

VASTUSLÄMPÖTILA-ANTURI LAIPALLA

TR10-F

TR10F-14369107
PT100 3-johdin -50-500°C 250x9 DN25 form2F



- Mittausalueet -196-600°C
- Vaihdeettava mittaosa
- Atex optiolla
- Saatavana lämpötilälähettimellä
- Laipallisella TW40 suojaputkella

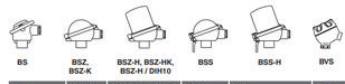
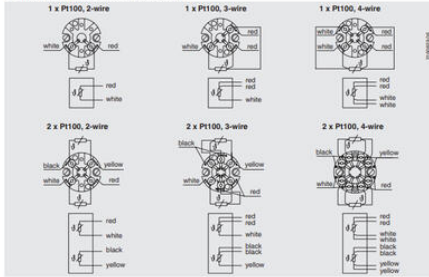
TUOTEKUVAUS

TR10-F sarjan vastuslämpötila-anturit on suunniteltu kiinnitettäväksi säiliöihin ja putkistoihin. Saatavilla on standardien DIN EN ja ASME mukaisia laippoja. Nämä lämpötilamittapäät sopivat nestemäisille ja kaasumaisille väliaineille, joita käytetään kohtalaisella mekaanisella kuormalla. Mukana putkimateriaalista valmistettu TW40-mallinen suojatasku.

TEKNISEET TIEDOT

Aineen kanssa kosketuksissa olevien osien materiaali	Ruostumaton teräs 316Ti
Asennussyvyys	250 mm
IP-luokka	IP65
Kaulan pituus	0,065 m
Kytinkotelon materiaali	Inconel - 600
Max. käyttölämpötila	500 °C
Max. painealue	16 bar
Max. ympäristön lämpötila	80 °C
Min. käyttölämpötila	-50 °C
Min. ympäristön lämpötila	-40 °C
Pistokkeen halkaisija	9 mm
Pituus	340 mm
Rungon materiaali	Alumiini
Sisähalkaisija	7 mm

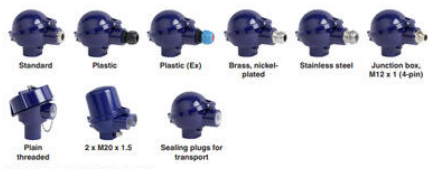
Electrical connection (colour code per IEC-EN 60719)



Model	Material	Cable entry thread size	Ingress protection (max.)	Cap	Surface	Connection to neck tube
BS	Aluminum	M20 x 1.5 or 1/2 NPT	IP65, IP68	Flat cap with 2 screws	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSZ	Aluminum	M20 x 1.5 or 1/2 NPT	IP65, IP68	Spherical hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSZ-H	Aluminum	M20 x 1.5 or 1/2 NPT	IP65, IP68	Raised hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSZ-HK	Aluminum	2 x M20 x 1.5 or 2 x 1/2 NPT	IP65, IP68	Raised hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5
BSZ-HK (2x cable outlet)	Aluminum	M20 x 1.5 or 1/2 NPT	IP65	Raised hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSS	Aluminum	M20 x 1.5 or 1/2 NPT	IP65	Spherical hinged cover with clamping lever	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSS-H	Aluminum	M20 x 1.5 or 1/2 NPT	IP65	Raised hinged cover with clamping lever	Blau, lacquered	M24 x 1.5, 1/2 NPT
BVS	Stainless steel	M20 x 1.5	IP65	Physicon-cast screw-on lid	Blau, electropolished	M24 x 1.5
BSZ-K	Plastic	M20 x 1.5 or 1/2 NPT	IP65	Spherical hinged cover with cylinder head screw	Black	M24 x 1.5
BSZ-HK	Plastic	M20 x 1.5 or 1/2 NPT	IP65	Raised hinged cover with cylinder head screw	Black	M24 x 1.5

Model	Explosion protection				
	Without	Ex I (gas) Zone 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2	Ex to (dust) Zone 22
BS	x	x	-	-	-
BSZ	x	x	x	x	x
BSZ-H	x	x	x	x	x
BSZ-H (2x cable outlet)	x	x	x	x	x
BSZ-H / DSH10	x	x	-	-	-
BSS	x	x	-	-	-
BSS-H	x	x	-	-	-
BVS	x	x	-	-	-
BSZ-K	x	x	-	-	-
BSZ-HK	x	x	-	-	-

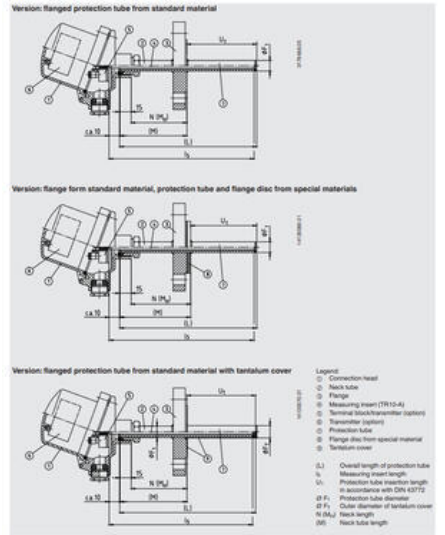
Cable entry



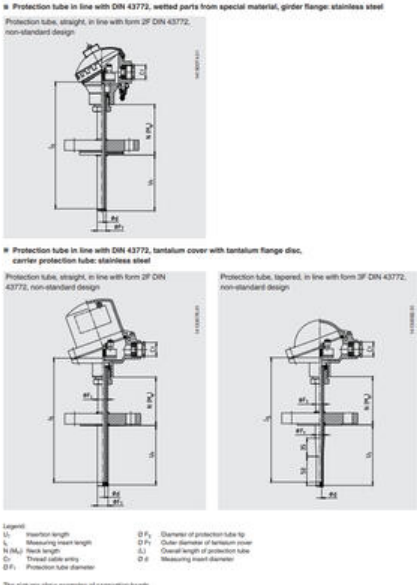
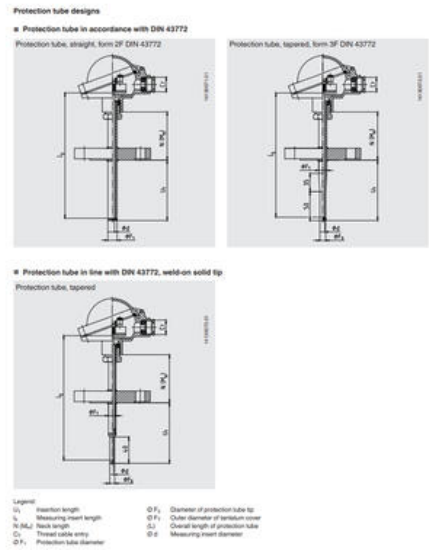
Cable entry	Cable entry thread size
Standard cable entry	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø 6 ... 10 mm)	M20 x 1.5 or 1/2 NPT
Nickel-plated brass cable gland (cable Ø 6 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Stainless steel cable gland (cable Ø 7 ... 12 mm)	M20 x 1.5 or 1/2 NPT
Plain threaded	M20 x 1.5 or 1/2 NPT
2 x M20 x 1.5	2 x M20 x 1.5
Junction box M12 x 1 (4-pin)	M20 x 1.5
Sealing plugs for transport	M20 x 1.5 or 1/2 NPT

Cable entry	Colour	Ingress protection (max.)	Max./min. ambient temperature	Explosion protection		Ex nA (Zone 2)	Ex to (Zone 22)
				Ex I (Zone 1, 2)	Ex I (Zone 20, 21, 22)		
Standard cable entry	Black	IP65	-40 ... +80 °C	x	-	-	-
Plastic cable gland	Black or grey	IP66, IP68	-40 ... +80 °C	x	-	-	-
Plastic cable gland, Ex e	Light blue	IP66, IP68	-20 ... +80 °C (standard) -40 ... +70 °C (optional)	x	x	x	x
Plastic cable gland, Ex e	Black	IP66, IP68	-20 ... +80 °C (standard) -40 ... +70 °C (optional)	x	-	x	x
Nickel-plated brass cable gland	Black	IP66, IP68	-50 ... +80 ... +100 °C	x	-	-	-
Nickel-plated brass cable gland, Ex e	Black	IP66, IP68	-50 ... +80 ... +100 °C	x	x	x	x
Stainless steel cable gland	Black	IP66, IP68	-50 ... +80 ... +100 °C	x	x	x	x
Stainless steel cable gland, Ex e	Black	IP66, IP68	-50 ... +80 ... +100 °C	x	x	x	x
Plain threaded	-	IP60	-	x	x	x	x
2 x M20 x 1.5	-	IP60	-	x	x	x	x
Junction box M12 x 1 (4-pin)	-	IP65	-40 ... +80 °C	x	x	x	x
Sealing plugs for transport	Transparent	-	-40 ... +80 °C	-	-	-	-

Components model TR10-F



Protection tube



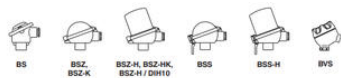
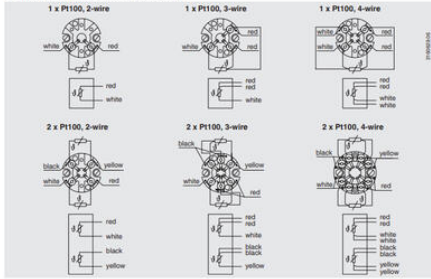
Protection tube designs in accordance with DIN 43772				
Protection tube	Material	Protection tube Ø	Suitable for measuring insert Ø	Connection to head
Straight, form 2F DIN 43772	Stainless steel 1.4571	9 x 12 mm	6 mm	M24 x 1.5 (standard connection, male nut)
		11 x 2 mm	6 mm with sleeve Ø 8 mm / 6 mm	M24 x 1.5 (standard connection, male nut)
		12 x 2.5 mm	6 mm	
Tapered, form 3F DIN 43772	Stainless steel 1.4571	12 x 2.5 mm, tapered to 9 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 1.4571	9 x 1 mm, tapered to 9 mm	3 mm	M24 x 1.5 (standard connection, male nut)
		11 x 2 mm, tapered to 6 mm	6 mm	M24 x 1.5 (standard connection, male nut)
		12 x 2.5 mm, tapered to 6 mm	6 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	2.4860 (Martensitic) stainless steel 2.4810 (Austenitic) stainless steel 2.4610 (Austenitic) stainless steel 3.7005 (Thin Grade 2) stainless steel	13.7 x 2.2 mm	6 mm with sleeve Ø 8 mm / 6 mm	M24 x 1.5 (standard connection, male nut)
		11 x 2 mm	6 mm	M24 x 1.5 (standard connection, male nut)
		12 x 2.5 mm	6 mm	
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 2F DIN 43772, non-standard design	Tantalum / stainless steel	11 x 2 mm, tantalum cover 12 x 0.4 mm	6 mm	M24 x 1.5 (standard connection, male nut)
		15 x 3 mm, tantalum cover 18 x 0.4 mm	6 mm with sleeve Ø 8 mm / 6 mm	M24 x 1.5 (standard connection, male nut)
		12 x 2.5 mm, tantalum cover 13 x 0.4 mm	6 mm	
Tapered, in line with form 3F DIN 43772, non-standard design	Tantalum / stainless steel	12 x 2.5 mm, tantalum cover 13 x 0.4 mm	6 mm	M24 x 1.5 (standard connection, male nut)

Legend:
 U₁: Insertion length
 U₂: Measuring insert length
 N: Neck length
 C₁: Thread cable entry
 D₁: Protection tube diameter
 Ø F₁: Diameter of protection tube to
 Ø F₂: Outer diameter of tantalum cover
 S₁: Overall length of protection tube
 Ø S₂: Measuring insert diameter

Legend:
 U₁: Insertion length
 U₂: Measuring insert length
 N: Neck length
 C₁: Thread cable entry
 D₁: Protection tube diameter
 Ø F₁: Diameter of protection tube to
 Ø F₂: Outer diameter of tantalum cover
 S₁: Overall length of protection tube
 Ø S₂: Measuring insert diameter

The pictures show examples of connection heads.

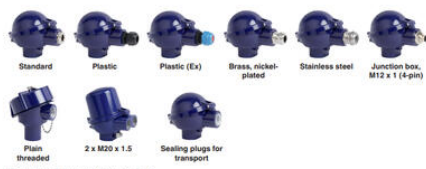
Electrical connection (colour code per IEC-EN 60719)



Model	Material	Cable entry thread size	Ingress protection (max.)	Cap	Surface	Connection to rack tube
BS	Aluminum	M20 x 1.5 or 1/2 NPT	IP65, IP68	Flat cap with 2 screws	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSZ	Aluminum	M20 x 1.5 or 1/2 NPT	IP65, IP68	Spherical hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSZ-H	Aluminum	M20 x 1.5 or 1/2 NPT	IP65, IP68	Raised hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSZ-H / DH10	Aluminum	2 x M20 x 1.5 or 2 x 1/2 NPT	IP65, IP68	Raised hinged cover with cylinder head screw	Blau, lacquered	M24 x 1.5
BSS	Aluminum	M20 x 1.5 or 1/2 NPT	IP65	Spherical hinged cover with clamping lever	Blau, lacquered	M24 x 1.5, 1/2 NPT
BSS-H	Aluminum	M20 x 1.5 or 1/2 NPT	IP65	Raised hinged cover with clamping lever	Blau, lacquered	M24 x 1.5, 1/2 NPT
BVS	Stainless steel	M20 x 1.5	IP65	Precision-cast screw-on lid	Blau, electropolished	M24 x 1.5
BSZ-K	Plastic	M20 x 1.5 or 1/2 NPT	IP65	Spherical hinged cover with cylinder head screw	Black	M24 x 1.5
BSZ-HK	Plastic	M20 x 1.5 or 1/2 NPT	IP65	Raised hinged cover with cylinder head screw	Black	M24 x 1.5

Model	Explosion protection				
	Without	Ex I (gas) Zone 0, 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2	Ex to (dust) Zone 22
BS	x	x	-	-	-
BSZ	x	x	x	x	x
BSZ-H	x	x	x	x	x
BSZ-H (2x cable outlet)	x	x	x	x	x
BSZ-H / DH10	x	x	-	-	-
BSS	x	x	-	-	-
BSS-H	x	x	-	-	-
BVS	x	x	-	-	-
BSZ-K	x	x	-	-	-
BSZ-HK	x	x	-	-	-

Cable entry

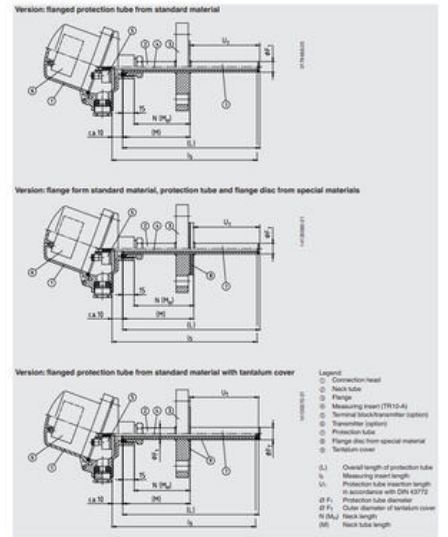


The pictures show examples of connection heads.

Cable entry	Cable entry thread size
Standard cable entry	M20 x 1.5 or 1/2 NPT
Plastic cable gland (cable Ø 6 ... 10 mm)	M20 x 1.5 or 1/2 NPT
Nickel-plated brass cable gland (cable Ø 6 ... 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	2 x M20 x 1.5
Junction box M12 x 1 (4-pin)	M20 x 1.5
Sealing plugs for transport	M20 x 1.5 or 1/2 NPT

Cable entry	Colour	Ingress protection (max.)	Max./min. ambient temperature	Explosion protection				
				Ex I (gas) Zone 0, 1, 2	Ex I (dust) Zone 20, 21, 22	Ex nA (gas) Zone 2	Ex to (dust) Zone 22	Ex to (dust) Zone 22
Standard cable entry	Black	IP65	-40 ... +80 °C	x	-	-	-	-
Plastic cable gland	Black or grey	IP66, IP68	-40 ... +80 °C	x	-	-	-	-
Plastic cable gland, Ex e	Light blue	IP66, IP68	-20 ... +80 °C (standard) -40 ... +70 °C (option)	x	x	x	x	x
Plastic cable gland, Ex e	Black	IP66, IP68	-20 ... +80 °C (standard) -40 ... +70 °C (option)	x	-	-	x	x
Nickel-plated brass cable gland	Black	IP66, IP68	-60 ... +80 ... +100 °C	x	-	-	-	-
Nickel-plated brass cable gland, Ex e	Black	IP66, IP68	-60 ... +80 ... +100 °C	x	x	x	x	x
Stainless steel cable gland	Black	IP66, IP68	-60 ... +80 ... +100 °C	x	x	x	x	x
Stainless steel cable gland, Ex e	Black	IP66, IP68	-60 ... +80 ... +100 °C	x	x	x	x	x
Plain threaded	-	IP60	-	x	x	x	x	x
2 x M20 x 1.5	-	IP60	-	x	x	x	x	x
Junction box M12 x 1 (4-pin)	-	IP65	-40 ... +80 °C	x	x	x	x	x
Sealing plugs for transport	Transparent	-	-40 ... +80 °C	-	-	-	-	-

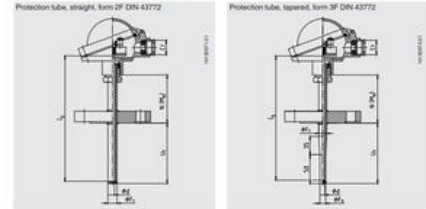
Components model TR10-F



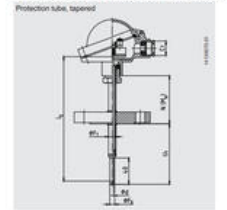
Protection tube

Protection tube designs

Protection tube in accordance with DIN 43772



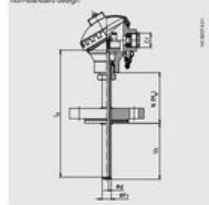
Protection tube in line with DIN 43772, weld-on solid tip



Legend:
 l₁ Insertion length
 l₂ Measuring insert length
 N (N_{St}) Rack length
 C₁ Thread cable entry
 D_{F1} Protection tube diameter
 Ø F₁ Outer diameter of protection tube to
 Ø F₂ Outer diameter of tantalum cover
 l₁ Overall length of protection tube
 Ø d₁ Measuring insert diameter

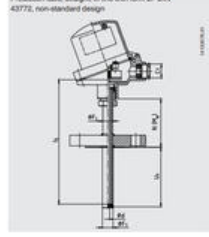
Protection tube in line with DIN 43772, welded parts from special material, girder flange: stainless steel

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

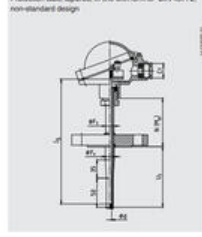


Protection tube in line with DIN 43772, tantalum cover with tantalum flange disc, carrier protection tube: stainless steel

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 Insertion length
 l₂ Measuring insert length
 N (N_{St}) Rack length
 C₁ Thread cable entry
 D_{F1} Protection tube diameter
 Ø F₁ Outer diameter of protection tube to
 Ø F₂ Outer diameter of tantalum cover
 l₁ Overall length of protection tube
 Ø d₁ 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 12 mm	6 mm	M24 x 1.5 (variable)
		12 x 2.5 mm	6 mm with sleeve Ø 8 mm / 8 mm	(welded connection, male nut)
		14 x 2.5 mm	6 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 12 mm, tapered to 9 mm	3 mm	M24 x 1.5 (variable)
		11 x 2 mm, tapered to 6 mm		(welded connection, male nut)
		12 x 2.5 mm, tapered to 6 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	2.4300 (MonelK00) stainless steel 2.4610 (Hastelloy C276) stainless steel 2.4610 (Hastelloy C4) stainless steel 3.7005 (Titan Grade 2) stainless steel	13.7 x 2.2 mm	8 mm with sleeve Ø 8 mm / 8 mm	M24 x 1.5 (variable)		

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 2F DIN 43772, non-standard design	Tantalum / stainless steel	11 x 2 mm, tantalum cover 12 x Ø 4 mm	8 mm	M24 x 1.5 (variable)
		15 x 3 mm, tantalum cover 16 x Ø 4 mm	8 mm with sleeve Ø 8 mm / 8 mm	(welded 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 Ø 4 mm	8 mm	