

MTM4832E

Integrated Temperature Transmitter



Introduction

MTM4832E Temperature Transmitter is designed to measure the temperature of various liquids, gases, and solid surfaces within the range of -30°C to $+200^{\circ}\text{C}$, and to convert the measured temperature into a standard two-wire current output signal (4mA ~ 20mA DC). The transmitter features a compact design, providing fast thermal response and high vibration resistance. Featuring a compact design and versatile electrical connections, it meets diverse installation and application requirements across various industrial sites.

Applications

- Refrigeration systems
- Pumps and compressors
- Hydraulic and pneumatic systems
- Measurement and control
- Marine and shipbuilding

Features

- Measuring range: -30°C ~ $+200^{\circ}\text{C}$
- Compact design, specifically engineered for confined-space applications
- Versatile electrical connections
- Two-wire 4mA ~ 20mA DC output, compliant with NAMUR NE 43

Specifications

- Measuring element: Pt100/Pt1000
- Measuring range: -30°C ~ $+200^{\circ}\text{C}$
- Power supply: 10V ~ 35V DC
- Output signal: 4mA ~ 20mA DC
- Ambient temperature: -40°C ~ $+85^{\circ}\text{C}$
- Storage temperature: -40°C ~ $+85^{\circ}\text{C}$
- Accuracy: Refer to Accuracy Specifications
- Electrical connection: Hirschmann, Packard, and M12×1 (4-pin)
- Process connection: Fixed thread; thread specifications refer to the Order Guide
- IP rating: IP65

Accuracy Specifications

Tolerance of sensing element (IEC 60751)	Class AA / Class A / Class B
Transmitter error (IEC 62828)	±0.05%FS
Total measurement error (IEC 62828)	Sensing element tolerance+ transmitter error
Ambient temperature effect	±0.05%FS (+25°C)
	±0.1%FS (-40°C~ +85°C)
Output error	±0.05%FS

Calculation Example: Total Measurement Error

(Measuring range: 0°C ~100°C ; Supply voltage: 24V DC; Ambient temperature: 40°C ; Process temperature: 50°C)

Sensor element (Class A, IEC 60751): $\pm(0.15+(0.0020 t))$:	±0.25°C
Transmitter error ±0.05%FS:	±0.05°C
Output error ±0.05%FS:	±0.05°C
Ambient temperature effect:	±0.1°C

Total measurement error (typ.)

$$\text{sqrt}(0.25^2 + 0.05^2 + 0.05^2 + 0.1^2) = \text{sqrt}(0.0775) = 0.28^\circ\text{C}$$

Total measurement error (max.)

$$0.25+0.05+0.05+0.1=0.45^\circ\text{C}$$

Output Signal

Analog output	4mA ~ 20 mA DC
Load resistance	$RL \leq (UB-10V)/21\text{mA}$
	RL: Max. load resistance; UB: Power supply
Load curve	

Operating Conditions

Ambient temperature	-40°C~ +85°C
Maximum operating pressure	80bar
IP rating	IP65, per IEC/EN 60529

Factory Configuration

Measuring range	As specified by customer selection
Failure signal current	Configurable, per NAMUR NE 043 Upper alarm: $\geq 21\text{mA}$ (factory default) Lower alarm: $\leq 3.6\text{mA}$
Response time	Power-on delay: $\leq 1.5\text{s}$ (Time before the first measured value) Warm-up time: Approx. 4 min to reach full specified accuracy

EMC

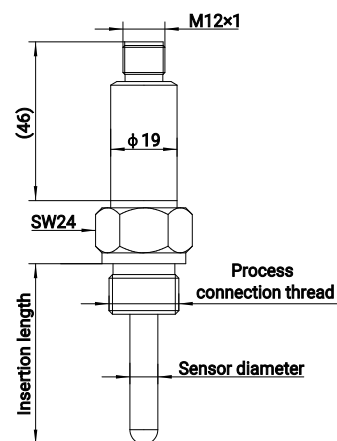
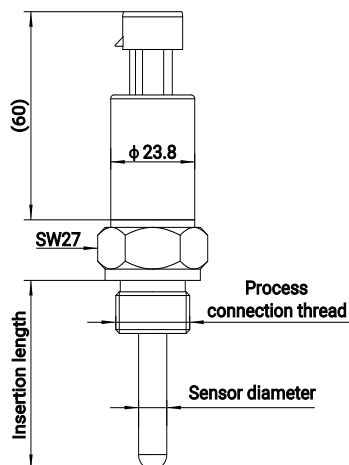
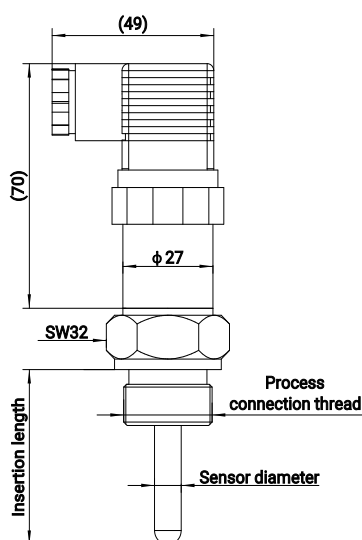
SN	Test item	Standard	Test conditions	Performance level
1	Conducted emissions (CE) test	GD019-2024 3.2 CISPR 16-2-1	Frequency range: 10kHz ~ 30MHz	Pass
2	Radiated emissions (enclosure port)	GD019-2024 3.3 CISPR 16-2-3	Frequency range: 150kHz ~ 6GHz	Pass
3	Electrostatic discharge immunity test	GD019-2024 3.4 GB/T 17626.2/IEC 61000-4-2	4kV(contact), 8kV(air)	A
4	Radiated, radio-frequency, electromagnetic field immunity test	GD019-2024 3.5 GB/T 17626.3/IEC 61000-4-3	80MHz ~ 6GHz, 10V/m	A
5	Electrical fast transient/burst immunity test	GD019-2024 3.6 GB/T 17626.4/IEC 61000-4-4	2kV, 5kHz, 5/50ns	A
6	Surge immunity test	GD019-2024 3.7 GB/T 17626.5/IEC 61000-4-5	Line-to-line: 1kV, Line-to-earth: 2kV	B
7	Low-frequency conducted immunity test	GD019-2024 3.8 GB/T 17626.6/IEC 61000-4-6	Frequency range: 50Hz ~ 10kHz	A
8	Immunity to conducted disturbances, induced by radio-frequency fields	GD019-2024 3.9 GB/T 17626.6/IEC 61000-4-6	150kHz ~ 80MHz	A
9	Power frequency magnetic field immunity test	GB/T 17626.8/IEC 61000-4-8	50Hz, 60Hz, 30A/m	A
Performance level A: Normal operation within specified limits.				
Note:	Performance level B: Temporary loss of function or degradation is allowed during the test, without affecting the operating state or stored data; full performance is restored after the test.			

Certification Details

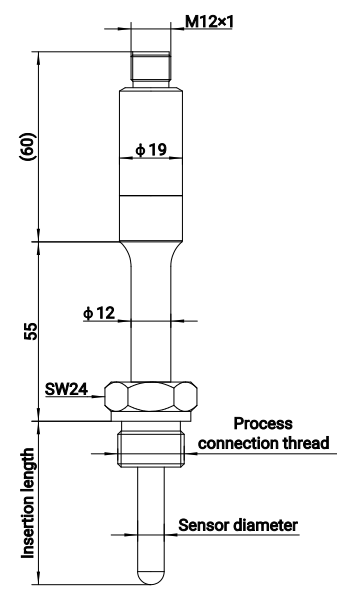
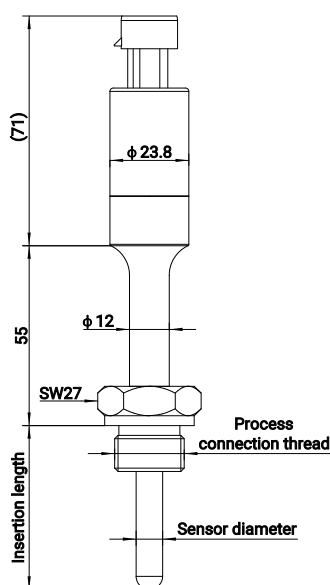
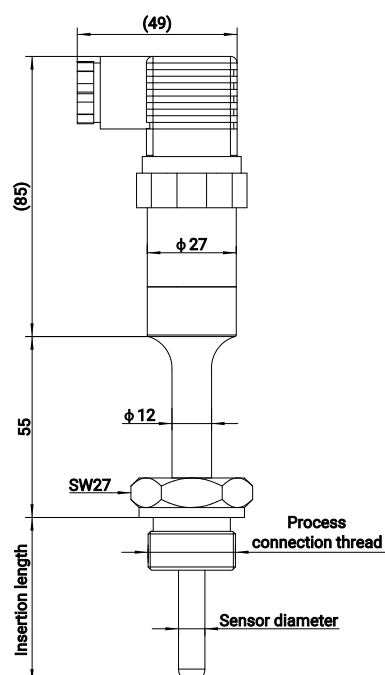
Mark	Description	Region
	EU Declaration of Conformity EMC Directive (electromagnetic emission and immunity)	European Union
	RoHS	European Union
	CCS Technical compliance certification (e.g. electrical safety, environmental requirements)	China & International

Outline Construction

Unit: mm



Standard Type

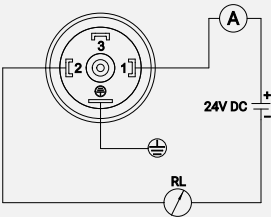
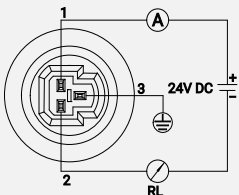
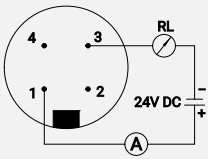


Extended Type

Process Connection

Thread spec.	Thread length (mm)	Standard
G1/4	12	ISO 1179-2-2022
G1/2	14	
G3/8	12	
NPT1/4	10	ANSI/ASME B1.20.1
NPT1/2	14	
M12×1.5	12	ISO 9974-2-2000
M20×1.5	14	

Electrical Connection

	Hirschmann connector	Packard plug	M12×1, 4-pin connector
Connection type			
Pin assignment	1:V+ 2:OUT 3:n.c. ⏏:Earth	1:V+ 2:OUT 3:Earth	1:V+ 2:n.c. 3:OUT 4:n.c.

Order Guide

MTM4832E	Integrated Temperature Transmitter	
	Code	Measuring range
	[X°C ~ Y°C]	X and Y represent the lower and upper temperature limits, respectively (°C)
	Code	Output signal
	E	4mA ~ 20mA DC
	Code	Accuracy
	A1	±1%FS or ±1°C (max.)
	A2	±0.5%FS or ±0.5°C (max.)
	A3	Other accuracy
	Code	Electrical connection
	H	Hirschmann connector
	P	Packard plug
	M	M12×1, 4-pin connector
	Code	Sensor diameter (mm)
	06	φ6
	08	φ8
	Y	Other diameters (specify)
	Code	Sensor material
	A	304
	L	316L
	Code	Extension length (mm)
	N	None (max. medium temperature +120°C)
	L	55
	Code	Insertion length (mm) (including thread length)
	050	50
	075	75
	100	100
	120	120
	150	150
	200	200
	250	250
	300	300
	350	350
	400	400
	Y	Other insertion lengths (specify)
	Code	Process connection
	I	Fixed thread, G1/4, thread length 12mm
	II	Fixed thread, G1/2, thread length 14mm
	III	Fixed thread, G3/8, thread length 12mm
	IV	Fixed thread, NPT1/4, thread length 10mm
	V	Fixed thread, NPT1/2, thread length 14mm
	VI	Fixed thread, M12×1.5, thread length 12mm
	VII	Fixed thread, M20×1.5, thread length 14mm
	Y	Other process connections (specify)
	Code	Accessories
	HT	Welded thermowell
	LT	Threaded thermowell
	HJ	Welded base
	N	No thermowell

MTM4832E [-30°C ~ +200°C] - E - A1 - H - 06 - A - L - 050 - I - HT

The complete spec.

Notes

1. Transmitter electronics temperature: -40°C to $+85^{\circ}\text{C}$.
2. For standard type (without extension length), the maximum process temperature is $+120^{\circ}\text{C}$.
3. The electronics temperature depends on process temperature, extension length, ambient temperature, and air flow velocity.
4. Selection example

Example: MTM4832E $[-30^{\circ}\text{C} \sim +200^{\circ}\text{C}]$ -E-A1-H-06-A-L-050-I-HT

Description: MTM4832E Integrated Temperature Transmitter; Measuring range $[-30^{\circ}\text{C} \sim +200^{\circ}\text{C}]$; Output signal: 4mA~20mA DC; Accuracy $\pm 1\% \text{FS}$ or $\pm 1^{\circ}\text{C}$ (max.); Electrical connection: Hirschmann connector; Sensor diameter $\phi 6$; Sensor material 304; Extension length 55mm; Insertion length 50mm; Fixed thread, G1/4, thread length 12mm; Welded thermowell.

Insertion Depth

1. Insertion depth should be selected based on pipe diameter and installation configuration. For optimal accuracy, the probe tip should generally be positioned [at the center of the medium](#).
2. If installation conditions on site do not allow the required insertion depth, thermal insulation shall be applied to the pipe surface to improve measurement accuracy.