

Autonics

Non-indicating Pressure Transmitters

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

- ⚠ 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.

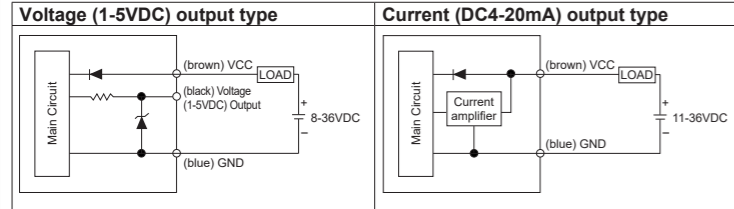
⚠ Warning

- 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.
- 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.
- Do not disassemble or modify the unit.
Failure to follow this instruction may result in fire or electric shock.†

⚠ Caution

- Do not apply beyond the rated pressure.
Failure to follow this instruction may result in product damage.
- Use the unit within the rated specifications.
Failure to follow this instruction may result in fire or product damage.
- Fix the cable through the cable connection part and do not turn the cable of the unit.
Failure to follow cause instruction may result in product damage.
- Keep metal chip, dust, and wire residue from flowing into the unit.
Failure to follow this instruction may result in fire or product damage.
- Check the polarity of the contact before wiring the unit.
Failure to follow this instruction may result in product damage by a fire.
- This product is designed to detect the pressure of noncorrosive fluid. Do not use for corrosive fluid.
Failure to follow this instruction may result in product damage.
- 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.

■ 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.

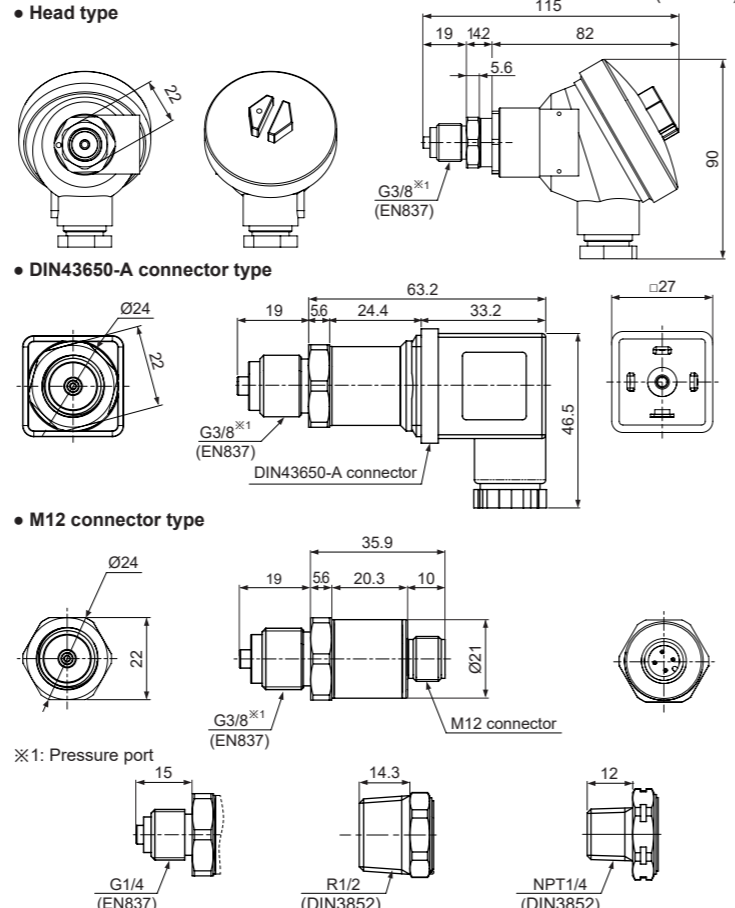
※ The above specifications are subject to change and some models may be discontinued without notice.
※ Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

■ Ordering Information

①	②	③	④	⑤	⑥	⑦	⑧
TPS30	-	G	2	9	V	G8	- 00 (0 to 0.5MPa)
① Item	Description						
② Measurement pressure	TPS30 Pressure Transmitter						
③ Cable	G	Gauge pressure, sealed gauge pressure ^{*1}					
	A	Absolute pressure					
	1	Head type					
	2	DIN43650-A connector type					
	3	M12 connector type					
④ Pressure range	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				
	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	—				
	⑤ Output type	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					
V		Voltage (1-5VDC) output					
A		Current (DC4-20mA) output					
G8		G3/8 (PF) (EN837)					
G4		G1/4 (PF) (EN837)					
R2		R1/2 (PT) (DIN3852)					
N4		NPT1/4 (DIN3852)					
ZZ ^{*3}		Others (option)					
00		Not used					
⑥ Pressure port	2l	"l" type 2m					
	2L	"L" type 2m					
	5l	"l" type 5m					
	5L	"L" type 5m					
	5L	"L" type 5m					
⑦ Option (connector cable) ^{*4}	User pressure range ^{*5}						
	00	Not used					
	2l	"l" type 2m					
	2L	"L" type 2m					
	5l	"l" type 5m					
⑧ User pressure range	User pressure range ^{*5}						
	00	Not used					
	2l	"l" type 2m					
	2L	"L" type 2m					
	5l	"l" type 5m					

- ※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 ⑥Pressure range)

■ Dimensions



■ 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 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 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	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	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 temp.			Voltage output type: 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			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														
	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.
- ※Environment resistance is rated at no freezing or condensation.

■ Connector

• Voltage output type

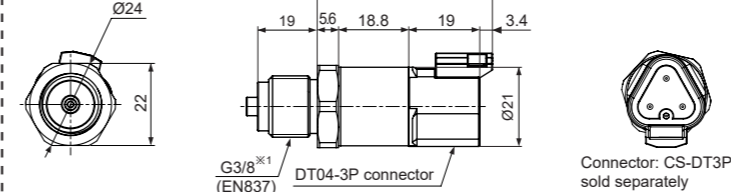
Pin type	Head type	DIN43650-A connector type	M12 connector type	DT04-3P connector type	Cable type
	Function	VCC	GND	Vout	
+	1	1	3	A	Brown
-	2	2	4	C	Blue
Vout	3	3	2	B	Black
N.C	4	4	1		

• Current output type

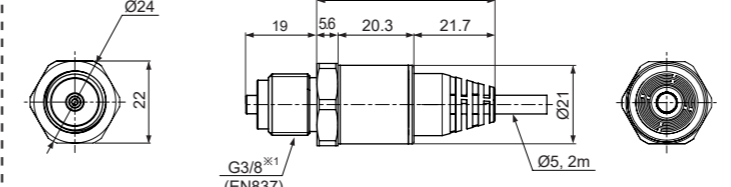
Pin type	Head type	DIN43650-A connector type	M12 connector type	DT04-3P connector type	Cable type
	Function	VCC	GND	Vout	
+	1	1	3	A	Brown
-	2	2	4	C	Blue
N.C	3	3	2	B	

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

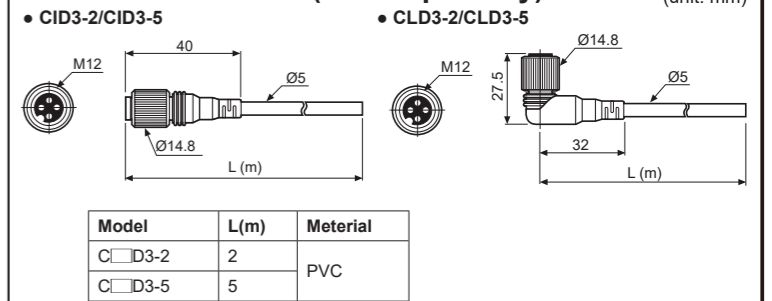
• DT04-3P connector type



• Cable type



■ Connection Cable (sold separately)



※ Only for M12 connector.

■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
- 8-36VDC, 11-36VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- 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.
- 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.
- 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.
- Switch or circuit breaker for supplying or cutting off the power should be installed nearby users for convenient control.
- 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.
- This unit may be used in the following environments.
 - Indoor / Outdoor (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000 m
 - Pollution Degree 2
 - Installation Category II