



SNÍMAČE TEPLOTY

Séria TR10-F

TR10F-14369107

PT100 3-trôd -50-500°C 250x9 DN25 form2F

- PT100, PT1000
- Teplota -196 až 600°C
- Pripojenie príruby
- Médiá voda, plyny, oleje
- ATEX, IECEx, SIL2, GOST

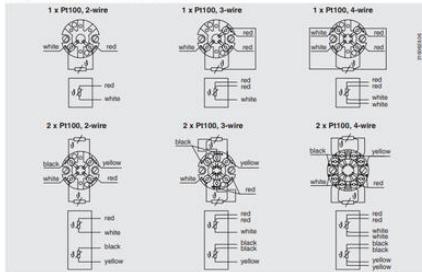


POPIS PRODUKTU

ŠPECIFIKÁCIA

Dĺžka	340 mm
Insertion length	250 mm
Inside diameter	7 mm
Materiál kontaktnej časti	Nerezová oceľ 316Ti
Material Sensor Body	Inconel - 600
Materiál tela	Hliník
Neck length	0,065 m
Plug diameter	9 mm
Prevádzková teplota max.	500 °C
Prevádzková teplota min.	-50 °C
Teplota okolia do	80 °C
Teplota okolia od	-40 °C
Tlaková odolnosť max	16 bar
Trieda krytia	IP65

Electrical connection (colour code per IEC EN 60751)



Cable entry



The pictures show examples of connection heads.

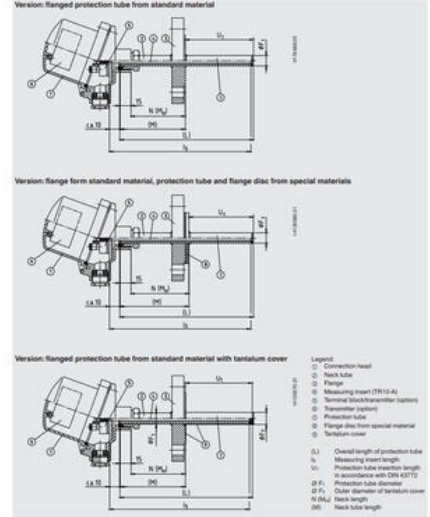
Cable entry	Cable entry thread size
Standard cable entry ¹⁾	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø 8 ... 16 mm) ¹⁾	M20 x 1.5 or 1/2 NPT
Nickel-plated brass cable gland (cable Ø 8 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Stainless steel cable gland (cable Ø 7 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Plain threaded	M20 x 1.5 or 1/2 NPT
2 x M20 x 1.5 ¹⁾	2 x M20 x 1.5
Junction box M12 x 1 (4-pin) ¹⁾	M20 x 1.5
Sealing plug for transport	M20 x 1.5 or 1/2 NPT

Model	Material	Cable entry thread size	Ingress protection (IP)	Cap	Surface	Connection to neck tube
BS	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65, IP68	Flat cap with 2 screws	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS2	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65, IP68	Spherical hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS2-H	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS2-H (2x cable outlet)	Aluminum	2 x M20 x 1.5 or 2 x 1/2 NPT ¹⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5
BS2-H / D9110 ¹⁾	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Raised hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS5	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Spherical hinged cover with clamping lever	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS5-H	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Raised hinged cover with clamping lever	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS5	Stainless steel	M20 x 1.5 ¹⁾	IP65	Position-vent screw on lid	Black, electropolished	M24 x 1.5
BS2-A	Plastic	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Spherical hinged cover with cylinder head screw	Black	M24 x 1.5
BS2-HK	Plastic	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Raised hinged cover with cylinder head screw	Black	M24 x 1.5

Model	Explosion protection	Ex i (gas)	Ex i (dust)	Ex nA (gas)	Ex tC (dust)
BS	Without	Zone 0, 1, 2	Zone 20, 21, 22	Zone 2	Zone 22
BS2	X	X	X	X	X
BS2-H	X	X	X	X	X
BS2-H (2x cable outlet)	X	X	X	X	X
BS2-H / D9110 ¹⁾	X	X	X	X	X
BS5	X	X	X	X	X
BS5-H	X	X	X	X	X
BS5	X	X	X	X	X
BS2-A	X	X	X	X	X
BS2-HK	X	X	X	X	X

Cable entry	Colour	Ingress protection (IP)	Min. max. ambient temperature	Explosion protection	Ex i (gas)	Ex i (dust)	Ex nA (gas)	Ex tC (dust)
Standard cable entry ¹⁾	Black	IP65	-40 ... +80 °C	X	X	-	-	-
Plastic cable gland ¹⁾	Black or grey	IP65, IP68	-40 ... +80 °C	X	-	-	-	-
Plastic cable gland, Ex e ¹⁾	Light blue	IP65, IP68	-20 ... +80 °C (standard) -40 ... +75 °C (optional)	X	X	-	-	-
Plastic cable gland, Ex e ¹⁾	Black	IP65, IP68	-20 ... +80 °C (standard) -40 ... +75 °C (optional)	X	-	X	X	X
Nickel-plated brass cable gland	Black	IP65, IP68	-40 °C / -40 ... +80 °C	X	-	-	-	-
Nickel-plated brass cable gland, Ex e	Black	IP65, IP68	-40 °C / -40 ... +80 °C	X	X	X	X	X
Stainless steel cable gland	Black	IP65, IP68	-40 °C / -40 ... +80 °C	X	X	-	-	-
Stainless steel cable gland, Ex e	Black	IP65, IP68	-40 °C / -40 ... +80 °C	X	X	X	X	X
Plain threaded	-	IP60	-	X	X	X	X	X
2 x M20 x 1.5 ¹⁾	-	IP65	-40 ... +80 °C	X	X	X	X	X
Junction box M12 x 1 (4-pin) ¹⁾	-	IP65	-40 ... +80 °C	X	X	X	X	X
Sealing plug for transport	Transparent	-	-40 ... +80 °C	not applicable, transport protection	-	-	-	-

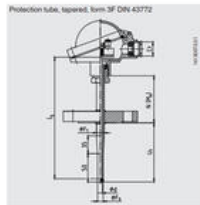
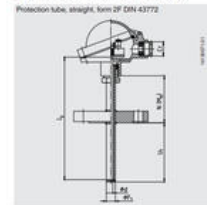
Components model TR10-F



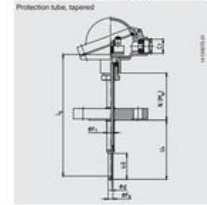
Protection tube

Protection tube designs

Protection tube, straight, in line with DIN 43772



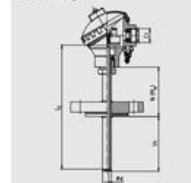
Protection tube in line with DIN 43772, weld-on solid tip



Legend:
L1: Insertion length
L2: Measuring insert length
L3: Neck length
L4: Thread cable entry
L5: Protection tube diameter
D1: Diameter of protection tube tip
D2: Outer diameter of transition cone
D3: Overall length of protection tube
D4: Measuring insert diameter

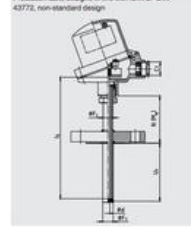
Protection tube in line with DIN 43772, welded parts from special material, girder flange stainless steel

Protection tube, straight, in line with form 3F DIN 43772, non-standard design

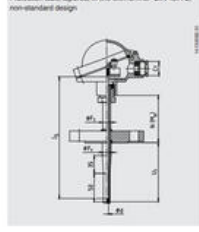


Protection tube in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

Protection tube, straight, in line with form 3F DIN 43772, non-standard design



Protection tube, tapered, in line with form 3F DIN 43772, non-standard design



Legend:
L1: Insertion length
L2: Measuring insert length
L3: Neck length
L4: Thread cable entry
L5: Protection tube diameter
D1: Diameter of protection tube tip
D2: Outer diameter of transition cone
D3: Overall length of protection tube
D4: Measuring insert diameter

Protection tube designs in accordance with DIN 43772

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, form 3F DIN 43772	Stainless steel 1.4371	9 x 1 mm 11 x 2 mm 12 x 2.5 mm 14 x 2.5 mm	6 mm	M24 x 1.5 (standard connection, male nut)
Tapered, form 3F DIN 43772	Stainless steel 1.4371	12 x 2.5 mm, tapered to 6 mm	6 mm	M24 x 1.5 (standard connection, male nut)

Protection tube designs in line with DIN 43772, weld-on solid tip

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Tapered, weld-on solid tip, in line with DIN 43772, non-standard design	Stainless steel 1.4371	8 x 1 mm, tapered to 6 mm 11 x 2 mm, tapered to 6 mm 12 x 2.5 mm, tapered to 6 mm	6 mm	M24 x 1.5 (standard connection, male nut)

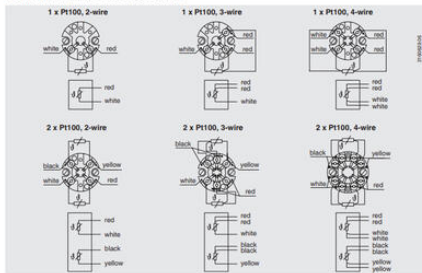
Protection tube designs in line with DIN 43772, welded parts: special material, girder flange stainless steel

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, in line with form 3F DIN 43772, non-standard design	2.4360 (MonelK50) / stainless steel 2.4819 (Inconel C276) / stainless steel 2.4610 (Hastelloy C4) / stainless steel 3.7005 (Titan Grade 2)	13.7 x 2.2 mm	6 mm with sleeve Ø 8 mm / 8 mm	M24 x 1.5 (standard connection, male nut)

Protection tube designs in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, in line with form 3F DIN 43772, non-standard design	Tantalum / stainless steel	11 x 2 mm, tantalum cover 12 x 5.4 mm 15 x 3 mm, tantalum cover 18 x 5.4 mm	6 mm 6 mm with sleeve Ø 8 mm / 8 mm	M24 x 1.5 (standard connection, male nut)
Tapered, in line with form 3F DIN 43772, non-standard design	Tantalum / stainless steel	12 x 2.5 mm, tantalum cover 13 x 5.4 mm	6 mm	M24 x 1.5 (standard connection, male nut)

Electrical connection (colour code per IEC EN 60751)



Model	Material	Cable entry thread size	Ingress protection (IP)	Cap	Surface	Connection to neck tube
BS	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65, IP68	Flat cap with 2 screws	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS2	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65, IP68	Spherical hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS2-H	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS2-H (2x cable outlet)	Aluminum	2 x M20 x 1.5 or 2 x 1/2 NPT ¹⁾	IP65, IP68	Raised hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5
BS2-H / D9110 ¹⁾	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Raised hinged cover with cylinder head screw	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS5	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Spherical hinged cover with clamping lever	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS5-H	Aluminum	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Raised hinged cover with clamping lever	Black, lacquered ¹⁾	M24 x 1.5, 1/2 NPT
BS5	Stainless steel	M20 x 1.5 ¹⁾	IP65	Position-vent screw on lid	Black, electropolished	M24 x 1.5
BS2-A	Plastic	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Spherical hinged cover with cylinder head screw	Black	M24 x 1.5
BS2-HK	Plastic	M20 x 1.5 or 1/2 NPT ¹⁾	IP65	Raised hinged cover with cylinder head screw	Black	M24 x 1.5

Model	Explosion protection	Ex i (gas)	Ex i (dust)	Ex nA (gas)	Ex tC (dust)
BS	Without	Zone 0, 1, 2	Zone 20, 21, 22	Zone 2	Zone 22
BS2	X	X	X	X	X
BS2-H	X	X	X	X	X
BS2-H (2x cable outlet)	X	X	X	X	X
BS2-H / D9110 ¹⁾	X	X	X	X	X
BS5	X	X	X	X	X
BS5-H	X	X	X	X	X
BS5	X	X	X	X	X
BS2-A	X	X	X	X	X
BS2-HK	X	X	X	X	X

Cable entry



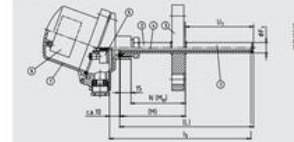
The pictures show examples of connection heads.

Cable entry	Cable entry thread size
Standard cable entry ¹⁾	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø ... 10 mm) ¹⁾	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø ... 12 mm)	M20 x 1.5 or 1/2 NPT
Nickel-plated brass cable gland (cable Ø ... 12 mm)	M20 x 1.5 or 1/2 NPT
Stainless steel cable gland (cable Ø ... 12 mm)	M20 x 1.5 or 1/2 NPT
Plain threaded	M20 x 1.5 or 1/2 NPT
2 x M20 x 1.5 ¹⁾	2 x M20 x 1.5
Junction box M12 x 1 (4-pin) ¹⁾	M20 x 1.5
Sealing plugs for transport	M20 x 1.5 or 1/2 NPT

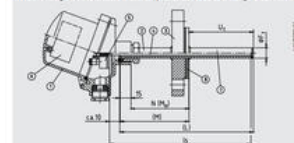
Cable entry	Colour	Ingress protection (max.)	Min./max. ambient temperature	Explosion protection without	Ex I (gas) Zone A	Ex I (pow) Zone 20	Ex II (gas) Zone 21	Ex II (pow) Zone 22
Standard cable entry ¹⁾	Black	IP65	-40 ... +80 °C	x	x	-	-	-
Plastic cable gland ¹⁾	Black or grey	IP65, IP68	-40 ... +80 °C	x	-	-	-	-
Plastic cable gland, Ex e ¹⁾	Light blue	IP65, IP68	-30 ... +80 °C (standard) -40 ... +70 °C (optional)	x	x	x	-	-
Plastic cable gland, Ex e ¹⁾	Black	IP65, IP68	-30 ... +80 °C (standard) -40 ... +70 °C (optional)	x	-	-	x	x
Nickel-plated brass cable gland, Ex e	Black	IP65, IP68	-60 °C / -40 ... +80 °C	x	-	-	-	-
Nickel-plated brass cable gland, Ex e	Black	IP65, IP68	-60 °C / -40 ... +80 °C	x	x	x	x	x
Stainless steel cable gland	Black	IP65, IP68	-60 °C / -40 ... +80 °C	x	x	x	-	-
Stainless steel cable gland, Ex e	Black	IP65, IP68	-60 °C / -40 ... +80 °C	x	x	x	x	x
Plain threaded	-	IP60	-	x	x	x/0	x/0	x/0
2 x M20 x 1.5 ¹⁾	-	IP00	-	x	x	x/0	x/0	x/0
Junction box M12 x 1 (4-pin) ¹⁾	-	IP65	-40 ... +80 °C	x	x/0	x/0	-	-
Sealing plugs for transport	Transparent	-	-40 ... +80 °C	not applicable	not applicable	not applicable	-	-

Components model TR10-F

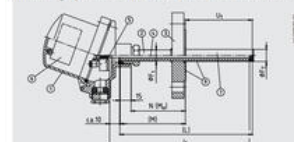
Version: flanged protection tube from standard material



Version: flange form standard material, protection tube and flange disc from special materials



Version: flanged protection tube from standard material with tantalum cover



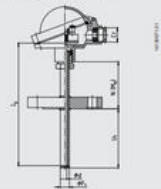
- Legend:
- 1) Connection head
 - 2) Neck tube
 - 3) Flange
 - 4) Measuring insert (TR10-F)
 - 5) Tantalum block/transfer (optional)
 - 6) Transfer system
 - 7) Protection tube
 - 8) Flange disc from special material
 - 9) Tantalum cover
- Dimensions:
- L1: Overall length of protection tube
 - L2: Measuring insert length
 - L3: Protection tube reaction length in accordance with DIN 43772
 - Ø F1: Protection tube diameter
 - Ø F2: Outer diameter of tantalum cover
 - h: Neck length
 - Ø R: Neck tube length

Protection tube

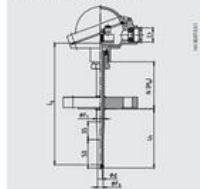
Protection tube designs

Protection tube in accordance with DIN 43772

Protection tube, straight, form 2F DIN 43772

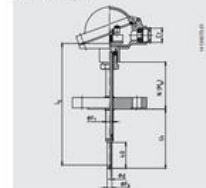


Protection tube, tapered, form 3F DIN 43772



Protection tube in line with DIN 43772, weld-on solid tip

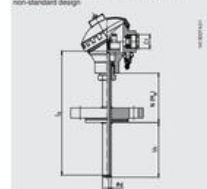
Protection tube, tapered



- Legend:
- L1: Reaction length
 - L2: Measuring insert length
 - h: Neck length
 - Ø F1: Diameter of protection tube tip
 - Ø F2: Outer diameter of tantalum cover
 - L3: Overall length of protection tube
 - Ø F3: Thread cable entry
 - Ø F4: Measuring insert diameter

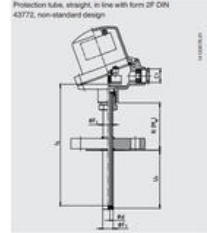
Protection tube in line with DIN 43772, welded parts from special material, girder flange: stainless steel

Protection tube, straight, in line with form 2F DIN 43772, non-standard design



Protection tube in line with DIN 43772, tantalum cover with tantalum flange disc

Protection tube, straight, in line with form 2F DIN 43772, non-standard design



Protection tube, tapered, in line with form 3F DIN 43772, non-standard design



- Legend:
- L1: Reaction length
 - L2: Measuring insert length
 - h: Neck length
 - Ø F1: Diameter of protection tube tip
 - Ø F2: Outer diameter of tantalum cover
 - L3: Overall length of protection tube
 - Ø F3: Thread cable entry
 - Ø F4: Measuring insert diameter

The pictures show examples of connection heads.

Protection tube designs in accordance with DIN 43772

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, form 2F DIN 43772	Stainless steel 1.4571	9 x 1 mm	6 mm	M24 x 1.5 (rotatable threaded connection, male nut)
		11 x 2 mm	8 mm	
		12 x 2.5 mm	8 mm with sleeve Ø 8 mm / 8 mm	
Tapered, form 3F DIN 43772	Stainless steel 1.4571	12 x 2.5 mm, tapered to 9 mm	6 mm	

Protection tube designs in line with DIN 43772, weld-on solid tip

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Tapered, weld-on solid tip, in line with DIN 43772, non-standard design	Stainless steel 1.4571	9 x 1 mm, tapered to 8 mm	6 mm	M24 x 1.5 (rotatable threaded connection, male nut)
		11 x 2 mm, tapered to 8 mm		
		12 x 2.5 mm, tapered to 8 mm		

Protection tube designs in line with DIN 43772, welded parts: special material, girder flange: stainless steel

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, in line with form 2F DIN 43772, non-standard design	2.4360 (MonelK505) / stainless steel 2.4819 (Hastelloy C276) / stainless steel 2.4619 (Inconel 625) / stainless steel 3.7005 (Titan Grade 2) / stainless steel	13.7 x 2.2 mm	6 mm with sleeve Ø 8 mm / 8 mm	M24 x 1.5 (rotatable threaded connection, male nut)

Protection tube designs in line with DIN 43772, tantalum cover with tantalum flange disc

Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, in line with form 2F DIN 43772, non-standard design	Tantalum / stainless steel	11 x 2 mm, tantalum cover 12 x 5.4 mm 15 x 3 mm, tantalum cover 18 x 5.4 mm	6 mm 6 mm with sleeve Ø 8 mm / 8 mm	M24 x 1.5 (rotatable threaded connection, male nut)
Tapered, in line with form 3F DIN 43772, non-standard design	Tantalum / stainless steel	12 x 2.5 mm, tantalum cover 13 x 5.4 mm	6 mm	