

Handling Instructions

CC-Link IE TSN Compatible

Serial Transmission Device

TVG series JA8*

(OPP8-A2TG / OPP8-A2TG-P)

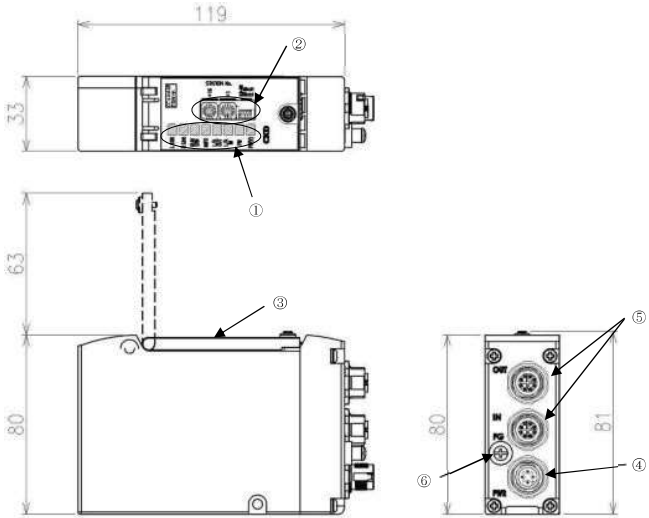
Thank you for purchasing CKD product.
Please review the precautions in this handling instructions thoroughly for safe operation of this product.
Incorrect usage may result in malfunction and dangers.
Keep this Instruction in a safe and convenient place for future reference.
For further information, refer to the instruction manual and product catalog.

⚠ CAUTION

- Do not touch the live part with bare hands or the electrical wiring (bare live part), as an electric shock may occur.
- Read the instruction manual of the communication system before using the product.
- This product is DC dedicated. Use the product within the specified power supply voltage.

1. Device specifications: Always operate the device within its specifications.		
Item	Specifications	
Model	OPP8-A2TG	OPP8-A2TG-P
Unit power voltage	21.6 VDC to 26.4 VDC (24VDC±10%)	
Unit power current consumption	100 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 (with all points ON at no load)	
Output type	+COM (NPN)	-COM (PNP)
Number of output points	32 points	
Insulation resistance	Between external terminals and the case: 30 MΩ or more with 500 VDC	
Withstand voltage	Between external terminals and the case: 500 VAC for one 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 IE TSN	
Unit type	Remote station	
Output insulation	Photo coupler insulation	
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)	

2. Dimensional outline drawing



- LED
Indicate the status of the product and network with D Link, RUN/ERR, INFO, LINK/ACT IN, LINK/ACT OUT, PW, PW (V).
- Setting switches
Set the IP address of the device by rotary switches.
Set the valve operation at communication error, and baud rate by slide switches.
- Cover
Protects the LEDs and switches.
- Unit/valve power plug (M12L 1 port [PWR] A-cord: 4pins)
Connects unit/valve power sockets.
- Network connector socket (M12L 2 ports [IN(P2), OUT(P1)] X-cord: 8 pins)
Transmits CC-Link IE TSN communication to the next device(remote station) or receives it from the previous device(remote station).
Note: There is no difference in the function between input(IN) and output(OUT) ports which only are named to distinguish each port.
- FG Terminal
Connects FG(frame grounding) to the terminal.

3. LED indicators and switch settings

3.1 LED indicators

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

	LED	Indication
	D Link	Indicates the data link communication status of CC-Link IE TSN with LED (green) lighting. (Lights on at normal communication)
	RUN /ERR	RUN: Indicates the operating status of the product with LED (green) lighting ERR: Indicates the error status of the product operation with LED (red) lighting
	INFO	Indicates the notification status from the device with LED (red) lighting (Lights off at normal communication)
	L/A OUT (P1)	Indicates the status of the Ethernet port (OUT side) with LED (green) lighting (light off, blinking, fast blinking)
	L/A IN (P2)	Indicates the status of the Ethernet port (IN side) with LED (green) lighting (light off, blinking, fast blinking)
	PW	Unit power is ON(Green on at normal condition)
	PW(V)	Valve power is ON(Green on at normal condition) Note: This indicator is disable when the unit power is OFF.

3.2 Switch settings

These switches set the output in the event of a communication error and IP address of the product. The setting is read into memory at power-up.

Refer to the following table for the settings of each switch.

Switch name	Settings	Setting range
STATION No.	IP address setting switch (I 16)	1 to 254
	IP address setting switch (I 1)	
HLD-CLR	Communication error output setting switch	ON: Hold mode (Hold output) OFF: Clear mode (Output OFF)
L. SPEED	Baud rate setting switch	ON : 100Mbps OFF : 1Gbps

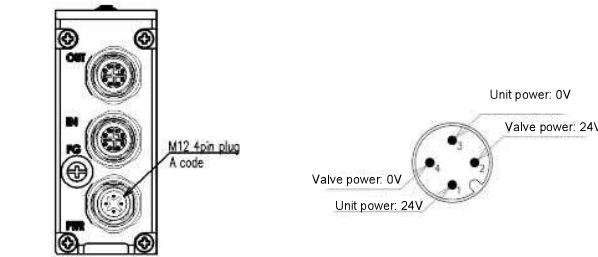
Note: The slide switch is in [ON] position when it is turned to the left in the above figure.

⚠ CAUTION

- Set switches while the unit power is turned off.
- Keep the cover of the device closed except when setting the switches. The cover may get damaged or foreign matters may enter inside and cause unexpected failure.
- The setting switch is very precise and may be damaged in case of rough handling.

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

- After confirming safety, stop network communication and power off all peripheral equipment.
- Refer to the figure below and wire to the M12 connector.



Recommended M12 connector (socket): loose wire type power cable straight Mfd by OMRON
XS2F-D421-8-2-1
Note: differs depending on the cable specifications.

Recommended assembly type M12 socket and power cable
1424655(SACC-M12FS-4PL M) M12 Assembly type connector Mfd by PHOENIX CONTACT
Cable size : AWG26 to 18, outside diameter of compatible cable : 4 to 8 dia.

⚠ CAUTION

- Check the polarity of this product and the cable terminal before connecting.
- Select the power cable by calculating the current consumption.

4.3 Connecting and wiring to the network connector socket (M12 connector-X-code)

Network plug is not supplied with the product. Separately purchase a network plug that satisfies the specifications.

Wiring the network cable to the network plug enables the plug to connect to the network connector on the device.

Recommended cable with plug: Cat.5e straight Mfd by Mitsubishi Electric System & Service
SC-E5EW-1
Note: differs depending on the cable specifications.

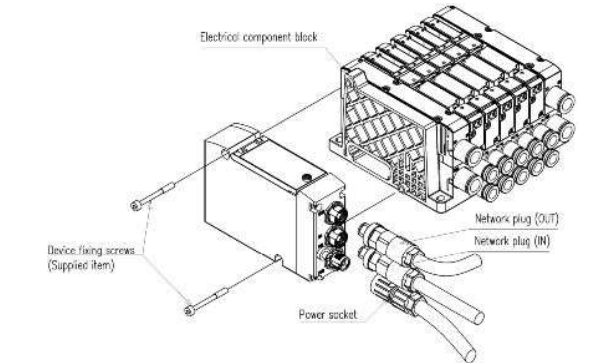
Recommended assembly type M12 connector
1411043(SACC-MSX-8QO) M12 Assembly type connector Mfd by PHOENIX CONTACT
Note: SPEEDCON mating method compatible

5.2 Removing the product (device)

- After confirming safety, stop network communication as necessary and turn off all peripheral equipment.
- After confirming safety, turn off the unit power and valve power as necessary.
(Note that following station next to the product may stop communication.)
- Unscrew the device fixing screws and slowly remove the product from the electrical component block.

⚠ CAUTION

- Do not remove the device by pulling cable or connector that may cause disconnection or damage.
- An electric shock may occur by touching the electrical wiring connection (bare live part).



6. Settings by CSP+ system profile

In order for the CC-Link IE TSN device to join the network, it is necessary to register the device to the network using the CSP+ profile which describes the device's communication specification. Refer to the instruction manual issued by the master unit manufacturer for registering the CSP+ profile. Use the latest CSP+ profile for proper network configuration.

6.1 Registering the device

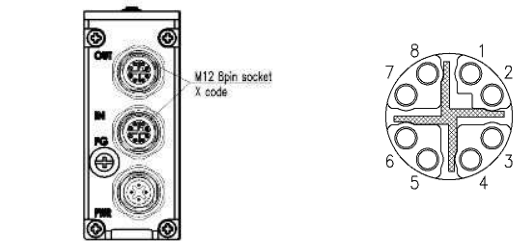
Before starting, check the specifications (model name) of the device to be used, as both the device and CSP+ profile need to be matched. Refer to the following table for device specifications and CSP+ profile and set accordingly.

Specifications and the model name in the CSP+ profile		
Item	Specifications	
Model	OPP8-A2TG	OPP8-A2TG-P
Module name	OPP8-2TG	OPP8-2TG-P
Output type	+COM (NPN)	-COM (PNP)
Number of output points	32 points	
CSP+ profile name	0x0104_OPP8-2TG_1_en	0x0104_OPP8-2TG-P_1_en

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

- After confirming safety, stop network communication and power off all peripheral equipment.
- Refer to the figure below and connect the CC-LINK IE TSN compliant cable to M12 connector.
Note: There is no difference in the function between input(IN) and output(OUT) ports which only are named to distinguish each port.

Note: The communication of the product turns off when the previous device is OFF.



Port	Pin	Signal	Function
IN/ OUT	1	BI_DA+	Bi-directional pair A +
	2	BI_DA-	Bi-directional pair A -
	3	BI_DB+	Bi-directional pair B +
	4	BI_DB-	Bi-directional pair B -
	5	BI_DD+	Bi-directional pair D +
	6	BI_DD-	Bi-directional pair D -
	7	BI_DC-	Bi-directional pair C -
	8	BI_DC+	Bi-directional pair C +

⚠ CAUTION

- Use a dedicated network cable that complies with CC-Link IE TSN 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.

5. Maintenance

5.1 Mounting the product (device)

- Set the IP address and other switches of the product.
- Turn off the power (for unit/valve) and connect the network plug and power socket. The system may start operating suddenly if they are connected while the power is turned on. Be careful of the surroundings and secure safety before performing work.
- Assemble the product to the connection block and screw it with the device fixing screws.
- After confirming safety, turn on each power supply.

6.2 I/O mapping

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 following table for RY mapping
(There is no remote input for the product).

RY mapping		Bit																																			
Number of I/O points	RY	RY_0	RY_1	RY_2	RY_3	RY_4	RY_5	RY_6	RY_7	RY_8	RY_9	RY_A	RY_B	RY_C	RY_D	RY_E	RY_F																				
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15																				
32-point outputs	4 bytes	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																				

Note: With the standard wiring of the double solenoid valve, the a-side solenoid close to the product is assigned RY data 00, and the b-side solenoid is assigned RY data 01 in order.

PRECAUTIONS

- To correspond with the requirements of the relevant EC Directive, use AC/DC adapter (e.g., switching power supplies) complying with EMC standards for the unit and valve power supplies.
- The system or solenoid valve (cylinder) may operate suddenly when powering on and off. Be careful of the surroundings and secure safety before performing work.
- For the delay time, refer to the instruction manual of 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.
- Wire the power cable and network cable properly within its specifications to avoid any incorrect wiring.
- Do not apply tension or impact to the power cable or network cable.
- Make sure that cables and connectors are securely connected before turning on the power.
- Do not disassemble, modify, or repair the product as that may cause failure or malfunction.
- Do not drop or apply excessive vibrations or shocks to the product as the part inside are made precisely.
- Do not attach or detach the connector while the power is ON as that may cause a failure or malfunction.
- Mold and rust may develop on the product if it is exposed to high humidity during transportation. Include moisture absorbers and tightly seal the package.

- For inquiries regarding the product, please contact the following or the nearest sales office.

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