



**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	084Z4020
100				None	084Z4021
150				None	084Z4022
200				None	084Z4023
250				None	084Z4024
50	2 wire	4 to 20 mA	0 to 200	33	084Z4025
100				33	084Z4026
150				33	084Z4027
200				33	084Z4028
250				33	084Z4029

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	084Z7258
100	87.5			084Z7259
150	137.5			084Z7260
200	187.5			084Z7261
250	237.5			084Z7262

Technical data
Main specifications

Pressure connections	See page 3
Measuring ranges	Any combinations between -50°C and $+200^{\circ}\text{C}$
Minimum span	25°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

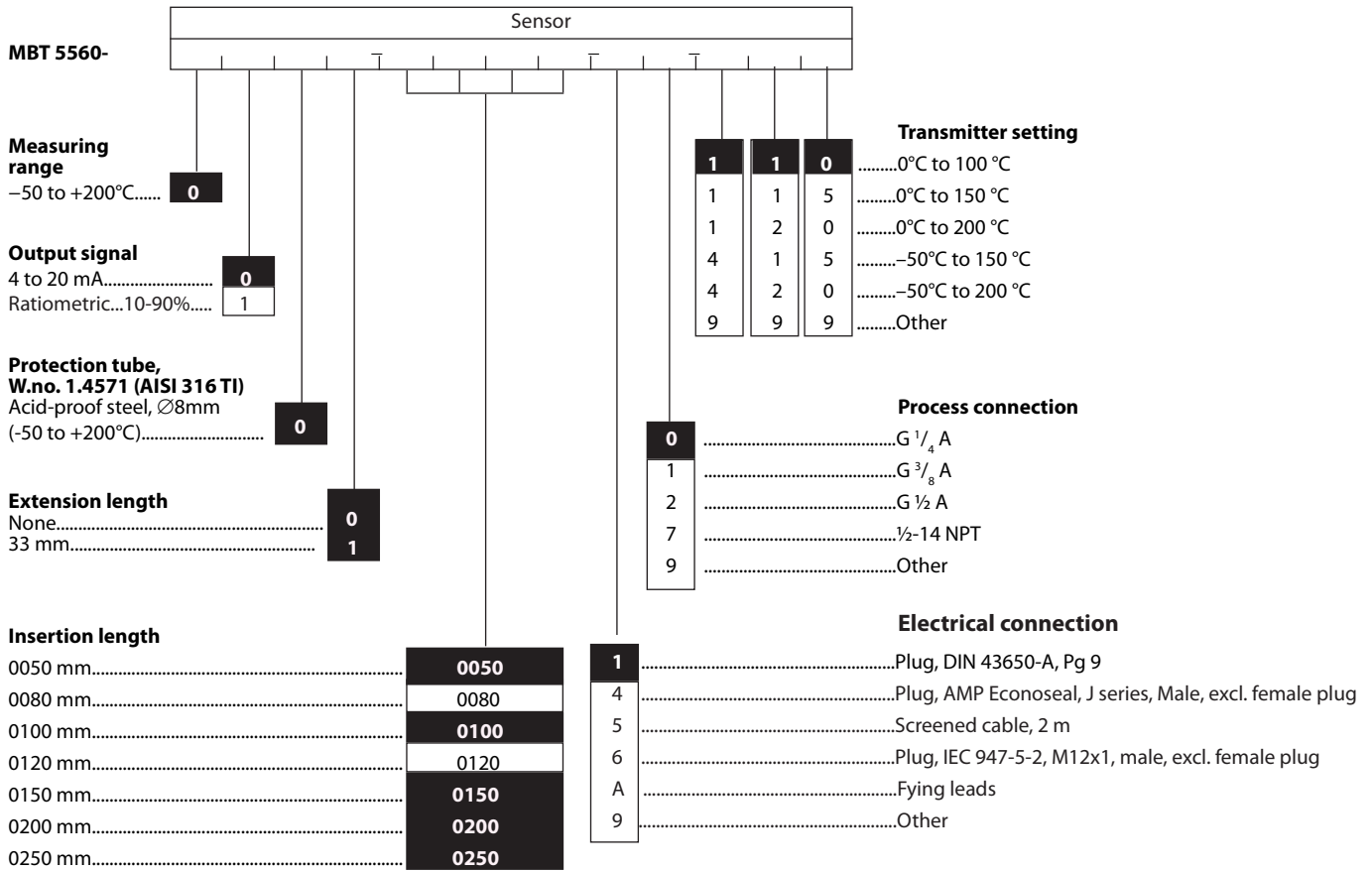
Media temperature (max. 120°C (without extension length))	-50°C to $+200^{\circ}\text{C}$	
Temperature on electronics ¹⁾	-40°C to $+85^{\circ}\text{C}$	
Transport temperature range	-50°C to 85°C	
EMC - Emission	EN 61000-6-3	
EMC - Immunity	EN 61000-6-2	
Vibration stability	Sinusoidal 15.9 mm-pp, 5 Hz-25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

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

**Ordering,
Standard versions**

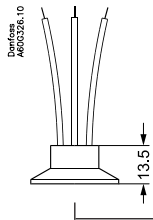


█ = Standard programme

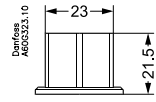
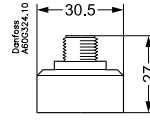
Non-standard build up combinations may be selected. However, minimum order quantities may apply, please contact your local Danfoss office for more information

Dimensions

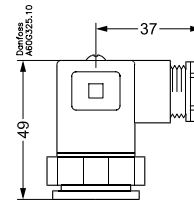
Flying leads



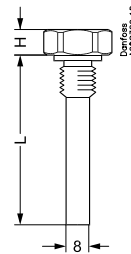
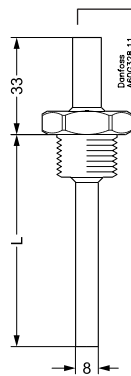
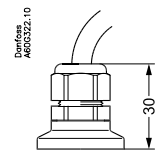
AMP Econoseal J series (male)


 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
Enclosure				
IP 65	IP 67	IP 67	IP 67	IP 67
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

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.
