

Data sheet

Temperature Sensors

Types MBT 5250, MBT 5260 and MBT 5252



Heavy-duty temperature sensors for controlling cooling water, lubrication oil, hydraulic oil and refrigeration plants within general industry and marine applications. These temperature sensors are based on a standardized Pt 100 or Pt 1000 element, which gives a reliable and accurate measurement. All three sensor types can be delivered with NTC / PTC elements on request.

In the low temperature version (-50 – 200 °C) the measuring insert is based on a silicone cable, which makes the sensor very resistant towards vibrations. The MBT 5250 with changeable measuring insert and MBT 5260 with fixed measuring insert are equipped with EN 175301-803-A, Pg 9 as standard. The MBT 5252 is equipped with a B-head as standard, but can also be delivered with B-mini Head on request. If needed, a transmitter (MBT 9110) can be ordered as an integrated part of the MBT 5252 sensor.

Features

- Gaseous or liquid media, e.g. air, gas, vapour, water or oil.
- Up to 200 °C media temperature (MBT 5250 and MBT 5260)
- Up to 200 °C or 400 °C media temperature (MBT 5252)
- Pt 100 or Pt 1000 sensing element
- Can be used with 2- or 3-wire connections
- Gold plated male and female connector (MBT 5250 and MBT 5260)
- MBT 5250 and MBT 5252 with interchangeable measuring insert
- MBT 5260 with fixed measuring insert
- Available with built-in transmitter (MBT 5252)

Approvals

Lloyds Register of Shipping, LR
Germanischer Lloyd, GL
Det Norske Veritas, DNV
Registro Italiano Navale, RINA

Nippon Kaiji Kyokai, NKK
American Bureau of Shipping, ABS
Korean Register of Shipping, KR
Bureau Veritas, BV
China Classification Society, CCS

Data sheet | Temperature Sensor, Types MBT 5250, MBT 5260 and MBT 5252

Technical data MBT 5250, MBT 5260

General data MBT 5250, MBT 5260

Measuring range	-50 – 200 °C
Sensing element	Pt 100, Pt 1000
Protection tube	ø8 × 1 mm

Response times

Type	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}
MBT 5250 with interchangeable measuring insert	ø8 × 1 mm	9 s.	33 s.	95 s.	310 s.
MBT 5260 with fixed meas. ins.	ø8 × 1 mm	6 s.	20 s.	35 s.	140 s.

Materials

Protection tube in contact with media	W.no. 1.4571 (AISI 316 Ti)
Process connection	W.no. 1.4404 (AISI 316 L)
Extension length	W.no. 1.4571 (AISI 316 Ti)
Union	Nickel plated brass
Gasket	Silicone
Plug EN 175301-803	PA 6.6 (max 125 °C)

Mechanical and environmental specifications

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	IP65 according to IEC 60529	
Cable entry EN 175301-803	Pg 9, Pg 11 or Pg 13.5	

**Ordering standard
(MBT 5250)**

Type MBT 5250		Sensor	
Measuring range, sensor element		Tolerance	
-50 – 200 °C	0	0	EN 60751 Class B
		1	1/3 EN 60751 Class B
		2	1/6 EN 60751 Class B
		3	EN 60751 Class A
		4	B-value (25°/85° C): 3540 ± 1%
Sensing element		Process connection	
1 × Pt 100	0	0	None
1 × Pt 1000 (Class B only)	1	1	G 1/4 A ¹⁾
2 × Pt 100	2	2	G 1/2 A
2 × Pt 1000 (Class B only)	3	3	1/2 – 14 NPT
1 × NTC 2055 ± 1% Ohm	4	4	G 3/4 A
		5	M18 × 1.5
Protection Tube, W.nr. 1.4571 (AISI 316 Ti)		6	M24 × 2
Acid-proof steel, ø8 × 1mm	0	7	G 3/8 A
Solid drilled, tapered, ø12 to ø14.5	1	8	M33 × 2
Acid-proof steel, ø10 × 2 mm	2	9	1/4 - 18 NPT
Acid-proof steel, ø10 × 2 mm	3	A	M22 × 1.5
Extension length		B	M16 × 1.5
None	0	C	M14 × 1.5
50 mm	1	D	Adjustable fitting, brass G 1/4 A ¹⁾
Insertion length		E	3/4 – 16 UNF
050 mm	050	F	1/4 – 18 NPT
060 mm	060	G	M20 × 1.5
080 mm	080	Electrical Connections	
100 mm	100	0	EN 175301/803 excl. female plug
120 mm	120	1	EN 175301/803 Plug Pg 9 (IP65)
150 mm	150	2	EN 175301/803 Plug Pg 11 (IP65)
200 mm	200	3	EN 175301/803 Plug Pg 13.5 (IP65)
250 mm	250	4	APD plug ISO 15170-1
		5	DIN 0627, M12
		6	EN 175301/803 Plug Pg 11 (IP65) with finger screw
		7	EN 175301/803 Plug Pg 9 (IP65 special)
		8	ITT Cannon 4 pins Au
		9	Other
		A	EN 175301/803 GL plug Pg 13.5 (IP65) Sn pins
		B	EN 175301/803 plug Pg 9, 4 pins without earth (IP65)
		C	EN 175301/803 plug Pg 11, 4 pins without earth (IP65)
		D	Hunnel HSK-M/Pg 9 (IP68) Metal
		E	EN 175301/803 plug M16 (IP 65)

¹⁾ Only ø8 x 1 mm tube

Preferred versions

**Ordering standard
MBT 5260)**

Type MBT 5260	Sensor									
				-			-			
Measuring range, sensor element										
-50 – 200 °C	0								0	Tolerance EN 60751 Class B
-30 – 150 °C	1								1	1/3 EN 60751 Class B
Sensing element									2	1/6 EN 60751 Classes B
1 × Pt 100		0							9	Other
1 × Pt 1000 (Class B only)		1								Process connection
2 × Pt 100		2								
Other		9								
Protection Tube, W.nr. 1.4571 (AISI 316 Ti)										
Acid-proof steel, ø8 x 1 mm		0							0	
Solid drilled, tapered, Ø12 to Ø14.5		1							1	G ¼ A ¹⁾
Acid-proof steel ø10 x 2 mm		2							2	G ½ A
Acid-proof steel, ø9.5 x 1 mm		3							3	½ – 14 NPT
Solid drilled, ø4.2		4							4	G ¾ A
Other		9							5	M18 x 1.5
Extension length									6	M24 x 2
None		0							7	G 3/8 A
50 mm		1							8	M14 x 1.5
Other		9							9	Other
Insertion length										Electrical Connections
030 mm					030				1	
040 mm					040				2	
050 mm					050				3	
060 mm					060				4	M12 plug, 4 wire, 4 pins
080 mm					080				5	DIN 72585 Bayonet plug
100 mm					100				7	DIN 43650, Plug Pg9 (IP65) Special
120 mm					120				8	M12 plug, 2 wire, 4 pins
150 mm					150				C	EN175301/803 Pg 11 – 4 pins without earth (IP65)
200 mm					200				9	Other
250 mm					250					

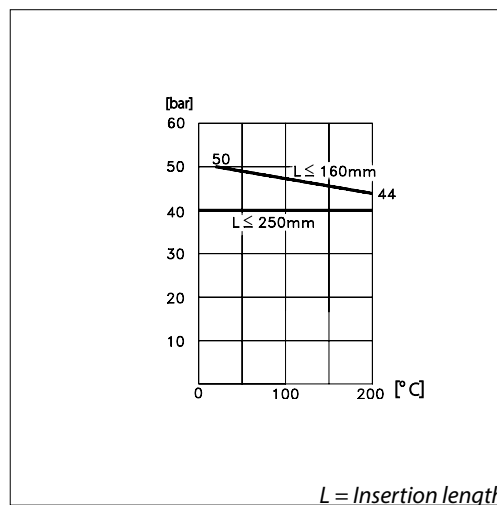
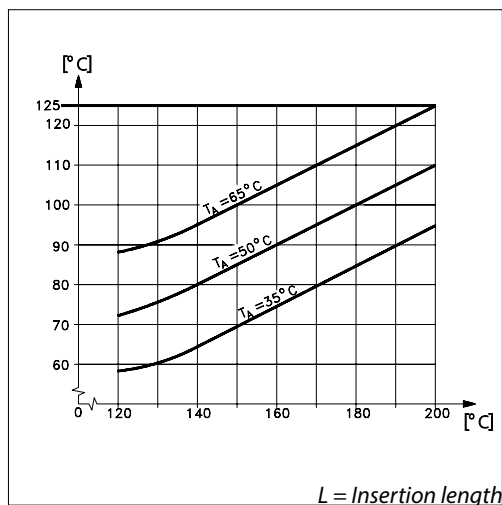
¹⁾ G ¼ A only for ø8 mm protection tube

Data sheet | Temperature Sensor, Types MBT 5250, MBT 5260 and MBT 5252

**Technical data
MBT 5250, MBT 5260**

Max. temperature (Ext. length "None")
Plug EN 175301-803

Max. load on protection tube
according to DIN 43763



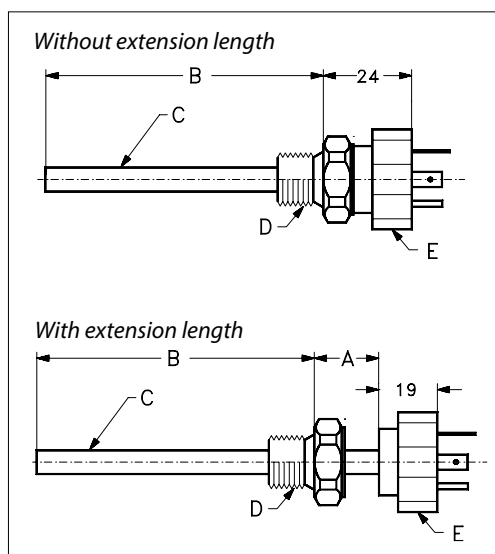
T_m = Media temperature
 T_p = Temperature for electric plug
 T_A = Ambient temperature

Note: for extension length = 50 mm
no limitations up to 200 °C media temperature
and 90 °C ambient temperature

Permissible media velocity	Air	Water
	25 m/s	3 m/s

Process connection	G ¼ A	G ½ A G ¾ A – M18	G ¾ A M24
Max. tightening torque	25 Nm	50 Nm	100 Nm

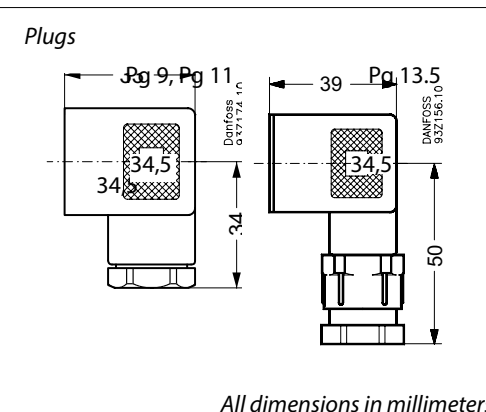
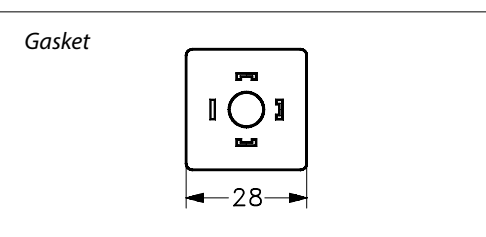
**Dimensions
MBT 5250, MBT 5260**



A = Extension length
B = Insertion length
C = Protection tube
D = Process connection
E = Union

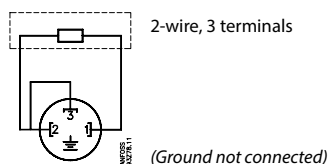
Please note:

- Tightening torque for the mounting screw at the rear end of the electrical connection plug: 25 Ncm
- Tightening torque for the union (position "E"): 17 Nm



Process connection	G ¼	G ½ A – G ½ A G ¾ A – M18	G ¾ A M24
Width across flats	HEX 22	HEX 27	HEX 32

Electrical connections



Data sheet | Temperature Sensor, Types MBT 5250, MBT 5260 and MBT 5252

Technical data MBT 5252

General data MBT 5252

Measuring range	-50 – 200 °C or -50 – 400 °C
Sensing element	Pt 100, Pt 1000
Protection tube	Low temperature: $\varnothing 10 \times 2$ mm
	High temperature: $\varnothing 11 \times 1$ mm

Permissible media velocity	Air	25 m/s.
	Steam	25 m/s.
	Water	3 m/s.

Process connection	G 1/4	G 1/4 A – G 1/2 A G 3/8 A – M18	G 3/4 A M24
Max. tightening torque	25 Nm	50 Nm	100 Nm

Response time

Type	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}
MBT 5252	$\varnothing 10 \times 2$ mm	14 s.	42 s.	110 s.	390 s.
MBT 5252 (HT)	$\varnothing 11 \times 1$ mm	25 s.	80 s.	150 s.	450 s.

Mechanical and environmental specifications

Max. ambient temperature ¹⁾	Sensors without transmitter	90 °C
	Sensors with transmitter	85 °C
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	IP65 according to IEC 60529	
Cable entry B-head	Pg16	
Cable entry BM	Pg 9	
Temperature transmitter MBT 9110	Supply voltage:	8 – 35 V d.c.
	Output:	4 – 20 mA

¹⁾ The temperature of the transmitter is influenced by media temperature, ambient temperature and ventilation in the engine room. If the temperature of the transmitter exceeds the max. allowed temperature the transmitter must be placed in a separated enclosure, as described in the separate sheet for MBT 9110.

Materials

Protection tube in contact with media	W.no. 1.4571 (AISI 316 Ti)
Process connection	W.no. 1.4404 (AISI 316 L)
Extension length	W.no. 1.4571 (AISI 316 Ti)
Union nut	Nickel plated brass
Connection head	Die cast aluminium

Ordering standard

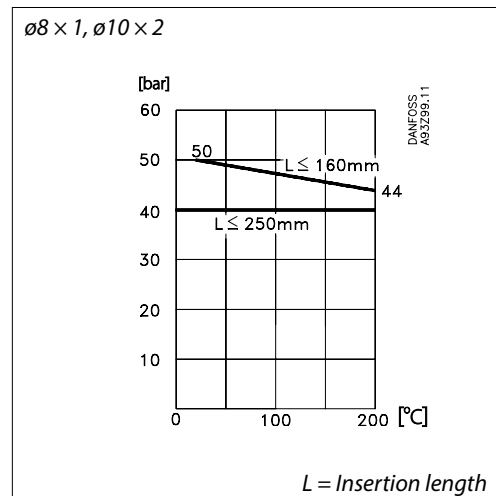
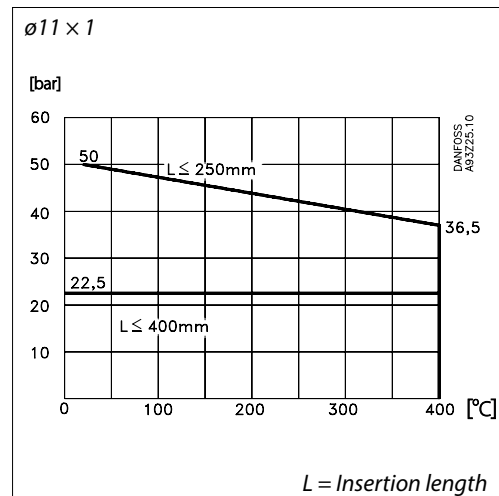
MBT 5252

Sensor										Transmitter								
					-				-					-				
										</								

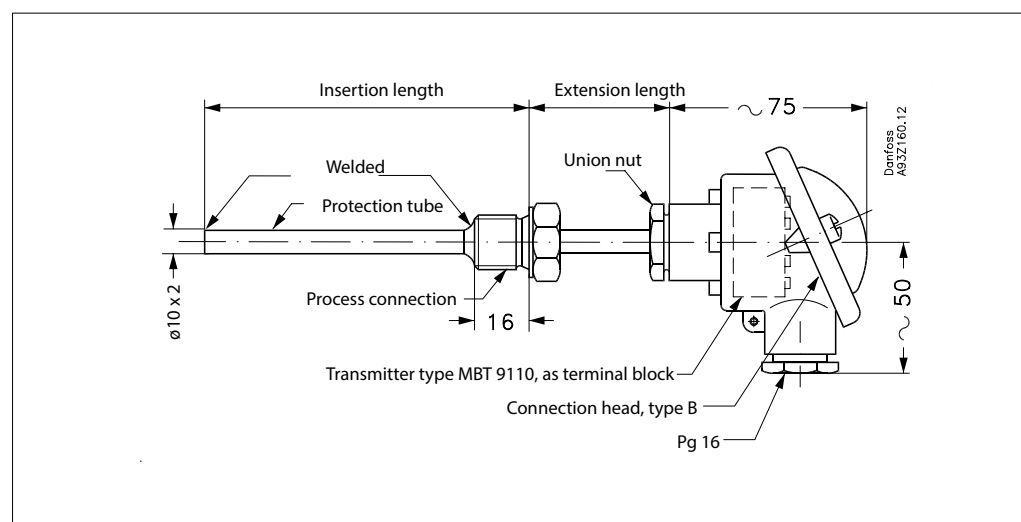
Preferred versions

**Technical data
MBT 5252**

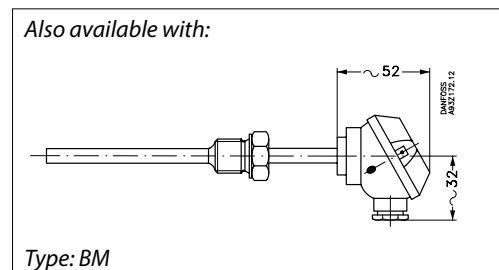
Max. load on protection tube according
to DIN 43763



**Dimensions [mm]
MBT 5252**



Also available with:



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

Electrical connections

With temperature transmitter

	Termocouple	1xTC
	2-Wire	1xPt
	3-Terminals	
	4-Wire	
	3-Wire	
	2-Wire	

Connection

Danfoss
A84217.10.10.02

Without temperature transmitter
1 x Pt100

	2-Wire	1xPt
	3-Terminals	
	4-Wire	
	3-Wire	
	2-Wire	

Connection

Danfoss
A84218.10.10.02

Without temperature transmitter
2 x Pt100

	2-Wire	2xPt
	3-Terminals	
	4-Wire	
	3-Wire	
	2-Wire	

Connection

Danfoss
A84214.11.10.02

