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Data Sheet

Temperature sensor Types **MBT 5250**, **MBT 5260** and **MBT 5252**

Heavy-duty marine approved temperature sensor.



MBT 5250
MBT 5260



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)

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Product specification

Technical data

MBT 5250, MBT 5260

Table 1: General 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

Table 2: 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

Table 3: 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

Table 4: Mechanical and environmental specifications

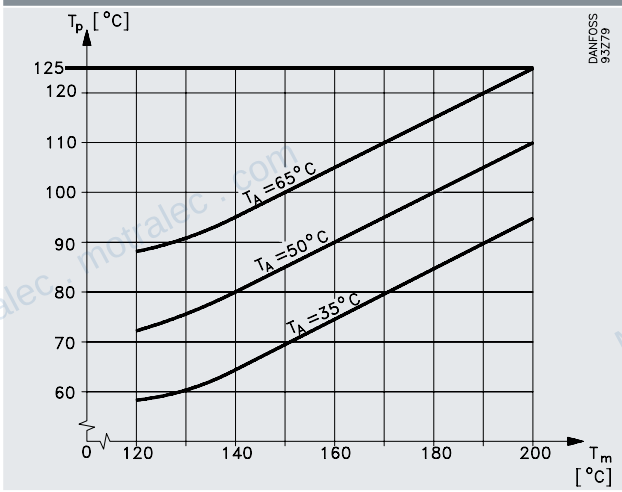
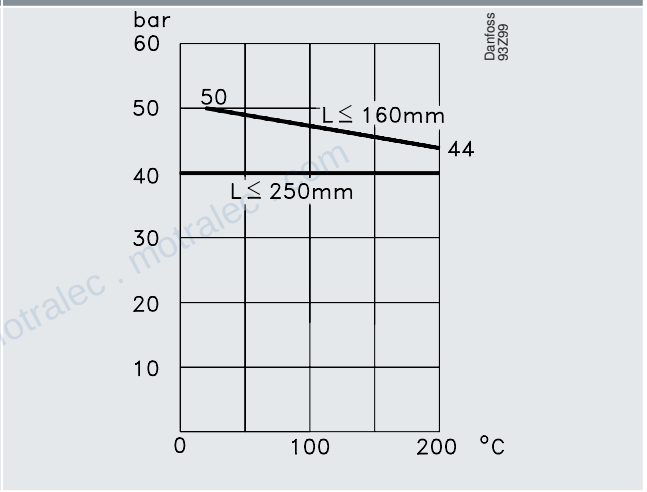
Features	Description	
Sensor tolerances	EN 60751 Class B: ± (0.3 + 0.005 × t)	t = temperature of medium, numerical value
Vibration stability	Shock:	100 g / 6 ms
	Vibrations:	4 g sine function 5 – 200 Hz, measured acc. to IEC 60068-2-6
Enclosure	IP65 according to IEC 60529	
Cable entry EN 175301-803	Pg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

Table 5: 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)

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Table 6: 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_p**	Temperature for electric plug
T_m	Media temperature	**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

Table 7: General 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

Table 8: 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

Table 9: 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

Table 10: 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

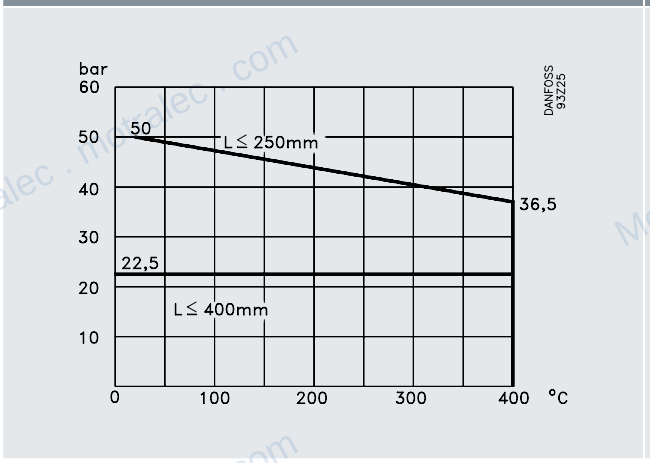
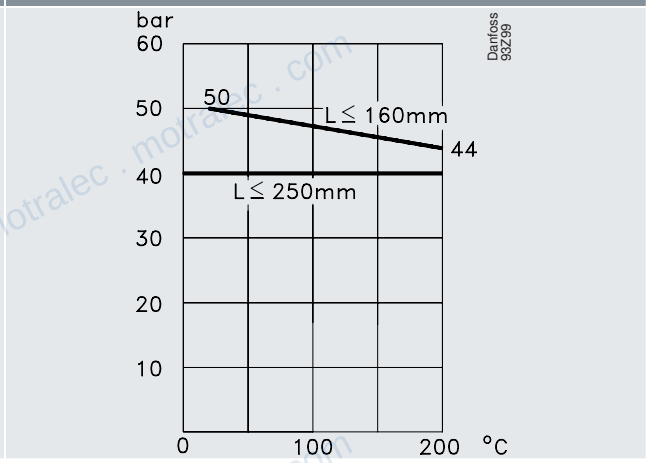
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Table 11: Mechanical and environmental specifications

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.

Table 12: Max. load on protection tube according to DIN 43763

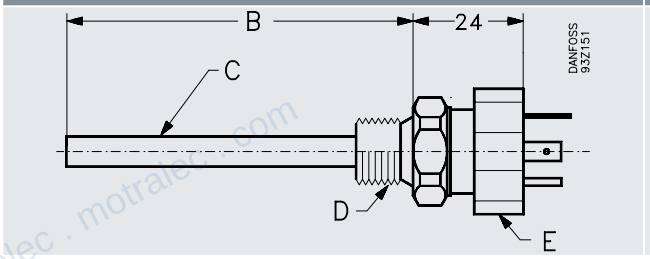
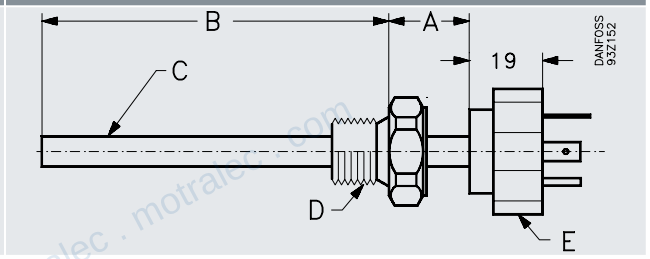
ø11 × 1	ø8 × 1, ø10 × 2
	

L	Insertion length

Dimensions

MBT 5250, MBT 5260

Table 13: Extension length

Without extension length	With extension length
	

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

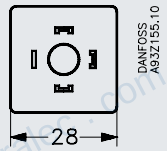
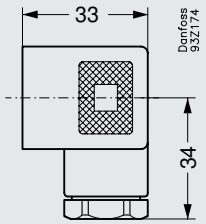
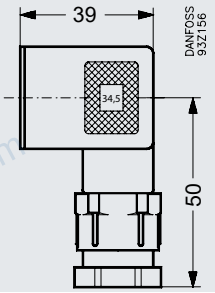
NOTE:

- 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

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Table 14: Gasket and Plugs

Gasket	Plugs	
		

Units: mm

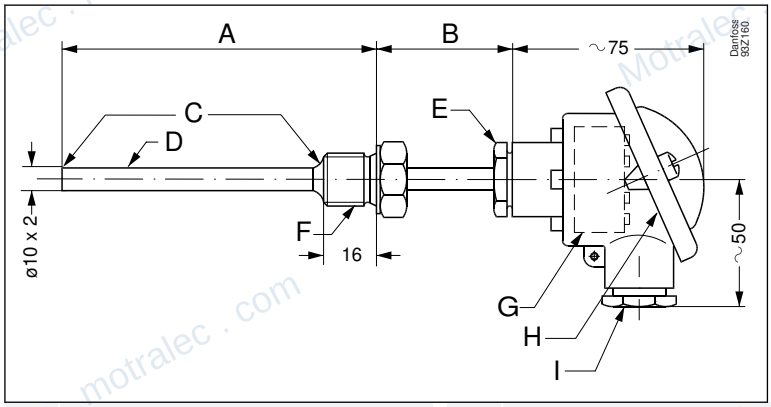
Table 15: Connection

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

Unit: mm

Figure 1: Dimension and parts



A	Insertion length	**D**	Protection tube	**G**	Transmitter type MBT 9110, as terminal block
B	Extension length	**E**	Union nut	**H**	Connection head, type B
C	Welded	**F**	Process connection	**I**	Pg 16

Also available with:

Figure 2: Type BM

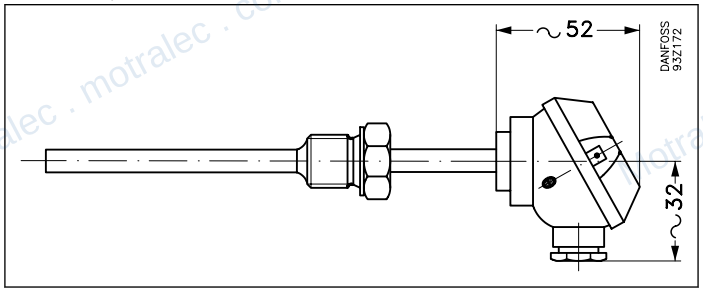


Table 16: Connection

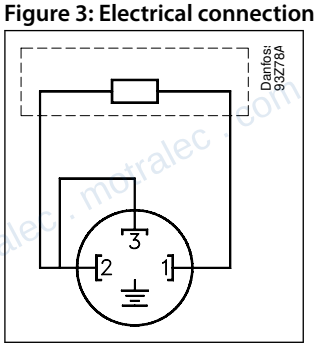
Process connection	G ½ A, ½–14 NPT	G ¾ A
Width across flats	HEX 27	HEX 32

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Electrical connection

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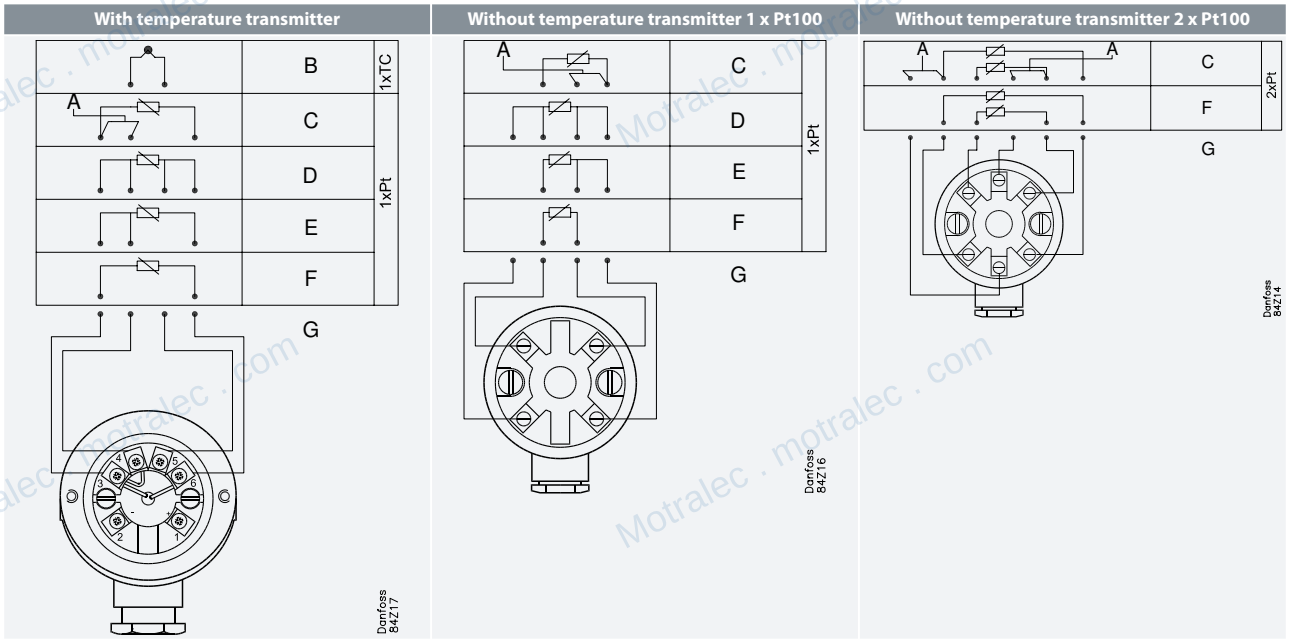
Figure 3: Electrical connection



2-wire, 3 terminals
(Ground not connected)

MBT 5252

Table 17: Electrical connection



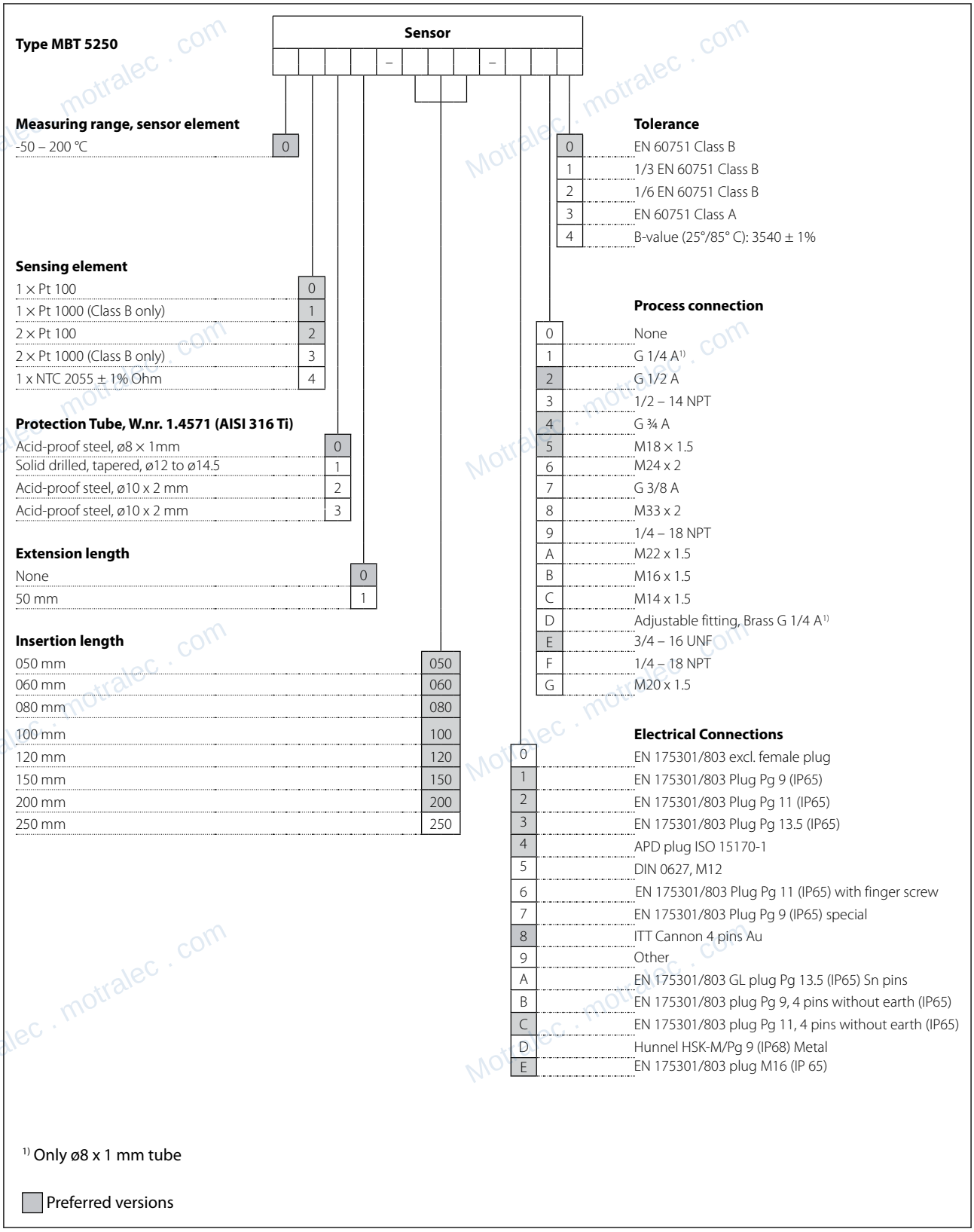
A	Jumper	**D**	4-Wire
B	Termocuple	**E**	3-Wire
C	2-Wire 3-Terminals Jumper connected	**F**	2-Wire
		G	Connection

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Ordering

MBT 5250

Figure 4: Ordering for MBT 5250



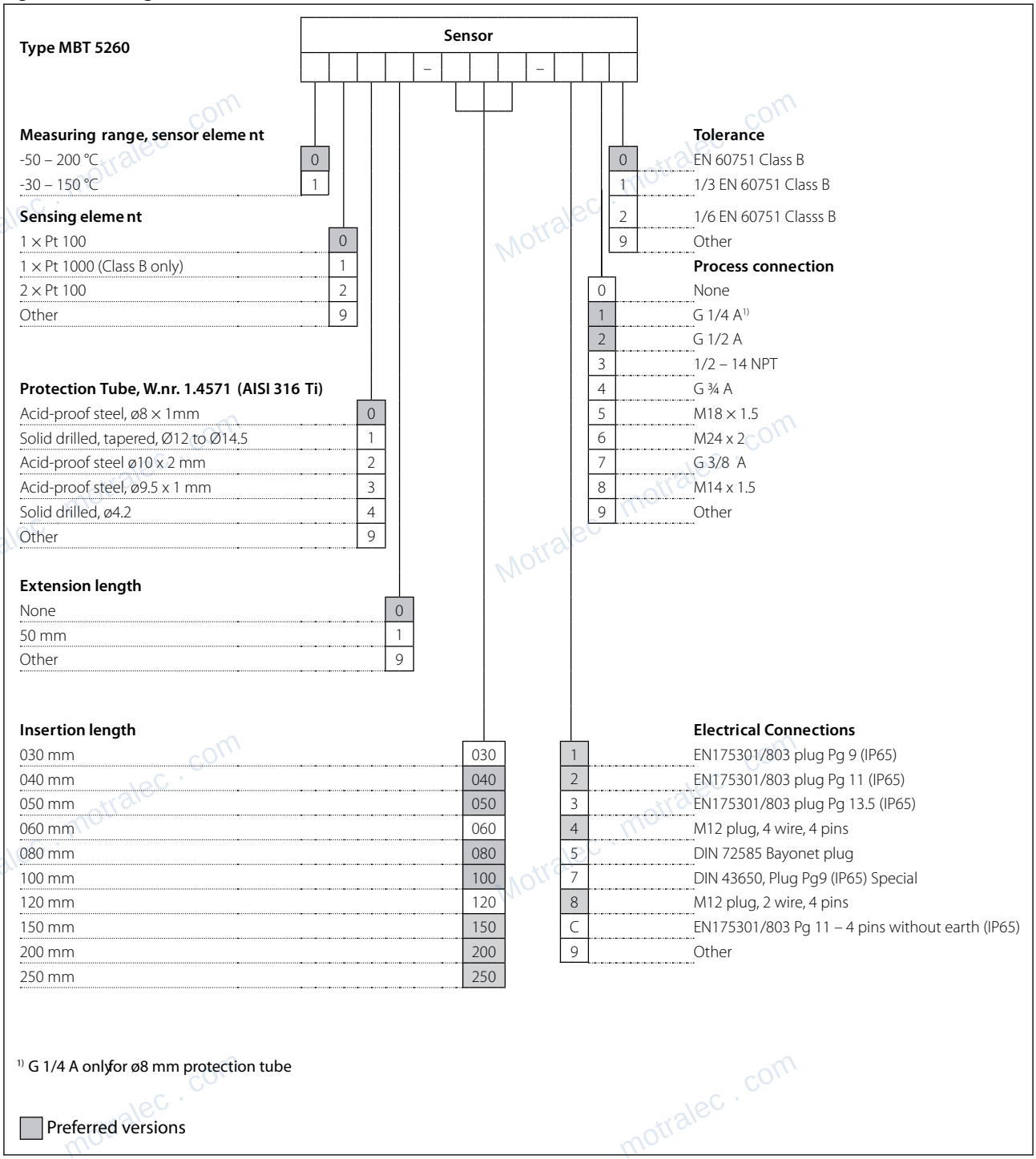
1) Only ø8 x 1 mm tube

Preferred versions

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MBT 5260

Figure 5: Ordering for MBT 5260



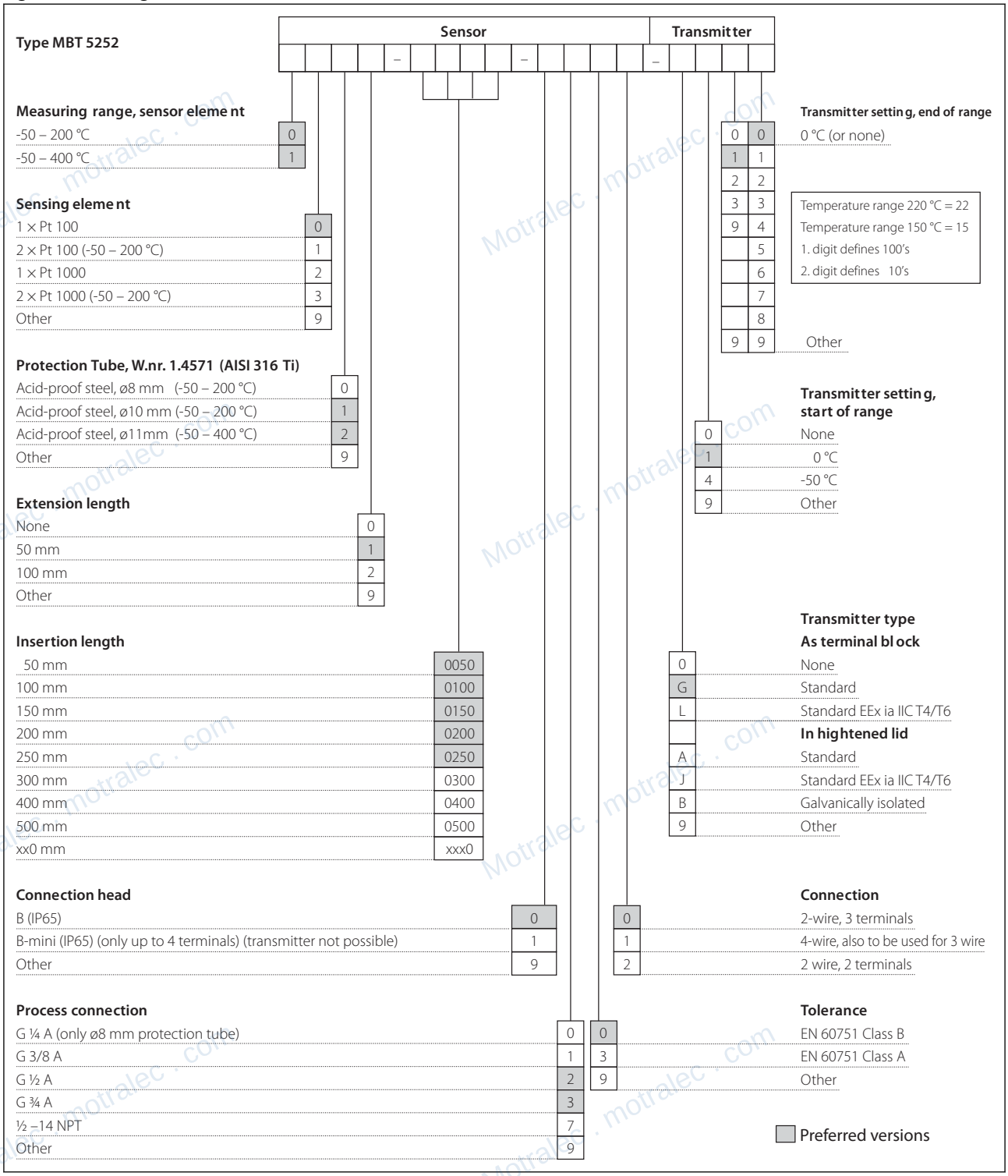
1) G 1/4 A only for ø8 mm protection tube

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MBT 5252

Figure 6: Ordering for MBT 5252



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MBT 5250

Table 18: MBT 5250

File name	Document type	Document topic	Approval authority
DLN 34014-AE002	Marine - Safety Certificate	–	KR
TA18505M	Marine - Safety Certificate	–	NKK
06839-E0 BV	Marine - Safety Certificate	–	BV
17-LD1597279-PDA	Marine - Safety Certificate	–	ABS
TAA000006F Rev. 2	Marine - Safety Certificate	–	DNV GL
ELE-061415XG	Marine - Safety Certificate	–	RINA
GB19PTB00025	Marine - Safety Certificate	–	CCS
14-20066 (E1)	Marine - Safety Certificate	–	LR
DK.C.32.004.A 41461	Measuring - Performance Certificate	–	GOST
097R0004.01	Manufacturers Declaration	RoHS	Danfoss
084R1022.01	Manufacturers Declaration	China RoHS	Danfoss
SMS.W.II-2179-B.0	Marine - Manufacturing Permission	–	BV
12CA69359	Explosive - Safety Certificate	ATEX	DEMKO
087R0017.00	Manufacturers Declaration	Simple apparatus	Danfoss
OC.C.32.004.A 75977	Measuring - Performance Certificate	–	GOST

MBT 5260

Table 19: MBT 5260

File name	Document type	Document topic	Approval authority
DLN 34014-AE002	Marine - Safety Certificate	–	KR
ELE-061415XG	Marine - Safety Certificate	–	RINA
17-LD1597279-PDA	Marine - Safety Certificate	–	ABS
06839-E0 BV	Marine - Safety Certificate	–	BV
TAA000006F Rev. 2	Marine - Safety Certificate	–	DNV GL
TA18505M	Marine - Safety Certificate	–	NKK
14-20066 (E1)	Marine - Safety Certificate	–	LR
DK.C.32.004.A 41461	Measuring - Performance Certificate	–	GOST
097R0004.01	Manufacturers Declaration	RoHS	Danfoss
084R1022.01	Manufacturers Declaration	China RoHS	Danfoss
TAA000012M	Marine - Safety Certificate	–	DNV GL
SMS.W.II-2179-B.0	Marine - Manufacturing Permission	–	BV
12CA69359	Explosive - Safety Certificate	ATEX	DEMKO
087R0017.00	Manufacturers Declaration	Simple apparatus	Danfoss
OC.C.32.004.A 75977	Measuring - Performance Certificate	–	GOST

MBT 5252

Table 20: MBT 5252

File name	Document type	Document topic	Approval authority
GB19PTB00025	Marine - Safety Certificate	–	CCS
DLN 34014-AE002	Marine - Safety Certificate	–	KR
ELE-061415XG	Marine - Safety Certificate	–	RINA
17-LD1597279-PDA	Marine - Safety Certificate	–	ABS
06839-E0 BV	Marine - Safety Certificate	–	BV
TAA000006F Rev. 2	Marine - Safety Certificate	–	DNV GL
TA18505M	Marine - Safety Certificate	–	NKK

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Temperature sensor, Types MBT 5250, MBT 5260 and MBT 5252

File name	Document type	Document topic	Approval authority
14-20066 (E1)	Marine - Safety Certificate	–	LR
084R1019.01	EU Declaration	EMCD/ROHS	Danfoss
DK.C.32.004.A 41460	Measuring - Performance Certificate	–	GOST
DK.C.32.004.A 41461	Measuring - Performance Certificate	–	GOST
RU Д-DK.АЛ87.B.00022_19	EAC Declaration	EMC	EAC
084R1022.01	Manufacturers Declaration	China RoHS	Danfoss
097R0004.01	Manufacturers Declaration	RoHS	Danfoss
SMS.W.II-2179-B.0	Marine - Manufacturing Permission	–	BV
12CA69359	Explosive - Safety Certificate	ATEX	DEMKO
087R0017.00	Manufacturers Declaration	Simple apparatus	Danfoss
OC.C.32.004.A 75977	Measuring - Performance Certificate	–	GOST

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