



**Temperature sensor with integrated  
transmitter for maritime applications,  
MBT 5560**

**Features**


- Designed for use in harsh maritime environments where reliable, robust and accurate equipment is required
- Acid-resistant stainless steel enclosure (AISI 316L)
- Output signals: 4 - 20 mA or Ratiometric 10-90%
- A wide selection of process and electrical connections
- Ultra compact design
- Temperature range -50 °C - +200°C

**Approvals**

- Registro Italiano Navale, RINA
- American Bureau of Shipping, ABS
- Korean Register of Shipping, KRS
- Lloyds Register of Shipping, LR
- Germanischer Lloyd, GL (not ratiometric)
- Bureau Veritas, BV
- Det Norske Veritas, DNV (not ratiometric)
- Nippon Kaiji Kyokai, NKK

**Ordering standard MBT 5560**

- Electrical connection DIN 43650-A, Pg 9
- Protection tube  $\varnothing$  8 mm
- Element Pt 1000, EN 60751, Class B
- Process connection G1/4A

Insertion length [mm]	Electrical connection	Transmitter output	Transmitter setting [C°]	Extension length [mm]	Code no.
50	2 wire	4 to 20 mA	0 to 100	None	<b>084Z4020</b>
100				None	<b>084Z4021</b>
150				None	<b>084Z4022</b>
200				None	<b>084Z4023</b>
250				None	<b>084Z4024</b>
50	2 wire	4 to 20 mA	0 to 200	33	<b>084Z4025</b>
100				33	<b>084Z4026</b>
150				33	<b>084Z4027</b>
200				33	<b>084Z4028</b>
250				33	<b>084Z4029</b>

Pocket for MBT 5560 standard programme

MBT 5560 Insertion length [mm]	Pocket insertion length [mm]	Process connection	Protection tube [mm]	Code no.
50	37.5	G $\frac{1}{2}$ A	$\varnothing$ 11	<b>084Z7258</b>
100	87.5			<b>084Z7259</b>
150	137.5			<b>084Z7260</b>
200	187.5			<b>084Z7261</b>
250	237.5			<b>084Z7262</b>

**Technical data**
**Main specifications**

Pressure connections	See page 3
Measuring ranges	Any combinations between $-50^{\circ}\text{C}$ and $+200^{\circ}\text{C}$
Minimum span	$25^{\circ}\text{C}$
Output signals	4-20 mA - Ratiometric 10-90%
Electrical connections	See page 4

**Performance**

Accuracy	$< \pm 0.5\% \text{ FS (typ.)}$ $< \pm 1\% \text{ FS (max.)}$	
Response times	Water 0.2 m/s	
	$t_{0.5} = 10 \text{ sec}$	$t_{0.9} = 30 \text{ sec}$
	Air 1 m/s	
	$t_{0.5} = 95 \text{ sec}$	$t_{0.9} = 310 \text{ sec}$
Max. load protection tube	100 bar	

**Electrical specifications**

	Nom. Output signal (short-circuit protected)	
	4 to 20 mA	ratiometric 10-90% of supply voltage
Supply voltage[ $U_s$ ] polarity protected	10 to 32 V d.c.	4.75 to 8 V d.c. 5 V d.c. (Nom.)
Supply - current consumption	–	$< 4 \text{ mA at } 5 \text{ V d.c.}$
Insulation resistance	$> 100 \text{ Mohm at } 100 \text{ V d.c.}$	$> 100 \text{ Mohm at } 100 \text{ V d.c.}$
Supply voltage dependency	$< \pm 0.05\% \text{ FS/ } 10 \text{ V}$	–
Current limitation	30 mA	–
Output impedance	–	$< 225 \text{ ohm}$
Load [ $R_L$ ]	$R_L < (U_s - 10)/(0.02A) \text{ ohm}$	$R_L > 5 \text{ kohm at } 5 \text{ V d.c.}$

**Environmental conditions**

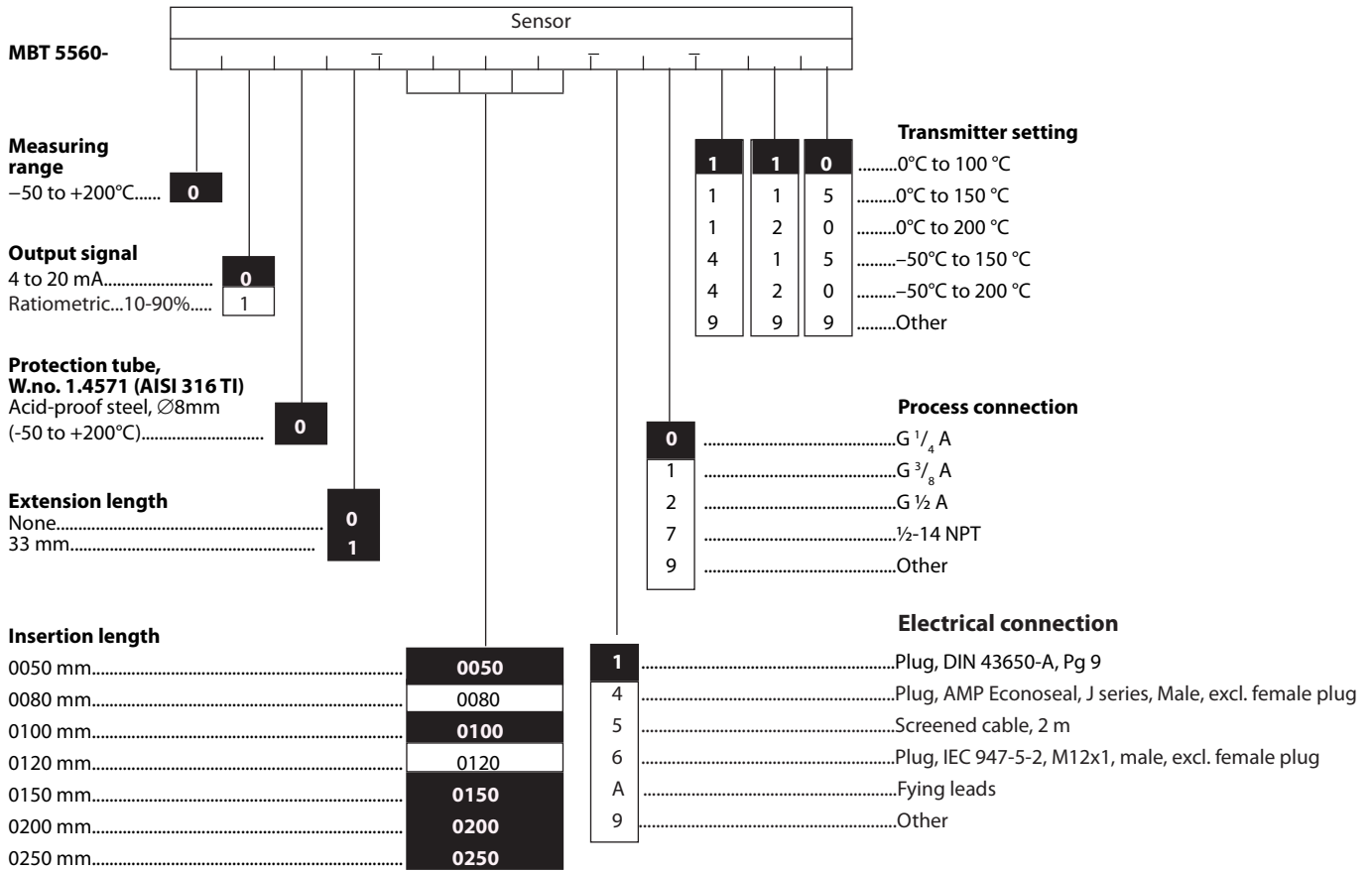
Media temperature (max. 120°C (without extension length))	$-50^{\circ}\text{C}$ to $+200^{\circ}\text{C}$	
Temperature on electronics <sup>1)</sup>	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$	
Transport temperature range	$-50^{\circ}\text{C}$ to $85^{\circ}\text{C}$	
EMC - Emission	EN 61000-6-3	
EMC - Immunity	EN 61000-6-2	
Vibration stability	Sinusoidal 15.9 mm-pp, 5 Hz-25 Hz	IEC 60068-2-6
	4 g, 25 Hz - 2 kHz	
	Random 3.17 g <sub>ms</sub> , 18Hz - 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 4	

**Mechanical characteristics**

Materials:	
Wetted parts	W.no. 1.4571 (AISI 316 Ti)
Enclosure	W.no. 1.4404 (AISI 316 L)
Measuring insert	fixed
Weight (Depending on design)	0.1 to 0.15 kg

<sup>1)</sup> Temperature of the electronics depends on the media temperature, extension length, ambient temperature and air velocity.

**Ordering,  
Standard versions**

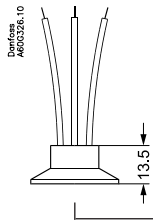


**█** = Standard programme

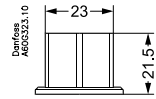
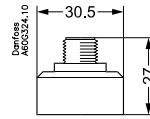
Non-standard build up combinations may be selected. However, minimum order quantities may apply, please contact your local Danfoss office for more information

**Dimensions**

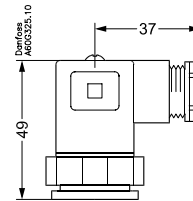
Flying leads



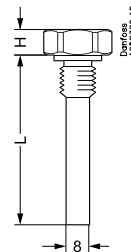
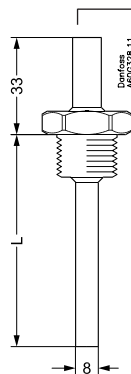
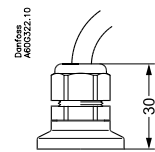
AMP Econoseal J series (male)


 IEC 947-5-2  
M12x1, 4-pin


DIN 43650-A, Pg 9



2 m screened cable



L = Insertion length  
H = 9 mm

**Electrical connections**

DIN 43650-A	AMP Econoseal J series (male)	IEC 947-5-2 M12 x 1	Flying leads	2 m screened cable
<b>Enclosure</b>				
IP 65	IP 67	IP 67	IP 67	IP 67
<b>Materials</b>				
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
<b>Electrical connection, 4-20 mA output (2 wire)</b>				
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
<b>Electrical connection, Ratio metric (3-wire) 10-90%</b>				
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

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