**Data sheet**

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

**Features**

- Designed for use in harsh maritme environments where reliable, robust and accurate equipment is required
- Acid-resistant stainless steel enclosure (AISI 316L)
- Output signals: 4 - 20 mA or Ratiometric
- 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 ∅ 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 | G½A | ∅ 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°C |
| Minimum span | 25°C |
| Output signals | 4-20 mA - Ratiometric |
| Electrical connections | See page 4 |

*Performance*

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

*Electrical specifications*

| | Nom. Output signal (short-circuit protected) | |
|---|---|---|
| | 4 to 20 mA | ratiometric |
| Supply voltage[$U_S$] polarity protected | 10 to 32 V d.c. | 4.75 to 8 V d.c.<br>5 V d.c. (Nom.) |
| Supply - current consumption | – | < 4 mA at 5 V d.c. |
| Supply voltage dependency | < ±0.05% FS/ 10 V | – |
| Current limitation | 30 mA | – |
| Output impedance | – | < 225 ohm |
| Load [$R_L$] | $R_L$<($U_S$-10)/(0.02A) ohm | $R_L$>5 kohm at 5 V d.c. |

*Environmental conditions*

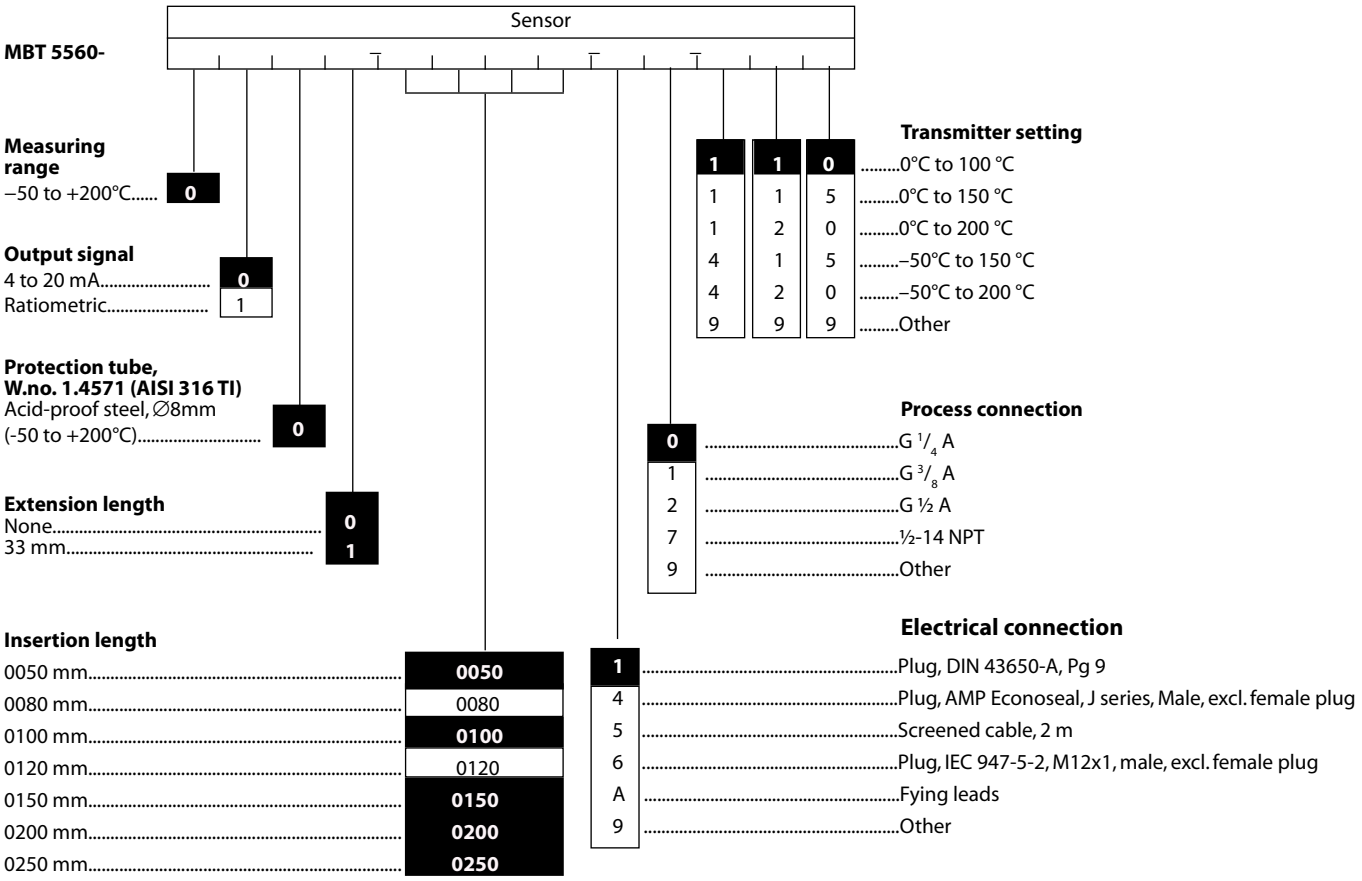
| | | | |
|---|---|---|---|
| Media temperature (max. 120°C (without extension length) | | | −50°C to + 200°C |
| Temperature on electronics[1)] | | | −40°C to +85°C |
| Transport temperature range | | | −50°C to 85°C |
| EMC - Emmision | | | EN 61000-6-3 |
| EMC - Immunity | | | EN 61000-6-2 |
| Vibration 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:<br>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.

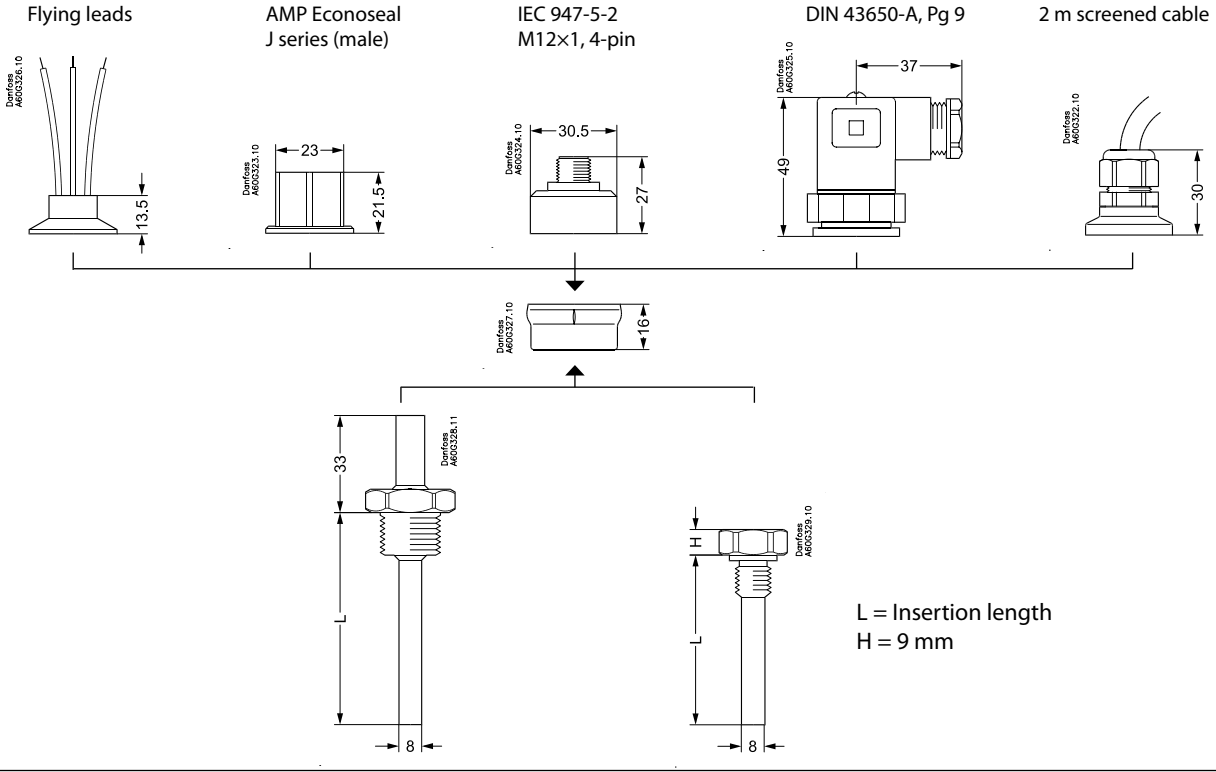
## Ordering, Standard versions



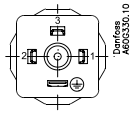
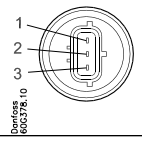
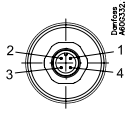
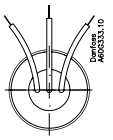
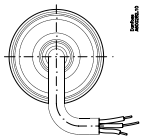

■ = Standard programme

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

## Dimensions




## 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<br>Pin 2: ÷supply<br>Pin 3: Not used<br>Earth: Not connected to MBT housing | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Not used | Pin 1: +supply<br>Pin 2: Not used<br>Pin 3: Not used<br>Pin 4: ÷supply | Red wire: +supply<br>Black wire: ÷supply | Red wire: +supply<br>Black wire: ÷supply<br>White wire: Not used<br>Brown wire: Not used<br>Green wire: Not used<br>Screen Not connected to MBT housing |
| *Electrical connection, Ratio metric (3-wire)* | | | | |
| Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Output<br>Earth: Not connected to MBT housing | Pin 1: +supply<br>Pin 2: ÷supply<br>Pin 3: Output | Pin 1: +supply<br>Pin 2: not used<br>Pin 3: Output<br>Pin 4: ÷supply | Red wire: +supply<br>Black wire: ÷supply<br>Blue wire: Output | Red wire: +supply<br>Black wire: ÷supply<br>White wire: Output<br>Brown wire: Not used<br>Green wire: Not used<br>Screen Not connected to MBT housing |