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Data Sheet

# Temperature sensor Type **MBT 3270**

Compact industrial temperature sensor.

The flexible temperature sensor MBT 3270 can be used in many industrial applications such as: Air Compressors, Mobile Hydraulics and Exhaust gas return systems. In other words applications where robustness, size and performance are essentials.

The sensor can be equipped with different sensing elements (RTD, NTC and PTC) and is available with different electrical connections (Cable, Delphi Metri Pack, AMP junior power Timer, Deutch DT04).

**Features:**

- OEM Temperature Sensor program
- Various sensor elements available (RTD, NTC, PTC)
- Robust, high protection against moisture
- Fixed measuring insert
- Brass or stainless steel
- Very low response times
- Temperature range up to 300 °C
- Available with cable or integrated plug (Delphi Metri Pack, AMP junior power Timer, Deutsch DT04)

# Product specification

## Technical data

### Cable version

**Figure 1: Cable version**

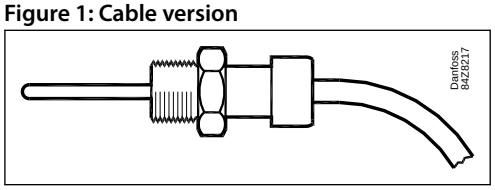



**Table 1: General data**

| Features | | Description | |
|---|---|---|---|
| Ambient temperature | Cable | PVC | -40 – 100 °C |
| | | Silicon | -40 – 200 °C |
| | | Teflon | -40 – 200 °C |
| | | Polyolefin (oil resistant) | -40 – 150 °C |
| | Plug | AMP spade | -40 – 200 °C |
| | | AMP Junior Power Timer | -40 – 125 °C |
| | | Delphi Metri Pack 102 | -40 – 125 °C |
| | | Deutsch DT04-3P | -40 – 125 °C |
| Media temperature | | Pt 100 | -50 – 300 °C |
| | | NTC | -50 – 150 °C, Special versions up to 300 °C |
| | | PTC | -50 – 150 °C |
| Max. external pressure | | Operating pressure | 500 bar |
| | | Burst pressure | > 900 bar |
| Max. tightening torque | | M10<br>M14 | 17 Nm<br>24 Nm |

**Table 2: Performance**

| Features | | Description |
|---|---|---|
| Sensor Element | | Pt 100, Pt 1000, NTC, PTC |
| Process Connection | | Refer to ordering standard, see page Cable version |
| Sensor insertion length | Brass | 80 mm @ d ≥ 8 mm |
| | | 60 mm @ 8 > d > 5 mm |
| | | 40 mm @ d ≤ 5 mm |
| | Stainless steel | 70 mm @ d ≥ 8 mm |
| | | 50 mm @ 8 > d > 5 mm |
| | | 35 mm @ d ≤ 5 mm |
| Electrical Connection | | Stripped wire ends<br>Cable with AMP spade (6.35)<br>Cable with AMP Junior Power Timer<br>Cable with Delphi Metri Pack 102<br>Cable with Deutsch DT04-3P-2P<br>Other on request |
| Connection | | 2, 3 or 4 wire (depending on electrical connection) |

**Table 3: Indicative response times**

| Material protection tube | Protection tube | Indicative response times | |
|---|---|---|---|
| | | Water 0,2 m/s | |
| | | $t_{0.5}$ | $t_{0.9}$ |
| Stainless steel | ø6 mm | 6 s | 18 s |
| | ø4 mm | 2 s | 6 s |
| | ø3 mm | 1.5 s | 3 s |

**NOTE:**
Response times can vary very much depending on the design of the sensor and the temperature element chosen.

### Table 4: Mechanical and environmental specifications

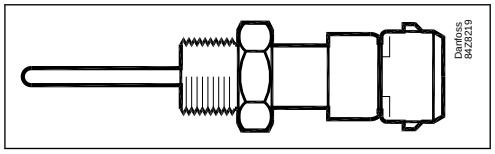
| Features | Description | |
|---|---|---|
| Sensor tolerances | Pt 1000 / Pt 100<br>NTC<br>PTC 2000 (KTY 81 – 210) | EN 60751 Class B: ± (0.3 + 0.005 × t)<br>On request<br>± 1% at 25 ° C |
| Vibration stability | Shock | 50 g / 6 ms |
| | Vibrations, x-y-z directions | 15.3 g sine, 20 – 2000 Hz, 8 hours |
| Enclosure | Sensor only | IP67 according to IEC 60529 |
| | Cable with AMP spade | IP00 according to IEC 60529 |
| | Cable with AMP Junior Timer | IP65 according to IEC 60529 |
| | Cable with Delphi Metri Pack 102 | IP65 according to IEC 60529 |
| | Cable with Deutsch DT04 | IP65 according to IEC 60529 |

### Table 5: Materials

| Features | Description |
|---|---|
| Protection tube in contact with media | AISI 316<br>Brass |
| Process connection | AISI 316<br>Brass |
| Cable | PVC, Silicon, Teflon (other on request) |
| Gasket | Viton, NBR (other on request) |
| Plug | PPS (Ryton 4) |

## Integrated plug version

### Figure 2: Integrated plug version




### Table 6: General data

| Features | | Description |
|---|---|---|
| Ambient temperature | Plug | -40 – 125 °C |
| Media temperature | Pt 1000, Pt 100 | -50 – 300 °C |
| | NTC | -50 – 150 °C, Special versions up to 300 °C |
| | PTC | -50 – 150 °C |
| Max. external pressure | Operating pressure | 500 bar |
| | Burst pressure | > 900 bar |
| Max. tightening torque | M10<br>M14 | 17 Nm<br>24 Nm |

### Table 7: Performance

| Features | | Description |
|---|---|---|
| Sensor Element | | Pt 100, Pt 1000, NTC, PTC |
| Process Connection | | Refer to ordering standard, see page Integrated plug version |
| Sensor insertion length | Brass | 80 mm @ d ≥ 8 mm |
| | | 60 mm @ 8 > d > 5 mm |
| | | 40 mm @ d ≤ 5 mm |
| | Stainless steel | 70 mm @ d ≥ 8 mm |
| | | 50 mm @ 8 > d > 5 mm |
| | | 35 mm @ d ≤ 5 mm |
| Electrical Connection | | AMP Junior Power Timer<br>Delphi Metri Pack<br>Deutsch DT04<br>Other on request |
| Connection | | 2 wire |

**Table 8: Indicative response times**

| Material protection tube | Protection tube | Indicative response times | |
|---|---|---|---|
| | | Water 0,2 m/s | |
| | | $t_{0.5}$ | $t_{0.9}$ |
| Stainless Steel | ø6 mm | 6 s | 18 s |
| | ø4 mm | 2 s | 6 s |
| | ø3 mm | 0.5 s | 1.5 s |

**NOTE:**
Response times can vary very much depending on the design of the sensor and the temperature element chosen.

**Table 9: Mechanical and environmental specifications**

| Features | Description | |
|---|---|---|
| Sensor tolerances | Pt 1000 / Pt 100<br>NTC<br>PTC 2000 (KTY 81 – 210) | EN 60751 Class B<br>On request<br>± 1% at 25 °C |
| Vibration stability | Shock | 50 g / 6 ms |
| | Vibrations, x-y-z directions | 15.3 g sine, 20 – 2000 Hz, 8 hours |
| Enclosure | AMP Junior Power Timer<br>Delphi Metri Pack<br>Deutsch DT04 | IP65 according to IEC 60529 |

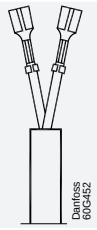
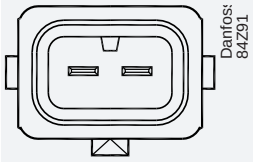
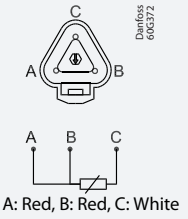
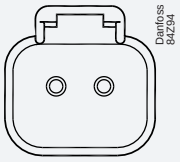
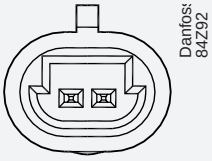
**Table 10: Materials**

| Features | Description |
|---|---|
| Protection tube in contact with media | AISI 316<br>Brass |
| Process connection | AISI 316<br>Brass |
| Gasket | Viton, NBR (other on request) |
| Plug | PPS (Ryton 4) |

# Electrical connection

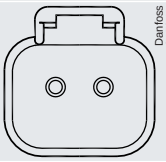
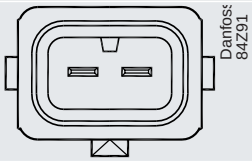
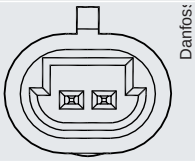
## Cable version

**Table 11: Electrical connection of cable version**

| AMP spade (6.35) | AMP Junior Power Timer | Deutsch DT04 3 pin | Deutsch DT04 2 pin | Delphi Metri Pack 102 |
|---|---|---|---|---|
|  |  |  A: Red, B: Red, C: White |  |  |

## Integrated plug version

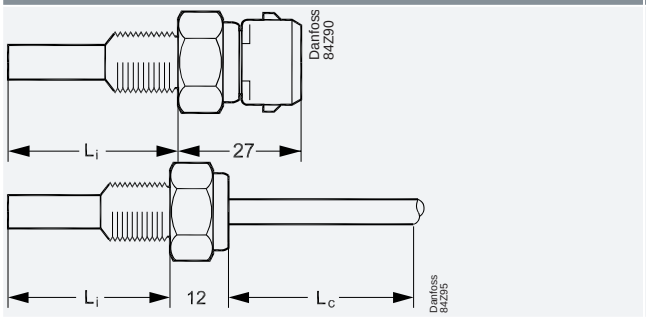
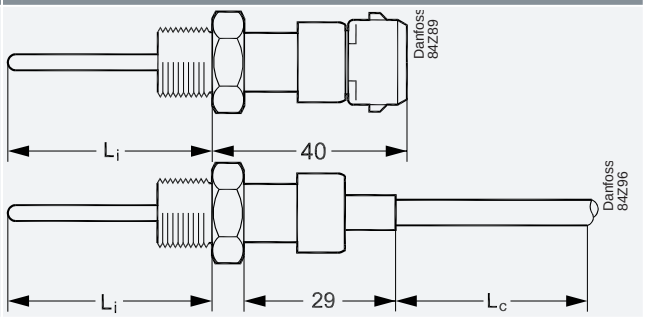
**Table 12: Electrical connection of integrated plug version**

| Deutsch DT04 | AMP Junior Power Timer | Delphi Metri Pack 102 |
|---|---|---|
|  |  |  |

## Dimensions

### Cable version

**Table 13: Dimensions**

| -50 – 150 °C | -50 – 150 °C / 300 °C |
|---|---|
|  |  |



**Examples:**
Insertion length: Li = 21 to xx (max. 80 mm)
Cable length: Lc = 0.5 m to x.xx m
Tube diameter depends on the chosen sensor element and the wanted response time.

# Ordering

## Cable version

**Figure 3: Ordering for MBT 3270 - Cable version**

**Type MBT 3270**

**Measuring range**

| | |
|---|---|
| -50 – 150 °C | 0 |
| -50 – 200 °C | 1 |
| -50 – 300 °C | 2 |
| Other | 9 |

**Cable length**

| | |
|---|---|
| 050 | 0.5 m |
| 100 | 1.0 m |
| 200 | 2.0 m |
| xxx | x.x m |

**Resistance value**

| | |
|---|---|
| 1 × Pt 100 | 0 |
| 1 × Pt 1000 | 2 |
| NTC 2000, B25/85 2880 - 4570 | 6 |
| NTC 2700, B25/85 2880 - 4570 | K |
| NTC 3000, B25/50 3499 | A |
| NTC 5000, B25/100 3988 | L |
| Other (e.g. NTC) | 9 |

**Cable**

| | |
|---|---|
| 1 | Silicone |
| 2 | Silicone, screened |
| 3 | Teflon |
| 4 | Teflon, screened |
| 5 | PVC |
| 6 | PVC, screened |
| 7 | Polyolefine, screened |
| 8 | Polyolefine, screened 80 °C |
| 9 | Other |

**Tolerance**

| | |
|---|---|
| EN 60751 Class B | 0 |
| ± 1% | 1 |
| ± 2% | 2 |
| ± 3% | 3 |
| Other | 9 |

**Connection**

| | |
|---|---|
| 0 | 2-wire |
| 1 | 3-wire |
| 2 | 4-wire |

**NTC characteristic**

| | |
|---|---|
| No NTC | 0 |
| Other | 9 |

**Protection tube**

| | |
|---|---|
| Brass | 0 |
| Acid-Proof Steel, AISI 316 | 1 |
| Other | 9 |

**Plug**

| | |
|---|---|
| 0 | None |
| 1 | AMP (Spade 6.35) |
| 3 | AMP Junior Power Timer |
| 5 | Deutsch Flying DT04– 3 pin |
| D | Deutsch Flying DT04 – 2 pin |
| E | Delphi Metri Pack flying – 102 |
| 9 | Other |

**Insertion length (80 mm max)**

| | |
|---|---|
| 24 mm | 024 |
| 28 mm | 028 |
| 40 mm | 040 |
| Other (21 – 80) | xxx |

**Insert**

| | |
|---|---|
| 0 | Fixed |

**Process connection**

| | |
|---|---|
| 0 | G ¼ A |
| 1 | G 3/8 A |
| 2 | G ½ A |
| 3 | M10 × 1 |
| B | M14 × 1.5 |
| 9 | Other |

## Integrated plug version

**Figure 4: Ordering for MBT 3270 - Integrated plug version**

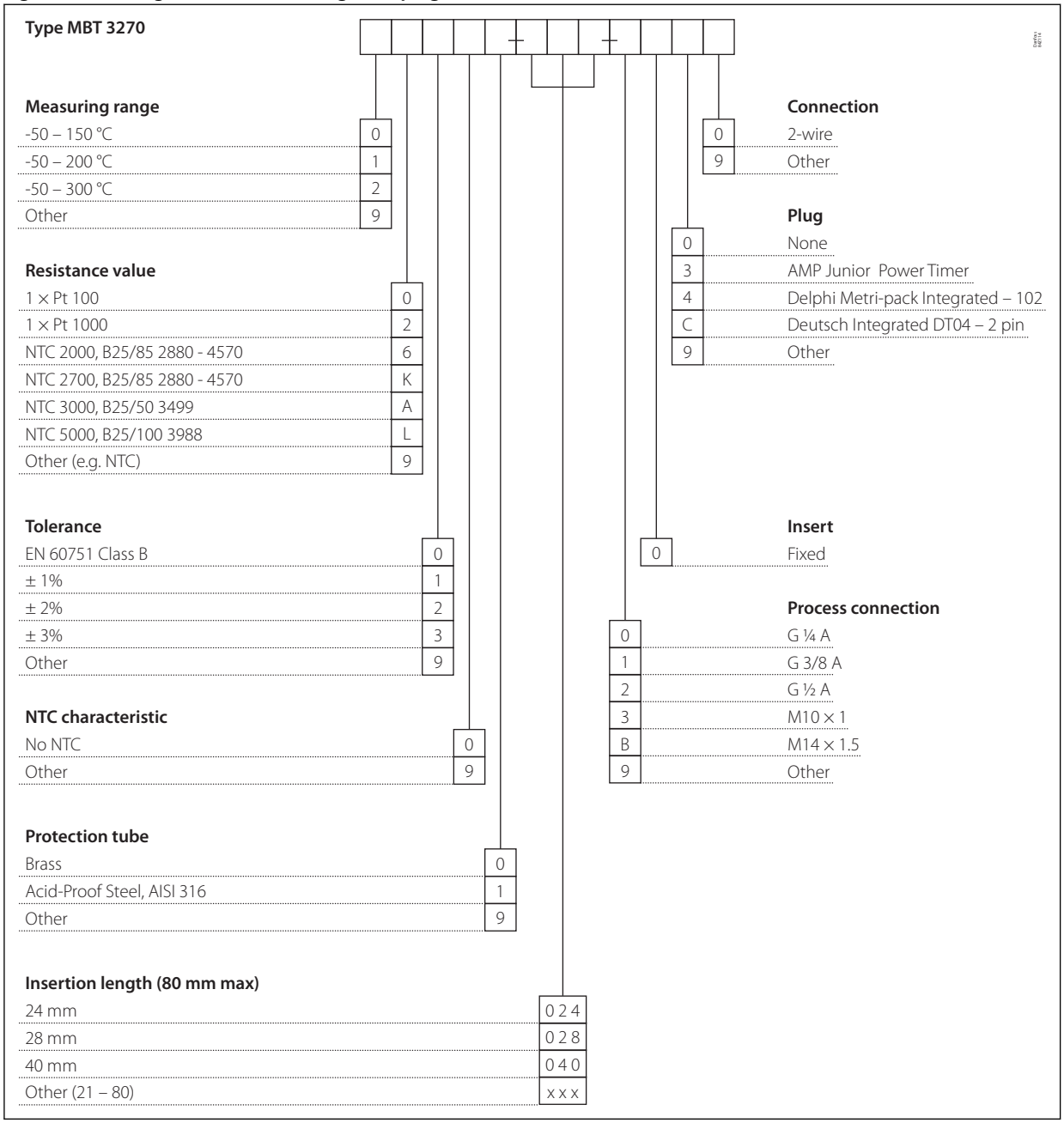


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**Table 14: MBT 3270**

| File name | Document type | Document topic | Approval authority |
|---|---|---|---|
| E494625 | Electrical - Safety Certificate | – | UL |
| DK.C.32.004.A 41461 | Measuring - Performance Certificate | – | GOST |
| 097R0004.01 | Manufacturers Declaration | RoHS | Danfoss |
| 084R1022.01 | Manufacturers Declaration | China RoHS | Danfoss |
| 087R0017.00 | Manufacturers Declaration | Simple apparatus | Danfoss |
| OC.C.32.004.A 75977 | Measuring - Performance Certificate | – | GOST |

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