

Data sheet

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



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

Approvals

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



Technical data

Main specifications

| Process connections | See page 3 |
|----------------------------------|---------------------------------------|
| Measuring ranges | Any combinations between -50 – 200 °C |
| nimum span 25 °C | |
| Output signals | 4 – 20 mA or Ratiometric 10 – 90% |
| lectrical connections See page 4 | |

Performance

| | Indicative response times | | | |
|---------------------------|---|------------------|-------------------------|------------------|
| | Water 0.2 m/s | | Air 1 m/s | |
| ø8 mm | t _{0.5} | t _{0.9} | t _{0.5} | t _{0.9} |
| 22 | 10 s | 35 s | 95 s | 310 s |
| Accuracy | < ± 0.5% FS (typ.) < ± 1.0% FS (max.) 100 bar | | | |
| Max. load protection tube | | | | |

Electrical specifications

| | Nom. Output signal (short-circuit protected) | | |
|---|---|---|--|
| | 4 – 20 mA | ratiometric 10 – 90% of supply voltage | |
| Supply voltage [U _s] polarity protected | 10 – 30 V d.c. | 4.75 – 8 V d.c. 5 V d.c. (Nom.) | |
| Supply – current consumption | _ | < 4 mA at 5 V d.c. | |
| Insulation resistance | > 100 Mohm at 100 V d.c. | > 100 Mohm at 100 V d.c. | |
| Supply voltage dependency | < ± 0.05% FS / 10 V | - | |
| Current limitation | 30 mA | - | |
| Output impedance | - | < 25 ohm | |
| Load [R _L] | R _L <(U _s -10) / (0.02 A) ohm | R _L > 5 kohm at 5 V d.c. | |

Environmental conditions

| Media temperature (max. 120 °C wi | -50 − 200 °C -40 − 85 °C | | |
|---|---|---------------------------------|--|
| Temperature on electronics') | | | |
| Transport temperature range | | -50 − 85 ℃ | |
| EMC – Emmision | | EN 61000-6-3 | |
| EMC – Immunity | | EN 61000-6-2 | |
| | Sinusoidal 15.9 mm-pp, 5 Hz – 25 Hz | - | |
| Vibration stability | 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 | |
| SHOCK LESISTATICE | Free fall | IEC 60068-2-32 | |
| Enclosure (depending on electrical connections) | | See page 4 | |

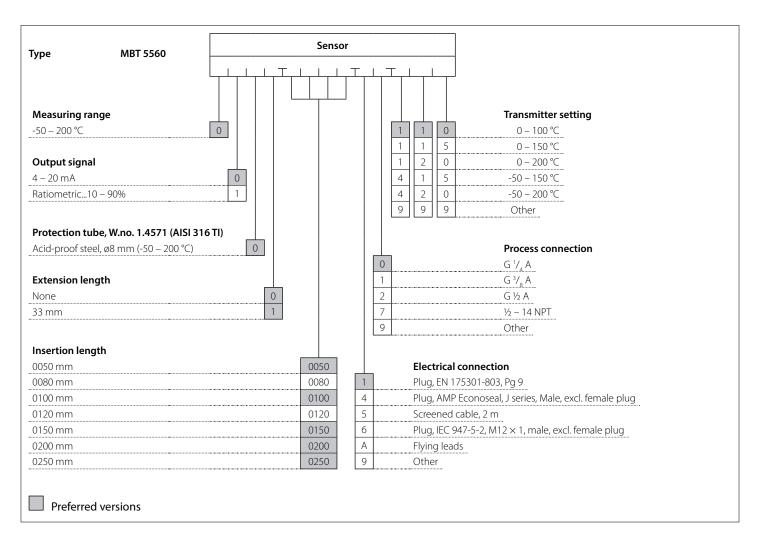
 $^{^{1}}$) Temperature of the electronics depends on the media temperature, extension length, ambient temperature and air velocity.

Mechanical characteristics

| 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 | |



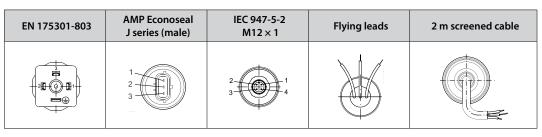
Ordering standard



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



Electrical connections



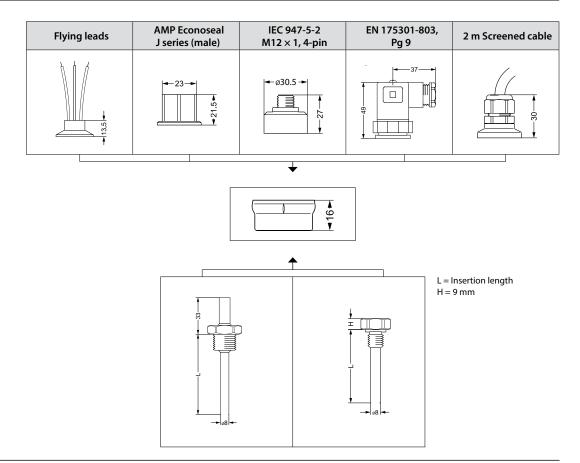
| Enclosure | | | | |
|-----------|------|------|------|------|
| IP65 | IP67 | IP67 | IP67 | IP67 |

| Materials | | | | |
|------------------|------------------|------------------|------------------|-----|
| Glass filled | Glass filled | Glass filled | Glass filled | PUR |
| polyamid, PA 6.6 | polyamid, PA 6.6 | polyamid, PA 6.6 | polyamid, PA 6.6 | |

| 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



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