

# TSP, TSM

## Resistance Temperature Detectors

Entered into the State Register of measuring instruments under ## 14216-97, 14217-97, 15906-96.

### GENERAL-PURPOSE APPLICATION

Table 1

RTD Type and Version	Measured Media	Design Features
TSP/TSM-1293	Fluids, non-corrosive and corrosive media, not destructive for protection fitting material	Modular design with replaceable thermometric insert, protection fitting: no connector, $\phi 10$ mm; head material: aluminium alloy
TSP/TSM-1293-01		Same as TSP/TSM-1293, protection fitting with connector M20x1.5
TSP/TSM-0196 and -0196B TSP-0196-05; -0196-05B		No head. Cable output $l = 2500$ mm; protection fitting: steel 08Cr13 or 12Cr18Ni10Ti (6 mm for TSP/TSM-0196; -0196-05; $\phi 8$ mm for TSP/TSM-0196B, -0196-05B); welded connector M20x1.5
TSP/TSM-0196-01 TSP-0196-06		Same as TSP/TSM-0196, with adjustable connector M16x1.5; fitting $\phi 6$ mm
TSP/TSM-0196-01B TSP-0196-06B		Same as TSP/TSM-0196-01, with fitting $\phi 8$ mm, adjustable connector M20x1.5
TSP/TSM-0196-02 and -02B TSP-0196-07; -0196-07B		Aluminium alloy head, welded connector M20x1.5; fitting $\phi 6$ mm (TSP/TSM-0196-02; -0196-07) $\phi 8$ mm (TSP/TSM-0196-02B; -0196-07B)
TSP/TSM-0196-03 TSP-0196-08		Same as TSP/TSM-0196-02, with adjustable connector M16x1.5
TSP/TSM-0196-03B TSP-0196-08B		Same as TSP/TSM-0196-02, with adjustable connector M20x1.5; fitting $\phi 8$ mm
TSP/TSM-0196-04 and -04B TSP-0196-09; -0196-09B		With 2RTT terminal (socket connector 2RTT16KPN2G3V is not shown); fitting $\phi 6$ mm; welded connector M16x1.5 (TSP/TSM-0196-04; -0196-09), fitting $\phi 8$ mm, welded connector M20x1.5 (TSP/TSM-0196-04B; -0196-09B)

### SPECIFIC-PURPOSE APPLICATION

Table 2

RTD Type and Version	Application Features	Design Features
TSP-1195 TSP-1195-01	Designed for temperature measurement of metals in operating region of KuASY thermoplastic automatic machines	No head, protection fitting $\phi 6.6$ mm, steel 12Cr18Ni10Ti
TSP/TSM-0395, -0395-02, -0395-04; TSM-0395-06	For temperature measurement of food products (sausage, etc.) at production and sterilization	No head, protection fitting: 12Cr18Ni10Ti, $\phi 3.2$ mm, with connecting cable, $l = 2500$ mm, low-inertia
TSP/TSM-0395-01, -0395-03, -0395-05; TSM-0395-07		Same as TSP/TSM-0395, cable length: $l = 4500$ mm

BASIC SPECIFICATIONS AND DIMENSIONS

Table 3

RTD Type and Version	Tolerance Class per GOST 6651	Measured Temperature Ranges, °C	Standard Curve per GOST 6651	Wiring diagram per GOST 6651	Fig.	Immersion Length L (length l), mm	Protection Fitting Material
TSP-1293	B	-200...500	50P, 100P	3, 4	1	320, 500, 800, 1000	12Cr18Ni10Ti or 08Cr13
TSP-1293-01					2	200, 250, 320, 400, 500, 630, 800, 1000	
TSM-1293	B C	-50...150	50M, 100M	3, 4	1	320, 500, 800, 1000	
TSM-1293-01		-50...180			2	120, 160, 200, 250, 320, 400, 500, 630, 800, 1000	
TSP-1195	B	-50...300	100P	2	3	40 at l = 800 and l1 = 75 65 at l = 1000 and l1 = 100	12Cr18Ni10Ti
TSP-1195-01						40 at l = 1000 and l1 = 75	
TSP-0196, TSP-0196B	A, B	-50...260	50P, 100P	4	4	80, 100, 120, 160, 200, 250 - A or B class 320, 500 - B class	12Cr18Ni10Ti or 08Cr13
TSP-0196-01		-50...500			5		
TSP-0196-01B					6		
TSP-0196-02, TSP-0196-02B					7		
TSP-0196-03, TSP-0196-03B		-50...500			8		
TSP-0196-04, TSP-0196-04B	A, B	-50...260	2	9	120, 160, 180, 200, 250		
TSP-0196-05, TSP-0196-05B	B	-50...260	Pt100 (W100=1.385)	4	4	80, 100, 120, 160, 200, 250, 320, 500	
TSP-0196-06	B	-50...260	Pt100 (W100=1.385)	4	5	80, 100, 120, 160, 200, 250, 320, 500	
TSP-0196-06B					6		
TSP-0196-07 TSP-0196-07B	B	-50...200	Pt100 Pt500 Pt1000 (W100=1.385)	4	7	80, 100, 120, 160, 200, 250, 320, 500	
TSP-0196-08 TSP-0196-08B		-50...400			8		
TSP-0196-09 TSP-0196-09B	B	-50...260	Pt100 (W100=1.385)	2	9	120, 160, 180, 200, 250	
TSM-0196, TSM-0196B	B, C	-50...150 (for B class) -50...180 (for C class)	50M, 100M	4	4	80, 100, 120, 160, 200, 250, 320, 500	
TSM-0196-01					5		
TSM-0196-01B					6		
TSM-0196-02, TSM-0196-02B					7		
TSM-0196-03, TSM-0196-03B					8		
TSM-0196-04, TSM-0196-04B					2		9
TSP-0395 TSP-0395-01	B	-50...150	50P	4	10	80, 100, 120 (l = 2500 mm for TSP/TSM-0395, -02, -04; TSM-0395-06; l = 4500 mm for TSP/TSM-0395-01, -03 -05; TSM-0395-07)	12Cr18Ni10Ti
TSP-0395-02 TSP-0395-03			100P				
TSP-0395-04 TSP-0395-05			Pt100				
TSM-0395 TSM-0395-01	B	-50...150	100M	4	10		
TSM-0395-02 TSM-0395-03			50M				
TSM-0395-04 TSM-0395-05	C	-50...150	100M	4	10		
TSM-0395-06 TSM-0395-07			50M				

**SPECIFICATIONS AND WEIGHT**

Table 4

RTD Type and Version	Thermal Inertia Index, s, max	Maximum Pressure, Pmax, MPa	Weight, kg
TSP/TSM-1293	80	0.4	0.42-0.75
TSP-1293-01	80	6.3	0.44-0.83
TSM-1293-01	80	10	0.44-0.83
TSP/TSM-0395	5	0.1	0.07-0.098
TSP-1195	20	0.1	0.07-0.08
TSP-1195-01	20	0.1	0.075
TSP/TSM-0196	20	0.4	0.08-0.55

**STANDARD CURVE ACCURACY LIMITS °C**

Table 5

Tolerance class	TSP	TSM
A	$\pm[0.15+0.002t]$	-
B	$\pm[0.3+0.002t]$	$\pm[0.25+0.0035t]$
C	-	$\pm[0.5+0.0065t]$

t - measured temperature value.

**EXPECTED LIFE**

8000 h for TSP/TSM-0395;  
10000 h for TSP/TSM-1293, -0196, TSP-1195.

**ORDERING INFORMATION**

<b>TSM-0196 - 200 mm - 100 M - B - diag.4 - 08Cr13 - C4 - TU... - P</b>								
1	2	3	4	5	6	7	8	9

1. RTD type and version.
2. Immersion length L (Table 3).
3. Standard curve (Table 3).
4. Tolerance class (Table 3).
5. Wiring diagram between conductors and sensing element (Table 3).
6. Protection fitting material (Table 3).
7. Climatic type:
  - traditional C4;
  - tropical T3.

**RESISTANCE TO EXTERNAL EFFECTS**

Version according to resistance to mechanical effects: vibration-proof per GOST 12997, Group **N3**.  
Version according to resistance to ambient temperature and humidity: **C4** per GOST 12997, at temperature 5 to 50 °C (for traditional and export versions); **T3** per GOST 15150, at temperature 5 to 50°C and up to 98% relative humidity at 35 °C (for tropical version).  
Dust and water tightness: **IP55** per GOST 14254 for TSP/TSM-1293;  
**IP65** for TSP-0395;  
**IP00** for TSP-1195.

**VERIFICATION**

Interval: one year.  
Procedure: per GOST8.461.

**WARRANTY**

Warranty period: 18 months from the date of commissioning (but within expected life limits).  
Warranty period for storage: 6 months maximum, from the date of production.

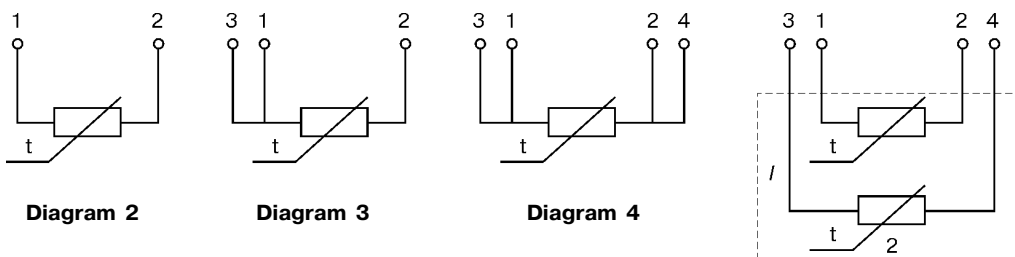
**DELIVERY SET**

- RTD;
  - Product Data Sheet.
- Upon Customer's request, mounting fitting is available acc. to "Assemblies and Parts for Temperature Transmitters" section:
- thermometric inserts.

8. Specifications:
  - TU 311-00226253.035-93 for TSM-1293, -0196;
  - TU 311-00226253.037-93 for TSP-1293,-0196,-0395,-1195;
  - TU 311-00226253.071-98 for TSM-0395.
9. Metrological verification:
  - GP** - verification by GosStandard Authorities;
  - P** - metrological verification by manufacturer.

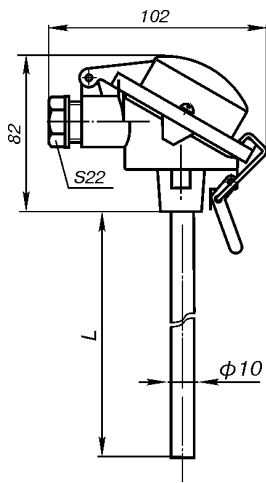
**WIRING DIAGRAMS**

Wiring diagram between inner conductors and sensing element (SE) per GOST 6651

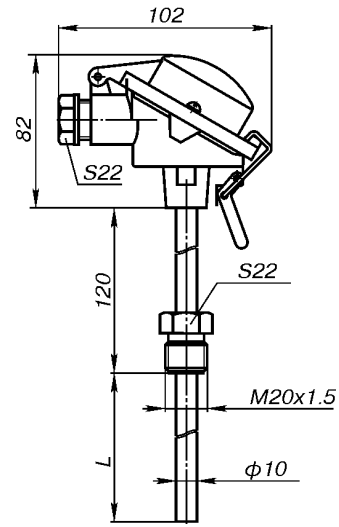
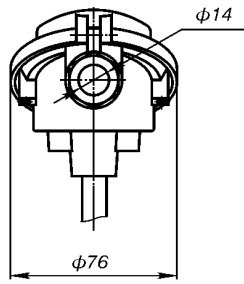


**2x2 diagram - "double SE"**  
(two SE in one housing)

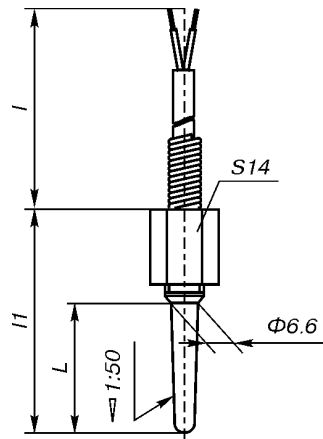
OVERALL AND MOUNTING DIMENSIONS



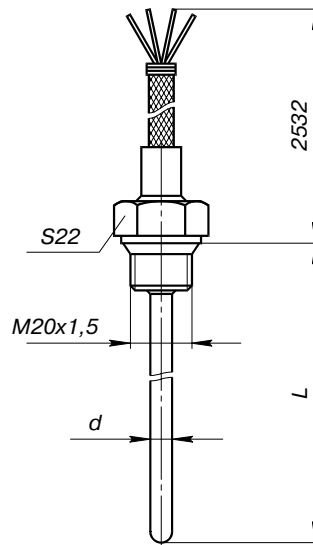
**Fig. 1.**  
TSP/TSM-1293.



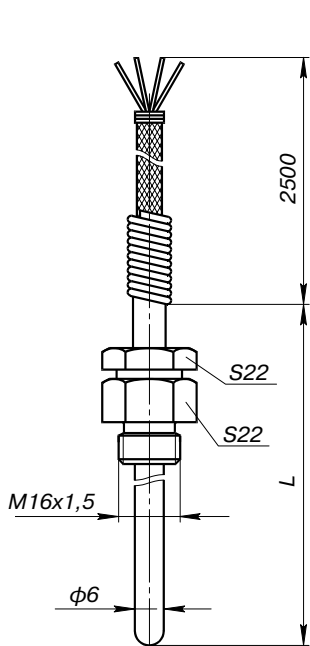
**Fig. 2.**  
TSP/TSM-1293-01,  
refer to Fig. 1.



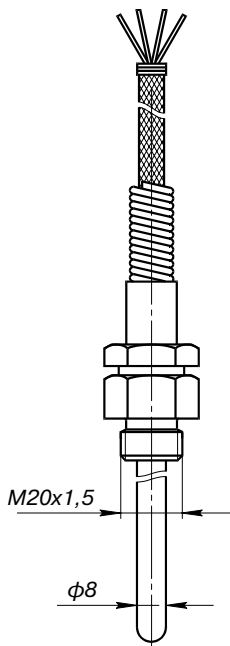
**Fig. 3.**  
TSP-1195, TSP-1195-01.



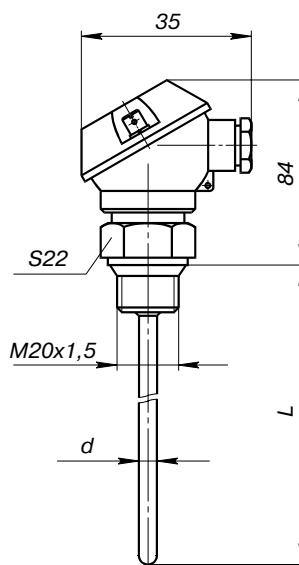
**Fig. 4.**  
TSP/TSM-0196, TSP-0196-05 (d = 6 mm),  
TSP/TSM-0196B, TSP-0196-05B (d = 8 mm)  
(welded connector).



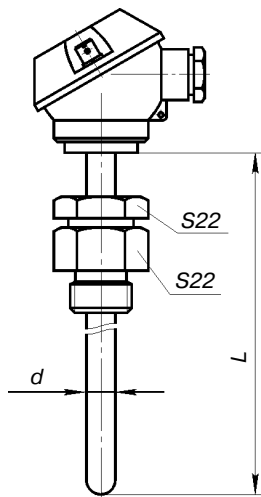
**Fig. 5.**  
TSP/TSM-0196-01,  
TSP-0196-06  
(adjustable connector).



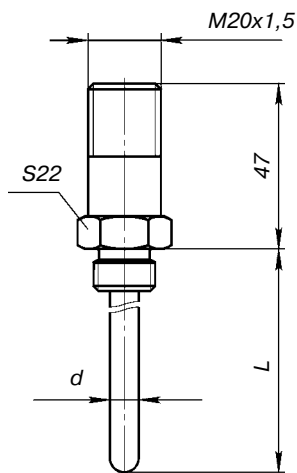
**Fig. 6.**  
TSP/TSM - 0196-01B,  
TSP-0196-06Б  
(adjustable connector).



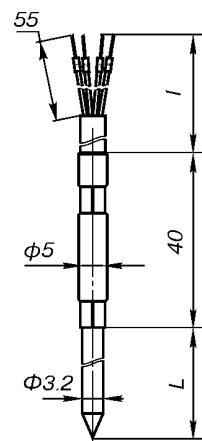
**Fig. 7.**  
TSP/TSM-0196-02,  
TSP-0196-07 (d=6 mm),  
TSP/TSM-0196-02B,  
TSP-0196-07B ( d=8 mm)  
(welded connector).



**Fig. 8.**  
TSP/TSM-0196-03; ]  
TSP-0196-08 (M16x1.5; d=6 mm),  
TSP/TSM-0196-03B;  
TSP-0196-08B (M20x1.5; d=8 mm)  
(adjustable connector)  
refer to Fig. 7.



**Fig. 9.**  
TSP/TSM-0196-04;  
TSP-0196-09 (M16x1.5; d=6 mm),  
TSP/TSM-0196-04B;  
TSP-0196-09B (M20x1.5 d=8 mm)  
(with 2PTT terminal,  
welded connector).



**Fig. 10.**  
TSP/TSM-0395.