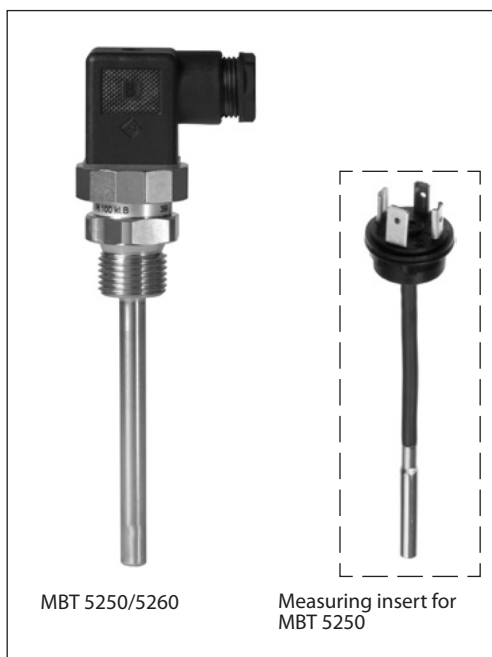


# Temperature sensors types MBT 5250, 5260 and 5252

## Features



- For temperature measurement and regulation in piping systems and refrigeration plants on ships – or points where reliable, robust and accurate equipment is required
- Gaseous or liquid media, e.g. air, gas, vapour, water or oil.
- Up to +200°C media temperatures
- Pt100 or Pt1000 resistance element
- Can be used with 2- or 3-wire connections
- Gold plated male and female connector
- MBT 5250 with interchangeable measuring insert
- MBT 5260 with fixed measuring insert
- Approvals
  - Lloyds Register of Shipping, LR
  - Germanischer Lloyd, GL
  - Bureau Veritas, BV
  - Det Norske Veritas, DNV
  - Nippon Kaiji Kyokai, ClassNK
  - Registro Italiano Navale, RINA
  - American Bureau of Shipping, ABS
  - Korean Register of Shipping, KRS

## Ordering MBT 5250 standard programme

- Measuring range: -50 to +200°C
- Resistance value: 1 × Pt100
- Protection tube: Ø8 × 1 mm, W. No. 1.4571 (AISI 316 Ti)
- Extension length: None
- Tolerance: EN 60751, Class B

Insertion length [mm]	Process connection	Electrical connection		
		PG 9	PG 11	PG 13.5
		Code no.	Code no.	Code no.
50	G 1/2 A	084Z8011	084Z8036	
100	G 1/2 A	084Z8012	084Z8039	
150	G 1/2 A	084Z8010	084Z8008	
200	G 1/2 A	084Z8022	084Z8043	
50	G 3/4 A		084Z8037	084Z8058
100	G 3/4 A		084Z8006	084Z8013
150	G 3/4 A		084Z8041	084Z8014
200	G 3/4 A		084Z8044	084Z8218
50	1/2 – 14 NPT		084Z8066	
80	1/2 – 14 NPT		084Z8019	
100	1/2 – 14 NPT		084Z8067	
150	1/2 – 14 NPT		084Z8065	
200	1/2 – 14 NPT		084Z8068	

Other specifications on request

**Ordering MBT 5260 Standard programme**

- Measuring range: -50 to +200°C
- Resistance value: 1 × Pt100
- Protection tube: Ø8 × 1 mm, W. No. 1.4571 (AISI 316 Ti)
- Extension length: None
- Tolerance: EN 60751, Class B

Insertion length [mm]	Process connection	Electrical connection	
		PG 9	PG 11
		Code no.	Code no.
50	G 1/2 A	<b>084Z8033</b>	<b>084Z8229</b>
100	G 1/2 A	<b>084Z8021</b>	<b>084Z8132</b>
150	G 1/2 A	<b>084Z8034</b>	<b>084Z8096</b>
200	G 1/2 A		<b>084Z8238</b>

Other specifications on request

**Technical data**

*Response times*

Type	Protection tube	Indicative response times according to VDI/VDE 3522			
		Water 0.2 m/s		Air 1 m/s	
		t <sub>0.5</sub>	t <sub>0.9</sub>	t <sub>0.5</sub>	t <sub>0.9</sub>
<b>MBT 5250 with interchangeable measuring insert</b>	Ø8 × 1 mm	9 s	33 s	95 s	310 s
	Ø8 × 1 mm, filled with heat conductive compound 1)	3 s	10 s	90 s	300 s
	Ø10 × 2 mm	12 s	42 s	111 s	391 s
	Ø10 × 2 mm, filled with heat conductive compound 1)	4 s	14 s	96 s	323 s
	Solid drilled	12 s	36 s	220 s	900 s
	Solid drilled, filled with heat conductive compound 1)	5 s	15 s	210 s	850 s
<b>MBT 5260 with fixed meas. ins.</b>	Ø8 × 1 mm	2 s	6 s	82 s	260 s
	Solid drilled	4 s	13 s	225 s	850 s

1) The sensors are supplied **without** heat conductive compound

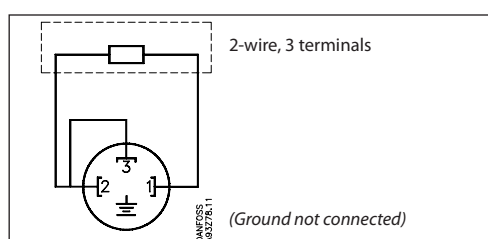
*Materials*

Protection tube in contact with media	W.no. 1.4571 (AISI 316 Ti)
Process connection	W.no. 1.4571 (AISI 316 Ti)
Extension length	W.no. 1.4571 (AISI 316 Ti)
Union	Nickel plated brass
Gasket	Silicone
Plug DIN 43650	PA 6.6 (max 125°C)

*Mechanical and environmental specifications*

Sensor tolerance	EN 60751 Class B: ± (0.3 + 0.005 × t)	t = temperature of medium, numerical value
	1/3 EN 60751 Class B: ± (0.1 + 0.005 × t)	
	1/6 EN 60751 Class B: ± (0.05 + 0.005 × t)	
Vibration stability	Shock: 100 g in 6 ms Vibrations: 4g sine function 5 - 200 Hz, measured acc. to IEC 68-2-6	
Enclosure	IP 65 according to IEC 529	
Cable entry DIN 43650	PG 9, PG 11 or PG 13.5	

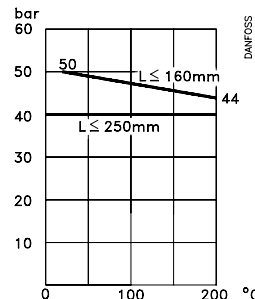
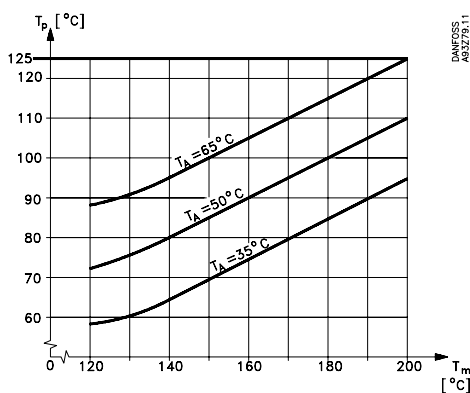
**Electrical connections**



Technical data

Max. temperature (Ext. length "None")  
Plug DIN 43650

Max. load on protection tube ( $\varnothing 8 \times 1$ ,  
 $\varnothing 10 \times 2$ ) acc. to DIN 43763



L = Insertion length

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

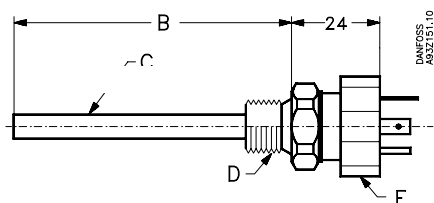
Note: for extension length = 50 mm  
no limitations up to 200 °C media  
temperature and 90 °C ambient  
temperature

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

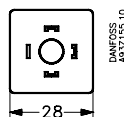
Process connection	G 1/4 A – G 1/2 A G 3/8 A – M18	G 3/4 A M24
Max. tightening torque	50 Nm	100 Nm

Dimensions

Without extension length

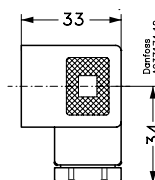


Gasket

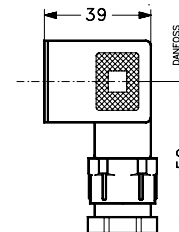


Plugs

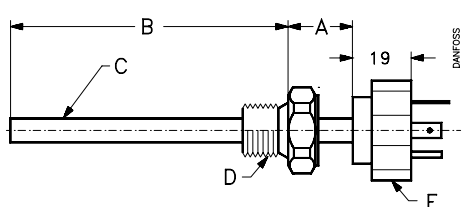
PG 9, PG 11



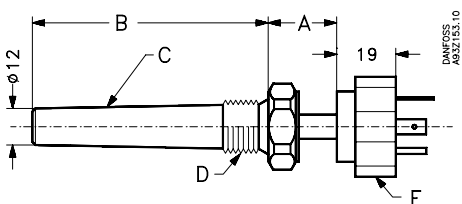
PG 13.5



With extension length



Solid drilled with extension length



A = Extension length  
B = Insertion length  
C = Protection tube  
D = Process connection 1)  
E = Union

All dimensions in millimeters

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

1)	Process connection	Width across flats
	G 1/4 A	HEX 22
	G 1/2 A, 1/2 - 14 NPT, M18 x 1.5, G 3/8 A	HEX 27
	M24 x 2, G 3/4 A	HEX 32

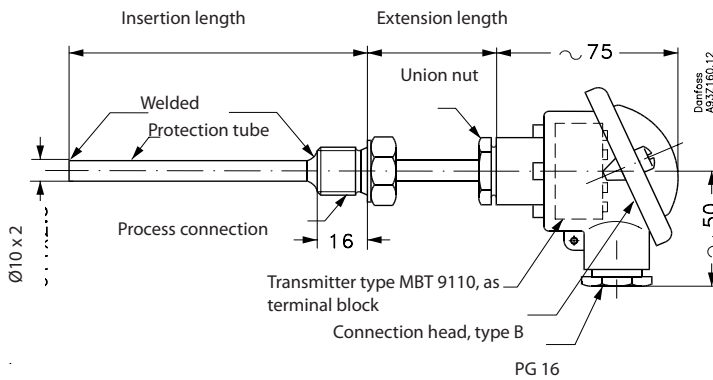
**Features and application**  
**MBT 5252**

- 1) MBT 5252 Measuring insert type MBT 152
- 2) with terminal block
- 3) with temperature transmitter

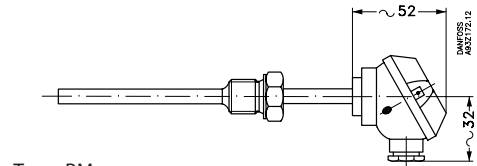


- For measuring and regulating temperature in piping systems and refrigeration plant on ships - or at all points where reliable, robust and accurate equipment is required
- Gaseous or liquid media, e.g. air, gas, vapour, water or oil
- Up to +400°C media temperatures
- Pt100/ Pt1000 resistance element
- Available with built-in transmitter
- Approvals
  - Lloyds Register of Shipping, LR
  - Germanischer Lloyd, GL
  - Bureau Veritas, BV
  - Det Norske Veritas, DNV
  - Nippon Kaiji Kyokai, ClassNK
  - Registro Italiano Navale, RINA
  - American Bureau of Shipping, ABS
  - Korean Register of Shipping, KRS

**Dimensions**



Also available with:



Type: BM

Process connection	Width across flats
G 1/2 A, 1/2-14 NPT	HEX 27
G 3/4 A	HEX 32

All dimensions in millimeters

**Ordering MBT 5252 Standard programme**

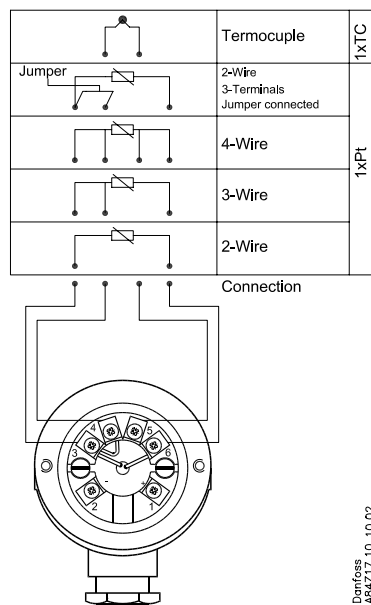
- Extension length: 50 mm
- Element: Pt 100, EN 60751, Class B
- Connection head: B-head
- Protection tube: Low temperature range: Ø10 x 2 mm  
High temperature range: Ø11 x 1 mm

Temperature range [°C]	Insertion length [mm]	Connection	Transmitter output	Transmitter setting	Process connection		
					G ½A	G 3/4 A	½-14 NPT
					Code no.	Code no.	Code no.
-50 to 200	50	2-wire, 3 terminals	None	None	084Z8210	084Z8230	084Z6165
	80				084Z6140	084Z6164	084Z6166
	100				<b>084Z8211<sup>1)</sup></b>	<b>084Z8231<sup>1)</sup></b>	<b>084Z6167<sup>1)</sup></b>
	150				<b>084Z8212<sup>1)</sup></b>	<b>084Z8232<sup>1)</sup></b>	<b>084Z6168<sup>1)</sup></b>
	200				<b>084Z8213<sup>1)</sup></b>	<b>084Z8233<sup>1)</sup></b>	<b>084Z6169<sup>1)</sup></b>
	250				084Z6139	084Z6141	084Z6170
	50	2-wire	4 - 20 mA, standard	0 to +100°C	084Z8214	084Z8234	084Z6171
	80				084Z6142	084Z6144	084Z6172
	100				<b>084Z8215<sup>1)</sup></b>	<b>084Z8235<sup>1)</sup></b>	<b>084Z6173<sup>1)</sup></b>
	150				<b>084Z8216<sup>1)</sup></b>	<b>084Z8236<sup>1)</sup></b>	<b>084Z6174<sup>1)</sup></b>
	200				<b>084Z8217<sup>1)</sup></b>	<b>084Z8237<sup>1)</sup></b>	<b>084Z6175<sup>1)</sup></b>
	250				084Z6143	084Z6145	084Z6176

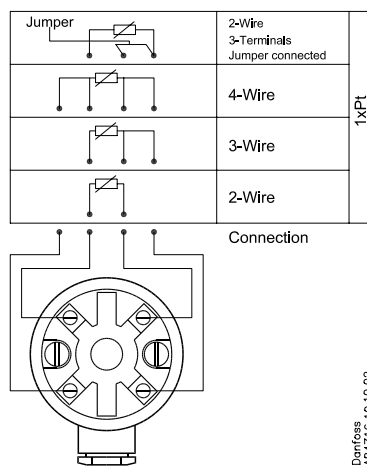
<sup>1)</sup> Preferred versions  
400° C version is available on request

**Electrical connection**

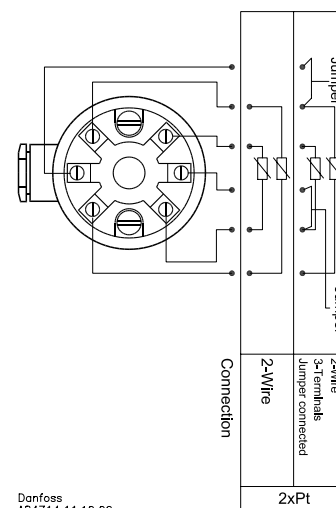
With temperature transmitter



Without temperature transmitter  
1 x Pt100



Without temperature transmitter  
2 x Pt100



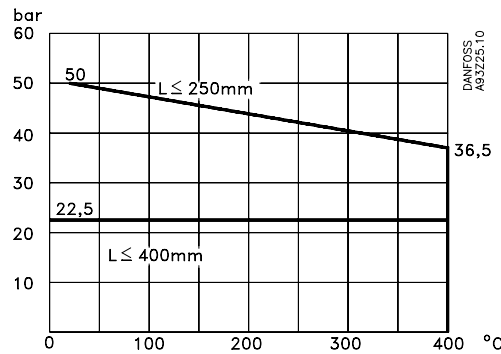
Technical data

Weight

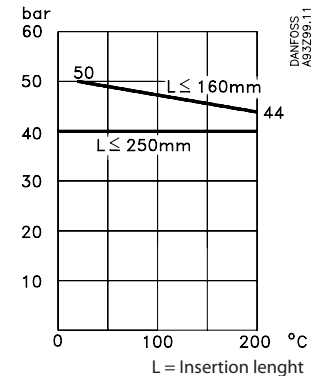
Insertion length [mm]	Electrical connection	Transmitter setting	Process connection		
			G 1/2 A	G 3/4 A	1/2-14 NPT
			Weight [g]	Weight [g]	Weight [g]
50	2-wire, 3 terminals	Sensors are without transmitter	430	480	430
100			460	510	460
150			490	540	490
200			520	570	520
250			550	600	550
50	4 - 20 mA, 2-wire universal temperature transmitter	0 -> +100°C	420	470	420
100			450	500	450
150			480	530	480
200			510	560	510
250			540	590	540

Max. load on protection tube according to DIN 43763

Ø 11 × 1, Ø 15 × 3



Ø 8 × 1, Ø 10 × 2



Protection tube		Ø 10 × 2
Max. tightening torque G 1/4 - M18		50 Nm
Permissible media velocity	Air	25 m/s
	Steam	25 m/s
	Water	3 m/s

Materials

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

Mechanical and environmental specifications

Max. temperature <sup>1)</sup>	Ambient: 90°C for sensors without temperature transmitter	
	Transmitter: 85°C for sensors with temperature transmitter	
Sensor tolerance	EN 60751 Class B: ±(0.3 + 0.005 × t) 1/3 EN 60751 Class B: ±(0.1 + 0.005 × t) 1/6 EN 60751 Class B: ±(0.05 + 0.005 × t)	t = temperature of medium, numerical value
Vibration stability	Shock: 100 g in 6 ms	
	Vibrations: 4g sine function 2 - 100 Hz, measured acc. to IEC 68-2-6	
Enclosure	IP 65 according to IEC 529	
Cable entry B-head/screw-cap	PG 16	
Cable entry BM	PG 9	
Temperature transmitter MBT 9110	Supply voltage:	8 - 35V d.c.
	Output:	4 - 20 mA

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

**MBT programme**

Danfoss offers a complete range of MBT temperature sensors for all types of applications. The range consists of exhaust gas sensors, universal sensors, bearing sensors, cargo sensors, stern tube sensors as well as general purpose sensors.

**General features**

- Fixed or replaceable measuring insert
- Pt100, Pt1000 resistance element or thermocouple
- Wide temperature range
  - up to +800°C with thermocouple
  - up to +600°C with resistance element

**Further information**

Further information about our temperature sensors type MBT can be found in separate data sheets, which can be ordered by contacting your local Danfoss representative.

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