services on machines and devices after the safety of all systems related to this product is confirmed.

(2) Handle with care as there may be hot surfaces or parts even after operation has stopped.

(3) Before inspecting or servicing this product, stop supplying energy source (air or fluid supply), turn off power to the facility, and discharge any compressed air and fluid from the system. Be careful of leaks.

(4) Before starting or restarting a machine or a device that incorporates pneumatic components, make sure that the safety of the system is ensured (for example, a pop-out prevention mechanism is in place and working effectively).

5. Observe all safety instructions in the pages that follow to prevent accidents.

In this instruction manual, the safety instructions are ranked as "DANGER", "WARNING", or "CAUTION"

DANGER	If unobserved, a hazardous situation which may result in fatal or serious injury is expected. There is also a high degree of emergency (urgency) to a warning.
WARNING	If unobserved, a hazardous situation in which the user may suffer a fatal or serious injury is expected.
CAUTION	If unobserved, a hazardous situation in which the user may suffer a minor injury or there is only property damage is expected.

Even some items labeled as “CAUTION” may lead to serious results depending on the particular situation. In any case, make sure to observe all instructions since important information is described in each one.

Important notes on warranty

Term of warranty

The product specified herein is warranted for one (1) year from the date on which the product is delivered to the location designated by the customer.

Scope of warranty

If the product becomes defective for reasons attributable to CKD within the above term of warranty, CKD will promptly provide a replacement for the defective product or part thereof or repair the defective product at one of CKD’s facilities free of charge.

However, following defects are excluded from this warranty:

(1) Defects due to use of the product under conditions and in environments not conforming to those stated in this instruction manual
(2) Defects due to reasons other than the delivered product
(3) Defects due to use for which the product is not intended
(4) Defects due to modifications and alterations to structure, performance, and/or specifications without permission from CKD and repairs not authorized by CKD
(5) Defects due to reasons unforeseen at the level of technology available at the time of delivery
(6) Defects due to natural disasters, accidents, or any other causes beyond control of CKD

The warranty set forth above covers only the delivered product itself and does not cover any incidental or consequential damages due to failure of the delivered product.

Determination of compatibility

It is the responsibility of the customer to determine whether the CKD product is compatible with the system, machinery, and/or device with which the product is to be used.

⚠ WARNING

- If you have to use the product under conditions that are different from the specified conditions or if you intend to use the product for a special application, consult CKD before using the product.
- Before performing maintenance, turn off the power, cut off the compressed air supply, and make sure there is no residual pressure.
- Before increasing or decreasing the number of stations (valves) on the manifold, turn off the power and release pressure.
- Before disassembling or assembling the manifold, read this instruction manual carefully and with full understanding of its content.
- Before performing electrical wiring, read this instruction manual carefully and with full understanding of its content.

⚠ CAUTION

- Regularly perform daily and periodic inspections to correctly maintain product performance.
- Confirm working voltage and polarity before wiring and turning on the power.
- Do not touch electrical wiring connections (exposed live parts); otherwise, there is a risk of electric shock. During wiring, keep the power off. Also, do not touch these live parts with wet hands.
- Before using the serial transmission adapter unit, read the manual for the applicable communication system carefully and with full understanding of its content.
- System components such as valves and cylinders could malfunction if the serial transmission slave station address setting is incorrect. Always check the address setting before starting use.
- This product does not meet the surge immunity requirements specified in EN61000-4-5 for CE marking. Please provide appropriate protective measures on the device side.
- The valve status light may flicker momentarily when the valve power of the adapter unit turns ON (i.e., when the power voltage starts to rise). This will not cause the valve itself to turn on or off.

TABLE OF CONTENTS

4GR Series T8EN*(OPP7-*EN)

Serial Transmission Slave Unit

Instruction Manual Number: SM-P29252-A

1. PRODUCT

1.1 General outline of the system

1) T8EN*(OPP7-*EN)

T8EN*(OPP7-*EN) is an adapter unit for 4GR Series which can establish connection to EtherNet/IP open field network system managed by Open DeviceNet Vendor Association, Inc. (or ODVA).

T8EN*(OPP7-*EN) adapter unit has the following features:

(1) It is connected to PLC with only an Ethernet cable (Category 5 or higher recommended), allowing a significant reduction of man-hours in wiring.
(2) It has separate power supplies for the unit and the valve, ensuring easy maintenance work.
(3) It allows, when a communication error occurs, the adapter unit output state to be set (either hold or clear) with a switch.
(4) It is mounted by inserting it into a slot on the manifold block and secured with just one screw, allowing reduction of man-hours in maintenance.
(5) It is available in +COM or −COM output type and 16 or 32 output points, allowing for use in a wide variety of applications.

2) EtherNet/IP

EtherNet/IP is an open and global industrial Ethernet that implements Common Industrial Protocol (or CIP), a control communication protocol, over standard Ethernet at the application layer. While general communication specifications are the same as standard Ethernet, CIP enables seamless communication across different networks (e.g., DeviceNet and CompoNet). It also enables multi-vendor interoperability.

EtherNet/IP has the following features:

(1) Allows high-speed and large capacity data communication with cyclic (implicit) communication.
(2) Allows cyclic (implicit) communication at cycles specified for each application.

Note: Before using this adapter unit, thoroughly read all relevant users' manuals.

This instruction manual mainly describes T8EN*(OPP7-*EN).

For information on the scanner (master) and adapters (other slaves) to be connected to the system, read the manuals provided by their manufacturers.

For information on the manifold solenoid valves, read this instruction manual as well as the manuals provided with the solenoid valves to fully understand their functions and performance for their proper operation.

If you have any questions concerning the EtherNet/IP system, refer to the following website run by ODVA: http://www.odva.org.

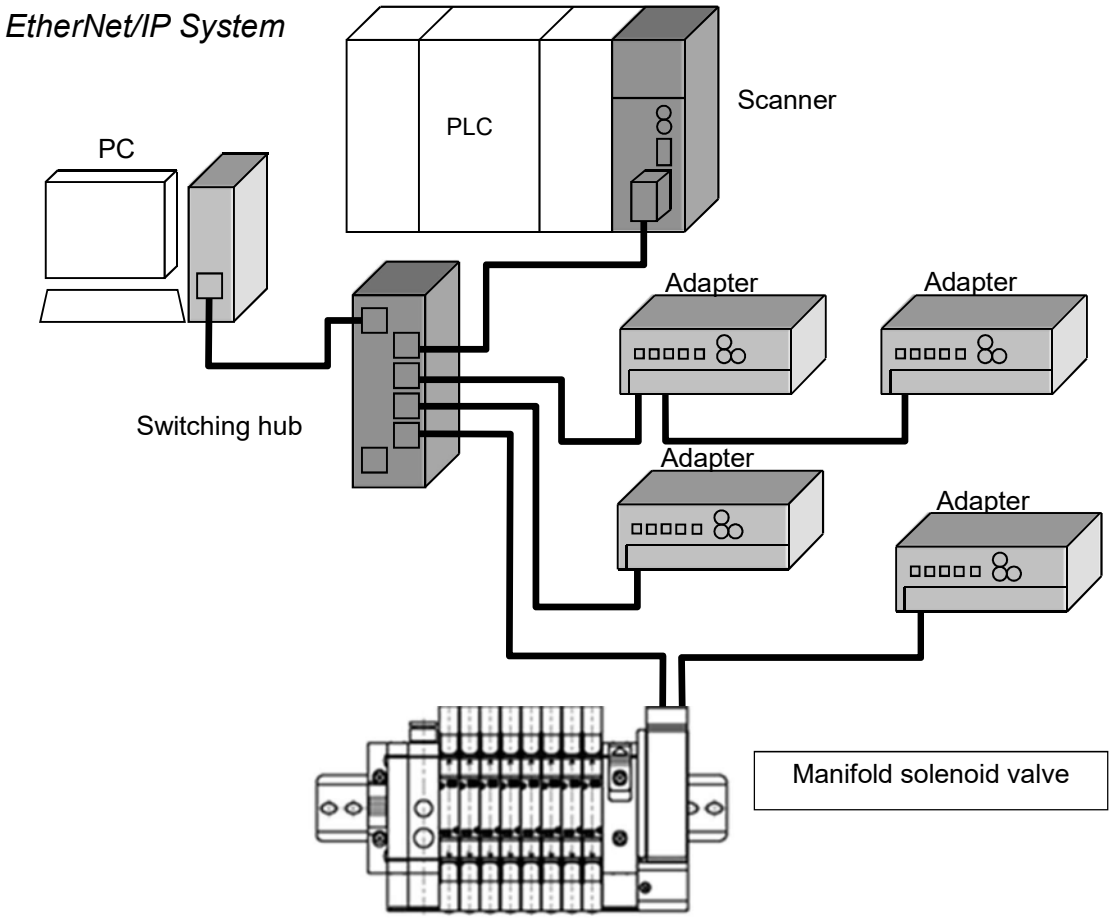
1.2 Network structure

EtherNet/IP system chiefly consists of PLC, scanner (master), N4G*(R)-T8EN** mounted manifold solenoid valve, and peripheral equipment.

1) PLC and scanner combination examples

PLC manufacturer	Compatible PLC	Scanner model
OMRON Corporation	NJ Series	NJ301/NJ501
	CS1 Series	CS1W-EIP21
	CJ1 Series	CJ1W-EIP21
Rockwell Automation, Inc.	1756-L75	1756-EN2TR
	1768-L43	1768-ENBT
	1769-L18ERM-BB1B	
Other EtherNet/IP-compatible scanners		

2) Fundamental structure of the system



Scanner (master) ·····This device requests communication connection and controls adapters (slaves).
Adapter (slave) ·····This device receives communication connection requests and handles I/O data.
Switching hub ·····This device relays data for the network.

1.3 Specifications

1) Transmission specifications

Item	Specification
Communication protocol	Compliant with EtherNet/IP
Link parameters	Auto Negotiation (100M/10M bps, full/half duplex)
Transmission media (Network cable)	Ethernet cable (Category 5 or higher) Shielded twisted-pair cable (cable recommended by EtherNet/IP)

Note: This adapter unit does not support DLR (Device Level Ring) and Quick Connect.

CAUTION

- Link parameters (baud rate and duplex mode) must correspond to the connecting EtherNet/IP unit. If they do not correspond, communication will become unstable and link may not be established or may cycle on and off.
- Upon selecting the network cable, consider the operating atmosphere (such as noise and temperature). Also, note that the maximum length of the cable between devices varies depending on the cable used.
- While there are 2 types of pin assignments, T568A and T568B, for RJ45 (8-pin modular connector) and Ethernet cable, mixing these two assignments may lead to service interruption. Make sure specifications are understood before wiring.

3) T8EN*(OPP7-*EN) specifications

Always operate this adapter unit within its product specifications.

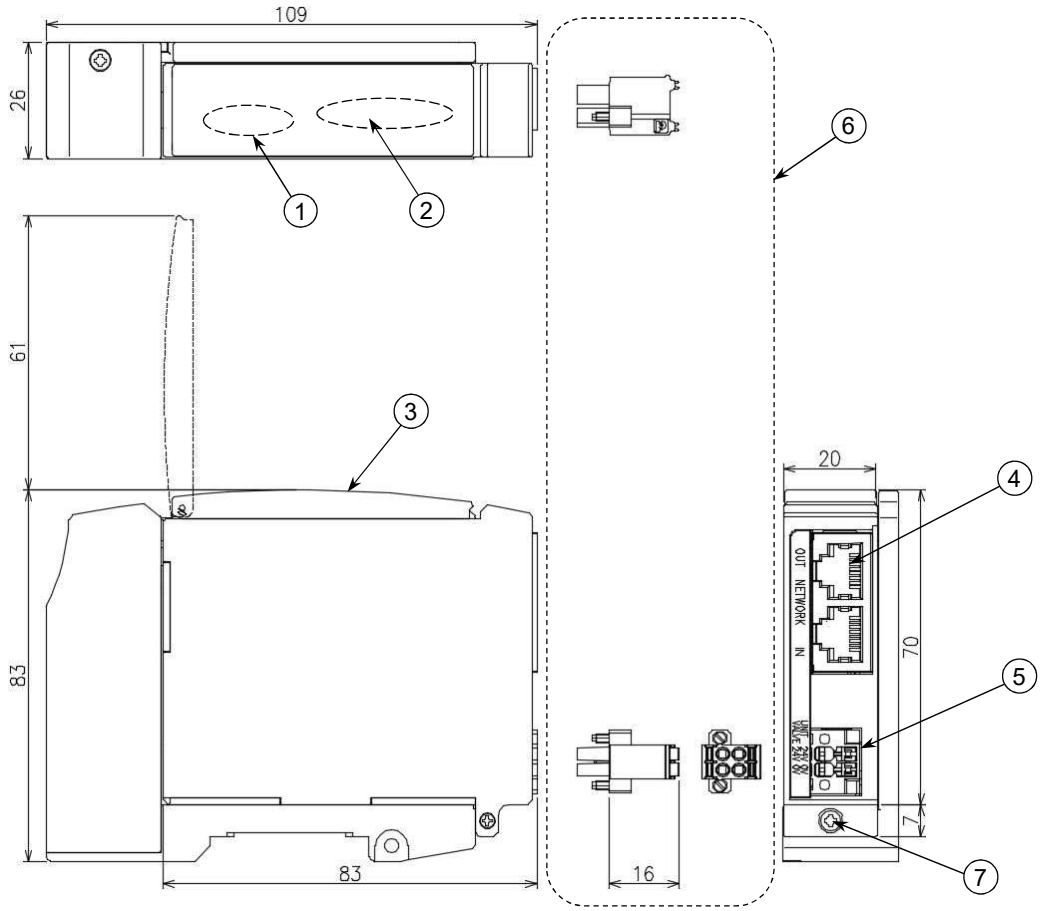
Item		Specification			
Model number		T8EN1 (OPP7-1EN)	T8EN2 (OPP7-2EN)	T8ENP1 (OPP7-1EN-P)	T8ENP2 (OPP7-2EN-P)
Unit power supply voltage		21.6 VDC to 26.4 VDC (24 VDC ±10%)			
Unit power current consumption		130 mA or less (at 24.0 VDC with all points ON)			
Valve power supply voltage		22.8 VDC to 26.4 VDC (24 VDC +10%, −5%)			
Valve power current consumption		15 mA or less (with all points OFF) 40 mA or less (with all points ON and without load)			
Output type (polarity)		+COM (NPN)		-COM (PNP)	
Number of output points		16 points	32 points	16 points	32 points
IP address setting		Between 01 and FE (in hex) [1 and 254 (in dec)][*1] (set using switches)			
Output setting when communication error occurs		Hold (maintains output) /Clear (clears output)[*2]			
Insulation resistance		30 MΩ or more with 500 VDC between external terminals and case			
Withstand voltage		500 VAC for 1 minute between external terminals and case			
Noise resistance		500 Vp-p, pulse width of 1 μsec			
Shock resistance		294.0 m/s^2 in 3 directions, 3 times each			
Storage temperature		−20 to 70°C			
Storage humidity		30 to 85%RH (no dew condensation)			
Ambient temperature		−5 to 55°C			
Ambient humidity		30 to 85%RH (no dew condensation)			
Ambient atmosphere		No corrosive gas			
Communication protocol		EtherNet/IP-compliant			
Link parameters		Auto negotiation (100M/10M bps, full/half duplex)			
EtherNet/IP connection connector		RJ45 (8-pin modular connector)			
Output isolation type		Photocoupler isolation			
Max. load current		40 mA per output point			
Leakage current		0.1 mA or less			
Residual voltage		0.5 V or less			
Fuse rating		Valve power: 24 V, 3 A (fuse not replaceable) Unit power: 24 V, 2 A (fuse not replaceable)			
Status indicator		LED (communication status, unit power and valve power statuses[*3])			
Number of occupied stations		1 station			
Degree of protection		IP20			
Vibration proof	Durability	10 Hz to 150 Hz to 10 Hz, 1 octave/minute, 15 sweeps each in X, Y, Z directions at half-amplitude of 0.75 mm or acceleration of 98.0 m/s^2, whichever is smaller			
	Malfunction	10 Hz to 150 Hz to 10 Hz, 1 octave/minute, 4 sweeps each in X, Y, Z directions at half-amplitude of 0.5 mm or acceleration of 68.6 m/s^2, whichever is smaller			

[*1] In hardware setting mode, first part of IP address is fixed and predefined as 192.168.1.

[*2] Selection can be made only when the operation mode setting is OFF (hardware setting mode).

[*3] Valve power status can be monitored only when voltage within the specified range is supplied to unit power.

1.4 Parts of adapter unit



① Status monitoring lights
These LEDs indicate adapter unit status and network status.

② Switches
These DIP switches and rotary switches are used to set the adapter unit IP address, the output when a communication error occurs, and the operating mode.

③ Cover
This cover protects the status monitoring lights and the switches.

④ Network connector socket (with two RJ45 ports [IN and OUT])
(Network connector plugs are not included.)
IN: I/O port for EtherNet/IP communication
OUT: I/O port for EtherNet/IP communication
There is no difference in the function between IN and OUT ports.

⑤ Unit/valve power socket
This is the socket for connecting the unit/valve power plug (included with the product).

⑥ Unit/valve power plug (included with the product)
This is the plug for connecting the unit and valve power cables (24 V).

⑦ Mounting screw (M2.5 Taptite screw)
This screw secures the adapter unit to the connecting block.

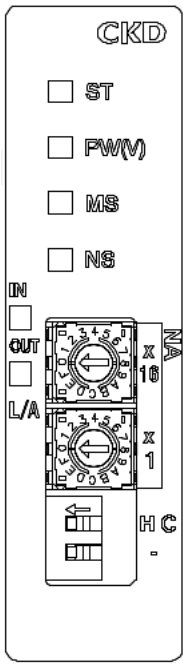
1.5 Switches and LED indicators

CAUTION

- Discharge static electricity that has built up on your body before touching the adapter unit. Otherwise, static electricity can cause damage to the adapter unit.

1) Switches

These switches are used to set the adapter unit IP address, the output when a communication error occurs, and the operating mode.
The adapter unit functions according to the IP address, the output mode, and the operating mode loaded at power-up.
The IP address is 192.168.1.NA, where NA part is set using switches.



Name of switch	Purpose
[NA (node address) switch setting] NA ×16: higher-digit ×1: lower-digit	Used to set the NA part of IP address to a value between 01 and FE (in hexadecimal) [1 to 254 (in decimal)]. Higher-digit is set with x16 switch and lower-digit is set with x1 switch. See “3.1 Switch settings” for details on how to set these switches.
[Output mode setting] HC	Used to specify whether to hold (H) or clear (C) output status when a communication error occurs.
[Operation mode setting] –	Used to specify whether to use switches (hardware setting mode) or software setting mode when setting the IP address and output mode.

2) LED indicators

These LEDs indicate adapter unit status and network status. See table below for their descriptions.

Name	Function	Status	
ST	Indicates adapter unit status	No light	Unit power: OFF
		Solid yellow/Flashing green	Error with adapter unit
		Solid green	Normal
PW (V)	Indicates valve power status	No light	Valve power: OFF
		Solid green	Valve power: ON
MS	Indicates adapter unit status related to EtherNet/IP	Flashing green	No IP address set or setting communication
		Solid green	Normal
		Flashing red	Improper switch setting
		Solid red	Error with adapter unit
NS	Indicates network status related to EtherNet/IP	Flashing green	No link
		Solid green	Link established (normal)
		Flashing red	Communication time out
		Solid red	Duplicate address
L/A IN	Indicates Ethernet (IN) port status	No light	No link, no data transfer
		Solid green	Link established, no data transfer
		Solid green/Rapidly flashing yellow	Link established, transferring data
L/A OUT	Indicates Ethernet (OUT) port status	No light	No link, no data transfer
		Solid green	Link established, no data transfer
		Solid green/Rapidly flashing yellow	Link established, transferring data

2
CAUTION

2. PRECAUTIONS

- For the power supplies used as network power supply and valve power supply, use AC/DC power supply adapters (e.g., switching power supplies) that comply with EMC standards in order to be in conformity with the requirements of the relevant EC Directive.
- Before turning on or off the power, take a good look around and make sure it is safe to do so as the components in the system, including the valve (cylinder), may move unexpectedly.
- Refer to the user's manual provided for the scanner (master) concerning the transmission delay time. The transmission delay within the entire system depends on the scan time achieved by the PLC and on other devices included in the system.
- Solenoid valve response time varies by model. Refer to the valve specification for the delay in response time.
- The time it takes for the solenoid valve to turn off is delayed by approximately 20 msec since there is a surge absorbing circuit incorporated in the adapter unit.
- Make sure the power cables and network cables are connected according to the specifications to avoid any incorrect wiring.
- Do not subject the power cables and network cables to tension and impact.
- Before turning on the power, make sure that all cables and connectors are connected firmly.
- Never attempt to disassemble, modify, and/or repair the adapter unit. Doing so may result in failure or malfunction of the adapter unit.
- Many precision devices are mounted inside the adapter unit. Do not drop the adapter unit nor apply vibration or impact to the unit.
- Do not connect or disconnect any connectors while the power is supplied. Doing so may result in failure or malfunction.
- Mold and rust can develop on the product if it is exposed to high humidity during transportation. Include moisture absorbers and tightly seal the package.
- Install the adapter unit at least 200 mm away from high-voltage cables and power lines, or lay the high-voltage cables and power lines in metal tubing and ground it.

3. OPERATION

3.1 Switch settings

CAUTION

- Discharge static electricity that has built up on your body before touching the adapter unit. Otherwise, static electricity can cause damage to the adapter unit.
- The adapter unit will not identify the settings if the power is supplied. Make sure the power is turned off upon setting as they are read into the unit only at power-up.
- The cover on the adapter unit is an easy open one flipping it up with a finger. Keep the cover closed at all times except when setting the switches. Otherwise, foreign matter may enter into the internal circuit from the cover and cause unexpected failure, or the cover itself may get damaged. Be extremely careful not to allow any foreign matter to enter the adapter unit when setting the switches.
- Make sure not to touch the internal circuit board when setting the switches as they are precisely built and can be damaged if mishandled.

1) IP address setting (allowed when operation mode setting is OFF: hardware setting mode)

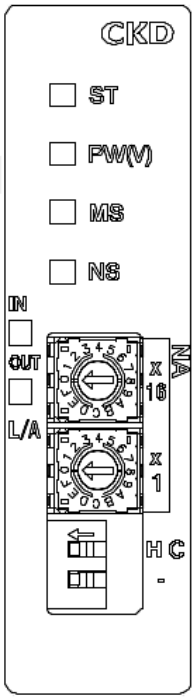
NA part of the IP address (192.168.1.NA) is set using the rotary switches.
Note: “00” and “FF” are invalid values.
When operation mode setting is ON (i.e., in the software setting mode), these switches are invalid.

NA (Node Address) switch	[IP address setting] NA ×16: higher-digit ×1: lower-digit
Setting range	01 to FE (in hexadecimal) [1 to 254 (in decimal)]

NA is read into memory at power-up.
Duplicate IP address (NA) cannot be assigned.

×16: higher-digit		
Switch setting (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

×1: lower-digit		
Switch setting (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: How to set the NA part to “71” (decimal value)

The decimal value “71” is equal to “64” plus “7” (71=64+7). According to the table above, set the higher-digit switch to “4” and the lower-digit switch to “7” (i.e., “47” in hexadecimal).

2) Output mode setting (allowed when operation mode setting is OFF: hardware setting mode)

Specify whether to hold or clear the output when an error occurs.
Note: When operation mode setting is ON (i.e., in software setting mode), this switch is invalid.

Name of switch	Purpose
[Output mode setting] HC	Specify whether to hold or clear the output when an error (such as bus line error or time over) occurs. OFF: Clear mode ON (slide in the direction of arrow): Hold mode

3) Operation mode setting

Specify whether to use switches (hardware setting mode) or software setting mode when setting the IP address and output mode.

Name of switch	Purpose
[Operation mode setting] —	Specify whether to configure settings using switches or software. OFF: Hardware setting mode ON (slide in the direction of arrow): Software setting mode (See “3.2 Software setting mode” for details.)

3.2 Software setting mode

IP address of the adapter unit can be set using a software.

- The IP address may get lost in the software setting mode. If that is the case, start up the unit in the hardware setting mode. Then, restart the unit in the software setting mode. (The unit will start up with the default IP address: 192.168.1.250.)
- Refer to "3.1 Switch settings" to use the software setting mode.
- The default IP address of the unit is always 192.168.1.250. To avoid duplicate MACID error, do not initialize the IP address of multiple units at the same time.
- Note that the output mode setting is clear mode in the software setting mode.

Change IP address: Method 1

This is to set the IP address using CIP service of EtherNet/IP.

(1) Switch the operation mode setting from the hardware setting mode to the software setting mode with the unit power turned off.

(2) After confirming the safety of surroundings, turn the unit power on. (Then it starts up in the software setting mode and the default IP address is 192.168.1.250)

(3) Input necessary parameters referring to TCP/IP object class described in below table.

(4) After confirming the safety of surroundings, turn off the unit power once and turn it up again. The adapter unit starts up with the IP address input in (3). (Since the unit will start operating with the IP address, safety of surroundings must be confirmed)

* As long as the unit is started up in the software setting mode, the IP address in (3) will be stored even when power is off. However, starting up the unit in the hardware setting mode will activate both NA (IP address setting) and output mode setting (HC) switches, and overwrite the stored IP address in the software setting mode to the default address : 192.168.1.250.

-
- TCP/IP object class: hexadecimal: F5 (decimal: 245)

class hexadecimal (decimal)	Instance	Attribute	Name	Size	Initial Value hexadecimal (decimal)
F5 (245)	1	5	IP Address	4bytes	C0A801FA (192.168.1.250)
			Network Mask	4bytes	FFFFFF00 (255.255.255.0)
			Gateway Address	4bytes	00000000 (00.00.00.00)
			Name Server, Name Server 2, Domain Name	10bytes	00000000000000000000

data is called according the table above (service code [0x0E]: Get_Attribute_Single), result will be as following because of the arrangement order of data.

Result: FA01A8C000FFFFFF0000000000000000000

To set the IP address to 10.17.34.01 (others maintain their initial values), following data is to be input using service code [0x10]: Set_Attribute_Single.

Input data: 0122110A00FFFFFF00000000000000000000000000000000

*Notations (such as object class) may be in hexadecimal or decimal depending on the tool employed.

Change IP address: Method 2

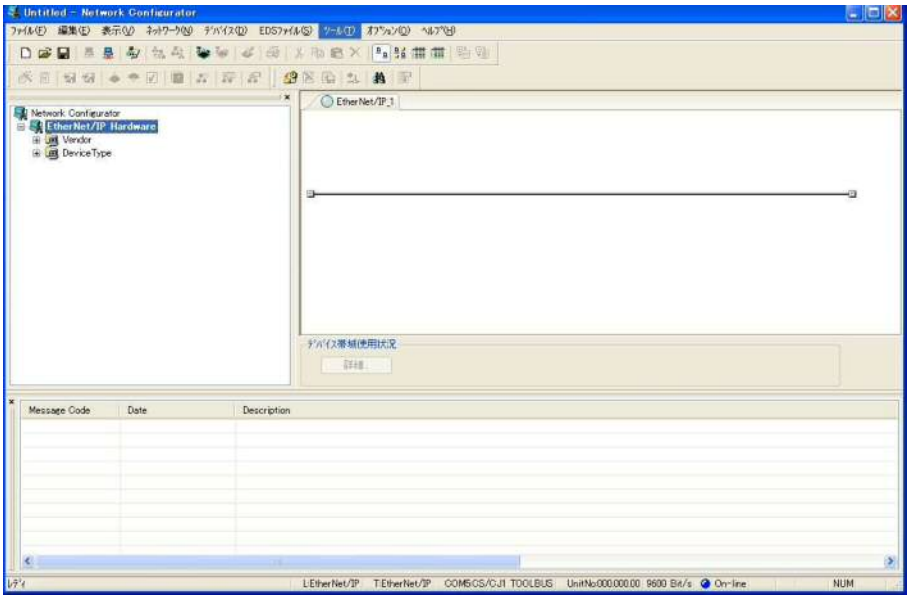
This is to set the IP address using a tool provided by PLC manufacturer.

(1) Switch the operation mode setting from the hardware setting mode to the software setting mode with the unit power turned off.

(2) After confirming the safety of surroundings, turn the unit power on. (Then it starts up in the software setting mode and the default IP address is 192.168.1.250)

(3) Set the IP address using the tool PLC manufacturer provided. (An example of setting procedure with Network Configurator provided by Omron Corporation is shown below.)

Startup Network Configurator and display online mode.



Select Tool: TCP/IP setting an example below. (10.17.34.1 is set as a new IP address).

Click this button and enter the new IP address.

(4) After confirming the safety of surroundings, turn off the unit power once and turn it up again. The adapter unit starts up with the IP address input in (3). (Since the unit will start operating with the IP address, safety of surroundings must be confirmed)

* As long as the unit is started up in the software setting mode, the IP address in (3) will be stored even when power is off. However, starting up the unit in the hardware setting mode will activate both NA (IP address setting) and output mode setting (HC) switches, and overwrite the stored IP address in the software setting mode to the default address : 192.168.1.250.

3.3 Correspondence between the adapter unit output No. and PLC address No.

1) PLC addresses correspondence tables

Tables below describe the correspondence using PLC manufactured by OMRON Corporation as a typical example.

◆ T8EN1、T8ENP1 (16 output points)

PLC allocated memory address	Output Bit 00-15															
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Adapter unit output No.	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Solenoid output No.	**s1**	**s2**	**s3**	**s4**	**s5**	**s6**	**s7**	**s8**	**s9**	**s10**	**s11**	**s12**	**s13**	**s14**	**s15**	**s16**

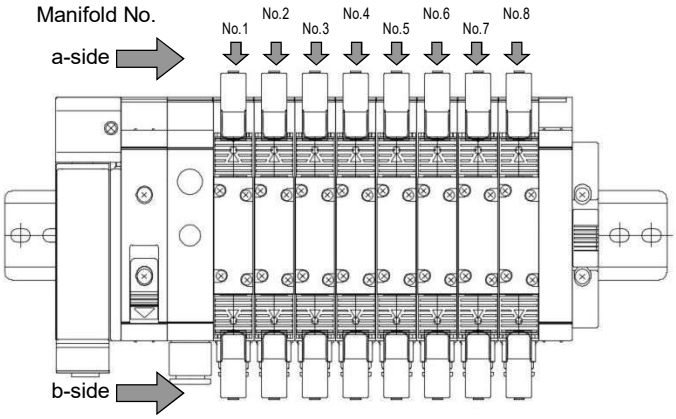
◆ T8EN2、T8ENP2 (32 output points)

PLC allocated memory address	Output Bit 00-15																Output Bit 16-31													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Adapter unit output No.	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**
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**

2) Examples of Valve No. assignments corresponding to the adapter unit T8EN* solenoid output No

The valve No. 1a, 1b, 2a, 2b, … indicate the station numbers such as station No.1, station No.2, and so on; while the alphabets 'a' and 'b' mean, respectively, the solenoid on the a-side and the solenoid on the b-side of the "double-solenoid type" valve.
Manifold station is set starting from the left toward the piping port.
Depending on the valve model selected by the customer, the appearance and the maximum number of stations will differ.

<T8EN1(OPP7-1EN)、T8ENP1(OPP7-1EN-P)> (16 output points)



Note: The figure is an example of double-solenoid type valve mounting 8 stations on the manifold. There is no solenoid on the b-side for single-solenoid type.

Standard wiring

● When all valves mounted on the manifold are single-solenoid types:

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

● When all valves mounted on the manifold are double-solenoid types:

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

● When both single- and double-solenoid type valves are mounted on the manifold (one such example is shown above):

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					

Double wiring

● When all valves mounted on the manifold are single-solenoid types:

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

Note: "B" indicates a blank station.

● When all valves mounted on the manifold are double-solenoid types:

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

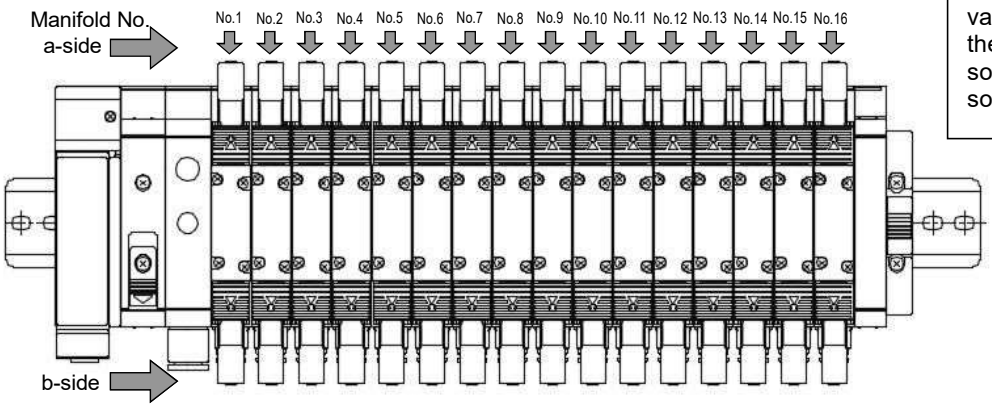
● When both single- and double-solenoid type valves are mounted on the manifold (one such example is shown above):

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

Note: "B" indicates a blank station.

< T8EN1(OPP7-1EN)、T8ENP1(OPP7-1EN-P)> (32 output points)

Note: The figure below is an example of double-solenoid type valves mounting 16 stations on the manifold. There is no solenoid on the b-side for single-solenoid type.



Standard wiring

● When all valves mounted on the manifold are single-solenoid types:

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

● When all valves mounted on the manifold are double-solenoid types:

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

● When both single- and double-solenoid type valves are mounted on the manifold (one such example is shown above):

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									

Double wiring

● When all valves mounted on the manifold are single-solenoid types:

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	B	2a	B	3a	B	4a	B	5a	B	6a	B	7a	B	8a	B	9a	B	10a	B	11a	B	12a	B	13a	B	14a	B	15a	B	16a	B

Note: “B” indicates a blank station.

● When all valves mounted on the manifold are double-solenoid types:

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

● When both single- and double-solenoid type valves are mounted on the manifold (one such example is shown above):

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	B	2a	B	3a	3b	4a	4b	5a	B	6a	B	7a	7b	8a	B	9a	B	10a	10b	11a	11b	12a	B	13a	B	14a	14b	15a	15b	16a	B

Note: “B” indicates a blank station.

3.4 Programing

This adapter unit is regarded as an adapter device
(16 output points: T8EN*1, 32 output points: T8EN*2).
There are 2 types of I/O data: output data transmitted from a scanner to an adapter and input data transmitted from an adapter to a scanner.
This adapter unit is an output device which transmits output data to valves after receiving it from the scanner. Regardless of model, input data is transmitted to the scanner with 2 bytes as of reserved data.
*See scanner manufacture's instruction manual for setting: Depending on the scanner, total of 6 bytes after adding header (4 bytes) to reserved data (2 bytes) may need for setting.

Refer to PLC manufacture's manual for programing. For I/O mapping, refer to the tables shown below.
Output status setting when error occurs and output type +COM/-COM are specific functions to the unit and do not relevant to the programing.

Output data mapping

I/O Points		Output	Bit															
T8EN*2	T8EN*1	Data	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
32	16	2bytes	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
	-	4bytes	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Input data mapping

Input	Bit															
Data	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
2bytes	Reserved Data															

I/O Assembly instance is used to set EtherNet/IP connection. As I/O Assembly instance of the following table is used for the unit with general-purpose device, refer to the table upon connection setting.

I/O Assembly Instance

Model		T8EN1	T8EN2	T8ENP1	T8ENP2
Adapter unit model		OPP7-1EN	OPP7-2EN	OPP7-1EN-P	OPP7-2EN-P
Output data	Instance	100 (Dec)	101 (Dec)	100 (Dec)	101 (Dec)
	Size	2 (bytes)	4 (bytes)	2 (bytes)	4 (bytes)
Input data	Instance	110 (Dec)			
	Size	2 (bytes)			

3.5 Network configuration with EDS (Electronic Data Sheet) file

For network participation, It is required for EtherNet/IP device to register network by EDS file with communication specification of the device. For EDS file registration, refer to the manual provided by scanner unit manufacturer. To ensure a suitable network configuration, use the latest EDS file which complies with product model and version.

How to register the device;
Before registering, check the address and specifications (model name) of the device, then register both the device and EDS file after matching them. Refer to the following table for the device specifications and EDS file.

The specifications and model names in the EDS file

Item	Specification	
Model	T8EN1	T8EN2
Adapter unit model	OPP7-1EN	OPP7-2EN
Output type (polarity)	+COM (NPN)	
Number of output points	16 points	32 points
Name of EDS file	CKD_OPP7-1EN_v0202	CKD_OPP7-2EN_v0202

Item	Specification	
Model	T8ENP1	T8ENP2
Adapter unit model	OPP7-1EN-P	OPP7-2EN-P
Output type (polarity)	-COM (PNP)	
Number of output points	16 points	32 points
Name of EDS file	CKD_OPP7-1EN-P_v0202	CKD_OPP7-2EN-P_V0202

4. INSTALLATION

The network cables and power cables must be connected for T8EN*(OPP7-*EN) to function. Erroneous connection causes not only malfunction but in some cases, vital transmission damage to this adapter unit as well as other related devices. Before use, read all manuals including this instruction manual and the user's manuals of the PLC and other devices for correct connections.

CAUTION

- Discharge static electricity that has built up on your body before handling the EtherNet/IP device by touching a grounded metal object. Otherwise, static electricity can cause damage to the adapter unit.
- Do not touch electrical wiring connections (exposed live parts); otherwise, there is a risk of electric shock. Always disconnect power before wiring. Never touch live parts with wet hands.
- Do not subject the power cables and network cables to tension and impact. Long cables can exert unexpected power due to its weight and impact, and this can consequently damage the connectors and devices. Take preventative measures such as securing the cables to the equipment.
- To prevent problems caused by noise, keep the following in mind when wiring.
  (1) If noise is likely to have an influence, provide a power supply for each manifold solenoid valve as much as possible and wire them independently.
  (2) Do not use the power cables needlessly long. Wire them in the shortest possible distance.
  (3) Do not share power with noise generating devices such as an inverter and motor.
  (4) Do not lay the power cables, network cables, and other power lines in parallel.
  (5) Connect the shield of the network cables to the equipotential bonding close to the adapter unit.
  (6) Refer to "EtherNet/IP Media Planning and Installation Manual" for wiring.
- Make sure the power cables and network cables are connected correctly within the specifications to avoid any incorrect wiring. Incorrect wiring can cause the adapter unit to malfunction or to be damaged.
- Make sure that all cables and connectors are connected firmly before turning on the power.

4.1 Connecting and wiring to the network connector socket

While EtherNet/IP adapts standard Ethernet cable that leads to flexible wiring methods, it is restricted by the components used such as wiring material, devices, scanner, switching hub. Wiring should be conducted with a thorough understanding of these specifications. (Refer to the user's manual provided by the manufacturer of scanner and ODVA)

The network connector plug is not included with this adapter unit. Purchase a connector plug which meets the specification. Wire the network cables to the network connector plug and connect it to the network connector socket on the unit.

<Recommended cable with network connector plug [Category 5e]>

ETP-SB-S***++	Industrial Ethernet cable (double shield)	Mfd by	JMACS

***: length, ++: unit and either M (meter) or C (centimeter) is used

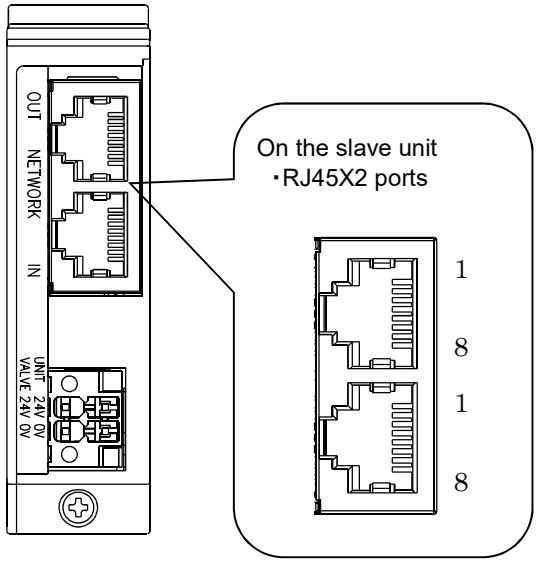
<Recommended assembly type network connector plug RJ45 [Category 6]>

09 45 151 1560	Assembly type RJ45 connector	Mfd by	HARTING
09 45 151 1561	Assembly type RJ45 connector (45 degree angle)	Mfd by	HARTING

Connecting the network cable(s)

Connect the network cable(s) to the network connector plug according to the following instructions.

(1) After confirming safety, stop network communication and power off all peripheral equipment.
(2) Refer to the drawing below and wire an EtherNet/IP-compliant cable to RJ45 network connector plugs (EtherNet/IP-compliant plug).



Port	Pin No.	Signal	Connection
IN/ OUT	1	TD+	Transmitted data +
	2	TD-	Transmitted data -
	3	RD+	Received data +
	4	Not used	Not used
	5	Not used	Not used
	6	RD-	Received data -
	7	Not used	Not used
	8	Not used	Not used

CAUTION

- For the network cables, use an EtherNet/IP-compliant.
- Make sure the network cables have a sufficient bending radius, and do not bend it forcibly.
- Separate the network cables from the power cables as well as high-voltage cable(s).

4.2 Connecting and wiring to the unit/valve power socket

Unit/valve power plug is included with this adapter unit. Wire the unit and valve power cables to the power plug and connect them to the power socket on the unit.

<Unit power>
Power to operate this adapter unit.
Prepare a 21.6 to 26.4 VDC power with the least noise.

<Valve power>
Power to operate the solenoid valves.
Prepare a 22.8 to 26.4 VDC power with the least noise.

<Included power plug>

DFMC1,5/2-STF-3,5 (1790292)	4 contacts	Mfd by Phoenix Contact

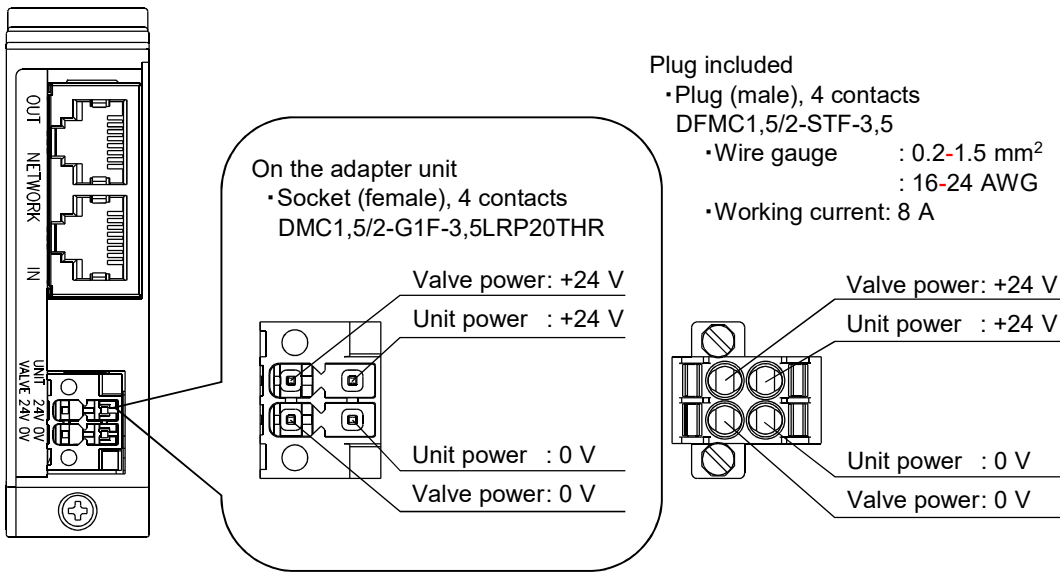
<Recommended ferrules and crimping tool>

Ferrule (without sleeve): A0,5 to 1,5-10	Mfd by Phoenix Contact
Ferrule (with sleeve): AI0,25 to 0,75-10	Mfd by Phoenix Contact
Crimpling tool (in common): CRIMPFOX6 (1212034)	Mfd by Phoenix Contact

1) Connecting the power cable

Connect the unit/valve power cables to the power plug according to the following instructions.

(1) After confirming safety, turn off the power to be connected to the adapter unit.
(2) Attach a terminal such as a ferrule to the power cable as necessary.
(3) According to the illustrations below, connect the power cable's 24 V power line to the power plug's 24 V terminal and the 0 V power line to the 0 V terminal with the polarity matched.
(4) After connecting the power plug to the power socket, secure the flanges on the plug using adequate torque (0.25N•m).



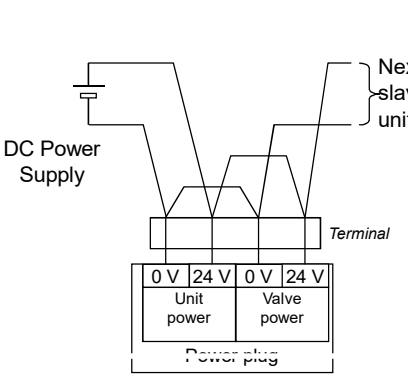
CAUTION

- Check the polarities and rated voltage carefully before making any connections.
- Calculate the current consumption before selecting an appropriate power cable.
- Select and wire the cables considering voltage drop caused by cables if more than one adapter units are powered from one power supply.
- Secure the specified power supply voltage by taking measures, such as wiring the power cables in multiple systems or installing other power supply if voltage drop cannot be avoided.
- Set a terminal block before the power plug and wire the power cables at the terminal block if the cables are daisy chained.

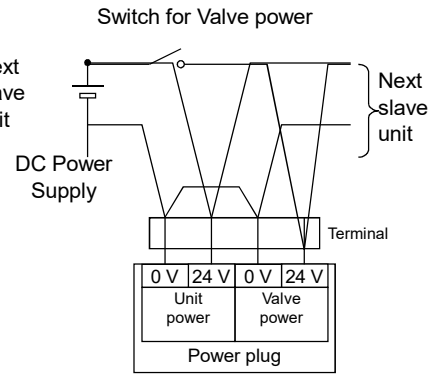
2) Wiring the power cables

Figures 1 to 3 below are examples of power supply wiring to the power plug.
You may try other variations if necessary.

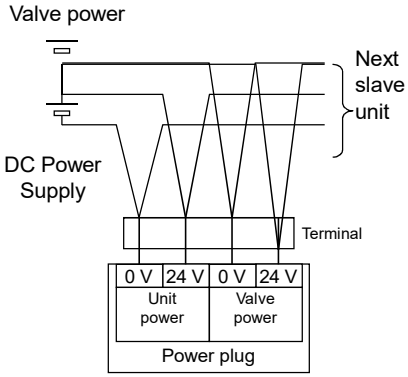
1. Common power Unit and Valve



2. Valve power can be turned on and off



3. Separate connection Unit and Valve



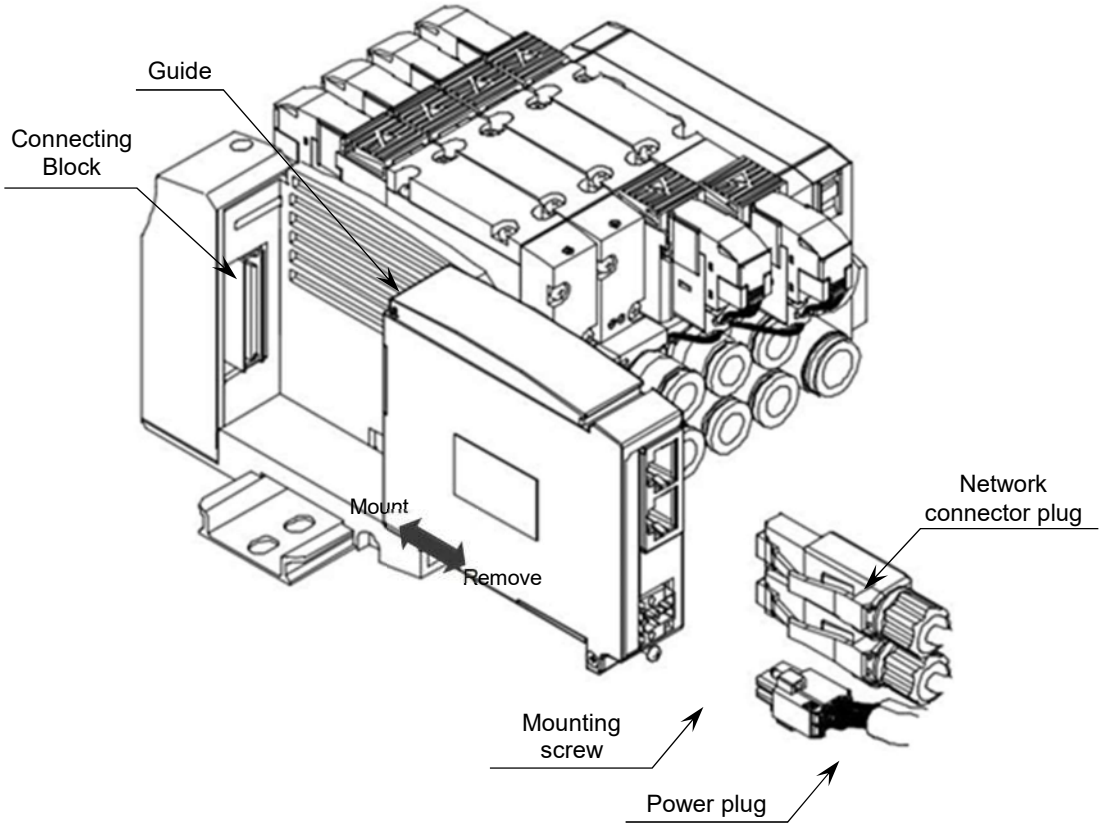
5. MAINTENANCE

5.1 Removing the adapter unit

(1) After confirming safety, stop network communication and turn off all peripheral equipment if necessary.
(2) After confirming safety, turn off unit power and valve power if necessary.
Due to daisy chain topology, turning off the adapter unit will stop communication to downstream devices, if this adapter unit is an intermediate station. (Except for DLR device)
(3) Remove the adapter unit mounting screw. Since this mounting screw is a fall-prevention type, stop loosening as soon as it detaches from the adapter unit connecting block.
(4) Hold the adapter unit and slowly pull it out in the direction of the plugs.
(5) Remove the network connector plug and the power plug.

5.2 Mounting the adapter unit

(1) Set the IP address of the adapter unit.
(2) Make sure to power off (for both unit and valve) before attaching the network connector plug and the power plug. Attaching the plugs while the power is on may cause a sudden move in the system. Take a good look around and make sure it is safe to do so.
Network connector plug: Confirm with the plug manufacturer for adequate torque.
Power plug adequate tightening torque: 0.25N·m
(3) Hold the adapter unit, and insert it into the adapter unit connecting block slowly from the front along the guide.
(4) Make sure the adapter unit and the connecting block are connected and tightened by the adapter unit mounting screw firmly. (Adequate tightening torque: 0.5N·m)
(5) After confirming safety, turn on the unit power and valve power.
Due to daisy chain topology, turning on the power may cause downstream devices to connect network and move suddenly.



CAUTION

- Before turning on or off the power, take a good look around and make sure it is safe to do so as the components in the system, including the valve (and cylinder), may move unexpectedly.
- Before turning on the unit power, check the adapter unit IP address, as well as output setting at communication error.
- Do not touch electrical wiring connections (exposed live parts); otherwise, there is a risk of electric shock.
- Many precision devices are mounted inside the adapter unit. Do not drop the adapter unit nor apply vibration or impact to the unit.
- Do not connect or disconnect any connector plugs while the power is supplied. Doing so may result in failure or malfunction.
- Do not pull out the adapter unit by a cable or connector that may cause cable broken or device damaged.
- When removing the plug, make sure to loosen the plug mounting screws sufficiently before removing. When inserting the plug, make sure to tighten the plug mounting screws firmly after inserting.

5.3 Troubleshooting

Troubleshooting should work through the entire system rather than the adapter unit itself. Operate the maintenance with full attention and ensuring safety as the device may move unexpectedly depending on the communication status.

[Problem 1] ST or PW (V) does not light up
- Power may not on. Make sure if the power cable is connected without broken and the supplied power voltage is within the specified range.
- Blowout of a fuse may have occurred in the adapter unit. If the system does not recover after restarting the product, replace the adapter unit.

[Problem 2] ST LED green flashes, yellow lights up, yellow & green flash
- Adapter unit may not be operating properly. Check that supplied power and voltage are within the specification and that high voltage or high current cable which generates noise is not in surrounding of the communication line or the adapter unit.
- If the system does not recover after restarting the product, replace the adapter unit.

[Problem 3] MS LED red flashes
- Switch setting may not match the operating mode. Check the setting, and turn off the power then back on.

[Problem 4] MS LED green flashes (more than 30 seconds)
- Communication mode may not have been established. Make sure the network cables connected properly.

[Problem 5] MS LED red lights up
- If the system does not recover after restarting the product, replace the adapter unit.

[Problem 6] NS LED green flashes (more than 30 seconds)
- Communication standby. Make sure the scanner settings are correct, and IP address and subnet mask are set as intended.

[Problem 7] NS LED red flashes
- Communication may time-out. Check that high voltage or high current cable which generates noise is not in surrounding of the communication line or the adapter unit and if communication line is disconnected.
- Communication may unstable. Check communication cycle time as well as processing capacity of the scanner and switching hub.

[Problem 8] NS LED red lights up
- IP address may duplicate. Check the IP address.
- If the system does not recover after restarting the product, replace the adapter unit.

5.4 Maintenance of components

This section describes the daily maintenance of components, particularly the methods of cleaning, inspecting, and replacing the adapter unit.

1) Cleaning

Clean the device periodically to ensure use in an optimum state.

(1) For daily cleaning, wipe the device with a dry, soft cloth.
(2) If dirt remains even after wiping with a dry cloth, use a cloth firmly wrung out of diluted detergent (2%).
(3) Rubber, vinyl, and tape products may stain the adapter unit if they are left for a long period of time. Remove such items during regular cleaning.

2) Inspection

Always perform periodic inspections to ensure that the network is in an optimum state. Periodic inspections should be carried out at least once every 6 to 12 months; however, for an adapter unit used in environments subject to high temperature and humidity or excessive dust, periodic inspections should be carried out more frequently.

■ Points of Inspection
Periodically inspect the following items to ensure that they do not deviate from the criteria.
If the items deviate from the criteria, improve the ambient environment to fall within criteria or adjust the adapter unit itself.

Inspection item	Inspection details	Criteria	Inspection method
Environment	Are the ambient and in-panel temperatures appropriate?	Refer to the specifications of the adapter unit	Thermometer
	Are the ambient and in-panel humidity appropriate?	Refer to the specifications of the adapter unit	Hygrometer
	Is there any dust accumulation?	No dust	Visual inspection
Installation	Is the adapter unit securely mounted?	No looseness	Phillips screwdriver
	Is the power connector plug inserted properly?	No looseness	Flat-blade screwdriver
	Is the network cable connector fully inserted?	No looseness	Visual inspection
	Are there any damages to the connection cables?	No visible damage	Visual inspection

3) Replacing

The network consists of a scanner and one or several adapter units. Malfunctioning of any unit can affect the entire network, so such unit must be replaced immediately. To restore network functions as quickly as possible, it is recommended that spare units be kept on hand to replace the malfunctioning unit.

■ Precaution
When replacing a unit after a periodic inspection has revealed a problem, check that the new unit does not have errors after replacement.

■ Setting the new adapter unit after replacement
After replacing the adapter unit, make necessary changes to the switches and other settings so that they are the same as before the unit was replaced.

6.APPENDIX（EDS File）

6.1 T8EN1 (OPP7-1EN)

```
$ EZ-EDS Version 3.11.1.20151008 Generated Electronic Data Sheet

$ ******************************************************************************
$ File:     CKD Corporation EtherNet/IP.EDS
$ Date:     10-30-2015
$ ******************************************************************************
$
$ ******************************************************************************
$
$ Changes:
$ Version   Date          Name     Description
$ ---------------------------------------------------------------------
$   1.2         10-30-2015        - created
$   1.4         11-09-2018        - changed MajRev and MinRev
$
$ ******************************************************************************

[File]
        DescText = "OPP7-1EN";
        CreateDate = 10-30-2015;
        CreateTime = 00:00:00;
        ModDate = 11-09-2018;
        ModTime = 10:27:50;
        Revision = 1.4;
        HomeURL = "https://www.ckd.co.jp/";

[Device]
        VendCode = 201;
        VendName = "CKD Corporation";
        ProdType = 43;
        ProdTypeStr = "Generic Device";
        ProdCode = 870;
        MajRev = 2;
        MinRev = 2;
        ProdName = "OPP7-1EN";
        Catalog = "OPP7-1EN";
        Icon = "opp7.ico";

[Device Classification]
        Class1 = EtherNetIP;

[Params]
        Param1 =
                0,                          $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC8,                        $ Data Type
                4,                          $ Data Size in bytes
                "RPI",                      $ name
                "",                         $ units
                "μs order 1ms～10s setting default 5s ",      $ help string
                1000,10000000,50000,        $ min, max, default data values
                ,,,,                        $ mult, div, base, offset scaling
                ,,,,                        $ mult, div, base, offset links
                ;                            $ decimal places
        Param2 =
                0,                          $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
```

```
            0xC7,                       $ Data Type
            2,                          $ Data Size in bytes
            "Assembly Output Size", $ name
            "",                         $ units
            "",                         $ help string
            2,2,2,                      $ min, max, default data values
            ,,,,                        $ mult, div, base, offset scaling
            ,,,,                        $ mult, div, base, offset links
            ;                           $ decimal places
    Param3 =
            0,                          $ reserved, shall equal 0
            ,,                          $ Link Path Size, Link Path
            0x0000,                     $ Descriptor
            0xC7,                       $ Data Type
            2,                          $ Data Size in bytes
            "Assembly Input Size",  $ name
            "",                         $ units
            "",                         $ help string
            2,2,2,                      $ min, max, default data values
            ,,,,                        $ mult, div, base, offset scaling
            ,,,,                        $ mult, div, base, offset links
            ;                           $ decimal places

$ ==================================
$ == COMMUNICATION PATH SETTING ==
$ ==================================

    Param4 =
            0,                          $ reserved, shall equal 0
            ,,                          $ Link Path Size, Link Path
            0x0000,                     $ Descriptor
            0xC6,                       $ Data Type
            1,                          $ Data Size in bytes
            "Output_CP",                $ name
            "",                         $ units
            "Output Connection Point",      $ help string
            100,100,100,                $ min, max, default data values
            ,,,,                        $ mult, div, base, offset scaling
            ,,,,                        $ mult, div, base, offset links
            ;                           $ decimal places
    Param5 =
            0,                          $ reserved, shall equal 0
            ,,                          $ Link Path Size, Link Path
            0x0000,                     $ Descriptor
            0xC6,                       $ Data Type
            1,                          $ Data Size in bytes
            "Input_CP",                 $ name
            "",                         $ units
            "Input Connection Point",       $ help string
            110,110,110,                $ min, max, default data values
            ,,,,                        $ mult, div, base, offset scaling
            ,,,,                        $ mult, div, base, offset links
            ;                           $ decimal places
    Param6 =
            0,                          $ reserved, shall equal 0
            ,,                          $ Link Path Size, Link Path
            0x0010,                     $ Descriptor
            0xC6,                       $ Data Type
            1,                          $ Data Size in bytes
            "InputOnly_CP",             $ name
            "",                         $ units
            "Input Only Connection Point",      $ help string
            193,193,193,                $ min, max, default data values
```

```
                ,,,,                    $ mult, div, base, offset scaling
                ,,,,                    $ mult, div, base, offset links
                ;                       $ decimal places
        Param7 =
                0,                      $ reserved, shall equal 0
                ,,                      $ Link Path Size, Link Path
                0x0010,                 $ Descriptor
                0xC6,                   $ Data Type
                1,                      $ Data Size in bytes
                "ListenOnly_CP",        $ name
                "",                     $ units
                "Listen Only Connection Point",     $ help string
                192,192,192,            $ min, max, default data values
                ,,,,                    $ mult, div, base, offset scaling
                ,,,,                    $ mult, div, base, offset links
                ;                       $ decimal places

    $ ==================================
    $ == INPUT OUTPUT DATA SETTING   ==
    $ ==================================

        Param8 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Output Data",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;
        Param9 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Input Data(Dummy Data)",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;


[Groups]
        Group1 =
                "Basic Configuration",
                1,
                1;
        Group2 =
                "Status",
                4,
                2,3,6,7;
        Group3 =
                "IO Data",
                2,
                4,5;
```

```
[Assembly]
        Assem100 =
                "16 Solenoid Output",
                "20 04 24 64 30 03",
                2,
                0x0000,
                ,,
                16,Param4;
        Assem110 =
                "Input Data (Dummy Data)",
                "20 04 24 6E 30 03",
                2,
                0x0000,
                ,,
                16,Param5;



[Connection Manager]
        Connection1 =
                0x04010002,                 $ Trigger and Transport
                0x44644405,                 $ Point Multicast
                Param1,2,Assem100, $ OT RPI Size format
                Param1,2,Assem110, $ TO rpi size format
                ,,                          $ config 1
                ,,                          $ config 2
                "Exclusive Owner ",         $ connection name
                "",                         $ help string
                "20 04 24 01 2C [Param4] 2C [Param5]";      $ path

[Port]
        Port1 =
                TCP,
                "Port 1",
                "20 F5 24 01",
                2;

[Capacity]
        ConnOverhead = .004;                $ Connection Overhead

        MaxIOConnections = 3;               $ Maximum number of Class 1 Connections
        MaxMsgConnections = 6;              $ Maximum number of Class 3 Connections
        TSpec1 = TxRx, 10, 2000;            $ packets per sec @ 10 bytes
        TSpec2 = TxRx, 504, 1500;           $ packets per sec @ 504 bytes

[TCP/IP Interface Class]
        Revision = 4;
        MaxInst = 1;
        Number_Of_Static_Instances = 1;
        Max_Number_Of_Dynamic_Instances = 0;

[Ethernet Link Class]
        Revision = 3;
        MaxInst = 2;
        Number_Of_Static_Instances = 2;
        Max_Number_Of_Dynamic_Instances = 0;
        InterfaceLabel1 = "ETH1";
        InterfaceLabel2 = "ETH2";

$ ******************************************************************************
$ EOF
$ ******************************************************************************
```

6.2 T8EN2(OPP7-2EN)

```
$ EZ-EDS Version 3.11.1.20151008 Generated Electronic Data Sheet

$ ******************************************************************************
$ File:     CKD Corporation EtherNet/IP.EDS
$ Date:     10-30-2015
$ ******************************************************************************
$
$ ******************************************************************************
$
$ Changes:
$ Version   Date          Name     Description
$ ---------------------------------------------------------------------
$   1.2         10-30-2015       - created
$   1.4         11-09-2018       - changed MajRev and MinRev
$
$ ******************************************************************************

[File]
        DescText = "OPP7-2EN";
        CreateDate = 10-30-2015;
        CreateTime = 00:00:00;
        ModDate = 11-09-2018;
        ModTime = 10:32:00;
        Revision = 1.4;
        HomeURL = "https://www.ckd.co.jp/";

[Device]
        VendCode = 201;
        VendName = "CKD Corporation";
        ProdType = 43;
        ProdTypeStr = "Generic Device";
        ProdCode = 871;
        MajRev = 2;
        MinRev = 2;
        ProdName = "OPP7-2EN";
        Catalog = "OPP7-2EN";
        Icon = "opp7.ico";

[Device Classification]
        Class1 = EtherNetIP;

[Params]
        Param1 =
                0,                          $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC8,                        $ Data Type
                4,                          $ Data Size in bytes
                "RPI",                      $ name
                "",                         $ units
                "μs order 1ms～10s setting default 5s ",      $ help string
                1000,10000000,50000,        $ min, max, default data values
                ,,,,                        $ mult, div, base, offset scaling
                ,,,,                        $ mult, div, base, offset links
                ;                            $ decimal places
        Param2 =
                0,                           $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC8,                        $ Data Type
                2,                          $ Data Size in bytes
```

```
            "Assembly Output Size", $ name
            "",                     $ units
            "",                     $ help string
            4,4,4,                  $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param3 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC7,                   $ Data Type
            2,                      $ Data Size in bytes
            "Assembly Input Size",  $ name
            "",                     $ units
            "",                     $ help string
            2,2,2,                  $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places

$ ==================================
$ == COMMUNICATION PATH SETTING ==
$ ==================================

    Param4 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "Output_CP",            $ name
            "",                     $ units
            "Output Connection Point",      $ help string
            101,101,101,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param5 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "Input_CP",             $ name
            "",                     $ units
            "Input Connection Point",       $ help string
            110,110,110,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param6 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0010,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "InputOnly_CP",         $ name
            "",                     $ units
            "Input Only Connection Point",      $ help string
            193,193,193,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
```

```
                ;                               $ decimal places
        Param7 =
                0,                              $ reserved, shall equal 0
                ,,                              $ Link Path Size, Link Path
                0x0010,                         $ Descriptor
                0xC6,                           $ Data Type
                1,                              $ Data Size in bytes
                "ListenOnly_CP",                $ name
                "",                             $ units
                "Listen Only Connection Point",       $ help string
                192,192,192,                    $ min, max, default data values
                ,,,,                            $ mult, div, base, offset scaling
                ,,,,                            $ mult, div, base, offset links
                ;                               $ decimal places

    $ ==================================
    $ == INPUT OUTPUT DATA SETTING   ==
    $ ==================================

        Param8 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Output Data",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;
        Param9 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Input Data(Dummy Data)",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;


[Groups]
        Group1 =
                "Basic Configuration",
                1,
                1;
        Group2 =
                "Status",
                4,
                2,3,6,7;
        Group3 =
                "IO Data",
                2,
                4,5;

[Assembly]
        Assem101 =
```

```
                "32 Solenoid Output",
                "20 04 24 65 30 03",
                4,
                0x0000,
                ,,
                32,Param4;
        Assem110 =
                "Input Data (Dummy Data)",
                "20 04 24 6E 30 03",
                2,
                0x0000,
                ,,
                16,Param5;



[Connection Manager]
        Connection1 =
                0x04010002,                 $ Trigger and Transport
                0x44644405,                 $ Point Multicast
                Param1,4,Assem101, $ OT RPI Size format
                Param1,2,Assem110, $ TO rpi size format
                ,,                          $ config 1
                ,,                          $ config 2
                "Exclusive Owner ",         $ connection name
                "",                         $ help string
                "20 04 24 01 2C [Param4] 2C [Param5]";      $ path


[Port]
        Port1 =
                TCP,
                "Port 1",
                "20 F5 24 01",
                2;

[Capacity]

        ConnOverhead = .004;                $ Connection Overhead

        MaxIOConnections = 3;               $ Maximum number of Class 1 Connections
        MaxMsgConnections = 6;              $ Maximum number of Class 3 Connections
        TSpec1 = TxRx, 10, 2000;            $ packets per sec @ 10 bytes
        TSpec2 = TxRx, 504, 1500;           $ packets per sec @ 504 bytes

[TCP/IP Interface Class]
        Revision = 4;
        MaxInst = 1;
        Number_Of_Static_Instances = 1;
        Max_Number_Of_Dynamic_Instances = 0;

[Ethernet Link Class]
        Revision = 3;
        MaxInst = 2;
        Number_Of_Static_Instances = 2;
        Max_Number_Of_Dynamic_Instances = 0;
        InterfaceLabel1 = "ETH1";
        InterfaceLabel2 = "ETH2";

$ ******************************************************************************
$ EOF
$ ******************************************************************************
```

6.3 T8ENP1(OPP7-1EN-P)

```
$ EZ-EDS Version 3.11.1.20151008 Generated Electronic Data Sheet

$ ******************************************************************************
$ File:     CKD Corporation EtherNet/IP.EDS
$ Date:     10-30-2015
$ ******************************************************************************
$
$ ******************************************************************************
$
$ Changes:
$ Version   Date          Name     Description
$ ---------------------------------------------------------------------
$   1.2         10-30-2015       - created
$   1.4         11-09-2018       - changed MajRev and MinRev
$
$ ******************************************************************************

[File]
        DescText = "OPP7-1EN-P";
        CreateDate = 10-30-2015;
        CreateTime = 00:00:00;
        ModDate = 11-09-2018;
        ModTime = 10:30:42;
        Revision = 1.4;
        HomeURL = "https://www.ckd.co.jp/";

[Device]
        VendCode = 201;
        VendName = "CKD Corporation";
        ProdType = 43;
        ProdTypeStr = "Generic Device";
        ProdCode = 873;
        MajRev = 2;
        MinRev = 2;
        ProdName = "OPP7-1EN-P";
        Catalog = "OPP7-1EN-P";
        Icon = "opp7.ico";

[Device Classification]
        Class1 = EtherNetIP;

[Params]
        Param1 =
                0,                          $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC8,                        $ Data Type
                4,                          $ Data Size in bytes
                "RPI",                      $ name
                "",                         $ units
                "μs order 1ms～10s setting default 5s ",      $ help string
                1000,10000000,50000,        $ min, max, default data values
                ,,,,                        $ mult, div, base, offset scaling
                ,,,,                        $ mult, div, base, offset links
                ;                            $ decimal places
        Param2 =
                0,                           $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC7,                        $ Data Type
                2,                          $ Data Size in bytes
```

```
            "Assembly Output Size", $ name
            "",                     $ units
            "",                     $ help string
            2,2,2,                  $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param3 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC7,                   $ Data Type
            2,                      $ Data Size in bytes
            "Assembly Input Size",  $ name
            "",                     $ units
            "",                     $ help string
            2,2,2,                  $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places

$ ==================================
$ == COMMUNICATION PATH SETTING ==
$ ==================================

    Param4 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "Output_CP",            $ name
            "",                     $ units
            "Output Connection Point",      $ help string
            100,100,100,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param5 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "Input_CP",             $ name
            "",                     $ units
            "Input Connection Point",       $ help string
            110,110,110,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param6 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0010,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "InputOnly_CP",         $ name
            "",                     $ units
            "Input Only Connection Point",      $ help string
            193,193,193,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
```

```
                ;                               $ decimal places
        Param7 =
                0,                              $ reserved, shall equal 0
                ,,                              $ Link Path Size, Link Path
                0x0010,                         $ Descriptor
                0xC6,                           $ Data Type
                1,                              $ Data Size in bytes
                "ListenOnly_CP",                $ name
                "",                             $ units
                "Listen Only Connection Point",       $ help string
                192,192,192,                    $ min, max, default data values
                ,,,,                            $ mult, div, base, offset scaling
                ,,,,                            $ mult, div, base, offset links
                ;                               $ decimal places

    $ ==================================
    $ == INPUT OUTPUT DATA SETTING   ==
    $ ==================================

        Param8 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Output Data",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;
        Param9 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Input Data(Dummy Data)",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;


[Groups]
        Group1 =
                "Basic Configuration",
                1,
                1;
        Group2 =
                "Status",
                4,
                2,3,6,7;
        Group3 =
                "IO Data",
                2,
                4,5;

[Assembly]
        Assem100 =
```

```
                "16 Solenoid Output",
                "20 04 24 64 30 03",
                2,
                0x0000,
                ,,
                16,Param4;
        Assem110 =
                "Input Data (Dummy Data)",
                "20 04 24 6E 30 03",
                2,
                0x0000,
                ,,
                16,Param5;



[Connection Manager]
        Connection1 =
                0x04010002,                 $ Trigger and Transport
                0x44644405,                 $ Point Multicast
                Param1,2,Assem100, $ OT RPI Size format
                Param1,2,Assem110, $ TO rpi size format
                ,,                          $ config 1
                ,,                          $ config 2
                "Exclusive Owner ",         $ connection name
                "",                         $ help string
                "20 04 24 01 2C [Param4] 2C [Param5]";      $ path


[Port]
        Port1 =
                TCP,
                "Port 1",
                "20 F5 24 01",
                2;

[Capacity]

        ConnOverhead = .004;                $ Connection Overhead

        MaxIOConnections = 3;               $ Maximum number of Class 1 Connections
        MaxMsgConnections = 6;              $ Maximum number of Class 3 Connections
        TSpec1 = TxRx, 10, 2000;            $ packets per sec @ 10 bytes
        TSpec2 = TxRx, 504, 1500;           $ packets per sec @ 504 bytes

[TCP/IP Interface Class]
        Revision = 4;
        MaxInst = 1;
        Number_Of_Static_Instances = 1;
        Max_Number_Of_Dynamic_Instances = 0;

[Ethernet Link Class]
        Revision = 3;
        MaxInst = 2;
        Number_Of_Static_Instances = 2;
        Max_Number_Of_Dynamic_Instances = 0;
        InterfaceLabel1 = "ETH1";
        InterfaceLabel2 = "ETH2";

$ ******************************************************************************
$ EOF
$ ******************************************************************************
```

6.4 T8ENP2(OPP7-2EN-P)

```
$ EZ-EDS Version 3.11.1.20151008 Generated Electronic Data Sheet

$ ******************************************************************************
$ File:     CKD Corporation EtherNet/IP.EDS
$ Date:     10-30-2015
$ ******************************************************************************
$
$ ******************************************************************************
$
$ Changes:
$ Version   Date          Name     Description
$ ---------------------------------------------------------------------
$   1.2         10-30-2015       - created
$   1.4         11-09-2018       - changed MajRev and MinRev
$
$ ******************************************************************************

[File]
        DescText = "OPP7-2EN-P";
        CreateDate = 10-30-2015;
        CreateTime = 00:00:00;
        ModDate = 11-09-2018;
        ModTime = 10:32:47;
        Revision = 1.4;
        HomeURL = "https://www.ckd.co.jp/";

[Device]
        VendCode = 201;
        VendName = "CKD Corporation";
        ProdType = 43;
        ProdTypeStr = "Generic Device";
        ProdCode = 874;
        MajRev = 2;
        MinRev = 2;
        ProdName = "OPP7-2EN-P";
        Catalog = "OPP7-2EN-P";
        Icon = "opp7.ico";

[Device Classification]
        Class1 = EtherNetIP;

[Params]
        Param1 =
                0,                          $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC8,                        $ Data Type
                4,                          $ Data Size in bytes
                "RPI",                      $ name
                "",                         $ units
                "μs order 1ms～10s setting default 5s ",      $ help string
                1000,10000000,50000,        $ min, max, default data values
                ,,,,                        $ mult, div, base, offset scaling
                ,,,,                        $ mult, div, base, offset links
                ;                            $ decimal places
        Param2 =
                0,                           $ reserved, shall equal 0
                ,,                          $ Link Path Size, Link Path
                0x0000,                      $ Descriptor
                0xC8,                        $ Data Type
                2,                          $ Data Size in bytes
```

```
            "Assembly Output Size", $ name
            "",                     $ units
            "",                     $ help string
            4,4,4,                  $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param3 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC7,                   $ Data Type
            2,                      $ Data Size in bytes
            "Assembly Input Size",  $ name
            "",                     $ units
            "",                     $ help string
            2,2,2,                  $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places

$ ==================================
$ == COMMUNICATION PATH SETTING ==
$ ==================================

    Param4 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "Output_CP",            $ name
            "",                     $ units
            "Output Connection Point",      $ help string
            101,101,101,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param5 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0000,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "Input_CP",             $ name
            "",                     $ units
            "Input Connection Point",       $ help string
            110,110,110,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
            ;                       $ decimal places
    Param6 =
            0,                      $ reserved, shall equal 0
            ,,                      $ Link Path Size, Link Path
            0x0010,                 $ Descriptor
            0xC6,                   $ Data Type
            1,                      $ Data Size in bytes
            "InputOnly_CP",         $ name
            "",                     $ units
            "Input Only Connection Point",      $ help string
            193,193,193,            $ min, max, default data values
            ,,,,                    $ mult, div, base, offset scaling
            ,,,,                    $ mult, div, base, offset links
```

```
                ;                               $ decimal places
        Param7 =
                0,                              $ reserved, shall equal 0
                ,,                              $ Link Path Size, Link Path
                0x0010,                         $ Descriptor
                0xC6,                           $ Data Type
                1,                              $ Data Size in bytes
                "ListenOnly_CP",                $ name
                "",                             $ units
                "Listen Only Connection Point",       $ help string
                192,192,192,                    $ min, max, default data values
                ,,,,                            $ mult, div, base, offset scaling
                ,,,,                            $ mult, div, base, offset links
                ;                               $ decimal places

    $ ==================================
    $ == INPUT OUTPUT DATA SETTING   ==
    $ ==================================

        Param8 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Output Data",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;
        Param9 =
                0,
                ,,
                0x0000,
                0xC7,
                2,
                "Input Data(Dummy Data)",
                "",
                "",
                0,255,0,
                ,,,,
                ,,,,
                0;


[Groups]
        Group1 =
                "Basic Configuration",
                1,
                1;
        Group2 =
                "Status",
                4,
                2,3,6,7;
        Group3 =
                "IO Data",
                2,
                4,5;

[Assembly]
        Assem101 =
```

```
                "32 Solenoid Output",
                "20 04 24 65 30 03",
                4,
                0x0000,
                ,,
                32,Param4;
        Assem110 =
                "Input Data (Dummy Data)",
                "20 04 24 6E 30 03",
                2,
                0x0000,
                ,,
                16,Param5;



[Connection Manager]
        Connection1 =
                0x04010002,                 $ Trigger and Transport
                0x44644405,                 $ Point Multicast
                Param1,4,Assem101, $ OT RPI Size format
                Param1,2,Assem110, $ TO rpi size format
                ,,                          $ config 1
                ,,                          $ config 2
                "Exclusive Owner ",         $ connection name
                "",                         $ help string
                "20 04 24 01 2C [Param4] 2C [Param5]";      $ path


[Port]
        Port1 =
                TCP,
                "Port 1",
                "20 F5 24 01",
                2;

[Capacity]

        ConnOverhead = .004;                $ Connection Overhead

        MaxIOConnections = 3;               $ Maximum number of Class 1 Connections
        MaxMsgConnections = 6;              $ Maximum number of Class 3 Connections
        TSpec1 = TxRx, 10, 2000;            $ packets per sec @ 10 bytes
        TSpec2 = TxRx, 504, 1500;           $ packets per sec @ 504 bytes

[TCP/IP Interface Class]
        Revision = 4;
        MaxInst = 1;
        Number_Of_Static_Instances = 1;
        Max_Number_Of_Dynamic_Instances = 0;

[Ethernet Link Class]
        Revision = 3;
        MaxInst = 2;
        Number_Of_Static_Instances = 2;
        Max_Number_Of_Dynamic_Instances = 0;
        InterfaceLabel1 = "ETH1";
        InterfaceLabel2 = "ETH2";

$ ******************************************************************************
$ EOF
$ ******************************************************************************
```