

Data sheet

Temperature sensors MBT 153

Sensor pocket MBT 120



The MBT 153 is an universal cable temperature sensor that can be used for controlling cooling water and ventilation systems within general industry applications. This temperature sensor is based on a standardized Pt 100 or Pt 1000 element, which gives a reliable and accurate measurement.

On request the MBT 153 can also be delivered with NTC / PTC elements. The sensor is based on a stainless steel housing with a cable, which makes the sensor extremely flexible.

The MBT 153 can be combined with a sensor pocket, type MBT 120, to protect the silicone cable from the media. The sensor combined with the sensor pocket is named MBT 5253.

The MBT 153 has a PVC or silicone cable as standard but it can be delivered with teflon cable on request.

Features

- For temperature measurement where reliable, robust and accurate equipment is required
- Temperature range -50 – 200 °C
- Short response times
- Pt 100 or Pt 1000 resistance element
- 2- or 4-wire connection
- MBT 120 sensor pocket available

**Technical data
MBT 153**
Response times

Indicative response times			
Water 0.2 m/s		Air 1 m/s	
$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
2 s	10 s	28 s	107 s

Net weight approx. for sensor, type MBT 153

Cable length	Net weight approx.
3.5 m	98 g
5.5 m	154 g
8.5 m	238 g

Mechanical and environmental specifications

Max. ambient temperature	PVC	-40 °C – 100 °C (not marine approved)
	Silicone	-60 °C – 200 °C (marine approved)
	Teflon	-80 °C – 200 °C (marine approved)
Sensor tolerance	EN 60751 class B: $\pm (0.3 + 0.005 \times t)$ t = temperature of medium, numerical value	
Vibration stability	Shock	100 g/6 ms
	Vibrations	4 g sine function 5 – 200 Hz, measured acc. to IEC 60068-2-6
Enclosure	IP67	
Cable resistance @ 20 °C	PVC / Teflon 2 x 0.22 mm ² Resistance per conductor R1 = 78.2 Ohm/km Silicone 2 x 0.25 mm ² Resistance per conductor R1 = 68.8 Ohm/km Silicone 4 x 0.15 mm ² Resistance per conductor R1 = 114.7 Ohm/km The constant conductor resistance : $R = 2 \times R1$ The total resistance in the sensor circuit is therefore: $R + RTD$ 3 & 4 wire sensor circuit are not relevant since the controller automatically compensates for the conductor resistance	

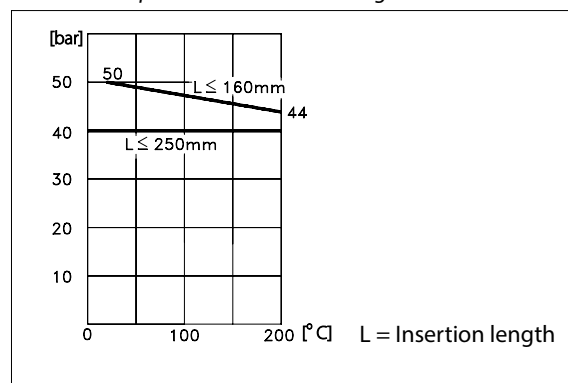
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Ordering standard MBT 153

Type MBT 153	Sensor	Cable
	T	
Measuring range		Cable length
-50 – 100 °C, PVC cable	0	0 0 5 0 0.5 m
-50 – 200 °C, Silicone cable	2	0 2 0 0 2.0 m
-50 – 200 °C, Teflon cable	4	0 3 5 0 3.5 m
Other	9	0 5 5 0 5.5 m
		0 8 5 0 8.5 m
		1 0 0 0 10.0 m
		x x x 0 xx.x m
Resistance value		
1 x Pt 100	0	
2 x Pt 100*	1	
1 x Pt 1000	2	
2 x Pt 1000*	3	
Other	9	
Tolerance		Connection
EN 60751 Class B	0 0	2 wire
Other	9 1	3 wire
	2	4 wire
	9	Others
* only available as 2 x 2-wire		
Preferred versions		

Technical data sensor pocket, MBT 120

Max. load on protection tube according to DIN 43763



General data

Process connection		G ½ A, ½ – 14 NPT	G ¾ A
Max. tightening torque		50 Nm	100 Nm
Permissible media velocity	Air	25 m/s	
	Water	3 m/s	

Net weight approx. for sensor pocket, type MBS 120

Insertion length	Process connection		
	G ½ A	G ¾ A	½ – 14 NPT
50 mm	87 g	128 g	87 g
100 mm	96 g	137 g	96 g
150 mm	105 g	146 g	105 g
200 mm	114 g	155 g	114 g
250 mm	123 g	164 g	123 g

Ordering standard MBT 120

Type MBT 120		Sensor pocket	
Pocket for sensor type		Process connection	
MBT 5253, union nut/o-ring		0	None
		1	G ¼ A
		2	G ¾ A
		3	G ½ A
		4	G ¾ A
		5	M18×1,5
		8	½" – 14 NPT
		9	Other
Protection Tube, (AISI 316L)			
Acid-proof steel, ø8 × 1 mm		1	
Other		9	
Extension length			
None		0	
Insertion length			
50 mm		050	
80 mm		080	
100 mm		100	
150 mm		150	
200 mm		200	
250 mm		250	
xxx mm		xxx	
Preferred versions			

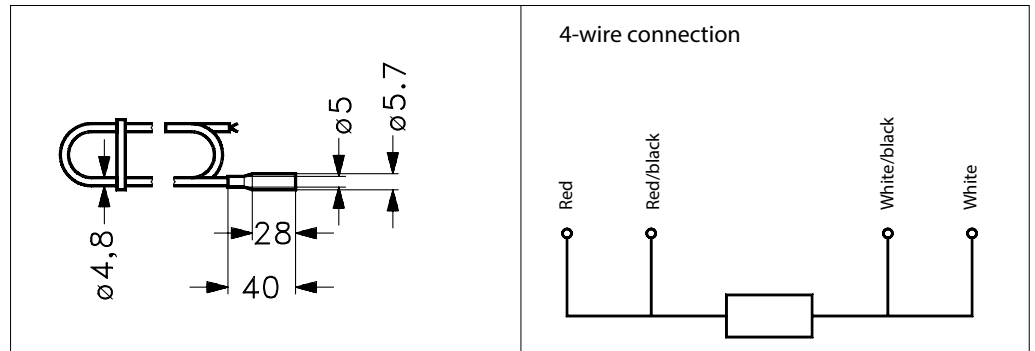
**Technical data
MBT 5253**
Response times. MBT 5253 (MBT 153 mounted with sensor pocket MBT 120)

Protection tube	Indicative response times			
	Water 0.2 m/s		Air 1 m/s	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
ø8 × 1	9 s	33 s	95 s	310 s

Mechanical and environmental specifications

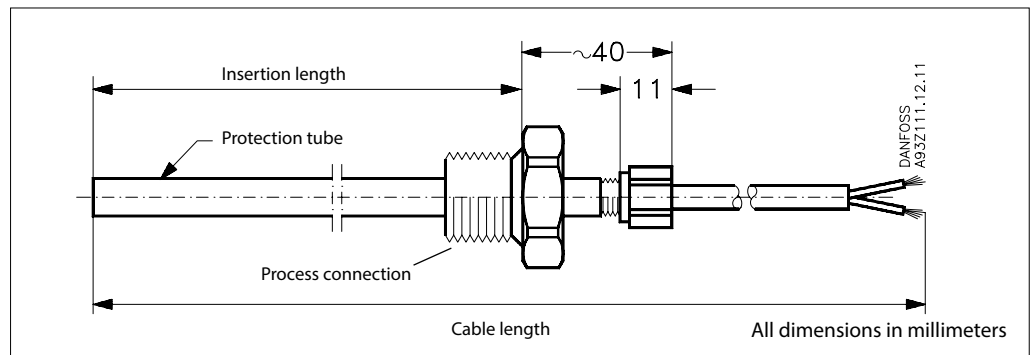
Max. ambient temperature	100 °C (limited by the O-ring sealing at cable entry)	
Sensor tolerance	EN 60751 class B: $\pm (0.3 + 0.005 \times t)$ t = temperature of medium, numerical value	
Vibration stability	Shock	100 g/6 ms
	Vibrations	4 g sine function 5 – 200 Hz, measured acc. to IEC 60068-2-6
Enclosure	IP67	
Cable	PVC 2 × 0.22 mm ² Silicone 2 × 0.25 mm ² (2-wire) Silicone 4 × 0.15 mm ² (4-wire)	
Materials in contact with medium	-50 – 200 °C: W no. 1.4435 (AISI 316L) -50 – 800 °C: W. no. 1.4571 (AISI 316 Ti)	

Dimensions and colour code MBT 153



Dimensions MBT 5253

MBT 5253: MBT 153 mounted in a MBT 120



Process connection	G ½ A, ½-14 NPT	G ¾ A
Width across flats	HEX 27	HEX 32