

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

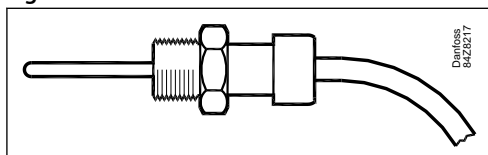


Table 1: General data

| 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 | 17 Nm | |
| | M14 | 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 Cable with AMP spade (6.35) Cable with AMP Junior Power Timer Cable with Delphi Metri Pack 102 Cable with Deutsch DT04-3P-2P 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 | 0.5 s | 1.5 s |

i NOTE:

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

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Table 4: Mechanical and environmental specifications

| Features | Description | |
|---------------------|----------------------------------|--|
| Sensor tolerances | Pt 1000 / Pt 100 | EN 60751 Class B: $\pm (0.3 + 0.005 \times t)$ |
| | NTC | On request |
| | PTC 2000 (KTY 81 – 210) | $\pm 1\%$ 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 Brass |
| Process connection | AISI 316 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

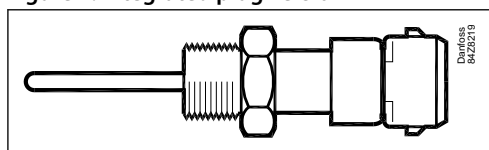


Table 6: General data

| Features | Description | |
|------------------------|------------------------|---|
| Ambient temperature | Plug | -40 – 125 °C |
| | Pt 1000, Pt 100 | -50 – 300 °C |
| Media temperature | NTC | -50 – 150 °C, Special versions up to 300 °C |
| | PTC | -50 – 150 °C |
| | Operating pressure | 500 bar |
| Max. external pressure | Burst pressure | > 900 bar |
| | Max. tightening torque | M10 |
| M14 | | 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 @ $d \geq 8$ mm |
| | | 60 mm @ $8 > d > 5$ mm |
| | | 40 mm @ $d \leq 5$ mm |
| | Stainless steel | 70 mm @ $d \geq 8$ mm |
| | | 50 mm @ $8 > d > 5$ mm |
| | | 35 mm @ $d \leq 5$ mm |
| Electrical Connection | AMP Junior Power Timer Delphi Metri Pack Deutsch DT04 Other on request | |
| Connection | 2 wire | |

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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 NTC PTC 2000 (KTY 81 – 210) | EN 60751 Class B On request ± 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 Delphi Metri Pack Deutsch DT04 | IP65 according to IEC 60529 |

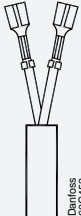
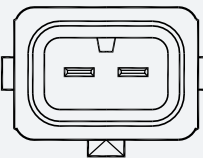
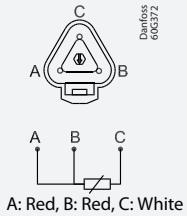
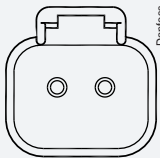
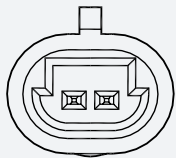
Table 10: Materials

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

Electrical connection

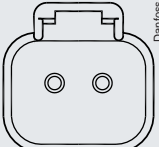
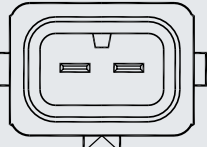
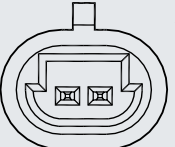
Cable version

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 |
|---|---|---|--|---|
|  |  |  |  |  |
| Danfoss 60595Z | Danfoss 84Z91 | Danfoss 60537Z A: Red, B: Red, C: White | Danfoss 84Z94 | Danfoss 84Z92 |

Integrated plug version

Table 12: Electrical connection of integrated plug version

| Deutsch DT04 | AMP Junior Power Timer | Delphi Metri Pack 102 |
|---|---|---|
|  |  |  |
| Danfoss 84Z94 | Danfoss 84Z91 | Danfoss 84Z92 |

Dimensions

Cable version

Table 13: Dimensions

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

Examples:

Insertion length: $L_i = 21$ to xx (max. 80 mm)

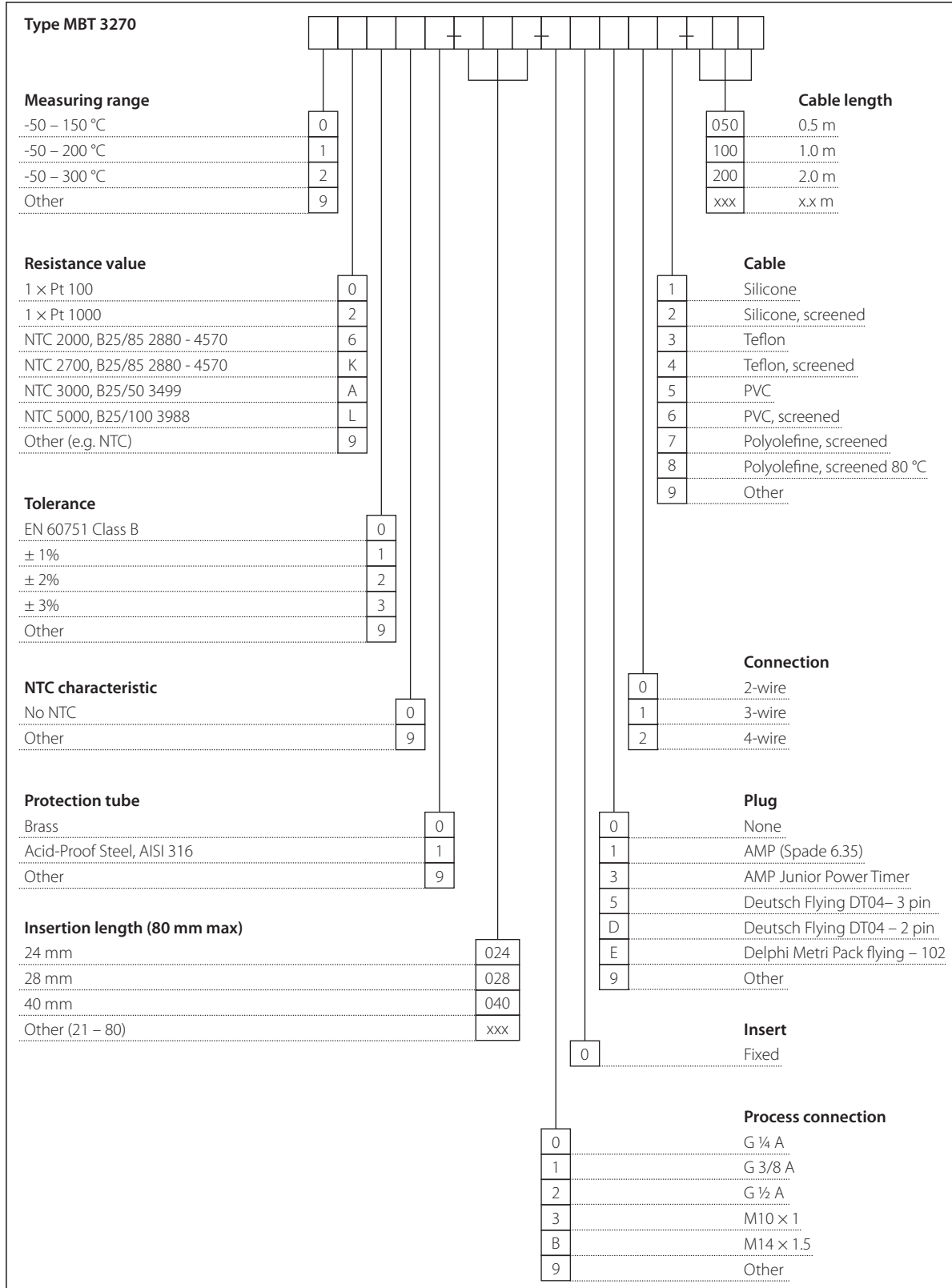
Cable length: $L_c = 0.5$ m to $x.xx$ m

Tube diameter depends on the chosen sensor element and the wanted response time.

Ordering

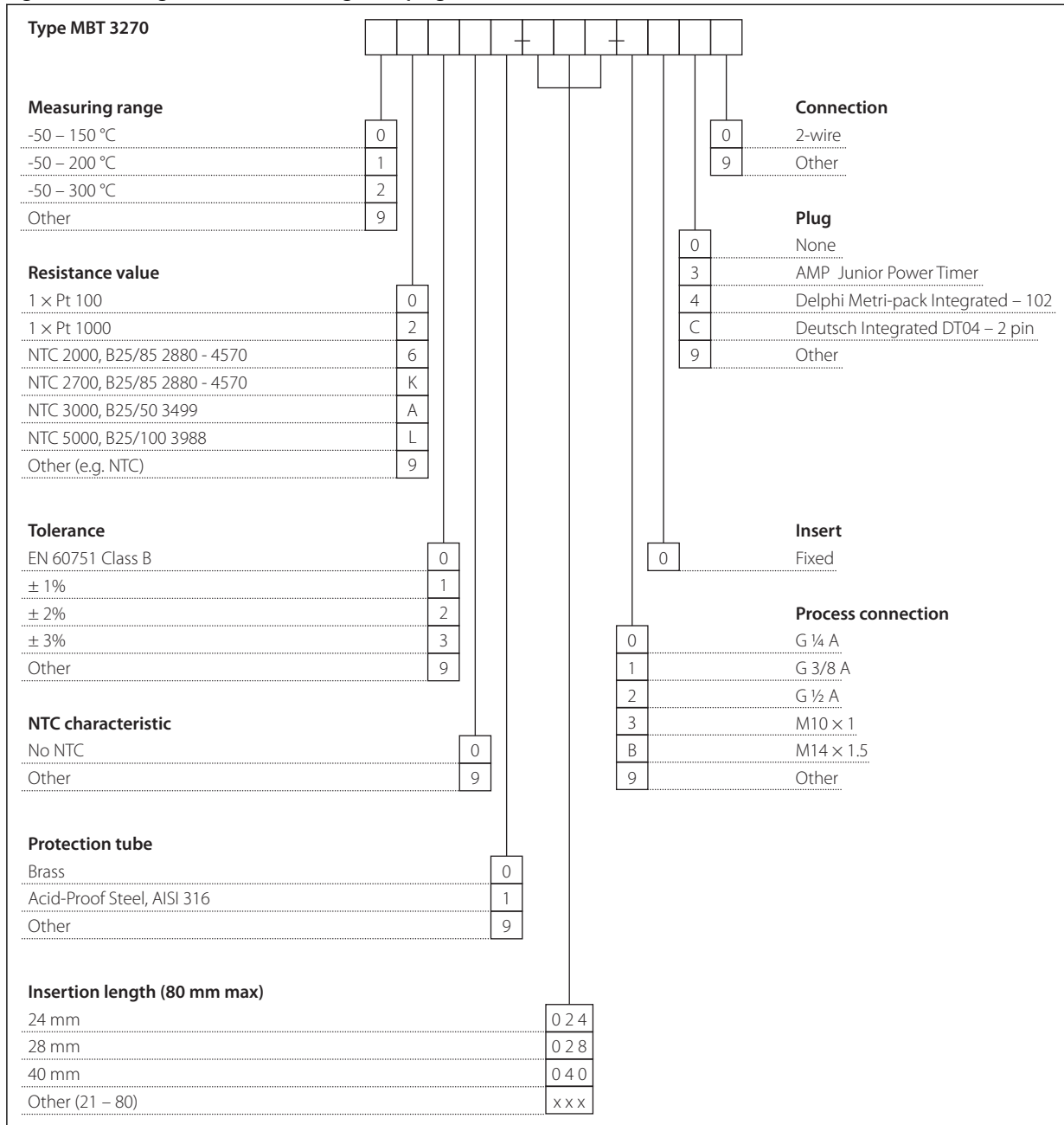
Cable version

Figure 3: Ordering for MBT 3270 - Cable version



Integrated plug version

Figure 4: Ordering for MBT 3270 - Integrated plug version



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The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

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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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