

Autonics

Cylindrical Temperature Transmitters with HART protocol CN-502H SERIES

INSTRUCTION MANUAL

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

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, economic loss or fire.

2. Do not use the unit in the place where flammable/explosive 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.

3. Do not connect, repair, or inspect the unit while connected to a power source.

Failure to follow this instruction may result in electric shock or malfunction.

4. Do not disassemble or modify the unit.

Failure to follow this instruction may result in fire or electric shock.

5. Check 'Connections' before wiring.

Failure to follow this instruction may result in fire.

⚠ Caution

1. Use the unit within the rated specifications.

Failure to follow this instruction may result in fire or product damage.

2. 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 or electric shock.

3. 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.

※ 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).

■ Specification

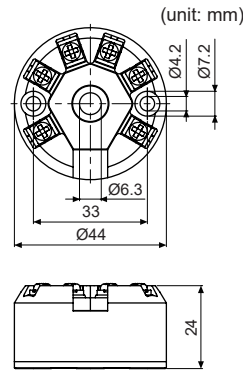
Model	CN-502H	
Power supply	11-35VDC	
Power consumption	Max. 1W	
Display method*1	None	
Input type	RTD	DPT100Ω, DPT500Ω, DPT1000Ω Ni100Ω, Ni500Ω, Ni1000Ω JPT100Ω
	Thermocouple	K, J, T, E, N, S, B, R
	Resistance trans. (Ω)	0-400Ω, 0-2000Ω
	Voltage trans. (mV)	-10-75mV, -100-100mV, -100-500mV, -100-2000mV
	Input accuracy	±0.1% F.S.
Measurable current	50μA (3-wire), 100μA (4-wire)	
Resistance	Max. 5Ω	
Output	DC4-20mA (2-wire)	
Output accuracy	±0.1% F.S.	
Response time	1 sec (10 to 90% of output)	
Load	Max. (power supply - 11VDC)/0.023A	
Setting method	HART-protocol (no setting key)	
Alarm	Below 3.8 mA, over 21.0 mA / sensor break 22mA or 3.6mA	
Sampling period	500ms	
Dielectric strength	1000VAC 50/60Hz 1 minute (between all terminals and case)	
Noise immunity	IEC 61326-1	
Vibration	0.75mm amplitude at frequency of 5 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Insulation resistance	Over 100MΩ (500VDC megger)	
Memory protection	Approx. 10 years (when using non-volatile semiconductor memory)	
Environ-ment	Ambient temp.	-40 to 85°C, storage: -40 to 85°C
	Ambient humi.	5 to 95%RH, storage: 5 to 95%RH
Protect structure	Housing: IP40 (IEC standard), terminal: IP00 (IEC standard)	
Tightening torque	Housing: 1N·m, terminal: 0.9N·m	
Galvanic insulation	1kVAC (input/output)	
Approval	CE	
Material	Case: polycarbonate	
Weight*2	Approx. 66g (approx. 26g)	

※1: Parameter setting and state monitoring are possible through an external device such as HART communicator or loader.

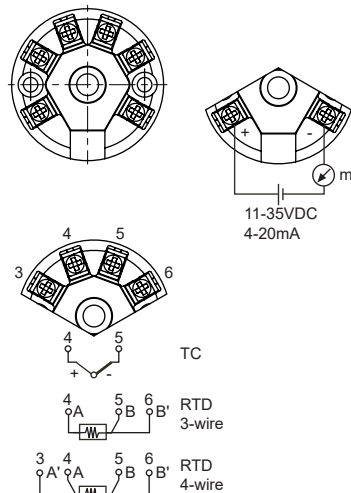
※2: The weight includes packaging. The weight in parenthesis is for unit only.

※Environment resistance is rated at no freezing or condensation.

■ Dimensions



■ Connections



■ Input Type and Range

Input type	Input range (°C)	Input range (°F)	Min. span (°C)		
RTD	DPT100Ω	-200 to 850	-328 to 1562	10	
	DPT500Ω	-200 to 250	-328 to 482		
	DPT1000Ω	-200 to 250	-328 to 482		
	Ni100Ω	-60 to 180	-76 to 356		
	Ni500Ω	-60 to 180	-76 to 356		
	Ni1000Ω	-60 to 150	-76 to 302		
Thermocouple	JPT100Ω	-200 to 600	-328 to 1112	50	
	K (NiCr-Ni)	-270 to 1372	-454 to 2501		
	J (Fe-CuNi)	-210 to 1200	-346 to 2192		
	T (Cu-CuNi)	-270 to 400	-454 to 752		
	E (NiCr-CuNi)	-270 to 1000	-454 to 1832		
	N (NiCrSi-NiSi)	-270 to 1300	-454 to 2372		
Resistance transmitter	S (PtRh10-Pt)	-50 to 1768	-58 to 3214.4	10Ω	
	B (PtRh30-PtRh6)	0 to 1820	32 to 3308		
	R (PtRh13-Pt)	-50 to 1768	-58 to 3214.4		
	Voltage transmitter	0-400Ω			5mV
		0-2000Ω			10mV
		-10-75mV			20mV

※Input range excluded from the ±0.1% F.S. of input accuracy
Thermocouple: K (below -190°C), T (below -200°C), S, B, R (below 400°C)

■ Environmental Influence

Cold Junction Compensation (CJC) error	±1°C	
Temperature influence	Output error	0.1% F.S. / 10°C (18°F)
	Input error (Thermocouple)	0.015% F.S. / 1°C (1.8°F)
	Input error (RTD)	0.015% F.S. / 1°C (1.8°F)
Power supply voltage fluctuations	0.002% F.S. / V	
Load fluctuations	0.002% F.S. / 100Ω	

※This is based on the state of 24VDC power supply, 250Ω load, 25°C ambient temperature, and 10 min warming up time.

■ Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Keep away from high voltage lines or power lines to prevent inductive noise. Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- In case of connecting RTD temperature sensor, must use 3-wire or 4-wire system in which all wires have same length and thickness. In case of extending wire of thermocouple (TC) temperature sensor, must use designated compensation wires.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000m
 - Pollution degree 2
 - Installation Category II