Autonics

M12 5-pin Connector Distribution Boxes

PT Series
PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Easy check operation by operation indicator (red/green)
- Single power operates several sensors
- Convenient wiring and power line
- IP67 protection structure with water-proof cover
  (IP52 protection structure with protection cover)
- Supports 1-signal, 2-signal (DC 4-wire)

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ **Warning** Failure to follow instructions may result in serious injury or death.

01. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.(e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
    Failure to follow this instruction may result in personal injury, economic loss or fire.
02. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
    Failure to follow this instruction may result in explosion or fire.
03. **Do not connect, repair, or inspect the unit while connected to a power source.**
    Failure to follow this instruction may result in fire.
04. **Check 'Connections' before wiring.**
    Failure to follow this instruction may result in fire.
05. **Do not disassemble or modify the unit.**
    Failure to follow this instruction may result in fire.

⚠ **Caution** Failure to follow instructions may result in injury or product damage.

01. **Use the unit within the rated specifications.**
    Failure to follow this instruction may result in fire or product damage.
02. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
    Failure to follow this instruction may result in fire.
03. **Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
    Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Since sensor distribution box is only for DC, do not use for AC.
- Connect sensor after checking whether output is NPN or PNP.
- Operate sensor after connecting load.
- Tighten the mounting screw or connector with following tightening torque.
  - Mounting screw (M4): max. 1.2 N·m
  - M12 connector: 0.6 to 0.7 N·m
  - M23 connector: 2.0 to 2.5 N·m
- Do not pull the cable which is connected to the body.
- Do not put an object on the body.
- It is hard to maintain protection structure, when consistently using the product with external power applied to the connector joint.
- Keep away from high voltage lines or power lines to prevent inductive noise.
  In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
  Do not use near the equipment which generates strong magnetic force or high frequency noise.
- If transceiver and sensor distribution box are installed closely, malfunction can occur.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

Sold Separately

- Protection cover (CAP-PT)
- Waterproof cover (P96-M12-1)
- M23 cable connector

Product Components

- Product
- Instruction manual
- Nameplate sticker
- Bolt × 4
- Nut × 4

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

PT ❶ - ❷ ❸ ❹ ❺ - ❻

❶ No. of ports
4: 4
6: 6
8: 8

❷ External signal connection
No mark: Cable type
C: Connector type
S: Spring terminal type
P: Pluggable screw terminal type

❸ Output type
3D: DC 3-wire (1 signal)
4D: DC 4-wire (2 signal)

❹ Input logic
N: NPN
P: PNP

❺ Case color
5: Blue
5K: Black

❻ Cable length (cable type)
5: 5 m
10: 10 m

❻ Hood cover (Pluggable screw terminal type)
No mark: Hood cover included
B: Hood cover excluded

Specifications

■ Cable type

Model	PT4-3D☐5-☐	PT4-4D☐5-☐	PT6-3D☐5-☐	PT6-4D☐5-☐	PT8-3D☐5-☐	PT8-4D☐5-☐
No. of port	4	4	6	6	8	8
Output type[01]	3-wire (1 signal)	4-wire (2 signal)	3-wire (1 signal)	4-wire (2 signal)	3-wire (1 signal)	4-wire (2 signal)
Output logic[01]	NPN/PNP model					
Material	Case: PBT (G15 %), name plate: PC, general cable (black): PVC					
Certification	CE ⓊK EAC					
Unit weight (packaged)[02]	≈ 900 g (≈ 1100 g)	≈ 1200 g (≈ 1400 g)	≈ 930 g (≈ 1130 g)	≈ 1230 g (≈ 1430 g)	≈ 960 g (≈ 1160 g)	≈ 1260 g (≈ 1460 g)

01) Connect the sensor to the proper output type and logic.
02) It is based on 5 m cable.

■ Connector type

Model	PT4-C3D☐5	PT4-C4D☐5	PT6-C3D☐5	PT6-C4D☐5	PT8-C3D☐5	PT8-C4D☐5
No. of port	4	4	6	6	8	8
Output type[01]	3-wire (1 signal)	4-wire (2 signal)	3-wire (1 signal)	4-wire (2 signal)	3-wire (1 signal)	4-wire (2 signal)
Output logic[01]	NPN/PNP model					
Material	Case: PBT (G15 %), name plate: PC, general cable (black): PVC					
Certification	CE ⓊK EAC					
Unit weight (packaged)	≈ 120 g (≈ 230 g)	≈ 125 g (≈ 235 g)	≈ 150 g (≈ 260 g)	≈ 155 g (≈ 265 g)	≈ 180 g (≈ 290 g)	≈ 185 g (≈ 295 g)

01) Connect the sensor to the proper output type and logic.

■ Spring terminal type

Model	PT4-S3D☐	PT6-S3D☐	PT8-S3D☐
No. of port	4	6	8
Output type[01]	3-wire (1 signal)		
Output logic[01]	NPN/PNP model		
Material	Case: PBT (G15 %), name plate: PC, cover: PBT (G15 %), cover bolt: PA6 (G15 %)		
Applicable cable out diameter	10.5 mm ± 0.3		
Certification	CE ⓊK EAC		
Unit weight (packaged)	≈ 140 g (≈ 270 g)	≈ 165 g (≈ 292 g)	≈ 190 g (≈ 314 g)

01) Connect the sensor to the proper output type and logic.

■ Pluggable screw terminal type

Model	PT4-P3D☐-☐	PT6-P3D☐-☐	PT8-P3D☐-☐
No. of port	4	6	8
Output type[01]	3-wire (1 signal)		
Output logic[01]	NPN/PNP model		
Material	Case: PBT (G15 %), name plate: PC, cover: PBT (G15 %), cover bolt: PA6 (G15 %)		
Applicable cable out diameter	10.5 mm ± 0.3		
Certification	CE ⓊK EAC		
Unit weight (packaged)	≈ 150 g (≈ 280 g)	≈ 175 g (≈ 302 g)	≈ 210 g (≈ 334 g)

01) Connect the sensor to the proper output type and logic.
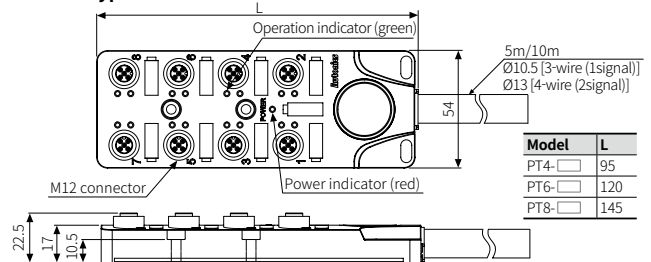
Power supply	12-24 VDC⎓
Rated current	• Cable type / connector type: 2 A (per signal), 4 A (per port), 10 A (body) • Spring / pluggable screw terminal type: 2 A (per signal), 2 A (per port), 7 A (body)
Leakage current	≤ 0.5 mA (only applicable for the cable type / connector type)
Current consumption	≤ 5 mA
Connection life cycle	≥ 200 operations
Insulation resistance	≥ 100 MΩ (500 VDC⎓ megger)
Dielectric strength	500 VAC∼ 50/60 Hz for 1 minute
Vibration	3 mm amplitude at frequency of 10 to 55Hz in each X, Y, Z direction for 2 hours
Shock	500 m/s² (≈ 50 G) X, Y, Z in each X, Y, Z direction for 3 times
Indicator	Power indicator: red / operation indicator: green
Ambient temperature	-25 to 75 °C, storage: -30 to 80 °C (a non freezing or condensation environment)
Ambient humidity	35 to 95 %RH, storage: 35 to 95 %RH (a non freezing or condensation environment)
Protection structure[01]	• With connector / waterproof cover: IP67 (IEC standard) • With protection cover: IP52 (IEC standard)

01) This is not applicable when connectors and protection/waterproof covers are not mounted.
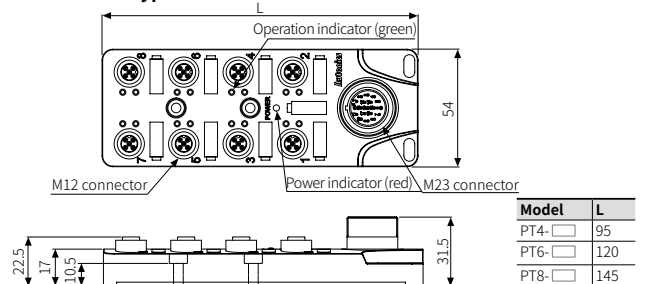
Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
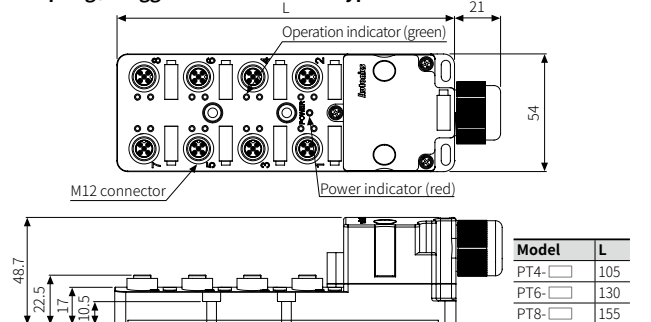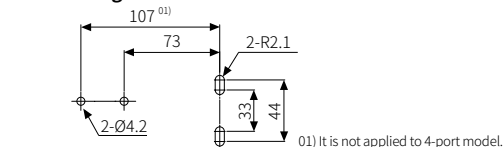- It is based on the 8-port model.

■ Cable type

Model	L
PT4-☐	95
PT6-☐	120
PT8-☐	145

5m/10m
Ø10.5 [3-wire (1signal)]
Ø13 [4-wire (2signal)]

■ Connector type

Model	L
PT4-☐	95
PT6-☐	120
PT8-☐	145

■ Spring / Pluggable screw terminal type

Model	L
PT4-☐	105
PT6-☐	130
PT8-☐	155

■ Mounting hole

107 [01]
73
2-R2.1
2-Ø4.2
33
44

01) It is not applied to 4-port model.

Spring / Pluggable Screw Terminal Connections

■ Connection

Model	PT4-☐	PT6-☐	PT8-☐
Spring terminal type	1 3 4 2 + − PE	1 3 5 6 4 2 + − PE	1 3 5 7 8 6 4 2 + − PE
Pluggable screw terminal type	1 3 4 2 + − PE	1 3 5 6 4 2 + − PE	1 3 5 7 8 6 4 2 + − PE

■ Wiring

After removing the terminal cover using a tool such as a (-) driver, connect/disconnect the wires.
• Connecting
Insert the wire ferrule into the terminal hole.
• Removing
1. Put the (-) screwdriver at the groove on the clamp lever and press it.
2. Pull the cable to disassemble.

■ Wire Ferrule Specifications

- Unit: mm, Use the UL approved wire ferrule.

Model	A	Appliable cable
Spring terminal type	8	Signal wire: AWG22 (0.30 mm²) Power wire: AWG17 (1 mm²)
Pluggable screw terminal type	8 to 10	

≤ 1.3 to 1.7
≤ 3.4 to 3.8

Connections

- It is based on the 8-port model.
- When connecting L type connectors, connection direction may be different by the manufacturers of the connector.

■ 3-wire (1 signal)

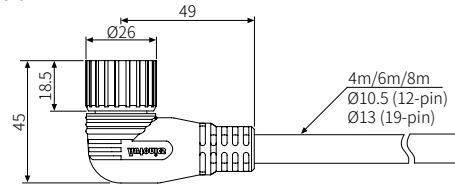| 3-wire (1 signal) NPN	Cable type (cable color)	Connector type (M23 plug pin no.)	Spring / Pluggable screw terminal type (pin no.)	3-wire (1 signal) PNP
PE	Green/Yellow	12	PE	PE
VCC	Brown	11	+	VCC
Power LED / GND	Blue	9, 10	-	Power LED / GND
Operation LED — 1 port — 1 signal	White	1	1	Operation LED — 1 port — 1 signal
2 port — 1 signal	Green	2	2	2 port — 1 signal
3 port — 1 signal	Yellow	3	3	3 port — 1 signal
4 port — 1 signal	Gray	4	4	4 port — 1 signal
5 port — 1 signal	Pink	5	5	5 port — 1 signal
6 port — 1 signal	Red	6	6	6 port — 1 signal
7 port — 1 signal	Black	7	7	7 port — 1 signal
8 port — 1 signal	Purple	8	8	8 port — 1 signal

■ 4-wire (2 signal)

4-wire (2 signal) NPN	Cable type (cable color)	Connector type (M23 plug pin no.)	4-wire (2 signal) PNP
PE	Green/Yellow	12	PE
VCC	Brown	19	VCC
Power LED / GND	Blue	6	Power LED / GND
Operation LED — 1 port — 1 signal	White	15	Operation LED — 1 port — 1 signal
1 port — 2 signal	Gray/Pink	7	1 port — 2 signal
2 port — 1 signal	Green	5	2 port — 1 signal
2 port — 2 signal	Red/Blue	4	2 port — 2 signal
3 port — 1 signal	Yellow	16	3 port — 1 signal
3 port — 2 signal	White/Green	8	3 port — 2 signal
4 port — 1 signal	Gray	3	4 port — 1 signal
4 port — 2 signal	Brown/Green	14	4 port — 2 signal
5 port — 1 signal	Pink	17	5 port — 1 signal
5 port — 2 signal	White/Yellow	9	5 port — 2 signal
6 port — 1 signal	Red	2	6 port — 1 signal
6 port — 2 signal	Yellow/Brown	13	6 port — 2 signal
7 port — 1 signal	Black	11	7 port — 1 signal
7 port — 2 signal	White/Gray	10	7 port — 2 signal
8 port — 1 signal	Purple	1	8 port — 1 signal
8 port — 2 signal	Gray/Brown	18	8 port — 2 signal

Sold Separately: M23 Cable Connector

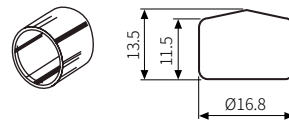- Unit: mm, For the detailed drawings, follow the Autonics website.

■ Dimension

49, Ø26, 18.5, 45, 4m/6m/8m, Ø10.5 (12-pin), Ø13 (19-pin)

■ Specification

Cable length is option.

Model	CLDH12C-040	CLDH12C-060	CLDH12C-080	CLDH19C-040	CLDH19C-060	CLDH19C-080
Cable Length	4m	6m	8m	4m	6m	8m
Pin no.	12-pin			19-pin		

Pin arrangement (12-pin): ① ⑨ ⑧ ② ⑩ ⑫ ⑦ ③ ⑪ ⑥ ④ ⑤

Pin arrangement (19-pin): ① ⑫ ⑪ ② ⑱ ⑩ ③ ⑬ ⑲ ⑨ ④ ⑮ ⑯ ⑧ ⑥ ⑦ ⑤ ⑭ ⑰

Connection wiring

Pin no	Wire color	AWG	Pin no	Wire color	AWG
1	White	AWG22	1	Purple	AWG22
2	Green		2	Red	
3	Yellow		3	Gray	
4	Gray		4	Red/Blue	
5	Pink		5	Green	
6	Red		6	Blue	AWG17
7	Black		7	Gray/Pink	
8	Purple		8	White/Green	
9	Blue	AWG17	9	White/Yellow	AWG22
10	-		10	White/Gray	
11	Brown		11	Black	
12	Green/Yellow		12	Green/Yellow	AWG17
			13	Yellow/Brown	AWG22
			14	Brown/Green	
			15	White	
			16	Yellow	
			17	Pink	
			18	Gray/Brown	
			19	Brown	AWG17

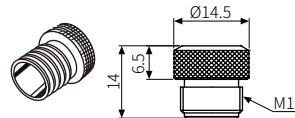## Sold Separately: Protection Cover (CAP-PT)

- Unit: mm, For the detailed drawings, follow the Autonics website.

13.5, 11.5, Ø16.8

- This protection cover is used for protecting connection holes from dust or particle, etc. Please push it into hole.
- If using protection covers, protection structure of the sensor distribution box is IP52.

Sold Separately: Waterproof Cover (P96-M12-1)

- Unit: mm, For the detailed drawings, follow the Autonics website.

Ø14.5, 6.5, 14, M12

- This waterproof cover is used for protecting unused connection hole from water or oil, etc. Please tighten it when applying to the ports.
- If using waterproof covers, protection structure of the sensor distribution box is IP67.