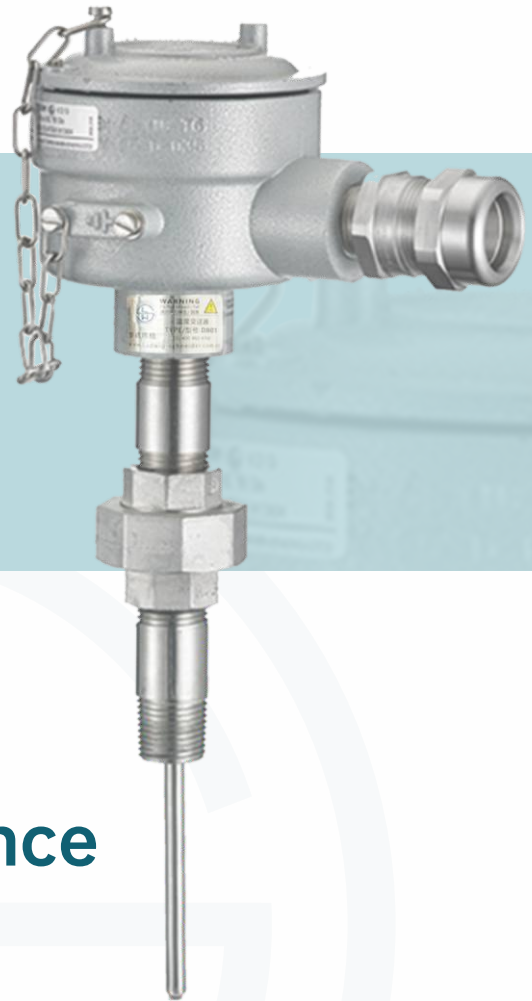


The selection is detailed on page 10



DB01

PT100 Thermal Resistance Thermometer

Working principle

Thermal resistance is a temperature measuring element commonly used in low and medium temperature areas, using the resistance of the substance itself to measure the temperature when the temperature changes. The heated part of the thermal resistance (temperature sensing element) is evenly wound on the skeleton made of insulating material with a thin metal wire. When there is a temperature gradient in the measured medium, the measured temperature is the average temperature in the medium layer within the range of the temperature sensing element.

Product description

This series of thermal resistance thermometers can be used in combination with a variety of jackets.

Various combinations of Pt100 or Pt1000 components, connectors, plunges, and neck lengths can be used with temperature bushings. Suitable for a variety of temperature casing sizes and applications.

It can be equipped with its own transmitter that can output analog or digital signals.

Explosion protection (optional)

Allowable power P_{max} and allowable ambient temperature refer to EC Type inspection Certificate, Ex Certificate or product instructions.

Product application

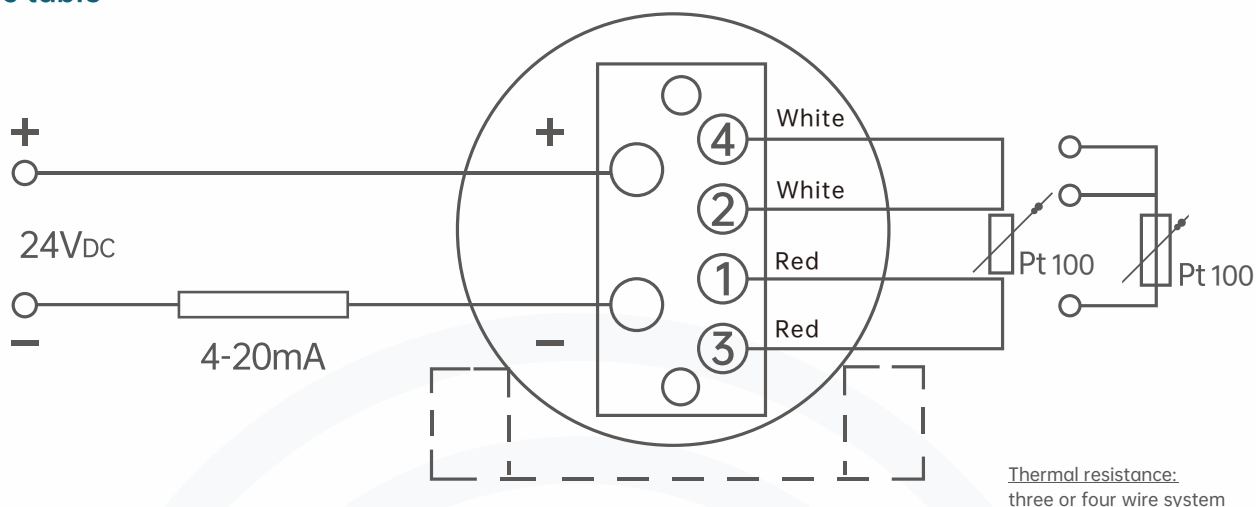
Machinery industry
Factory and tank manufacturing
Energy technology and power plants
Chemical, food and beverage industry
Heating and air conditioning technology

Functional characteristics

Application range: $-196\text{ }^{\circ}\text{C}$ to $+600\text{ }^{\circ}\text{C}$
Suitable for mounting all standard forms of sheathing
Measuring rod with spring (replaceable) PT100 and PT1000 sensors
Explosion proof type



Working principle Analytic table



Sensor

The table shows the temperature ranges listed in the corresponding standard, where the tolerance values (accuracy grades) are valid.

Measuring element

Connection mode	
Unitware	1 x 2 Wire system
	1 x 3 Wire system
	1 x 4 Wire system
Two-element	2 x 2 Wire system
	2 x 3 Wire system
	2 x 4 Wire system

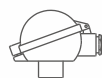
Effective range of accuracy levels, according to EN 60751		
Category	Sensor structure	
	Winding form	Film type
B level	-196 ... +600°C	-50 ... +500°C
	-196 ... +450°C	-50 ... +250°C
A level	-100 ... +450°C	-30 ... +300°C
AA level	-50 ... +250°C	0 ... 150°C

Connector

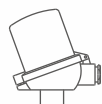
Connector material and specification



DBM



DBM-A



DBM-B



DBM-C



DBM-D



DBM-E

Material	Cable inlet thread specification	Protection level (Max)	Protective cap	Surface	The connection to the neck tube
Aluminum	M20×1.5 or 1/2NPT ¹⁾	IP65 ²⁾	Flat top cover with 2 screws	Blue finish	M24×1.5, 1/2 NPT
Aluminum	M20×1.5 or 1/2NPT ¹⁾	IP65 ²⁾	Spherical hinged cover with cylinder head screws	Blue finish	M24×1.5, 1/2 NPT
Aluminum	M20×1.5 or 1/2NPT ¹⁾	IP65 ²⁾	Raised hinged cover with cylinder head screws	Blue finish	M24×1.5, 1/2 NPT
Aluminum	M20×1.5 or 1/2NPT ¹⁾	IP65 ²⁾	Spherical hinged cover with clamping handle	Blue finish	M24×1.5, 1/2 NPT
Aluminum	M20×1.5 or 1/2NPT ¹⁾	IP65 ²⁾	Raised hinged cover with clamping handle	Blue finish	M24×1.5, 1/2 NPT
Stainless steel	M20×1.5 ¹⁾	IP65 ²⁾	Precision cast nut	Natural color, electric polishing	M24×1.5

1) Standard (other available on demand);

2) Levels of protection can be provided upon request, describing temporary or prolonged immersion

Explosion protection							
There is no	Ex i (gas) Zones 0, 1, 2	Ex i (dust) Precincts 20, 21, 22	Ex eb (Gas) Zone 1	Ex tb (Dust) Zone 21	Ex ec (Gas) Zone 2	Ex nA (Gas) Zone 2	Ex tc (Dust) Zone 22
X	X	X	-	-	-	-	-
X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X
X	X	-	-	-	-	-	-
X	X	-	-	-	-	-	-
X	X	-	-	-	-	-	-

Cable inlet

Cable inlet material and specification



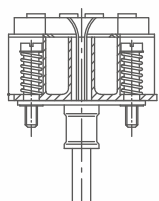
Cable inlet	Cable inlet thread specification	Minimum/maximum ambient temperature
Standard cable inlet ¹⁾	M20×1.5 或 1/2NPT	-40 ... +80°C
Plastic cable head (Cable diameter 6... 10 mm) ¹⁾	M20×1.5 或 1/2NPT	-40 ... +80°C
Plastic cable head (Cable diameter 6... 10 mm), Ex e ¹⁾	M20×1.5 或 1/2NPT	-20 ... +80°C (标准)
		-40 ... +70°C (可选)
Nickel-plated brass cable joint (Cable diameter 6... 12 mm)	M20×1.5 或 1/2NPT	-60 ²⁾ /-40 ... +80°C
Stainless steel cable connector (Cable diameter 7... 12 mm)	M20×1.5 或 1/2NPT	-60 ²⁾ /-40 ... +80°C
Optical thread	M20×1.5 或 1/2NPT	-
Sealing plug for transport	M20×1.5 或 1/2NPT	-40 ... +80 °C



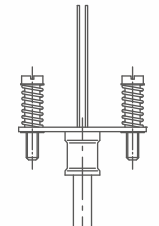
Cable inlet	Colour	Protection level ^(Max) IEC/ compliant EN 60529 Standard	Explosion protection							
			There is no	Ex i (Gas) 0, 1, Zone 2	Ex i (Dust) 20, 21, Zone 22	Ex eb (Gas) Zone 1	Ex tb (Dust) Zone 21	Ex ec (Gas) 2, 21, Zone 22	Ex nA (Gas) Zone 2	Ex tc (Dust) Zone 22
Standard cable inlet ¹⁾	Natural quality	IP65	x	x	-	-	-	-	-	-
Plastic cable head ¹⁾	Black or grey	IP66 ³⁾	x	x	-	-	-	-	-	-
Plastic cable head, Ex e ¹⁾	Baby blue	IP66 ³⁾	x	x	x	-	-	-	-	-
Plastic cable head, Ex e ¹⁾	black	IP66 ³⁾	x	x	x	x	x	x	x	x
Nickel-plated brass cable joint	Natural quality	IP66 ³⁾	x	x	x	-	-	-	-	-
Nickel plated brass cable head, Ex e	Natural quality	IP66 ³⁾	x	x	x	x	x	x	x	x
Stainless steel cable joint	Natural quality	IP66 ³⁾	x	x	x	x	x	x	x	x
Stainless steel cable head, Ex e	Natural quality	IP66 ³⁾	x	x	x	x	x	x	x	x
Optical thread	-	IP00	x	x	x ⁴⁾	x ⁴⁾	x ⁴⁾	x ⁴⁾	x ⁴⁾	x ⁴⁾
Sealing plug for transport	transparent	-	Not applicable, only for protection during transport							

- 1) Not applicable to DBM-E connectors;
- 2) Special versions (only with special permission) and other temperatures are available on request;
- 3) A level of protection can be provided upon request, describing temporary or prolonged immersion;
- 4) Suitable cable connectors for operation

transmitter



The terminal board for the transmitter is installed



Prepare the terminal board for installing the transmitter

Mount to measuring rod

When the transmitter is mounted to the measuring rod, the transmitter replaces the terminal and is fixed directly to the terminal panel of the measuring rod.

Install it in the protective cap of the connection head

Instead of mounting the transmitter on the measuring rod, it is recommended to install it in the connection head protective cap. Because this installation ensures better insulation, in addition, it simplifies the replacement and installation operations required for maintenance.



Transmitter

Transmitter model number

Output signal 4... 20 mA HART® protocol, FOUNDATION™ Fieldbus and PROFIBUS® PA standard cable entry			
Transmitter	S10 type	S20 type	S30 type
Exportation			
▪ 4 ... 20 mA	x	x	-
▪ HART® agreement	-	x	-
▪ FOUNDATION™ PROFIBUS® PA	-	-	x
Connection mode			
▪ 1 x 2 Wire, 3-wire or 4-wire system	x	x	x
Measuring current	< 0.2mA	< 0.3mA	< 0.2mA
Explosion protection	Selectable	Selectable	Standard

Transmitter model number

Connector	S10 type	S20 type	S30 type
DBM	○	-	○
DBM-A	○	○	○
DBM-B	●	●	●
DBM-C	○	○	○
DBM-D	●	●	●
DBM-E	○	○	○

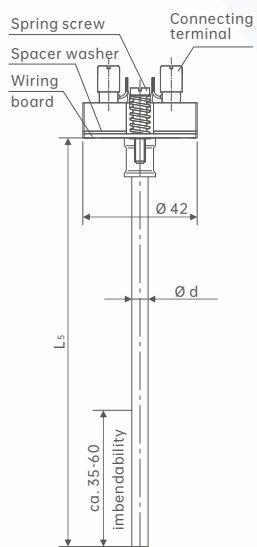
- Install the wiring terminal instead
- Install the connector in the protective cap
- Cannot install

For all the connectors listed here, they can be used to mount the transmitter on the measuring rod.

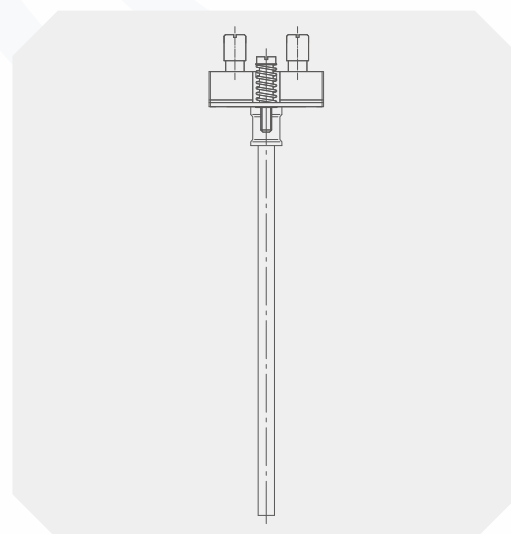
2 transmitters can be installed as required.

In order to correctly determine the overall measurement error, the measurement error of the sensor and transmitter must be increased.

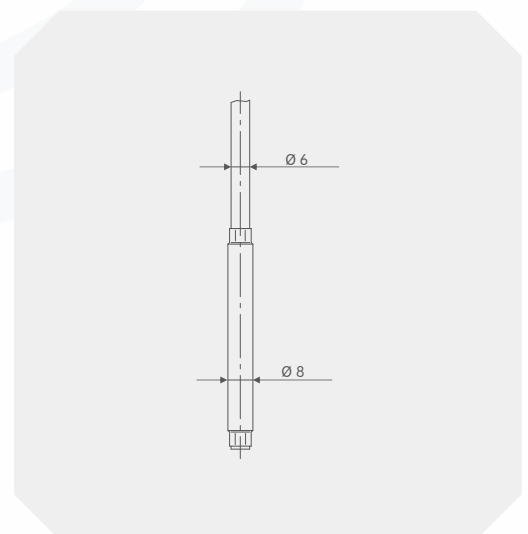
Size mm



Socket design with recessed welded lugs



A measuring rod with casing in the sensor area



Legend:

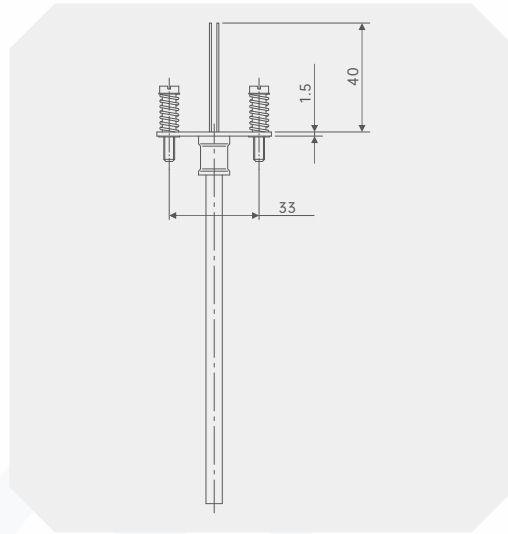
- L₅ Measure the length of the probe
- Ød Measure rod diameter



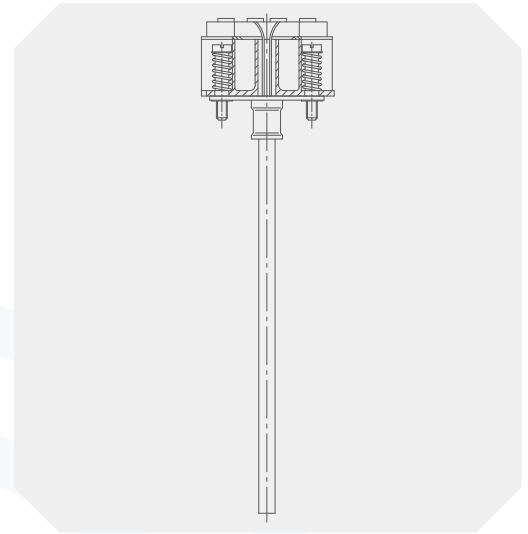
Size mm

Legend:
 L5 Measure the length of the probe
 Ød Measure the diameter of the probe rod

Prepare the transmitter design for installation



A transmitter design is installed



Specification and material

Measuring rod diameter Ød (Unit: mm)		Index basis DIN 43735	Tolerance (mm)	Sheath material	
				Standard design	Recessed welded lugs
3 ¹⁾	Standard	30	3 _{-0.05}	1.4571, 316L ¹⁾²⁾	1.4571
6	Standard	60	6 _{-0.1} ⁰	1.4571, 316L ¹⁾²⁾	1.4571
8 (6mm, Thimble)	Standard	-	8 _{-0.1} ⁰	1.4571	1.4571
8	Standard	80	8 _{-0.1} ⁰	1.4571, 316L ¹⁾²⁾	1.4571

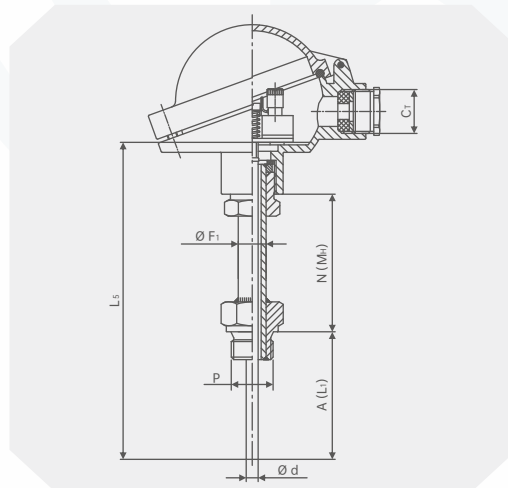
1) Not available for 2 x 4 wire version; 2) Not applicable to socket designs with recessed welded lugs

Neck tube design

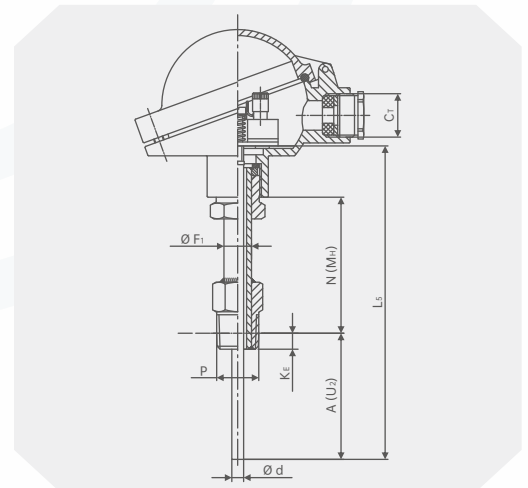
The neck tube, it fits DIN 43772

Legend:
 A(L₁) Insert length (straight thread)
 A(U₂) Insert length (taper thread)
 L₅ Measure the length of the probe
 N(MH) Neck length
 K_e 1/2 NPT: 8.13 mm
 3/4 NPT: 8.61mm
 C_T Threaded cable inlet
 ØF₁ Neck diameter
 P Sheath thread diameter
 d Measure rod diameter

Straight thread



Taper thread



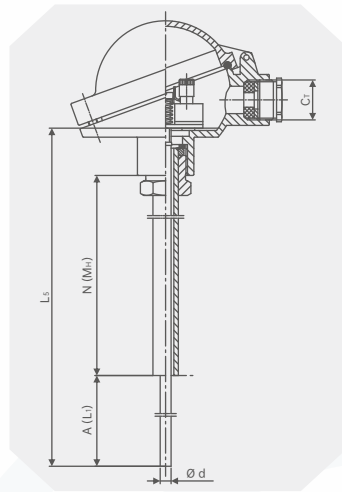
Neck tube design

Neck tube, according to DIN 43772 Straight, with/without active clamp

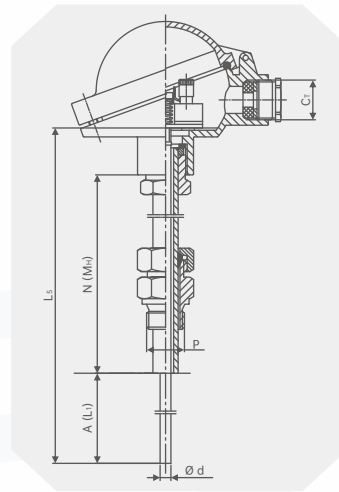
Legend:

- A(L₁) Insert length (straight thread)
- L_s Measure the length of the probe
- N(MH) Neck length
- K_e 1/2 NPT: 8.13 mm
3/4 NPT: 8.61mm
- C_T Threaded cable inlet
- ØF₁ Neck diameter
- P Sheath thread diameter
- d Measure rod diameter

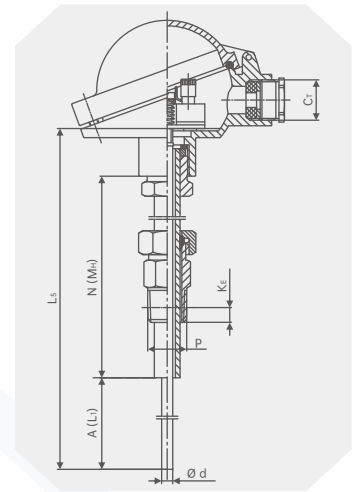
No thread (straight)



Straight thread

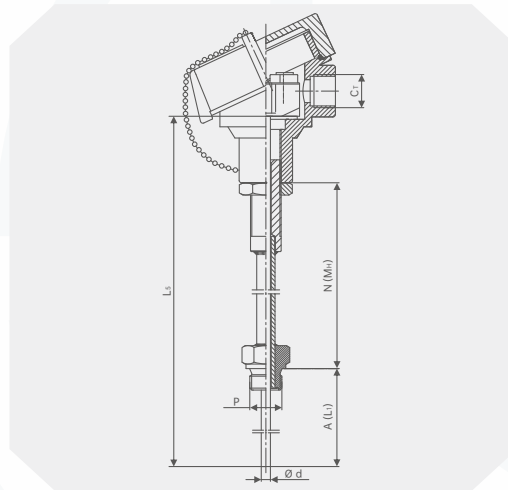


Taper thread

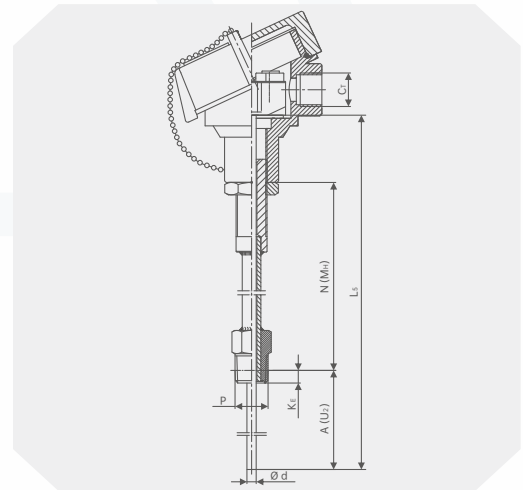


Neck tube design

Neck tube with countersunk nut at top - straight thread



Neck tube with countersunk nut at top - tapered thread

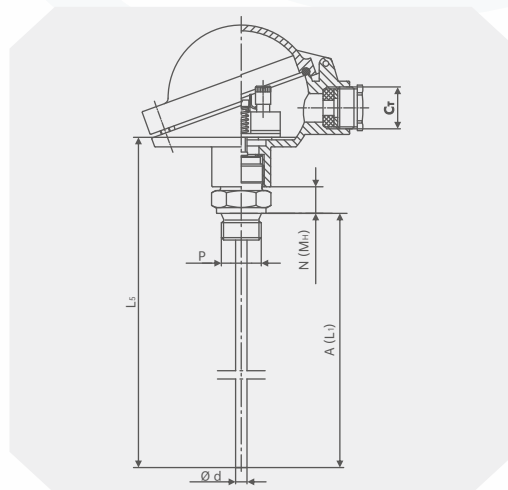


Legend:

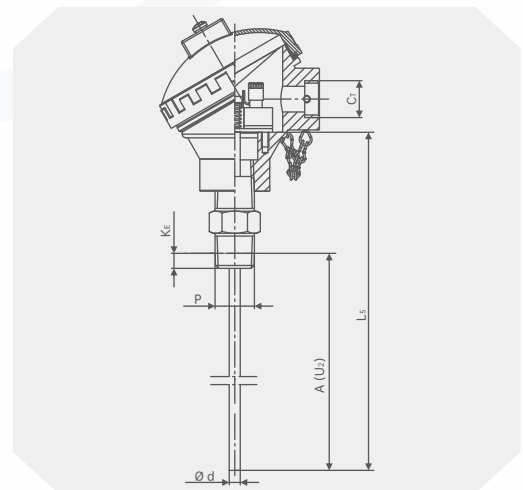
- A(L₁) Insert length (straight thread)
- A(U₂) Insert length (taper thread)
- L_s Measure the length of the probe
- N(MH) Neck length
- K_e 1/2 NPT: 8.13 mm
3/4 NPT: 8.61mm
- C_T Threaded cable inlet
- ØF₁ Neck diameter
- P Sheath thread diameter
- d Measure rod diameter

Neck tube design

Double thread (with hexagonal head wrench bayonet)- Straight thread



Double thread (with hexagonal head wrench bayonet)- Taper thread



Legend:

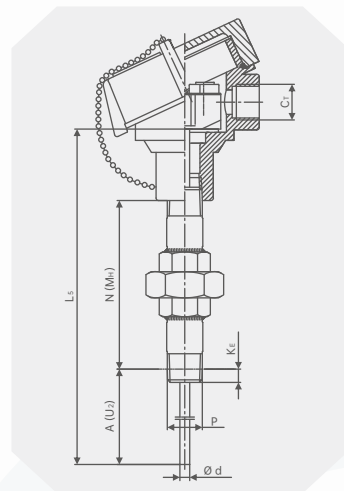
- A(L₁) Insert length (straight thread)
- A(U₂) Insert length (taper thread)
- L_s Measure the length of the probe
- N(MH) Neck length
- K_e 1/2 NPT: 8.13 mm
3/4 NPT: 8.61mm
- C_T Threaded cable inlet
- ØF₁ Neck diameter
- P Sheath thread diameter
- d Measure rod diameter

Neck tube design

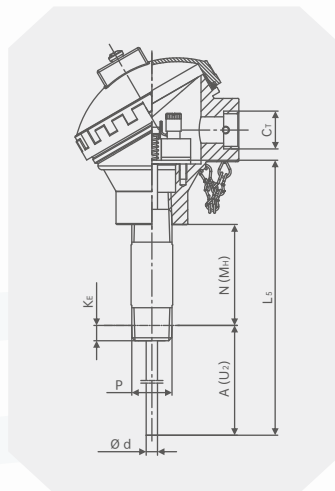
Legend:

- A(L₁) Insert length (straight thread)
- A(U₂) Insert length (taper thread)
- L_s Measure the length of the probe
- N(MH) Neck length
- K_e 1/2 NPT: 8.13 mm
3/4 NPT: 8.61 mm
- C_T Threaded cable inlet
- ØF₁ Neck diameter
- P Sheath thread diameter
- d Measure rod diameter

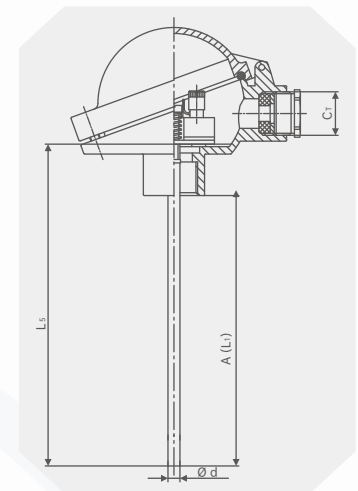
"Flexible joint type neck tube Double thread



Double thread



Acervate tube



Cervical version

Neck tube design	Diameter	Attached to top	Connected to the sheath	Materials
Neck tube, according to DIN 43772	12×1.5 mm	M24×1.5 (Rotary threaded joint)	Install thread and movable sleeve	1.4571
	12×2.5 mm		Movable nut, outer nut, straight type	
	14×2.5 mm		Install thread, movable nut and external nut	
Neck tube with countersunk nut at top	14×2.5 mm	M20×1.5 (Countersunk nut)	Mounting thread	1.4571
Double thread (with hexagonal head wrench bayonet)	-	M24×1.5, 1/2NPT	Mounting thread	1.4571
"Flexible-joint type neck tube	~ 22 mm	1/2 NPT	Mounting thread	316
	~ 27 mm	3/4 NPT		
Double thread	~ 22 mm	1/2 NPT	Mounting thread	316
	~ 27 mm	3/4 NPT		

Cervical version

Neck tube design	Diameter	Protective tube diameter
The neck tube, it fits DIN 43772	12×1.5 mm 12×2.5 mm	G1/2B
		G3/4B
		G1/4B
		M20×1.5
		M18×1.5
		M14×1.5
		1/2 NPT
		3/4 NPT
		G1/2B Adjustable ferrule
		G3/4B Adjustable collar (metal ring)
		M18×1.5 Movable collar (metal ring)
		M20×1.5 Movable collar (metal ring)
		G1/2B movable nut
G3/4B Movable nut		

Cervical version

Neck tube design	Diameter	Protective tube diameter
The neck tube, it fits DIN 43772	12×1.5 mm	M20×1.5 Outer nut
	12×2.5 mm	Unthreaded fittings, straight type
The neck tube, it fits DIN 43772	14×2.5 mm	G1/2B
		G3/4B
		G1/4B
		M20×1.5
		M18×1.5
		M14×1.5
		1/2 NPT
		3/4 NPT
		G1/2B Movable nut
		G3/4B Movable nut
		M20 x 1.5 movable nuts
		G1/2B external nut
		G3/4B External nut
M20 x 1.5 external nuts		

Cervical version

Neck tube design	Diameter	Sheath thread
Neck tube with countersunk nut at top	14×2.5 mm	1/2 NPT
		3/4 NPT
		G1/2B
		G3/4B
		G1/4B
		M14×1.5
		M18×1.5
		M20×1.5
Double thread (with hexagonal head wrench bayonet)	-	G1/2B
		G3/4B
		G1/4B
		1/2 NPT
		3/4 NPT
		M14×1.5
		M18×1.5
		M20×1.5
"Flexible coupling" type neck tube	~ 22 mm	1/2 NPT
	~ 27 mm	3/4 NPT
Double sided thread (pipe joint)	~ 22 mm	1/2 NPT
	~ 27 mm	3/4 NPT



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Neck length

Neck tube design	Neck length	Minimum/maximum length of neck tube
The neck tube, it fits DIN 43772	150 mm (about 6 inches)	30 mm (about 1.2 inches) / 500 mm (about 20 inches)
Neck tube, conforming to DIN 43772, straight	150 mm (about 6 inches)	75 mm (about 3 inches) / 900 mm (about 35 inches)
Neck tube with countersunk nut at top	150 mm (about 6 inches)	75 mm (about 3 inches) / 250 mm (about 10 inches)
Double thread (with hexagonal head wrench bayonet)		
▪ Connection head M24×1.5, the sheath adopts straight thread	13 mm	-
▪ Connection head 1/2 NPT, sheath with straight thread	25 mm	-
▪ Connection head M24×1.5, sheath with taper thread	25 mm	-
▪ Connector 1/2 NPT, sheath with conical thread	25 mm	-
"Flexible coupling" type neck tube	150 mm (about 6 inches)	75 mm (about 3 inches) / 250 mm (about 10 inches)
Double thread	50 mm (about 2 inches)	50 mm (about 2 inches) / 250 mm (about 10 inches)

The neck tube can be screwed into the junction box. Neck length depends on the intended use. Usually the neck tube can act as a bridge isolation. In many cases, the neck tube can also be used as an extended cooling element between the junction box and the medium, providing protection for the built-in transmitter at high medium temperatures.

Other models are available on request

DB01-Selection composition

Selection example Threaded type **DB01** **B** **S** **G** **J** **S** **V** **S** **C** **E** **M** **N** **A** **P**

1 2 3 4 5 6 7 8 9 10 11 12 13

1.Selection description	A	All-in-one transmitter
	B	Threaded casing
	C	Intrinsically safe explosion-proof type
	D	Flameproof type
	T()	Other types
2.Threaded connection	S	Sliding thread
	F	Fixed thread
3.Insert probe design	G	Fixed installation
	H	Spring-fixed terminal block (replaceable ferrule)
4.Junction box	I	Aluminum
	J	Stainless steel
	K	With digital temperature display
	T()	Other types of junction boxes
5.Electrical interface	R	1/2NPT
	S	M20×1.5
	T()	Other electrical interfaces
6.Wiring block/sensor	U	Crastin Terminal block
	V	Ceramic connection block
	W	S10 (4-20mA transmitter)
	X	S20 (HART transmitter)
	Y	S30 (Fieldbus transmitter)
7.Wire system	S	Single 3-wire system
	Z	Double branch 6-wire system
	T()	Other wire system
8.Dimension of thread connection	A	1/2NPT
	B	G1/2
	C	M20×1.5
	T()	Other connection sizes
9.Thermal resistance element	E	Pt100, B level
	F	Pt100, A level
	G	Pt1000, B level
	H	Pt1000, A level
10.Probe rod material	M	304SS
	L	316/316L (1.4401/1.4435)
	T()	Other materials



DB01-Selection composition

Selection example Threaded type **DB01** 1 B 2 S 3 G 4 J 5 S 6 V 7 S 8 C 9 E 10 M 11 N 12 A 13 P

11. Temperature range (°C)	N	-50...+250	
	O	-50...+450	
	P	-200...+250	
	Q	-200...+450	
	R	-200...+600	
	S	0...+400	
	U	0...+500	
	T()	Other measured temperatures	
12. Rod length (mm)	A	50	
	B	100	
	C	150	
	D	200	
	E	250	
	F	300	
	G	350	
	H	400	
	I	450	
	J	500	
	T()	Other lengths	
	13. Rod diameter (mm)	P	6mm
Q		8mm	
R		10mm	
S		12mm	
T()		Other diameters	
14. Safety certification	E	Intrinsic safety	
	D	Flameproof	
	N	There is no	
15. Additional order information	X	Additional information	
	Z	There is no	

Instructions:

It indicates that the DB01 thermal resistance is a thermometer with threaded sleeve, the thread connection mode is sliding thread, the probe rod is designed to be fixed installation, the connection box is stainless steel, the electrical interface is M20*1.5, the sensor is ceramic wiring block, the single three-wire system, the thread specification is G1/2, the thermal resistance element is Pt100, the temperature range is 0... 400°C, the length of the probe rod 50mm, the diameter of the probe rod 6mm, the material of the probe rod 304SS, item 14/15 in the table is not required.

DB01-Selection composition

Selection example **DB01** **B** **S** **G** **L** **V** **B** **G** **N** **V** **D** **G** **X** **F**

Flange connection type 1 2 3 4 5 6 7 8 9 10 11 12 13

1.Selection description	A	All-in-one transmitter
	B	Flange casing
	C	Intrinsically safe explosion-proof type
	D	Flameproof type
	T()	Other types
2.Flange connection	S	20592 Standard flange
	F	ANSI Standard flange
	T()	Other standards
3.Insert probe design	G	Fixed installation
	H	Spring-fixed terminal block (replaceable ferrule)
4.Junction box	K	Aluminum
	L	Stainless steel
	M	With digital temperature display
	T()	Other types of junction boxes
5.Electrical interface	U	1/2NPT
	V	M20×1.5
	T()	Other electrical interfaces
6.Wiring block/sensor	A	Crastin Terminal block
	B	Ceramic connection block
	C	S10 (4-20mA transmitter)
	D	S20 (HART transmitter)
	E	S30 (Fieldbus transmitter)
7.Wire system	G	Single 3-wire system
	H	Double branch 6-wire system
	T()	Other wire system
8.Flange connection size	N	DN25
	O	DN50
	P	DN80
	Q	DN100
	R	ANSI 1"
	S	ANSI 2"
	Z	ANSI 3"
	U	ANSI 4"
	T()	Other flange types
9.Thermal resistance element	V	Pt100, B level
	W	Pt100, A level
	X	Pt1000, B level
	Y	Pt1000, A level



DB01-Selection composition

Selection example
Flange connection type **DB01** **B** **S** **G** **L** **V** **B** **G** **N** **V** **D** **G** **X** **F**

1 2 3 4 5 6 7 8 9 10 11 12 13

10. Probe diameter	A	3mm
	B	4mm
	C	5mm
	D	6mm
	E	8mm
	F	10mm
11. Rod length (mm)	G	50
	O	100
	P	150
	Q	200
	R	250
	S	300
	T	350
	U	400
	V	450
	W	500
	T()	Other lengths
12. Probe rod material	X	304SS
	Y	316/316L (1.4401/1.4435)
	T()	Other materials
13. Temperature range (°C)	A	-50...+250
	B	-50...+450
	C	-200...+250
	D	-200...+450
	E	-200...+600
	F	0...+400
	G	0...+500
	T()	Other measured temperatures
14. Safety certification	X	Intrinsic safety
	Y	flameproof
	Z	There is no
15. Additional order information	V	Additional information
	N	There is no

Instructions:

It means that the DB01 thermal resistance is a thermometer with flanged sleeve, the connection mode is 20592 standard flange, the probe rod design is fixed installation, the connection box is stainless steel, the electrical interface is M20*1.5, the sensor is ceramic connecting block, the single three-wire system, the flange specification is DN25, the thermal resistance element is Pt100, the class B, the diameter of the probe rod is 6mm. The length of the rod is 50mm, the material of the rod is 304SS, and the temperature range is 0... 400 °C: Item 14/15 in the table is optional.

Product certification

Compliance and approval; Rodwig thermometers meet key standards and certifications for process measurement technology; This guarantees the highest reliability in such Settings;