ENGINEERING TOMORROW

Data Sheet

Temperature sensor Type **MBT 5560**

Marine approved temperature transmitter.

With MBT 5560 we have combined the technology of our standard temperature sensors and the electrical connections from our MBS pressure transmitters with a new developed electronics which has resulted in a compact temperature sensor with a built-in transmitter.

The MBT 5560 is designed for use in harsh industrial environments where reliable, robust and accurate equipment is required.

Available with a wide selection of process and electrical connections. Can be delivered with a 33 mm extension length which makes it possible to measure temperatures up to 200 °C without damaging the built-in electronics.

Features:

- Designed for use in harsh industrial environments where reliable, robust and accurate equipment is required
- All metal enclosure parts made of stainless steel (AISI 316)
- Output signals: 4 – 20 mA or Ratiometric 10 – 90%
- A wide selection of process and electrical connections
- Ultra compact design
- Temperature range -50 – 200 °C
- Sensor pockets available for applications where emptying the system is not an option
- Based on Pt 1000 technology

Product specification

Technical data

Table 1: Main specifications

Features	Description
Process connections	See page Ordering
Measuring ranges	Any combinations between -50 – 200 °C
Minimum span	25 °C
Output signals	4 – 20 mA or Ratiometric 10 – 90%
Electrical connections	See page Electrical connection

Table 2: Performance

Features	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 mm	10 s	35 s	95 s	310 s
Accuracy	Typical: < ± 0.5% FS, Maximum: < ± 1.0% FS			
Max. load protection tube	100 bar			

Table 3: Electrical specifications

Features	Nom. Output signal (short-circuit protected)	
	4 – 20 mA	Ratiometric 10 – 90% of supply voltage
Supply voltage [U_S] polarity protected	10 – 30 V DC	4.75 – 8 V DC 5 V DC (Nom.)
Supply – current consumption	-	< 4 mA at 5 V DC
Insulation resistance	> 100 MΩ at 100 V DC	> 100 MΩ at 100 V DC
Supply voltage dependency	< ± 0.05% FS/10 V	-
Current limitation	30 mA	-
Output impedance	-	< 25 Ω
Load [R_L]	R_L<(U_S-10) / (0.02 A) ohm	R_L> 5 kohm at 5 V DC

Table 4: Environmental conditions

Features		Description
Media temperature (max. 120 °C without extension length)		-50 – 200 °C
Temperature on electronics[1]		-40 – 85 °C
Transport temperature range		-50 – 85 °C
EMC – Emmision		EN 61000-6-3
EMC – Immunity		EN 61000-6-2
Vibration stability	Sinusoidal 15.9 mm-pp, 5 – 25 Hz	-
	4 g, 25 Hz – 2 kHz	IEC 60068-2-6
	Random 7.5 $g_{ms'}$ 5 Hz – 1 kHz	IEC 600868-2-34, IEC 60068-2-36
Shock resistance	Shock 500 g/1 ms	IEC 60068-2-27
	Free fall	IEC 60068-2-32
Enclosure (depending on electrical connections)		See page Electrical connection

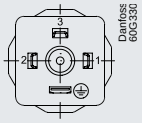
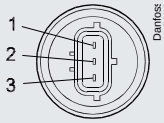
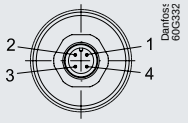
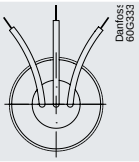
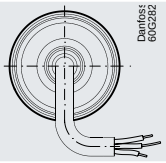
[1] Temperature of the electronics depends on the media temperature, extension length, ambient temperature and air velocity.

Table 5: Mechanical characteristics

Features		Description
Materials	Wetted parts Enclosure	W.no. 1.4571 (AISI 316 Ti) W.no. 1.4404 (AISI 316 L)
Measuring insert		Fixed
Net weight (depending on design)		0.1 – 0.15 kg

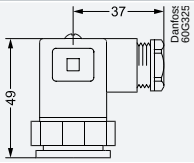
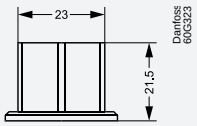
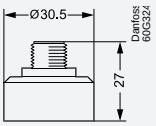
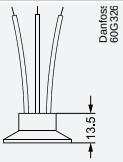
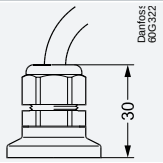
Electrical connection

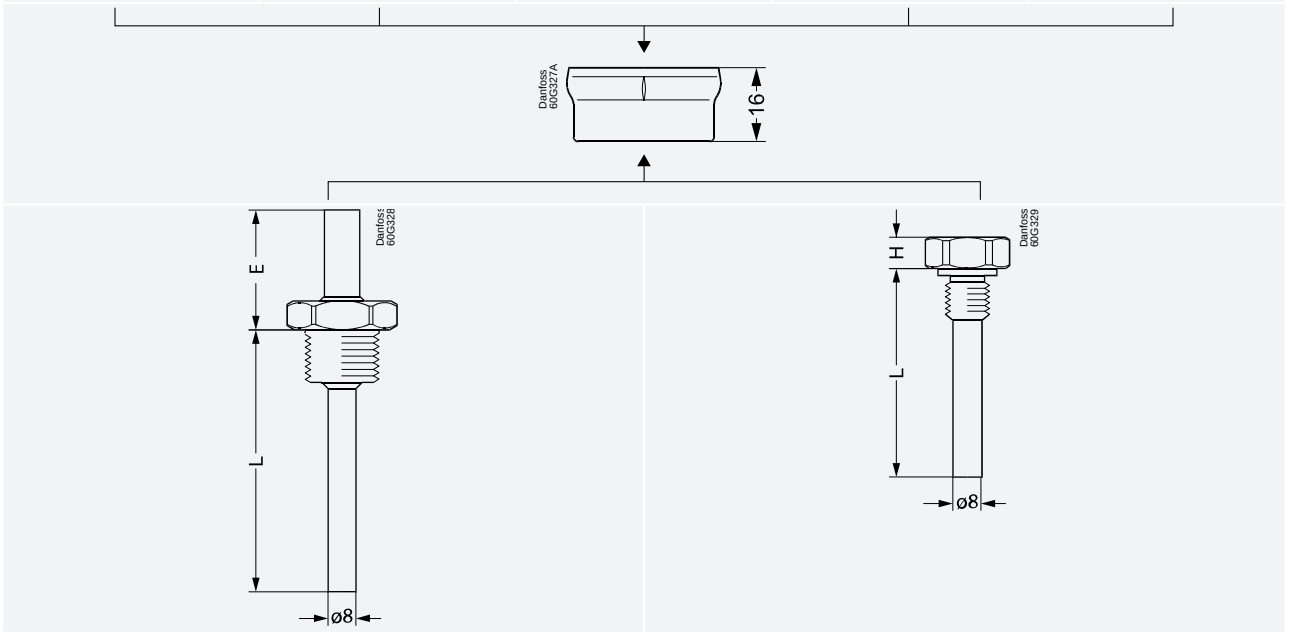
Table 6: Electrical connection

EN 175301-803	AMP Econoseal J series (male)	IEC 947-5-2 M12 × 1	Flying leads	2 m screened cable
				
Enclosure				
IP65	IP67	IP67	IP67	IP67
Materials				
Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6	Glass filled polyamid, PA 6.6	PUR
Electrical connection, 4 – 20 mA output (2 wire)				
Pin 1: +supply Pin 2: ÷supply Pin 3: Not used Earth: Not connected to MBT housing	Pin 1: +supply Pin 2: ÷supply Pin 3: Not used	Pin 1: +supply Pin 2: Not used Pin 3: Not used Pin 4: ÷supply	Red wire: +supply Black wire: ÷supply	Red wire: +supply White wire: ÷supply Red/black wire: Not used Screen: Not connected to MBT housing
Electrical connection, Ratio metric (3-wire) 10 – 90%				
Pin 1: +supply Pin 2: ÷supply Pin 3: Output Earth: Not connected to MBT housing	Pin 1: +supply Pin 2: ÷supply Pin 3: Output	Pin 1: +supply Pin 2: not used Pin 3: Output Pin 4: ÷supply	Red wire: +supply Black wire: ÷supply Blue wire: Output	Red wire: +supply White wire: ÷supply Red/ Black wire: Output Screen: Not connected to MBT housing

Dimensions

Table 7: Dimensions

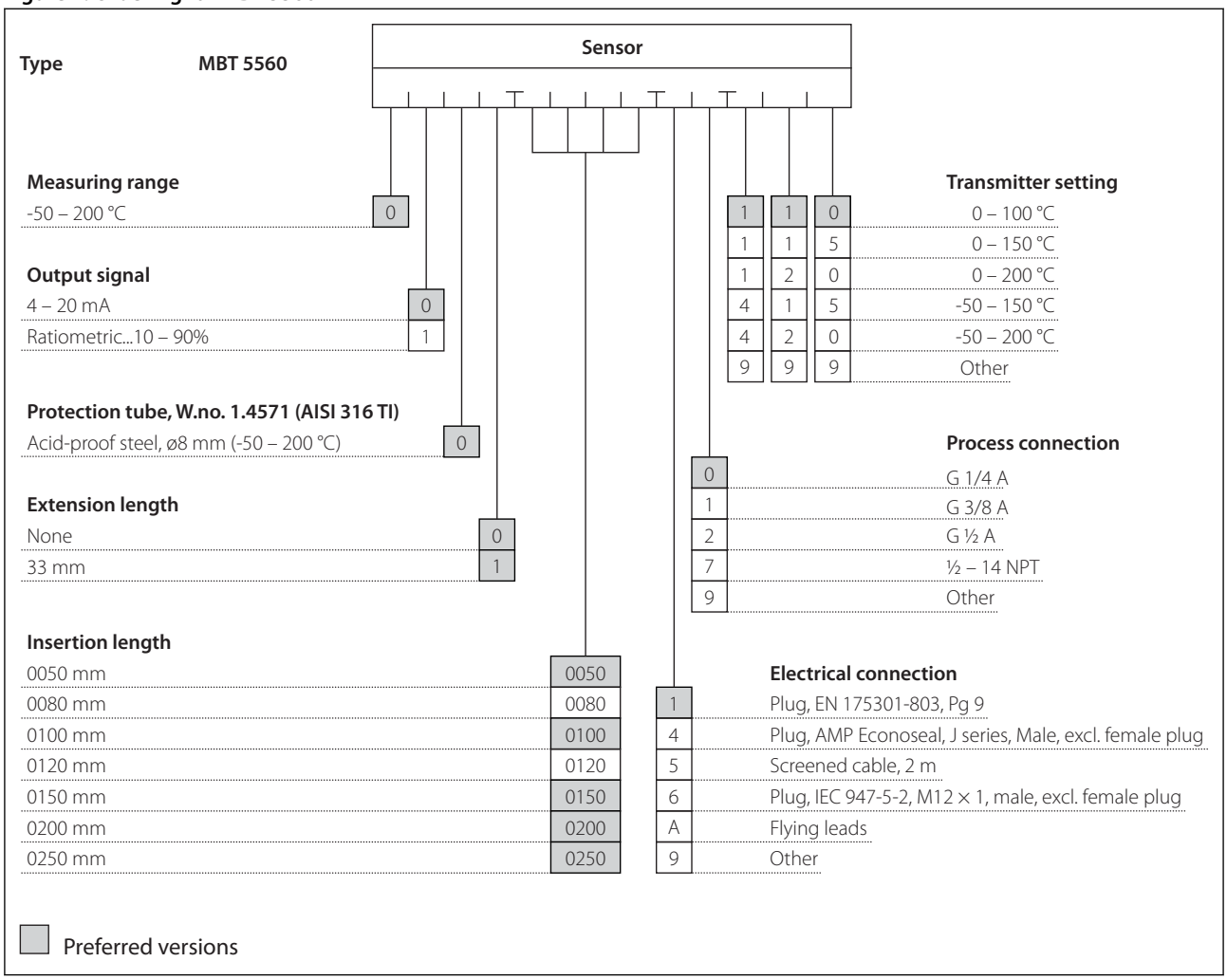
EN 175301-803, Pg 9	AMP Econoseal J series (male)	IEC 947-5-2 M12 × 1, 4-pin	Flying leads	2 m Screened cable
				



E	Extension length = 33 mm	**L**	Insertion length	**H**	9 mm

Ordering

Figure 1: Ordering for MBT 5560



Non-standard build up combinations may be selected. However, minimum order quantities may apply, please contact your local Danfoss office for more information

Certificates, declarations, and approvals

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.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 8: MBT 5560

File name	Document type	Document topic	Approval authority
14159-D0 BV	Marine - Safety Certificate	-	BV
DLN 34014-AE004	Marine - Safety Certificate	-	KR
ELE-006715XG-002	Marine - Safety Certificate	-	RINA
TAA00002NM	Marine - Safety Certificate	-	DNV GL
15-20024	Marine - Safety Certificate	-	LR
TA16100M	Marine - Safety Certificate	-	NKK
15-LD1317841-PDA	Marine - Safety Certificate	-	ABS
084R1019.01	EU Declaration	EMCD/ROHS	Danfoss
DK.C.32.004.A 41460	Measuring - Performance Certificate	-	GOST
RU Д-DK.АЛ87.B.00022_19	EAC Declaration	EMC	EAC
UA.1O146.D.00075-19	UA Declaration	EMCD/LVD	LLC CDC EURO TYSK
084R1022.01	Manufacturers Declaration	China RoHS	Danfoss
097R0004.01	Manufacturers Declaration	RoHS	Danfoss
SMS.W.II-2179-B.0	Marine - Manufacturing Permission	-	BV

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