Data sheet



Temperature sensor

MBT 5250 / MBT 5260 / MBT 5252

Heavy-duty marine approved temperature sensor

Description

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 & benefits

- 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)

Ordering

Product code numbers

Ordering for MBT 5250

Type MBT 5250

Sensor

				–				–			

Measuring range, sensor element

-50 – 200 °C	0

Sensing element

1 × Pt 100	0
1 × Pt 1000 (Class B only)	1
2 × Pt 100	2
2 × Pt 1000 (Class B only)	3
1 x NTC 2055 ± 1% Ohm	4

Protection Tube, W.nr. 1.4571 (AISI 316 Ti)

Acid-proof steel, ø8 × 1mm	0
Solid drilled, tapered, ø12 to ø14.5	1
Acid-proof steel, ø10 x 2 mm	2
Acid-proof steel, ø10 x 2 mm	3

Extension length

None	0
50 mm	1

Insertion length

050 mm	050
060 mm	060
080 mm	080
100 mm	100
120 mm	120
150 mm	150
200 mm	200
250 mm	250

Tolerance

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%

Process connection

0	None
1	G 1/4 A[1)]
2	G 1/2 A
3	1/2 – 14 NPT
4	G ¾ A
5	M18 × 1.5
6	M24 x 2
7	G 3/8 A
8	M33 x 2
9	1/4 – 18 NPT
A	M22 x 1.5
B	M16 x 1.5
C	M14 x 1.5
D	Adjustable fitting, Brass G 1/4 A[1)]
E	3/4 – 16 UNF
F	1/4 – 18 NPT
G	M20 x 1.5

Electrical Connections

0	EN 175301/803 excl. female plug
1	EN 175301/803 Plug Pg 9 (IP65)
2	EN 175301/803 Plug Pg 11 (IP65)
3	EN 175301/803 Plug Pg 13.5 (IP65)
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)

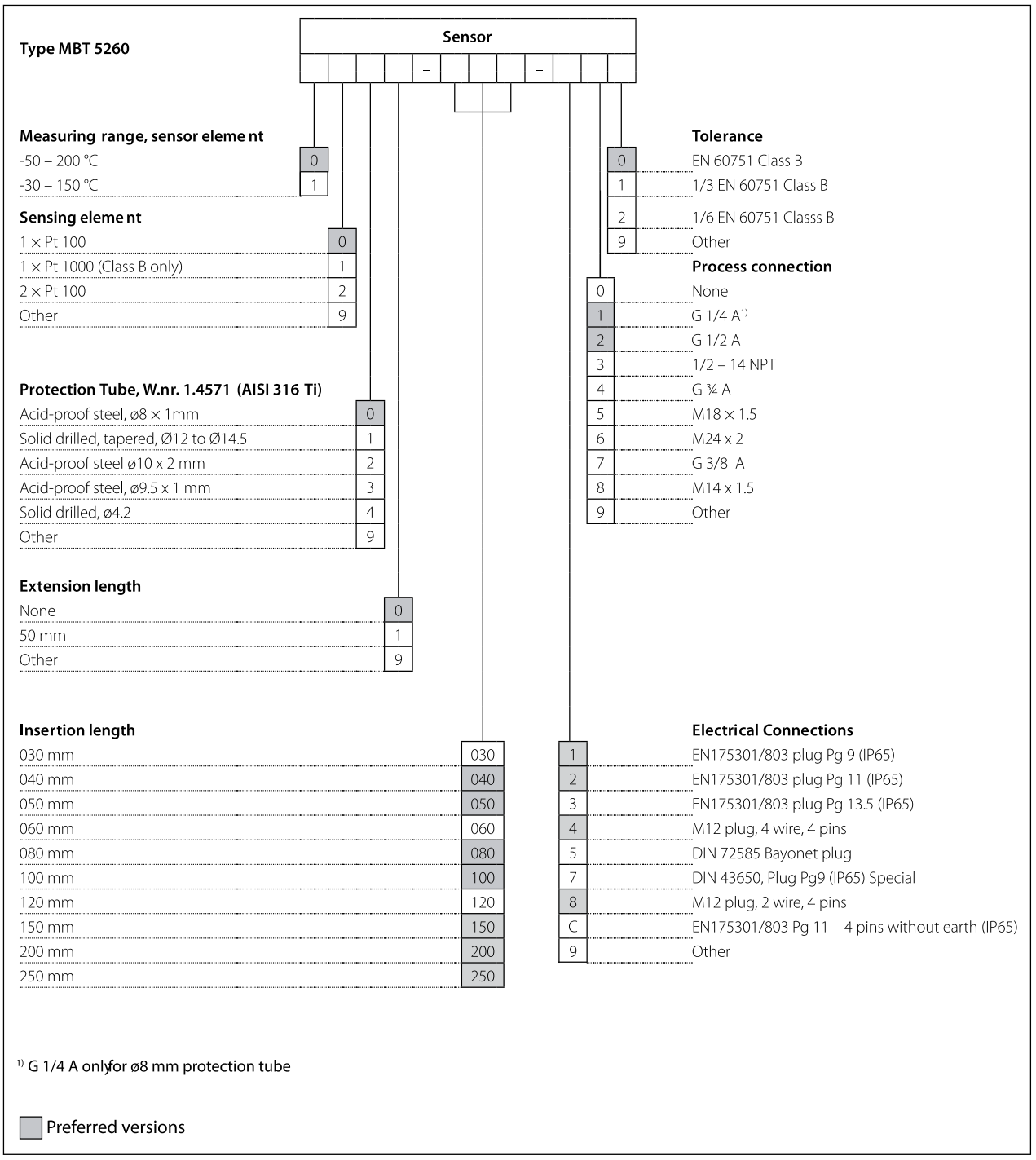
[1)] Only ø8 x 1 mm tube

Preferred versions

Note: Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information or request on other versions.

Note: For a detailed overview of our existing code numbers, please visit the Danfoss Product Store at store.danfoss.com. You can use the filtering options to find the right sensor for your specific needs.

Ordering for MBT 5260



Note: Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information or request on other versions.

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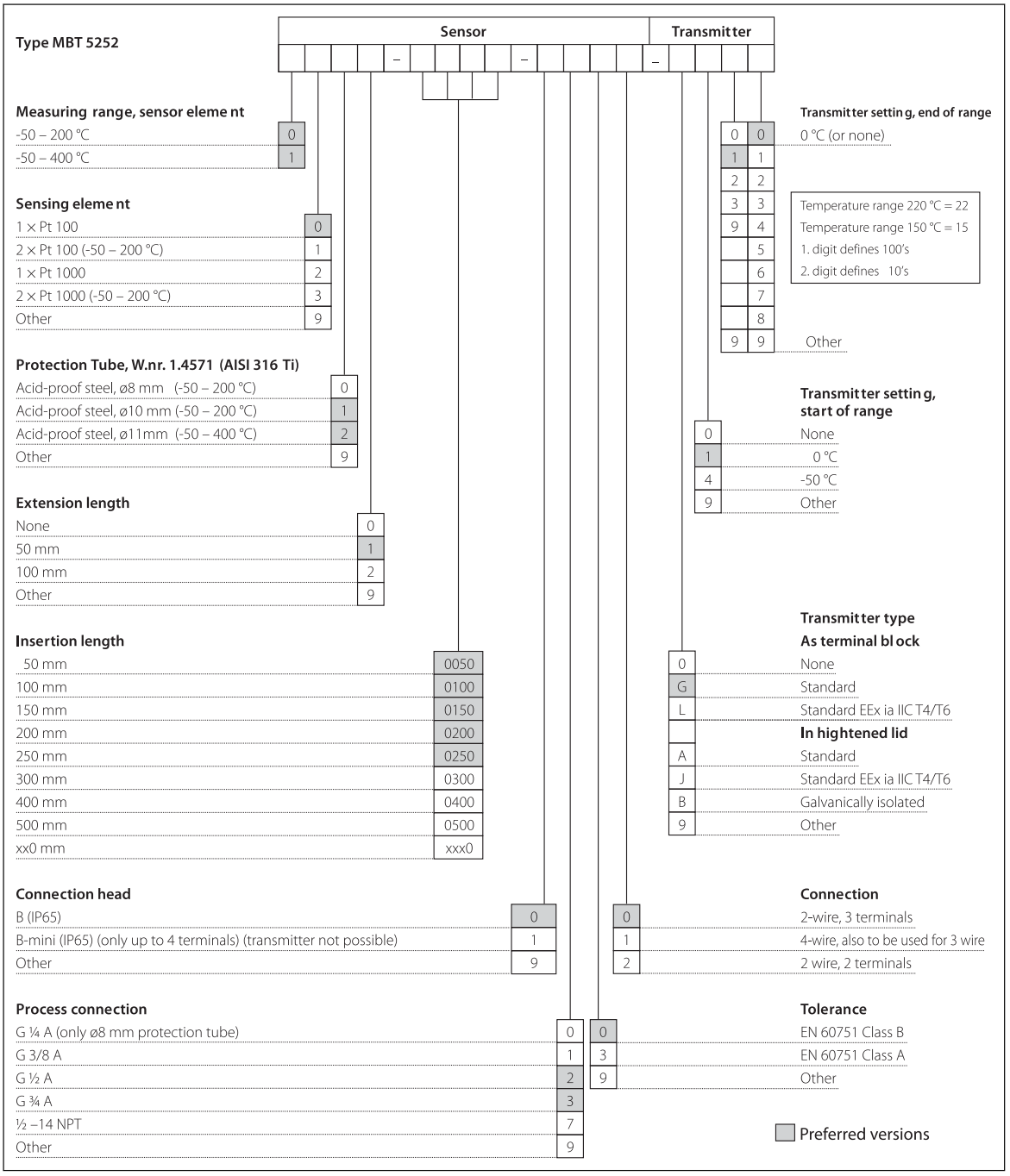
Ordering for MBT 5252



Note: Non-standard build-up combinations may be selected. However, minimum order quantities may apply. Please contact your local Danfoss office for further information or request on other versions.

Note: For a detailed overview of our existing code numbers, please visit the Danfoss Product Store at store.danfoss.com. You can use the filtering options to find the right sensor for your specific needs.

Product details

General data

MBT 5250, MBT 5260

Technical data

Features	Description	
Measuring range	-50 – 200 °C	
Sensing element	Pt 100, Pt 1000	
Protection tube	ø8 × 1 mm	
Permissible media velocity	Air	25 m/s
	Water	3 m/s

Connection

Process connection	G ¼ A	G ¼ A G ⅜ A – M18	G ¾ A M24
Max. tightening torque	25 Nm	50 Nm	100 Nm

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

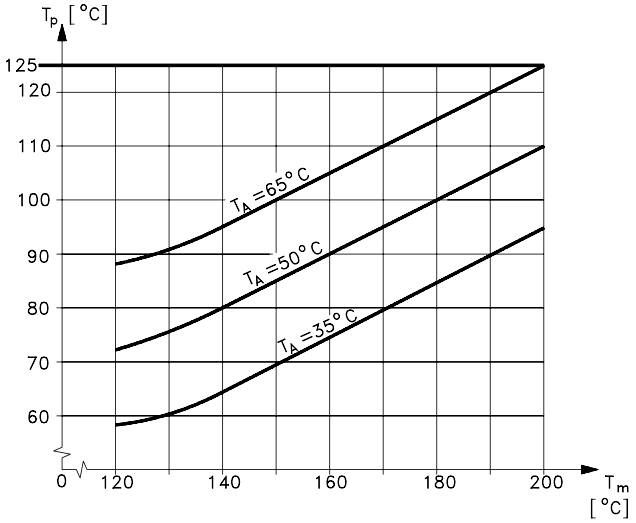
Features	Description
Protection tube in contact with media	W.no. 1.4571 (AISI 316 Ti)
Process connection	W.no. 1.4404 (AISI 316 L)
Extension length	W.no. 1.4571 (AISI 316 Ti)
Union	Nickel plated brass
Gasket	Silicone
Plug EN 175301-803	PA 6.6 (max 125 °C)

Mechanical and environmental specifications

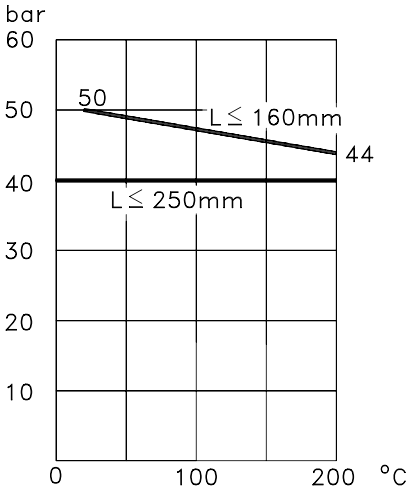
Features	Description	
Sensor tolerances	EN 60751 Class B: ± (0.3 + 0.005 × t)	t = temperature of medium, numerical value
Vibration stability	Shock:	100 g / 6 ms
	Vibrations:	4 g sine function 5 – 200 Hz, measured acc. to IEC 60068-2-6
Enclosure	IP65 according to IEC 60529	
Cable entry EN 175301-803	Pg 9, Pg 11 or Pg 13.5	

Max. temperature and load

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



Max. load on protection tube (ø8 × 1, ø10 × 2) acc. to EN 175301-803



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.

MBT 5252

Technical data

Features	Description	
Measuring range	-50 – 200 °C or -50 – 400 °C	
Sensing element	Pt 100, Pt 1000	
Protection tube	Low temperature: ø10 × 2 mm High temperature: ø11 × 1 mm	
Permissible media velocity	Air	25 m/s
	Stream	25 m/s
	Water	3 m/s

Connection

Process connection	G ¼	G ¼ A – G ½ A G ⅜ A – M18	G ¾ A M24
Max. tightening torque	25 Nm	50 Nm	100 Nm

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 5252	ø10 × 2 mm	14 s	42 s	110 s	390 s
MBT 5252 (HT)	ø11 × 1 mm	25 s	80 s	150 s	450 s

Materials

Features	Description
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
Connection head	Die cast aluminium

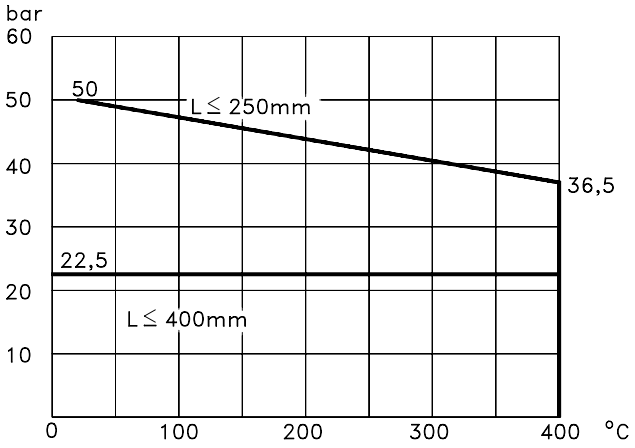
Mechanical and environmental specifications

Features		Description
Max. ambient temperature[1]	Sensors without transmitter	90 °C
	Sensors with transmitter	85 °C
Sensor tolerance	EN 60751 Class B: ± (0.3 + 0.005 × 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 DC
	Output:	4 – 20 mA

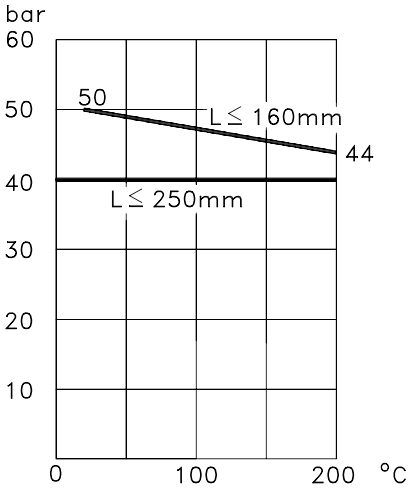
[1] The temperature of the transmitter is influenced by media temperature, ambient temperature and ventilation in the engine room. If the temperature of the transmitter exceeds the max. allowed temperature the transmitter must be data placed in a separated enclosure, as described in the separate sheet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

Max. load on protection tube according to DIN 43763

ø11 × 1



ø8 × 1, ø10 × 2

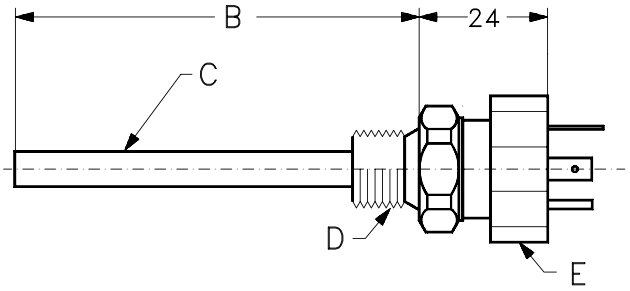


L	Insertion length

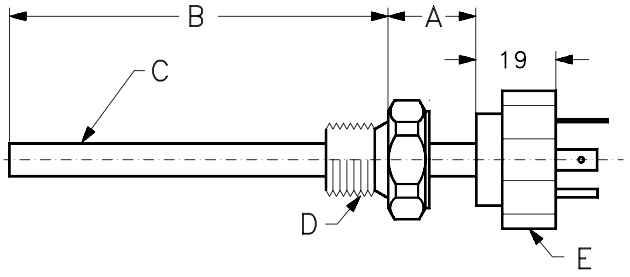
Dimensions
MBT 5250, MBT 5260

Extension length

Without extension length



With extension length



Note: Dimensions are in mm, unless stated otherwise.

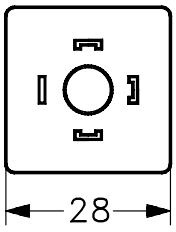
A	Extension length
B	Insertion length
C	Protection tube

D	Process connection
E	Union

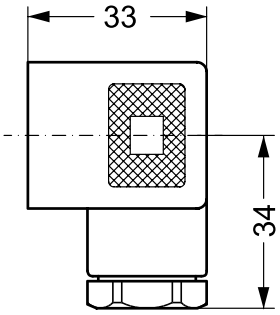
Note:
- Tightening torque for the mounting screw at the rear end of the electrical connection plug: 25 Ncm
- Tightening torque for the union (position "E"): 17 Nm

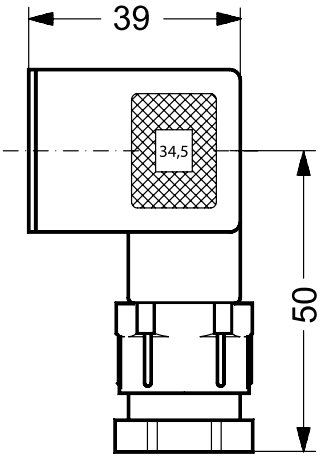
Gasket and Plugs

Gasket



Plugs





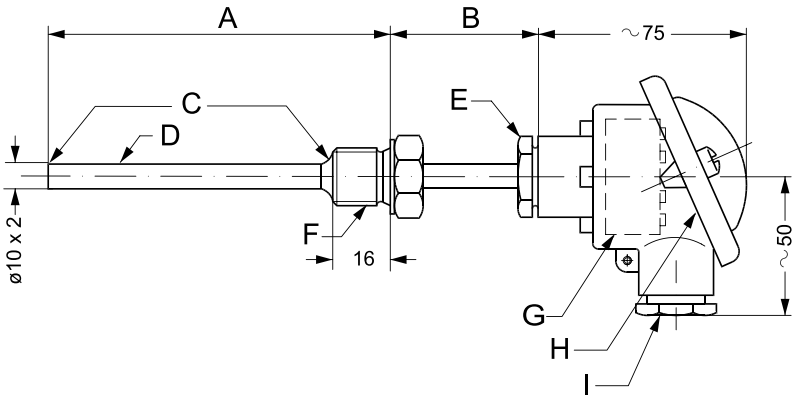
Note: Dimensions are in mm, unless stated otherwise.

Connection

Process connection	**G ¼**	**G ¼ A – G ½ A G ⅜ A – M18**	**G ¾ A M24**
Width across flats	HEX 22	HEX 27	HEX 32

MBT 5252

Dimension and parts



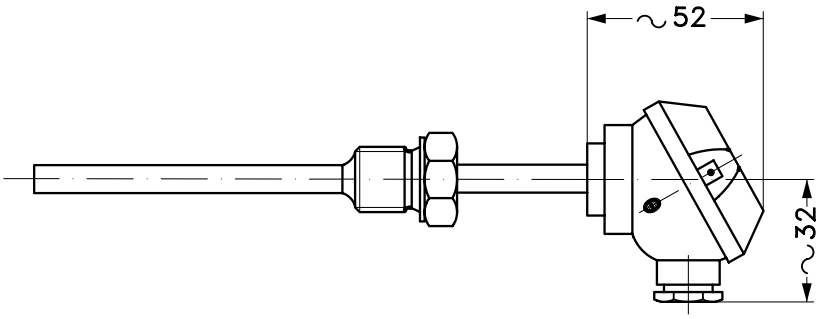
Note: Dimensions are in mm, unless stated otherwise.

A	Insertion length
B	Extension length
C	Welded

D	Protection tube
E	Union nut
F	Process connection

G	Transmitter type MBT 9110, as terminal block
H	Connection head, type B
I	Pg 16

Also available with:
Type BM



Note: Dimensions are in mm, unless stated otherwise.

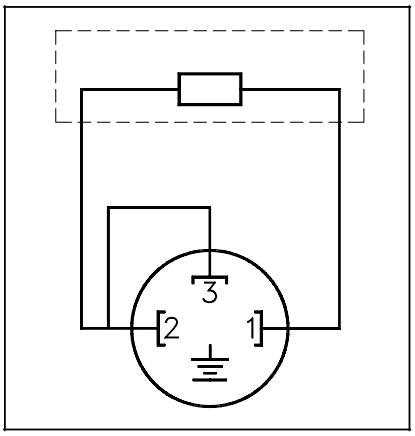
Connection

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

Connections

Electrical connection

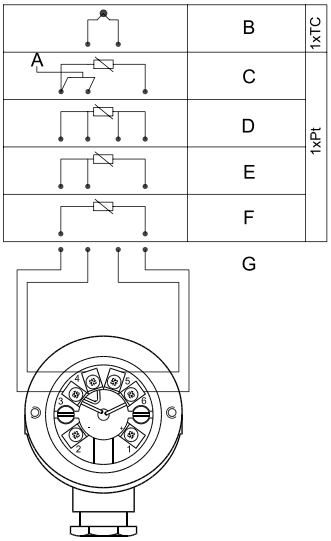
MBT 5250, MBT 5260



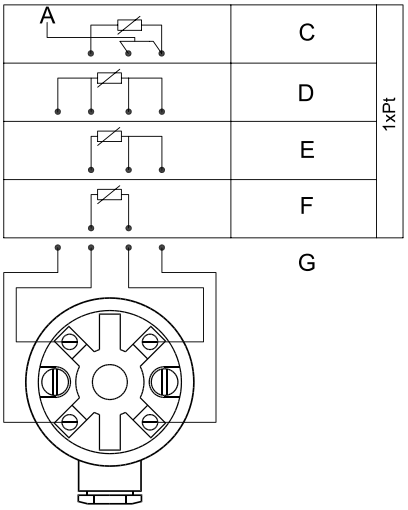
2-wire, 3 terminals (Ground not connected)

MBT 5252

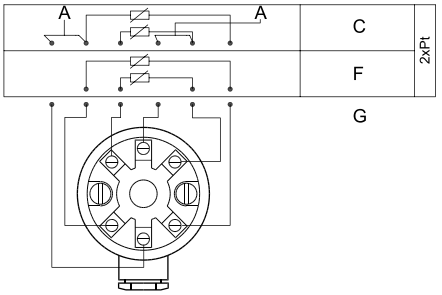
With temperature transmitter



Without temperature transmitter 1 x Pt100



Without temperature transmitter 2 x Pt100



A	Jumper
B	Termocuple
C	2-Wire 3-Terminals Jumper connected

D	4-Wire
E	3-Wire
F	2-Wire
G	Connection

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The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

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Pressure Safety Certificate	TSSA CRN 0F22934.52367890YTN	TSSA - Technical Standards & Safety Authority	CRN
Marine Certificate	BV 06839-F0 BV	BV - Bureau Veritas	Marine
Marine Certificate	ABS 22-2216869-PDA	ABS - American Bureau of Shipping	Marine
Marine Certificate	NKK TA22320M	ClassNK - The Japanese Marine Association	
EU-UK Declaration	Danfoss EU-UK 084R1019.04	Danfoss	EMC, EU RoHS, UK RoHS
Manufacturer's Declaration	Simple Apparatus	Danfoss	Simples apparatus
Marine Certificate	KR DLN 34014-AE002	KR - Korean Register of Shipping	Marine
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