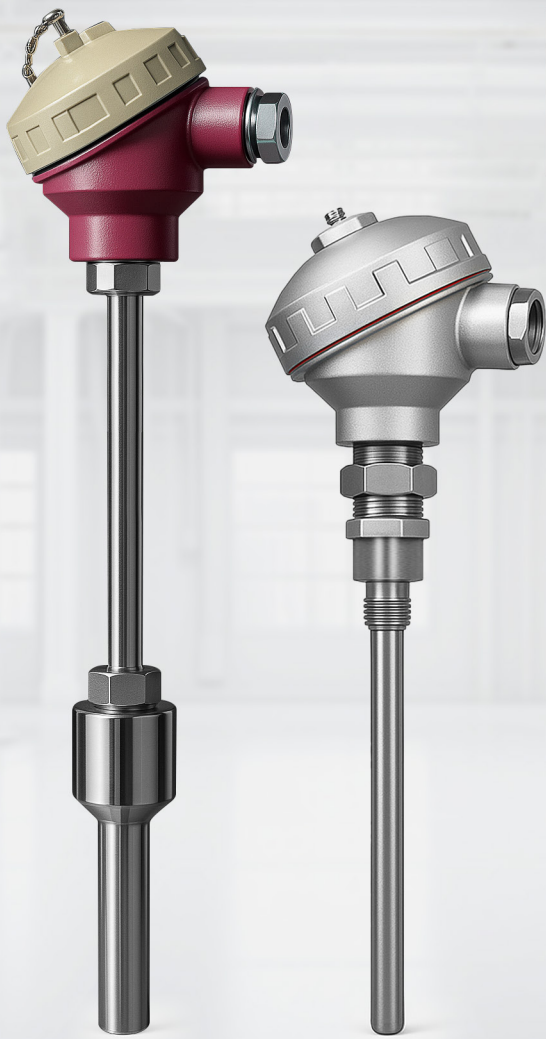




HNT30

ARMORED TEMPERATURE SENSOR

HNT30

MAIN PARAMETERS

Temperature type: Thermocouple

Pipe diameter range: -50-1800 °C, please refer to the selection table for details

Output signal: Analog signal, Thermocouple

Measurement medium: Suitable for most industrial temperature measurement applications

Application scenarios: Temperature measurement

Authentication:



PRODUCT INTRODUCTION

The HNT30 armored temperature sensor is a temperature transmitter with a wide measurement range, which uses thermocouples or PT100 thermistors for temperature measurement. The signal is processed by the post-processing circuit and converted into a standard industrial electrical signal output.

The all metal shell design enables this series of products to be used in various industrial applications. Optional HART output. Select different thermocouple conductor materials according to different temperature measurement ranges to achieve targeted measurement. Quantity, its structure is assembled from hot electrodes, protective sleeves, insulating sleeves, terminals, etc. Quantity, its structure is assembled from hot electrodes, protective sleeves, insulating sleeves, terminals, etc.

PRODUCT FEATURES

- 1 Wide temperature measurement range, up to -50-1800 °C
- 2 Compact structure, diverse installation methods
- 3 Extremely high linearity and repeatability
- 4 Suitable for harsh environments, high reliability
- 5 High temperature measurement in industrial processes
- 6 Suitable for liquid, steam, gas media, and fixed surface temperatures
- 7 Suitable for temperature measurement of main steam pipelines in thermal power plants, thermal response detection of explosive products, heating technology measurement, as well as chemical, steel and other industries

GENERAL TECHNICAL PARAMETERS (IEC584 International Standard)

MEASUREMENT RANGE AND ALLOWABLE ERROR

Thermocouple category	Graduation	Temperature measurement range °C	Allowable deviation $\Delta t^{\circ}\text{C}$
Platinum rhodium 30- Platinum rhodium 6	B	0-1800	$\pm 1.5^{\circ}\text{C}$ or $\pm 0.25\% t$
Platinum rhodium 10 platinum	S	0-1600	$\pm 1.5^{\circ}\text{C}$ or $\pm 0.25\% t$
Platinum rhodium 13 platinum	R	0-1600	$\pm 1.5^{\circ}\text{C}$ or $\pm 0.25\% t$
Nickel chromium nickel silicon	K	0-1300	$\pm 2.5^{\circ}\text{C}$ or $\pm 0.75\% t$
Nickel chromium copper nickel	E	0-800	$\pm 2.5^{\circ}\text{C}$ or $\pm 0.75\% t$
Copper Copper Nickel	T	0-350	$\pm 1^{\circ}\text{C}$ or $\pm 0.75\% t$
Iron copper nickel	J	0-750	$\pm 2.5^{\circ}\text{C}$ or $\pm 0.75\% t$

THERMAL RESPONSE TIME

When there is a step change in temperature, the output of the thermocouple changes to 50% of the change, and the time required is called the thermal response time, represented by $\tau 0.5$

Material of protective tube	Protection tube diameter	Thermal response time $\tau 0.5$ (S)
Jadeite quality	$\Phi 16$	< 150
	$\Phi 25$	< 360
High alumina	$\Phi 16$	< 150
	$\Phi 20$	< 240

High alumina	Φ25	< 360
X6CrNiTi1811 (321 stainless steel)	/	< 90
X6CrNi2520 (310 stainless steel)	/	< 90

PERFORMANCE

Maximum withstand voltage	<10MPa (the material, diameter, and wall thickness of the protective tube will affect its uncertainty)				
Minimum insertion depth of thermocouple	>8D (D is the outer diameter of the protective tube)				
Insulation impedance (Voltage 500V+50VDC, atmospheric temperature conditions 15-35 °C, relative humidity 45% -75% atmospheric pressure 86-106KPa)	Length>1000mm, $R_r * L > 100 M\Omega \cdot m$ Length<1000mm,				
Accuracy class	Level I or Level II				
Protection level	IP65, IP67 (optional)				
Electrical connection	M12*1.5, M16*1.5, M27*2, G1/2, G3/4, 1/2NPT				
Mechanical connection	Threaded type, flange type				

INSULATION IMPEDANCE (upper limit temperature)

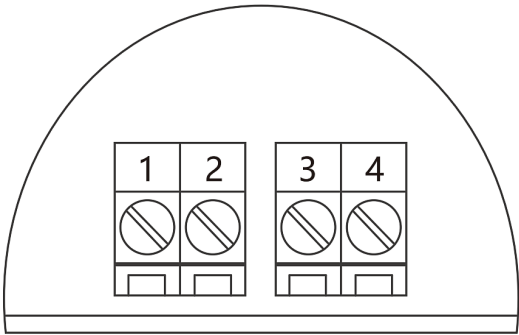
Upper limit temperature t_m °C	Test temperature t °C	Resistance value (MΩ)
$100 \leq t_m \leq 300$	$t = t_m$	10
$300 \leq t_m \leq 500$	$t = t_m$	2
$500 \leq t_m \leq 850$	$t = t_m$	0.5
$850 \leq t_m \leq 1000$	$t = t_m$	0.05
$1000 \leq t_m \leq 1300$	$t = t_m$	0.02
$t_m \geq 1300$	$t = 1300$	0.02

EXPLOSIVE HAZARDOUS ENVIRONMENT

Explosion proof grade	Exd IIBT1-T6, Exd IICT1-T6, Ex ia IIBT1-T6, Ex ia IICT1-T6					
Ex (Explosion proof Identification)	d		ia			
Category	/		Class II (Factory Electrical Equipment)			
Explosion proof grade	Grade B		Grade C			
Temperature group	T1	T2	T3	T4	T5	T6

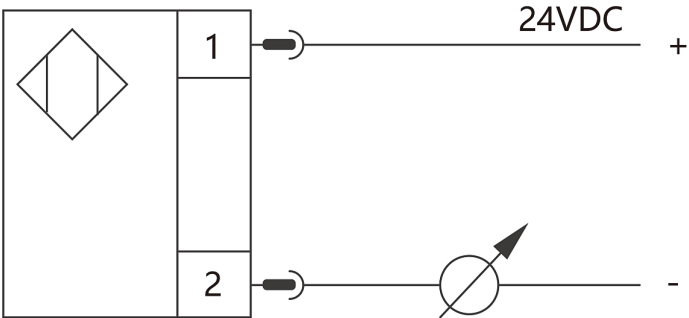
ELECTRICAL CONNECTION

Connection Diagram

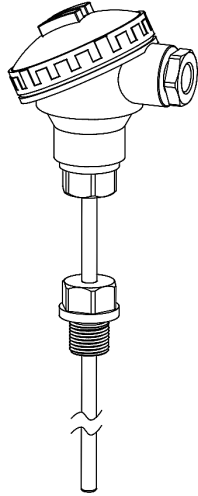
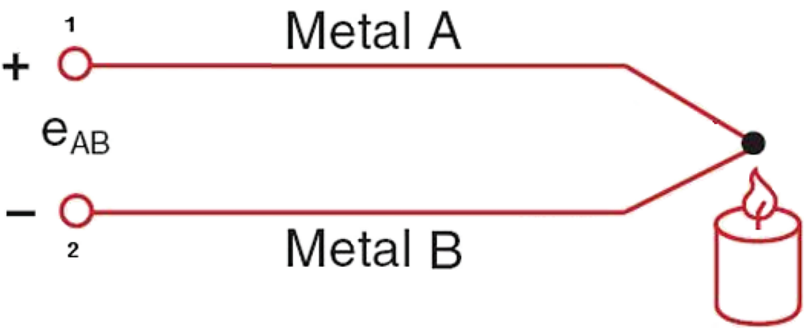
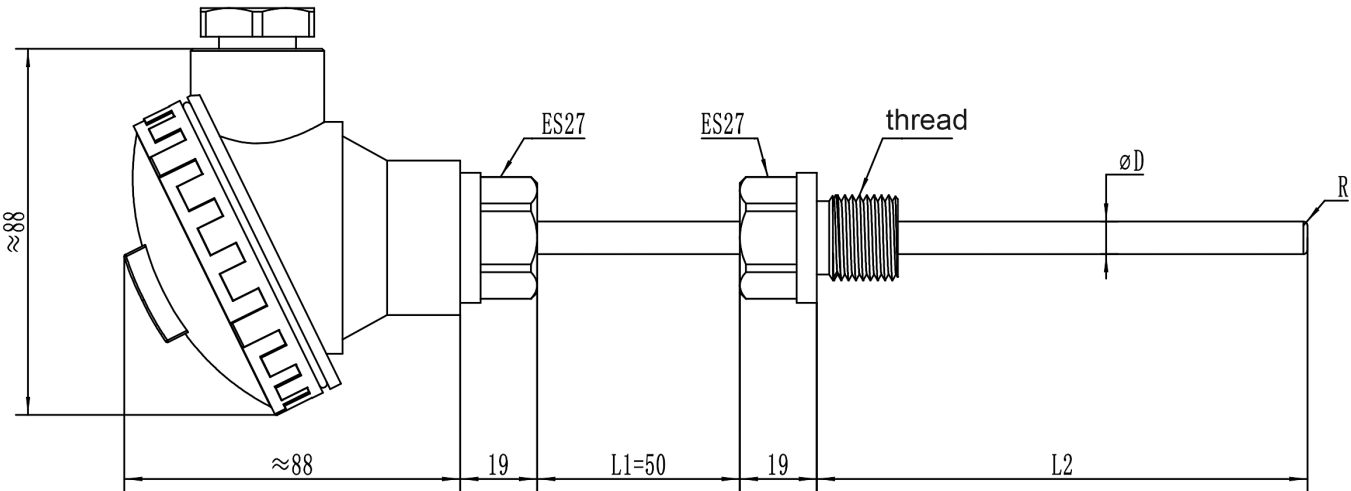


Terminal wiring

2-wire type

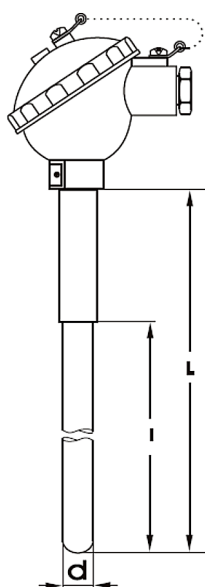


PRODUCT SIZE(MM)



SPECIAL TECHNICAL PARAMETERS

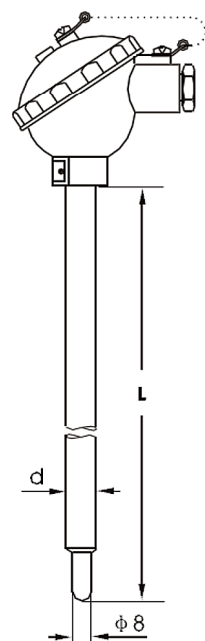
A: Non fixed device type (ceramic protective tube) thermocouple



Category	Graduation	Temperature range °C	Specification and protective tube material		τ0.5 (S)
Single Platinum Rhodium m 30- Platinum Rhodium 6	B	0-1600	Φ16	Jadeite quality	< 150
Single Platinum Rhodium m 30- Platinum Rhodium 6	B	0-1600	Φ25	Jadeite quality	< 360
Double Platinum Rhodium m 30- Platinum Rhodium 6	B	0-1600	Φ16	Jadeite quality	< 150
Double Platinum Rhodium m 30- Platinum Rhodium 6	B	0-1600	Φ25	Jadeite quality	< 360
Single Platinum Rhodium m 10 Platinum	S	0-1300	Φ16	High alumina	< 150
Single Platinum Rhodium m 10 Platinum	S	0-1300	Φ25	High alumina	< 360
Double platinum rhodium m 10 platinum	S	0-1300	Φ16	High alumina	< 150
Double platinum rhodium m 10 platinum	S	0-1300	Φ25	High alumina	< 360
Single nickel chromium m nickel silicon	K	0-1200	Φ20	High alumina	< 240
Double branch nickel chromium m nickel silicon	K	0-1100	Φ20	High alumina	< 240
Single nickel chromium m nickel silicon	K	0-1100	Φ16	High alumina	< 240

Note: The material of the non insertion part is X6CrNiTi1811 (321 stainless steel) with a diameter of Φ 25mm and a double-layer ceramic sleeve

B: Non fixed device type (stainless steel protective tube) thermocouple

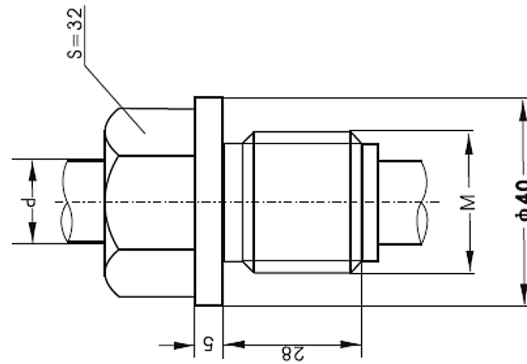
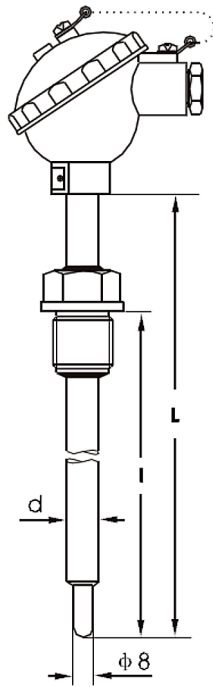


Φ16mm (single-layer pipe)		Φ20mm		Φ25mm (double-layer pipe)	
Total length L	Insertion depth l	Total length L	Insertion depth l	Total length L	Insertion depth l
300	150	400	250	550	400
350	200	450	300	650	500
400	250	550	400	900	750
450	300	650	500	1150	1000
550	400	900	750	1650	1500
650	500	1150	1000	2150	2000
900	750	1650	1500		
1150	1000	2150	2000		

Category	Graduation	Temperature range °C	Material of protective tube	Total length L (mm)			Junction box
Single nickel chromium m nickel silicon	K	0-800	X6CrNiTi1811	300	350	400	Waterproof type
Double branch nickel chromium m nickel silicon	K	0-800	X6CrNiTi1811	450	550	650	Waterproof type
Single nickel chromium m copper nickel	E	0-600	X6CrNiTi1811	900	1150	1650	Waterproof type
Double branch nickel chromium m copper nickel	E	0-600	X6CrNiTi1811	2150			Waterproof type

Note: τ 0.5 (S) < 90 seconds, diameter = Φ 16. When the protective tube material is X6CrNi2520 (310 stainless steel), the temperature resistance can reach 1000 °C, and special materials are ordered

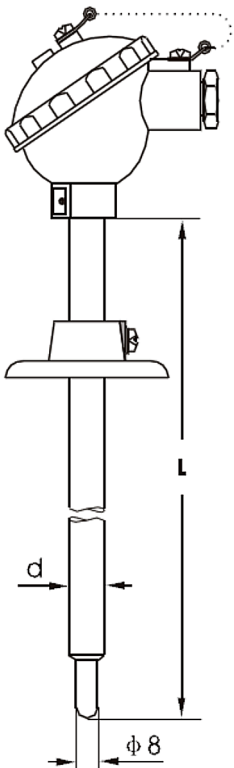
C: Fixed thread thermocouple



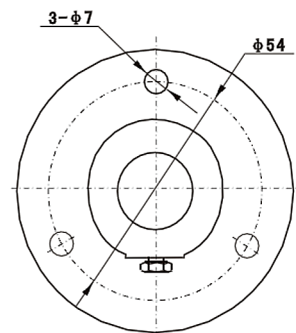
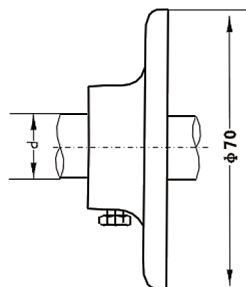
Note:When $\tau \ 0.5 \ (S) < 90$ seconds diameter= $\Phi \ 16$, the protective tube material is X6CrNi2520 (310 stainless steel), and the temperature resistance can reach 1000°C. Thread standard M27 * 2. Special requirements can be customized. Nominal pressure: 10MPa

Category	Graduation	Temperature range °C	Material of protective tube	Total length/insertion depth		Total length/insertion depth		Junction box
				300	150	650	500	
Single nickel chromium nickel silicon	K	0-800	X6CrNiTi1811	350	200	900	750	Waterproof type
Double branch nickel chromium nickel silicon	K	0-800	X6CrNiTi1811	400	250	1100	950	Waterproof type
Single nickel chromium copper nickel	E	0-600	X6CrNiTi1811	450	300	1650	1500	Waterproof type
Double branch nickel chromium copper nickel	E	0-600	X6CrNiTi1811	550	400	2150	2000	Waterproof type

D: Active flange thermocouple

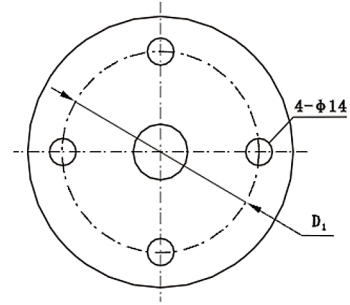
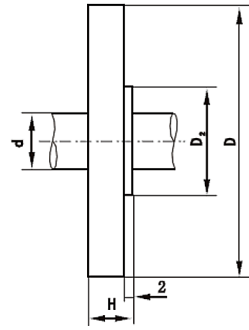
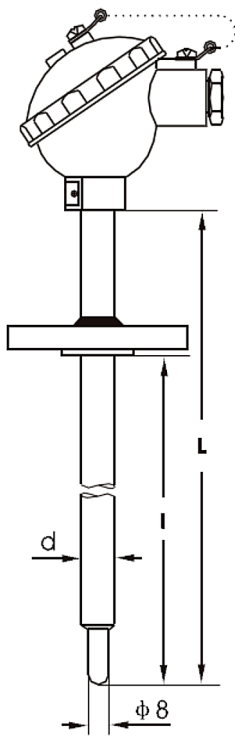


Category	Graduation	Temperature range °C	Material of protective tube	Total length L (mm)			Junction box
Single nickel chromium nickel silicon	K	0-800	X6CrNiTi1811	300	350	400	Waterproof type
Double branch nickel chromium nickel silicon	K	0-800	X6CrNiTi1811	450	550	650	Waterproof type
Single nickel chromium copper nickel	E	0-600	X6CrNiTi1811	900	1150	1650	Waterproof type
Double branch nickel chromium copper nickel	E	0-600	X6CrNiTi1811	2150			Waterproof type



Note: $\tau \ 0.5 \ (S) < 90$ seconds, diameter= $\Phi \ 16$. When the protective tube material is X6CrNi2520 (310 stainless steel), the temperature resistance can reach 1000 °C, and special materials are ordered

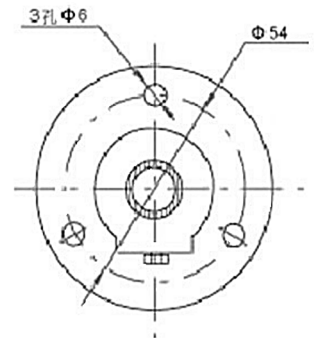
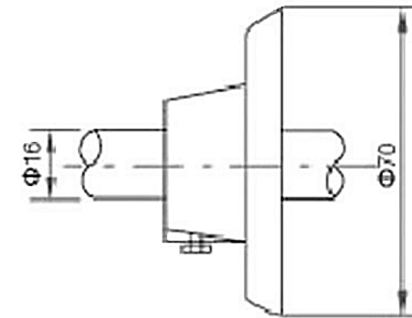
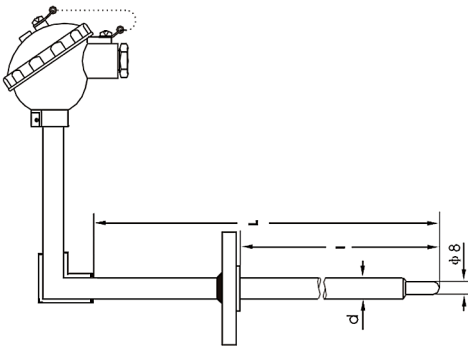
E: Fixed flange thermocouple



Note: $\tau \leq 0.5$ (S) < 90 seconds, diameter = $\Phi 16$. When the protective tube material is X6CrNi2520 (310 stainless steel), the temperature resistance can reach 1000 $^{\circ}\text{C}$, and special materials are ordered

Category	Graduation	Temperature range $^{\circ}\text{C}$	Material of protective tube	Total length/insertion depth		Total length/insertion depth		Junction box
				300	150	650	500	
Single nickel chromium / nickel silicon	K	0-800	X6CrNiTi1811	350	200	900	750	Waterproof type
Double branch nickel chromium / nickel silicon	K	0-800	X6CrNiTi1811	400	250	1100	950	Waterproof type
Single nickel chromium / copper nickel	E	0-600	X6CrNiTi1811	450	300	1650	1500	Waterproof type
Double branch nickel chromium / copper nickel	E	0-600	X6CrNiTi1811	550	400	2150	2000	Waterproof type

F: Active flange angle gauge thermocouple



Category	Graduation	Temperature range $^{\circ}\text{C}$	Material of protective tube	Total length L (mm)	Junction box
Single nickel chromium / nickel silicon	K	0-800	X6CrNiTi1811	500*500	Waterproof type
Double branch nickel chromium / nickel silicon	K	0-800	X6CrNiTi1811		Waterproof type
Single nickel chromium / copper nickel	E	0-600	X6CrNiTi1811	750*750	Waterproof type
Double branch nickel chromium / copper nickel	E	0-600	X6CrNiTi1811		Waterproof type

Note: $\tau \leq 0.5$ (S) < 90 seconds, diameter = $\Phi 16$. When the protective tube material is X6CrNi2520 (310 stainless steel), the temperature resistance can reach 1000 $^{\circ}\text{C}$, and special materials are ordered

HNT30 ARMORED TEMPERATURE SENSOR SELECTION TABLE

NAME	CODE	CODE DESCRIPTION
Temperature measurement type	P	Thermal resistor (0-600°C) single (double)
	K1	Thermocouple (0-600°C) single (double)
	K2	Thermocouple (0-1200°C) single (double)
	S	Thermocouple (0-1600°C) single (double)
	B	Thermocouple (0-1600°C) single (double)
Temperature measurement range	X	Directly write the temperature range, such as 0~100°C
Measuring rod length	X	Total length/insertion depth (500/300 units in mm)
Measuring rod diameter	060	Φ6mm protective tube
	080	Φ8mm protective tube
	016	Φ16mm protective tube
	020	Φ22mm protective tube
	025	Φ25mm protective tube
	X	Customizable
Standard for mechanical connection threads and flanges	G	G1/2
	M	M20*1.5
	N	NPT1/4
	FG	50 (fixed flange)
	FA	50 (sliding flange)
Measuring rod material	321	Casing Material: 321 Stainless Steel
	310	Casing Material: 310 Stainless Steel
	304	Casing Material: 304 Stainless Steel
	316	Casing Material: 316 Stainless Steel
	GH	Casing Material: GH3030 Alloy (Heat Resistance 1100°C)
	HA	Casing Material: High Aluminum (Heat Resistance 1300°C)
	CO	Casing Material: Corundum (Heat Resistance 1800°C)
	X	Customization Available

Whether with transmitter output	P	Without transmitter output
	M	With 4-20mA transmitter output
Is it explosion-proof?	0	No explosion-proof required
	1	With explosion-proof
Special options	S	Shock-resistant
	W	Wear-resistant
	C	Corrosion-resistant

Protective sleeve

HNT30	Interface	Diameter
	G1/2 internal thread	8
	G1/2 external thread	10

HNT30

**Armored
temperature sensor**

