

Autonics Pressure Transmitter TPS30 SERIES

INSTRUCTION MANUAL



Cable type DIN43650-A DT04-3P M12 Head type

Connector type Connector type Connector type

Thank you for choosing our Autonics product.

Please read the following safety considerations before use.

Safety Considerations

⊗ Please observe all safety considerations for safe and proper product operation to avoid hazards.

⊗ Safety considerations are categorized as follows.

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

Caution Failure to follow these instructions may result in personal injury or product damage.

⊗ The symbols used on the product and instruction manual represent the following

⚠ symbol represents caution due to special circumstances in which hazards may occur.

Warning

1. **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, fire, or economic loss.

2. **Do not use the unit where flammable or explosive gas, humidity, direct sunlight, radiant heat, vibration, and impact may be present.**
Failure to follow this instruction may result in fire or explosion.

3. **Do not disassemble or modify the unit. Please contact us if necessary.**
Failure to follow this instruction may result in fire.

Caution

1. **Do not apply beyond the rated pressure.**
Failure to follow this instruction may result in product damage.

2. **Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or shortening the life cycle of the unit.

3. **Fix the cable through the cable connection part.**
Do not turn the cable of the unit. Failure to follow cause instruction may result in product damage.

4. **Keep dust and wire residue from flowing into the unit.**
Failure may result in burn out of the unit.

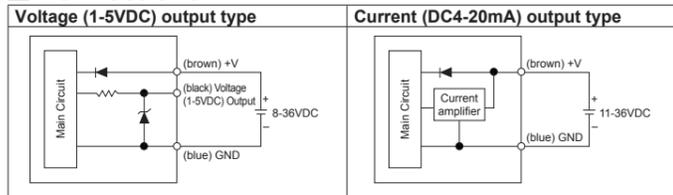
5. **Check the polarity of the measurement terminals before wiring the unit.**
Failure may result in burn out of the unit.

6. **Please contact us for using the unit to the corrosive detergent.**
Failure to follow this instruction may result in shortening the life cycle of the unit or product damage.

7. **Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.**
Failure to follow this instruction may result in fire.

8. **Head type should use over Ø7mm cable for IP67 protection structure.**

Connections



⊗ Cable color is only for cable type.

Troubleshooting

Error	Troubleshooting
No outputs	Check the power supply. Check the polarity (+, -) when wiring the cable. Check the connection part.
Abnormally fluctuating output	Check the power supply. Check the supplied pressure. Check the pressure line.
Out of zero point output value	Check the power supply. Check the load resistive value of current output type for a receiver is over 700Ω. (when supplying 24VDC) Check the measuring point and transmission distance. Check the line resistance is below 700Ω.

⊗ The above specifications are subject to change and some models may be discontinued without notice.

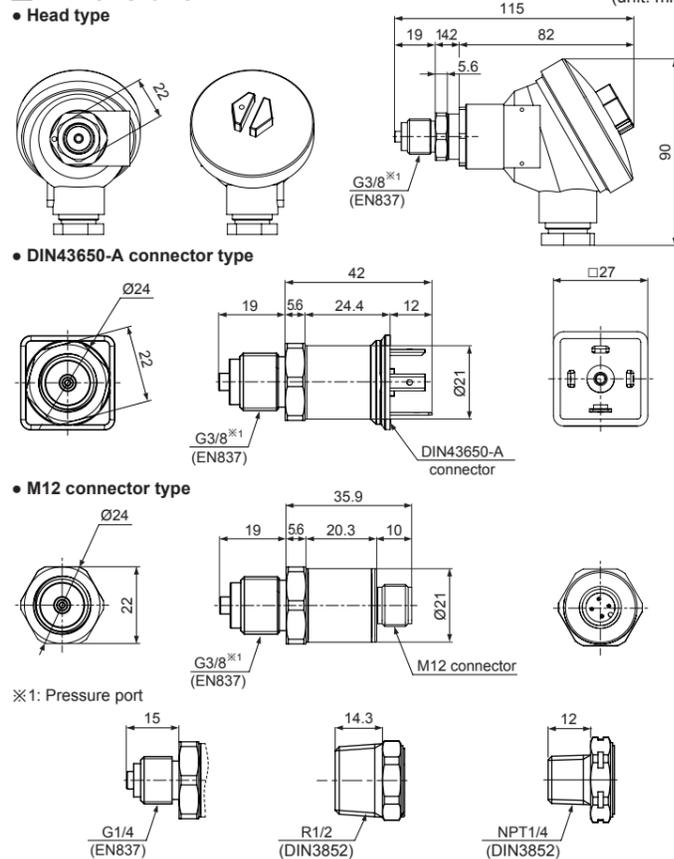
Ordering Information

TPS30	-	G	2	9	V	G8	-	00	(0 to 0.5MPa)
①		②	③	④	⑤	⑥		⑦	⑧

Item	Description		
① Item	TPS30 Pressure Transmitter		
② Measurement pressure	G Gauge pressure, sealed gauge pressure*1 A Absolute pressure		
③ Cable	1 Head type		
	2 DIN43650-A connector type		
	3 M12 connector type		
	4 DT04-3P connector type		
	5 Cable type		
	Gauge pressure	Absolute pressure	
	3	0 to 0.1MPa	0 to 0.1MPa
	4	0 to 0.2MPa	0 to 0.2MPa
	5	0 to 0.7MPa	0 to 0.7MPa
	6	0 to 1MPa	0 to 1MPa
④ Pressure range	7	0 to 2MPa	0 to 2MPa
	8*2	0 to 3.5MPa	—
	9*2	0 to 5MPa	—
	A*2	0 to 10MPa	—
	B*2	0 to 20MPa	—
	C*2	0 to 40MPa	—
	D*2	0 to 50MPa	—
	E*2	0 to 60MPa	—
	Sealed gauge pressure*1	—	
	F	-0.1 to 0MPa	—
G	-0.1 to 0.1MPa	—	
H	-0.1 to 0.7MPa	—	
J	-0.1 to 1MPa	—	
K	-0.1 to 2MPa	—	
Z	Others	—	
⑤ Output type	V Voltage (1-5VDC) output		
	A Current (DC4-20mA) output		
⑥ Pressure port	G8 G3/8 (PF) (EN837)		
	G4 G1/4 (PF) (EN837)		
	R2 R1/2 (PT) (DIN3852)		
	N4 NPT1/4 (DIN3852)		
	ZZ*3 Others (option)		
⑦ Option (connector cable)*4	00 Not used		
	21 "I" type 2m		
	2L "L" type 2m		
	51 "I" type 5m		
	5L "L" type 5m		
⑧ User pressure range	User pressure range*5		

*1: The pressure is sealed gauge pressure. The unit is sealed structure. It is based on atmospheric pressure 101.3kPa (1.013bar).
*2: G1/4 is the standard pressure port. For the other pressure ranges, G3/8, R1/2 are standard pressure ports.
*3: The option ports are sold separately. In case of large amount ordering, contact the Autonics for manufacturing the requested pressure port.
*4: Only for M12 connector type.
*5: Write the desired pressure range and it is the default of user pressure range. (select "Z" at ④Pressure range)

Dimensions



*1: Pressure port

Specifications

Series	TPS30																
Pressure type	Gauge pressure, absolute pressure						Sealed gauge pressure*1					Gauge pressure					
Rated pressure range (MPa)	0 to 0.1	0 to 0.2	0 to 0.7	0 to 1	0 to 2	-0.1 to 0	-0.1 to 0.1	-0.1 to 0.7	-0.1 to 1	-0.1 to 2	0 to 3.5	0 to 5	0 to 10	0 to 20	0 to 40	0 to 50	0 to 60
Expanded analog output range (MPa)	0 to 0.11	0 to 0.22	0 to 0.77	0 to 1.1	0 to 2.2	-0.1 to 0.01	-0.1 to 0.12	-0.1 to 0.78	-0.1 to 1.11	-0.1 to 2.21	0 to 3.85	0 to 5.5	0 to 11	0 to 22	0 to 44	0 to 55	0 to 66
Max. pressure range (MPa)	0.6	0.6	3	3	3	0.6	0.6	3	3	3	10	20	50	80	120	120	120
Burst pressure (MPa)	0.6	0.6	3	3	3	0.6	0.6	3	3	3	15	30	75	120	160	160	160
Measured materials	Liquid, gas, oil																
Power supply	Voltage output type: 8-36VDC (ripple P-P: max. 10%) Current output type: 11-36VDC (ripple P-P: max. 10%)																
Permissible voltage range	90 to 110% of rated voltage																
Current consumption	Voltage output type: max. 20mA Current output type: max. 30mA																
Response time	Max. 1ms																
Protection circuit	Reverse polarity protection circuit																
Output type	Voltage output type: 1-5VDC Current output type: DC4-20mA																
Compensation temperature	-10 to 80°C																
Accuracy	Max. ±0.5% F.S. (including linearity, hysteresis, reproducibility)																
Linearity	Max. ±0.2% F.S.																
Hysteresis	Max. ±0.2% F.S.																
Temp. Zero Shift	Max. ±0.1% F.S./10°C (standard), max. ±0.25% F.S./10°C (max.)																
Temp. Span Shift	Max. ±0.1% F.S./10°C (standard), max. ±0.25% F.S./10°C (max.)																
Temperature characteristics	-25 to 100°C: max. ±1.5% F.S. / -40 to 125°C: max. ±2.5% F.S.																
Load resistance	Current output type: max. 700Ω (supplying 24VDC)																
Dielectric strength	500VAC 50/60Hz for 1 minute																
Insulation resistance	Over 100MΩ (at 500VDC megger)																
Environment	Ambient Voltage output temp.	Head type, DIN43650-A connector type, M12 connector type, DT04-3P connector type: -40 to 125°C, storage: -40 to 125°C Cable type: -40 to 80°C, storage: -40 to 80°C															
	Current output temp.	Head type, DIN43650-A connector type, M12 connector type, DT04-3P connector type: -40 to 85°C, storage: -40 to 125°C Cable type: -40 to 80°C, storage: -40 to 80°C															
	Ambient humidity	35 to 85%RH															
	Fluid temp.	-40 to 125°C															
Vibration	10g, 20 to 2,000Hz																
Shock	100g/6ms																
Tightening torque	Max. 10N·m																
Protection structure	Head type, M12 connector type, DT04-3P connector type, cable type: IP67 (IEC standard) DIN43650-A connector type: IP65 (IEC standard)																
Material	Stainless steel 316L (head component of head type: aluminium diecasting), connector: Polybutylene terephthalate G30, water-proof rubber: Silicon																
Connection	Voltage output type: +, -, Vout Current output type: +, -																
Approval	CE																
Weight*2	Head type: approx. 330g (approx. 250g)																
	DIN43650-A connector type, M12 connector type, DT04-3P connector type: approx. 130g (approx. 50g) Cable type: approx. 200g (approx. 120g)																

*1: The sensor is sealed structure. It is based on atmospheric pressure 101.3kPa (1.013bar).

*2: The weight includes packaging. The weight in parentheses is for unit only.

Connector

Voltage output type

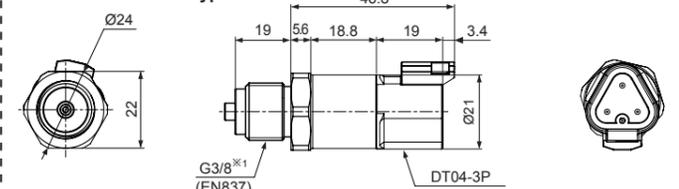
Pin type	Head type	DIN43650-A connector type	M12 connector type	DT04-3P connector type	Cable type
Function	Pin	1	1	A	Brown
+	+	⊕	3	C	Blue
-	-	⊖	4	B	Black
Vout	Vout	2, 3	2, 4	B	—
N:C	—	3	2	—	—

Current output type

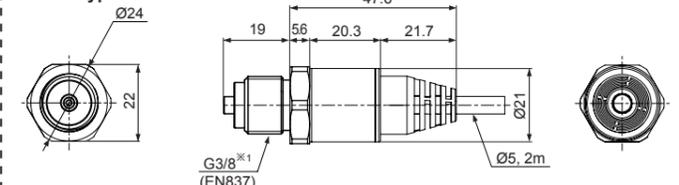
Pin type	Head type	DIN43650-A connector type	M12 connector type	DT04-3P connector type	Cable type
Function	Pin	1	1	A	Brown
+	+	⊕	3	C	Blue
-	-	⊖	4	B	Black
N:C	—	2, 3	2, 4	B	—

*In case of head type, remove the top cover.

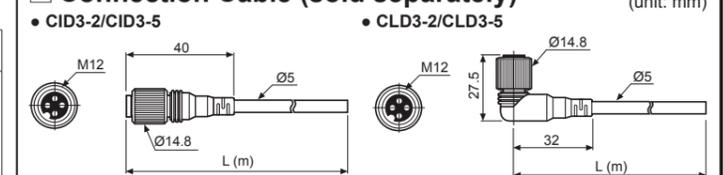
DT04-3P connector type



Cable type



Connection Cable (sold separately)



* "L" Standard cable length is 2m, 5m.
* Only for M12 connector.

Cautions During Use

- When installing the unit on pipe line, use the hexagon part of connections not to turn the unit with a pipe wrench. Do not use the unit with strong vibrations.
 - The unit is manufactured with precisely. If you drop or shock the unit, it may lose the function. Please treat the unit carefully.
 - Store the unit at the place without moisture, dust, and vibration.
 - This product which does not have drive part at sensing part does not need to repair it. Even though inside of pressure pipe is normally clean, it needs to take maintenance once a year as below instructions.
 - Check the broken status of outside.
 - Check the pressure slot, cleanliness inside, and corrosion state.
 - Short each terminal and check the insulation resistance between the case and power. (at 500VDC, over 100MΩ)
 - Check zero, span adjustment and linearity by pressure standards.
 - When removing a sensor for maintenance, follow the below instructions.
 - Replace an O-ring which is used once.
 - Be sure that diaphragm part is not damaged.
 - Connect the power with the crimp terminals.
 - Switch or circuit breaker should be installed nearby users for convenient control.
 - Do not use the unit near the high frequency instruments (high frequency welding machine & sewing machine, large capacity SCR controller).
 - The unit cannot be repaired due to disassembled structure.
 - The unit is fixed with bolt and nut at the both sides of case. Do not press excessive load (approx. 300kg/cm²), or it may cause damage to the unit.
 - Do not pull the cables with over 30N of tension force.
 - Tighten the cable connection part firmly not to enter water to the cable.
 - Installation environment.
 - Indoor / Outdoor
 - Pollution Degree 2
 - Altitude max. 2,000 m
 - Installation Category II
- ⊗ Failure to follow these instructions may result in product damage.

Major Products

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> ■ Photoelectric Sensors ■ Fiber Optic Sensors ■ Door Sensors ■ Door Side Sensors ■ Area Sensors ■ Proximity Sensors ■ Pressure Sensors ■ Rotary Encoders ■ Connector/Sockets ■ Switching Mode Power Supplies ■ Control Switches/Lamps/Buzzers ■ I/O Terminal Blocks & Cables ■ Stepper Motors/Drivers/Motion Controllers ■ Graphic/Logic Panels ■ Field Network Devices ■ Laser Marking System (Fiber, CO₂, Nd: YAG) ■ Laser Welding/Cutting System | <ul style="list-style-type: none"> ■ Temperature Controllers ■ Temperature/Humidity Transducers ■ SSRs/Power Controllers ■ Counters ■ Timers ■ Panel Meters ■ Tachometer/Pulse (Rate) Meters ■ Display Units ■ Sensor Controllers ■ Temperature Transmitters ■ Converters ■ Controllers | <ul style="list-style-type: none"> ■ Recorders ■ Indicators ■ Converters ■ Controllers ■ Thyristor Units ■ Pressure Transmitters ■ Temperature Transmitters |
|--|---|--|
- Autonics Corporation**
http://www.autonics.com
- HEADQUARTERS:
18, Bansong-ro 513 beon-gil, Haeundae-gu, Busan, South Korea, 48002
TEL: 82-51-519-3232
E-mail: sales@autonics.com