Temperature Transmitter

MTM4831



Features

- EXIA/ EXD/ CCS/ DNV/ ABS/ CE certified
- Compact size, easy installation
- Zero and span adjustable
- Local display optional
- Multi-output signals
- Convenient filed configuration

Introduction

MTM4831 temperature transmitter is avail able for measuring temperature from -200°C～ 1200°C of various liquid, gas or solid surface directly. It uses special temperature module to make linearity correction on temperature sensing element, outputting a standard analog/digital signal. With various outputs, it is easy to apply for temperature measurement in many different fields including petroleum, metallurgy, chemical industry, power station and light industry, etc.

Specifications

- Sensor Graduation

Code	Name	TEMP. Range	Accuracy Class	Allowable Error/°C	Temperature Range of Different Accuracy
PT100	PT100 Thermal Resistance	-200°C～ 500°C	AA	± (0.1+0.0017|t|)	0°C～ 100°C (Thin Film)
					-50°C～ 200°C (Wire-wound)
			A	± (0.15+0.002|t|)	-30°C～ 300°C
			B	± (0.3+0.005|t|)	-200°C～ 500°C
PT1000	PT1000 Thermocou-ple	-50°C～ 200°C	A	± (0.15+0.002|t|)	-30°C～ 200°C
			B	± (0.3+0.005|t|)	-50°C～ 200°C
K	K-type Thermocou-ple (Nick-el-chrome - Nickel-sili-con)	-40°C～ 1200°C	I	±1.5°C	-40°C～ 375°C
				±0.004 |t|	375°C～ 1000°C
			II	±2.5°C	-40°C～ 333°C
				±0.0075 |t|	333°C～ 1200°C

- Temperature Ranges: -200°C …0°C～ 500°C (PT100)
  -50°C …0°C～ 200°C (PT1000)
  -40°C …0°C～ 1200°C (K Type)
- Power Supply: 12V ～ 30V DC(Typical: 24V DC)
- Output: 4mA ～ 20mA DC
  4mA ～ 20mA DC + HART
  4mA ～ 20mA DC + RS485
  RS485
  Thermal Resistance,Thermocouple
- Accuracy: ±1.0%FS,±0.5°C ,±0.25°C
- Display: 4-digit LCD/LED

- Insulation Resistance: ≥20MΩ@500V DC
- Stability: ±0.5%FS/year (general)
- Ambient Temperature: -25℃～ 70℃
- Relative Humidity: ＜ 95%
- Storage Temperature: -40℃～ 120℃
- Weight: About 1100g (header)
- IP Rating: IP67
- Explosion proof :

  Exia IIC T6 Ga

  Transmitter Ex-proof parameter:

  Ui: 28V DC Ii: 93mA DC Pi: 0.65W

  Ci: 0.022μF Li: 0mH

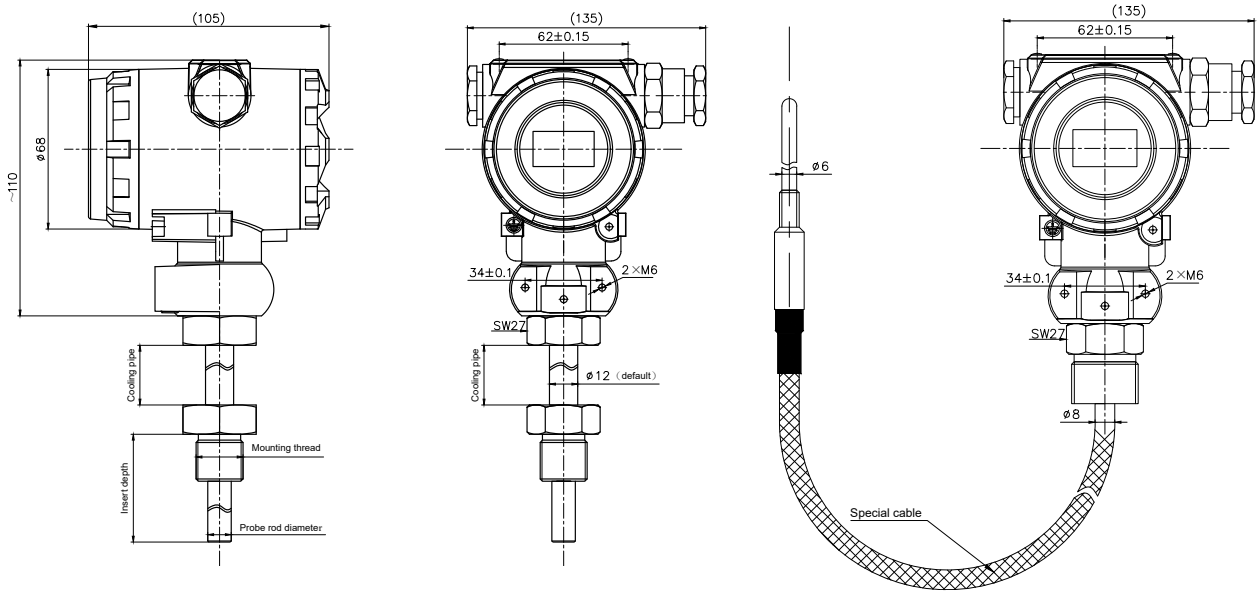
  Ex db IIC T6 Gb

Construction Material

- Electronic housing: aluminum alloy
- Media wetted material: 304 stainlesssteel

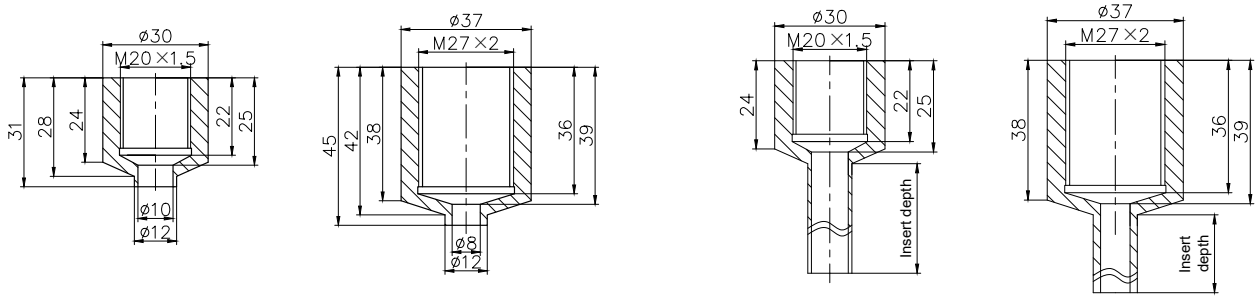
  316L stainless steel/others
- Temperature sensing element: PT100/PT1000
- Display window: flameproof glass

Outline Construction (Unit: mm)



Integrated Type

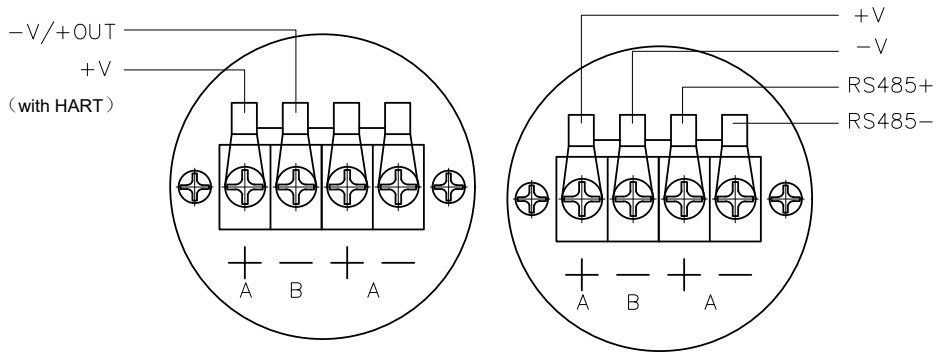
Split Type



Welding base

Welding sleeve

Electrical Connection



2-wire current with HART　　RS485

EMC Effects

SN	Test Item	Test Standard	Test Condition	Performance Level
1	Conducted disturbance measurements	GD22-2015 3.2 CISPR 16-2-1	Frequency range: 10kHz ～ 30MHz	Qualified
2	Radiated disturbance measurements	GD22-2015 3.3 CISPR 16-2-3	Frequency range: 150kHz ～ 6GHz	Qualified
3	Electrostatic discharge immunity test	GD22-2015 3.4 GB/T 17626.2/IEC 61000-4-2	4kV （contact） 8kV （air）	B
4	Radiated, radio-frequency electromagnetic field immunity test	GD22-2015 3.5 GB/T 17626.3/IEC 61000-4-3	80MHz ～ 6GHz 10V/m	A
5	Electrical fast transient/burst immunity test	GD22-2015 3.6 GB/T 17626.4/IEC 61000-4-4	2 kV 2.5 kHz 5/50 ns	B
6	Surge immunity test	GD22-2015 3.7 GB/T 17626.5/IEC 61000-4-5	line ～ line:　0.5 kV line ～ ground:　1 kV	B
7	Low frequency conducted immunity test	GD22-2015 3.8 GB/T 17626.6/IEC 61000-4-6	Power frequency: 15 ～ 100 harmonics Frequency range: 50Hz ～ 10kHz	A
8	Immunity to conducted disturbances, induced by radio-frequency fields	GD22-2015 3.9 GB/T 17626.6/IEC 61000-4-6	150kHz ～ 80MHz	A

Performance Criteria:
Criterion A: The transducer must maintain normal operation during and after the test, with no performance degradation.
Criterion B: Temporary functional loss and performance degradation are permitted during the test, without changing the actual operating mode or stored data. The transducer must return to normal operation with no performance degradation.

Ordering Guide

MTM4831	Temperature Transmitter
Range	[X ～ Y°C] X,Y is the temperature upper limit and lower limit, unit °C -200°C ... 0°C ～ 500°C (PT100) -50°C ... 0°C ～ 200°C (PT1000) -40°C ... 0°C ～ 1200°C (K Type)
L	Accuracy: ±1.0%FS (-200°C …0°C～ 1200°C)
M	Accuracy: ±0.5°C (-40°C …0°C～ 150°C)
H	Accuracy: ±0.25°C (-20°C …0°C～ 105°C)

Code	Output Signal
E	4mA ～ 20mA DC
EH	4mA ～ 20mA DC + HART
R8	RS485
ER8	4mA ～ 20mA DC + RS485
Z	Thermal resistance
R	Thermocouple

Code	Protection pipe diameter Unit: mm
6	φ6
8	φ8
12	φ12
16	φ16
612	Inner pipe φ6,Outer pipe φ12 (φ12 welding casing)
816	Inner pipe φ8,Outer pipe φ16 (φ16 welding casing)

Code	Installation Method and Process Connection (Split type: Header default)
I	Fixed thread installation, M20×1.5 male, thread length 18mm (Standard thread when equipped with thermowell)
II	Fixed thread installation, M27×2 male, thread length 32mm
III	Fixed thread installation, G1/2 male, thread length 20mm
IV	Fixed flange installation (DN10, DN15, DN20, DN32…)
V	Chuck installation (Clamp φ25.4, φ50.5…)
VI	Movable flange installation (DN10, DN15, DN20, DN32…)
VII	Fixed thread installation, M16×1.5 male, thread length 18mm
VIII	Fixed thread installation, G3/8 male, thread length 14mm
IX	Other standard thread sizes, please note
X	Fixed thread installation, NPT1/4 male, thread length 14mm
XI	Fixed thread installation, G1/4 male, thread length 14mm
XII	Movable thread installation(M20×1.5)
XIII	Movable thread installation (M27×2)
XIV	Movable thread installation (G1/2)
XV	Fixed thread installation, NPT1/2 male, thread length 18mm

Insert depth	Protection pipe insert depth (unit mm)
XXX	According to the actual length required (the product with a base installation is required, the insertion depth is the size except the base)

Code	Wetted part
1	SS304 (default)
2	SS316L
3	PTFE sleeve
4	Other materials, please note

Code	Display type
A	LCD display
B	No display
C	LED display (no flameproof type)

Code	Other
i	EXIA (Exia IIC T6 Ga)
d	EXD (Exdb IIC T6 Gb) 6 Gb) ※
D	EXD (Exdb IIC T6 Gb)+ 3C(Cable connector)
T	Marine certification
N	Null

Code	Cooling pipe (unit: mm)
XXX(Integrated)	0mm [-50°C～ 100°C]
	100mm[-200°C～ 150°C]
	150mm[-200°C～ 1200°C]
F	Split Type

MTM4831[0 ～ 200°C] L- E - 6 - I - 200 - 1 - A - d - 150 Complete specification

Split type Order Guide

F	Split type, please continue to choose according to the following selection						
	Code	Cable length					
	XXX	Specific length of high temperature shielded cable (unit: meter)					
		Code	Cable form				
		N	Non-armored cable				
		KK	Armored tube cable (stainless steel corrugated tube)				
			Code	Probe fixing method			
			GL	Fixed thread installation,			
			KT	Movable thread installation			
			FL	Fixed flange installation			
			KG	Chuck installation (Clamp φ25.4, φ50.4…)			
			TR	Immersion			
			BG	Clamp type (The diameter of the protective tube can be customized)			
			TP	Surface mount type(The diameter of the protective tube can be customized)			
***-	F	-	5	-	KK	-	TR	Split type specification

Notes

1. If there is no special requirement, except the probe part and explosion-proof housing, other materials are stainless steel 304.
2. For the content not included in the order guide selection, please consult our company for customization. This item is replaced by '*', and please explain them in the remarks or provide drawings.
3. Clamp type and surface mount type have a large deviation due to different environmental temperature. It is recommended to add heat preservation measures.
4. ※ For flameproof (Ex d) products, user-supplied certified cable entry devices matching the explosion protection rating shall be used. Flameproof threaded joints shall comply with GB/T 3836.2-2021. Refer to the operation manual for installation.
5. For example: MTM4831[0℃～ 200℃]L-E-6-*-300-1-A-d-150
   Description: MTM4831 temperature transmitter, accuracy ±1.0%FS, range [0 °C ~ 200 °C], 4mA ~ 20mA output, probe outer diameter 6mm, installation method shown in the drawings, protection pipe insertion depth 300mm, protection tube material SS304, LCD display, flameproof, cooling part length 150mm.

Insertion Depth

The insertion depth of the thermowell is determined by the pipe diameter and installation configuration specified by the user. For higher accuracy, the probe tip should be positioned at the center of the medium.

Minimum insertion depth verifiable by tthird-party metrology institutes:

RTD (Resistance Temperature Detector): $l_{min} \geq 15D$

Thermocouple: $l_{min} \geq 8D$

D refers to the thermowell diameter

If installation conditions on site do not allow the required insertion depth, thermal insulation should be applied to the pipe surface to improve measurement accuracy.