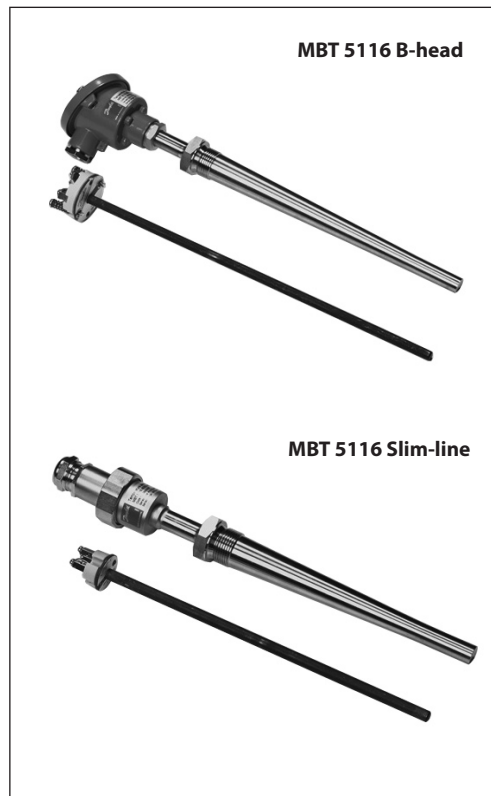


Exhaust gas temperature sensors types MBT 5116 and MBT 5113

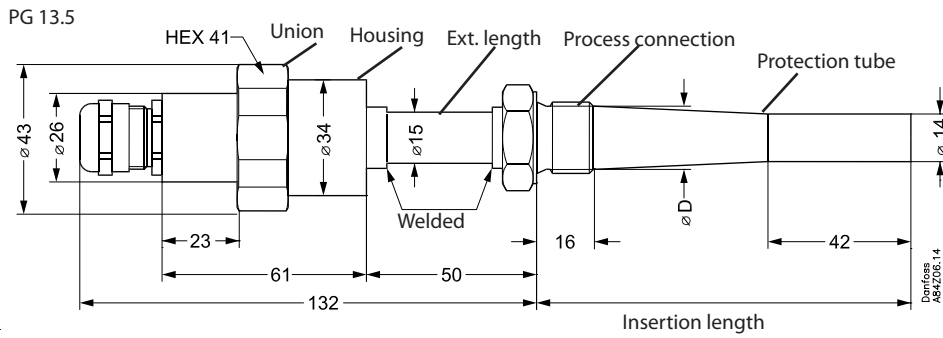
Features, MBT 5116



- For measuring and regulation exhaust gas temperature in stationary and marine
 - diesel engines
 - turbines
 - compressors
- Up to 600°C media temperatures
- Can be used with 2- or 3-wire connections
- Robust and compact construction with extremely high resistance to shock and vibration, measured according to IEC 68-2-6
- Pt100 thinfilm technology specially developed for heavy duty applications
- Can be mounted in all positions
- The small size of the thinfilm element reduces the necessary insertion length compared to sensors with wire wound elements
- Solid drilled protection tube
- Approvals:
 - Lloyds Register of Shipping, LR
 - Germanischer Lloyd, GL
 - Registro Italiano Navare, RINA
 - American Bureau of Shipping, ABS
 - Bureau Veritas, BV
 - Det Norske Veritas, DNV
 - Nippon Kaiji Kyokai, Class NK

Dimensions

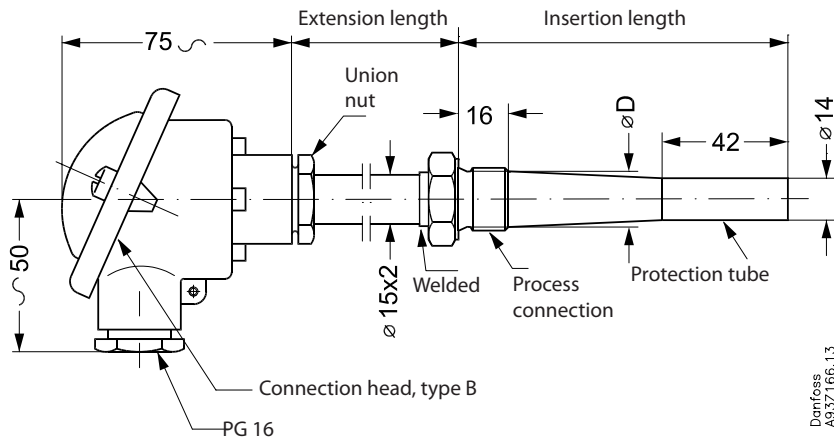
MBT 5116 Slim-line



| Process connection | | $\varnothing D$ |
|--------------------|--------|-----------------|
| G $\frac{1}{2}$ A | HEX 27 | 18 mm |
| G $\frac{3}{4}$ A | HEX 32 | 24 mm |

Note: Tightening torque moment for the union max.: 25 Nm

MBT 5116 B-head

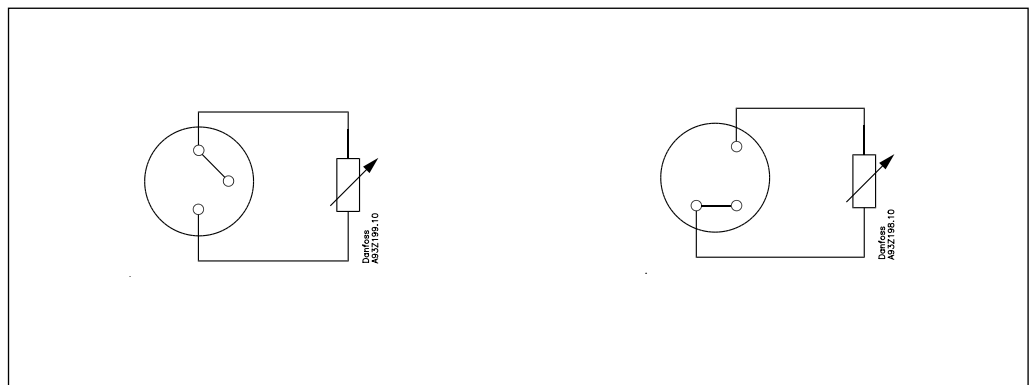


| Process connection | | $\varnothing D$ |
|--------------------|--------|-----------------|
| G $\frac{1}{2}$ A | HEX 27 | 18 mm |
| G $\frac{3}{4}$ A | HEX 32 | 24 mm |

Electrical connection

Slim-line, 2 wires, 3 terminals

B-Head, 2 wires, 3 terminals



Technical data
Response time

| Protection tube | Indicative response times according to VDI/VDE 3522 | | | |
|-----------------|---|-----------|-----------|-----------|
| | Water 0.2 m/s | | Air 1 m/s | |
| | $t_{0.5}$ | $t_{0.9}$ | $t_{0.5}$ | $t_{0.9}$ |
| ø24 → ø14 | 30 s. | 95 s. | 150 s. | 450 s. |

Material

| | | |
|-----------|---------------------------------------|---------------------|
| Slim-Line | Housing | Nickel plated brass |
| | Union | Nickel plated brass |
| | Cover | Nickel plated brass |
| | Spring (internal mounted) | W.no. 1.4568 |
| | Extension length | AISI 316 |
| | Protection tube in contact with media | AISI 316 |
| B-Head | Union | Nickel plated brass |
| | Connection head | Die cast aluminium |
| | Extension length | AISI 316 |
| | Protection tube in contact with media | AISI 316 |

Mechanical and environmental specifications

| | |
|--|--|
| Max. ambient temperature: Slim-Line: B-Head: | 75°C with 600°C media temperature 90°C with 600°C media temperature |
| Sensor tolerance | EN 60751 Class B: $\pm(0.3 + 0.005xt)$ t = temperature of medium, numerical value |
| Insulation resistance | Minimum 0.5 M Ohm at 600°C according to EN60751 |
| Vibration stability | Shock: 100g in 6 ms Vibrations: 4g sine function, 2–200Hz, measured according to IEC 68-2-6 |
| Enclosure | IP65 according to IEC 529 |
| Cable entry: Slim-Line B-Head | PG13,5 PG16 |

Weight approx.[kg]

| Insertion length (mm) | Process connection | | | |
|-----------------------|--------------------|-------|--------|-------|
| | Slim-line | | B-head | |
| | G1/2" | G3/4" | G1/2" | G3/4" |
| 80 | 0.43 | | 0.48 | |
| 100 | 0.46 | 0.52 | 0.52 | 0.60 |
| 120 | 0.48 | 0.57 | 0.56 | 0.64 |
| 150 | 0.52 | 0.64 | 0.60 | 0.70 |
| 170 | | 0.68 | | 0.72 |
| 200 | | 0.76 | | 0.76 |
| 250 | | 0.89 | | 0.85 |
| 300 | | 0.99 | | 1.04 |

**Ordering MBT5116
Slim-Line**

| | |
|------------------------|------------------|
| Measuring range: | -50 to +600°C |
| Resistance value: | Pt100 |
| Tolerance: | EN 60751 class B |
| Extension length: | 50mm |
| Electrical connection: | Pg13.5 (IP65) |

| Insertion length [mm] | MBT 5116 Slim-Line | |
|-----------------------|------------------------------|------------------------------|
| | Process connection | |
| | G1/2" | G3/4" |
| 80 | 084Z8157¹⁾ | |
| 100 | 084Z8158¹⁾ | 084Z8150¹⁾ |
| 120 | 084Z8159 | 084Z8151 |
| 150 | 084Z8186¹⁾ | 084Z8152¹⁾ |
| 170 | | 084Z8153 |
| 200 | | 084Z8154¹⁾ |
| 250 | | 084Z8155 |
| 300 | | 084Z8156 |

¹⁾ Preferred versions
Other specifications on request

**Ordering MBT 5116
B-Head**

| | |
|------------------------|------------------|
| Measuring range: | -50 to +600°C |
| Resistance value: | Pt100 |
| Tolerance: | EN 60751 class B |
| Extension length: | 50mm |
| Electrical connection: | Pg16 (IP65) |

| Insertion length [mm] | MBT 5116 B-Head | |
|-----------------------|------------------------------|------------------------------|
| | Process connection | |
| | G1/2" | G3/4" |
| 80 | 084Z5156¹⁾ | |
| 100 | 084Z5157¹⁾ | 084Z5160¹⁾ |
| 120 | | 084Z5048 |
| 150 | 084Z5159¹⁾ | 084Z5024¹⁾ |
| 170 | | 084Z5161 |
| 200 | | 084Z5025¹⁾ |
| 250 | | 084Z5034 |
| 300 | | 084Z5026 |

¹⁾ Preferred versions
Other specifications on request

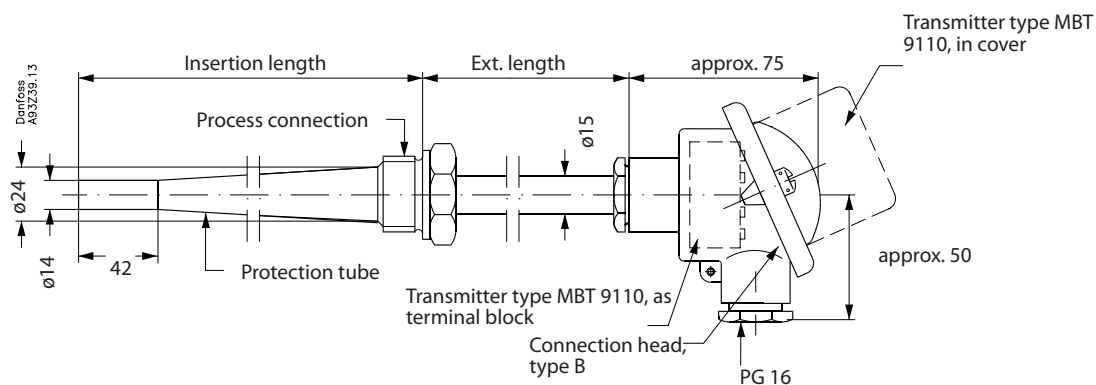
Features



MBT 5113 with thermocouple

- For measuring and regulating exhaust gas in stationary and marine
 - diesel engines
 - turbines
 - compressors
- With thermocouple up to 800°C media temperature
- Available with built-in transmitter
- Approvals
 - Lloyds Register of Shipping, LR
 - Germanischer Lloyd, GL
 - Bureau Veritas, BV
 - Det Norske Veritas, DNV
 - Nippon Kaiji Kyokai, ClassNK
 - American Bureau of Shipping ABS
 - Registra Italiano Navare, Rina

Dimensions



All dimensions in millimeter

Technical data

Response times

| | Indicative response times VDI/VDE 3522 | | | |
|-----------|--|-----------|-----------|-----------|
| | Water 0.2 m/s | | Air 1 m/s | |
| ø24 → ø14 | $t_{0.5}$ | $t_{0.9}$ | $t_{0.5}$ | $t_{0.9}$ |
| | 30 s. | 95 s. | 150 s. | 450 s. |

Mechanical and environmental specifications

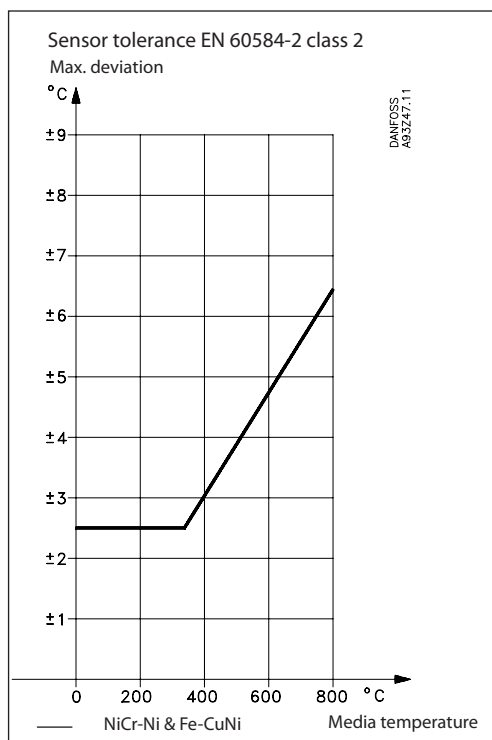
| | | |
|---------------------|----------------------------|--|
| Max. temperature 1) | Ambient: | 90°C for sensors without temperature transmitter |
| | Transmitter: | 85°C for sensors with temperature transm. galvanic isolation |
| Vibration stability | Shock: | 100 g in 6 ms |
| | Vibrations: | 4g sine function 2-100 Hz , measured according to IEC 68-2-6 |
| Enclosure | IP 65 according to IEC 529 | |
| Cable entry | PG 16 | |

1) The temperature of the temperature transmitter is influenced by media temperature, ambient temperature and ventilation in the engine room. If the temperature exceeds the max. allowed temperature the temperature transmitter must be placed in a separated enclosure as described in the separate data sheet for MBT 9110.

Weight without transmitter 1) - ca. [kg]

| Insertion length [mm] | Process connection | |
|-----------------------|--------------------|-------|
| | G1/2" | G3/4" |
| 80 | 0.48 | |
| 100 | 0.52 | 0.60 |
| 120 | 0.56 | 0.64 |
| 150 | 0.60 | 0.70 |
| 170 | | 0.72 |
| 200 | | 0.76 |
| 250 | | 0.85 |
| 300 | | 1.04 |

1) MBT 9110 increases weight by approx. 50 g (as terminal block) or approx. 80 g (in hightened lid).



**Ordering - Standard
MBT 5113 B-Head**

| | |
|------------------------|-----------------------------|
| Measuring range: | -50 to +800°C |
| Thermocouple: | 1 × NiCr-Ni, type K |
| Tolerance: | EN 60584-2 class 2 |
| Extension length: | 50 mm |
| Protection tube: | Tapered Ø24 → Ø14, AISI 316 |
| Electrical connection: | Pg 16 (IP 65) |

| Insertion length [mm] | Process connection G3/4" |
|-----------------------|--------------------------|
| 100 | 084Z5052 |
| 150 | 084Z5274 |
| 200 | 084Z5248 |
| 250 | 084Z5275 |
| 300 | 084Z7014 |

**Ordering - Standard
MBT5113 B-Head
with built-in transmitter**

| | |
|------------------------|------------------------------|
| Measuring range: | -50 to +800°C |
| Thermocouple: | 1 × NiCr-Ni, type K |
| Tolerance: | EN 60584-2 class 2 |
| Extension length | 100 mm |
| Protection tube: | Tapered Ø24 → Ø 14, AISI 316 |
| Electrical connection: | Pg 16 (IP 65) |
| Transmitter type: | MBT9110 as terminal block |
| Transmitter output: | 4-20 mA |
| Transmitter setting: | 0 to 600°C |

| Insertion length [mm] | Process connection G3/4" |
|-----------------------|--------------------------|
| 100 | 084Z5276 |
| 150 | 084Z5257 |
| 200 | 084Z5277 |
| 250 | 084Z5278 |

Recommendations

- In order to reduce the heat at the temperature transmitter the recommended extension length for sensors with temperature transmitter type MBT 9110 is 100 mm
- Thermocouple 1 × NiCr-Ni, type K are recommended as standard for sensors with temperature transmitters

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Exhaust gas temperature sensor with Pt100 resistance element, type MBT 5116, B-head

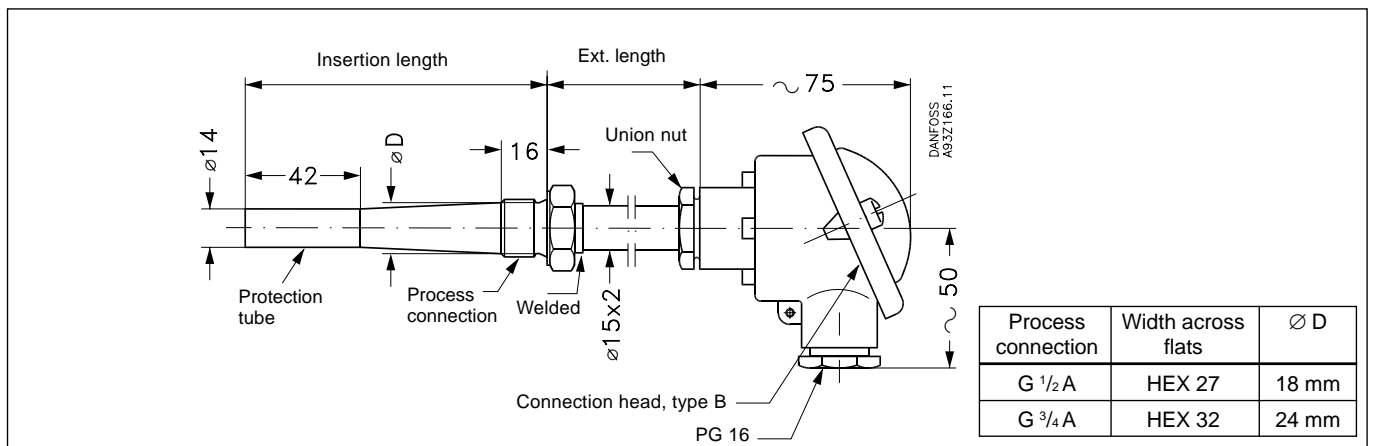
Features and application



- For measuring and regulating exhaust gas temperature in stationary and marine
 - diesel engines
 - turbines
 - compressors
- Up to 600°C media temperatures
- Can be used with 2- or 3-wire connections
- Robust and compact construction with extremely high resistance to shock and vibration, measured according to IEC 68-2-6
- Pt100 thinfilm technology specially developed for heavy duty applications
- Can be mounted in all positions
- The small size of the thinfilm element reduces the necessary insertion length compared to sensors with wire wound elements
- Solid drilled protection tube
- Approvals:
 - Lloyds Register of Shipping, LR
 - Germanischer Lloyd, GL
 - Bureau Veritas, BV
 - Det Norske Veritas, DNV
 - Nippon Kaiji Kyokai, ClassNK

MBT 5116, B-head

Dimensions



Technical data

Response times

| G 1/2 A, G 3/4 A | Indicative response times according to VDI/VDE 3522 | | | |
|------------------|---|------------------|------------------|------------------|
| | Water 0.2 m/s | | Air 1 m/s | |
| | t _{0.5} | t _{0.9} | t _{0.5} | t _{0.9} |
| | 30 sec. | 95 sec. | 150 sec. | 450 sec. |

Materials

| | |
|---------------------------------------|----------------------------|
| Protection tube in contact with media | W.Nr. 1.4571 (AISI 316 Ti) |
| Extension length | W.Nr. 1.4571 (AISI 316 Ti) |
| Union nut | Nickel plated brass |
| Connection head | Die cast aluminium |

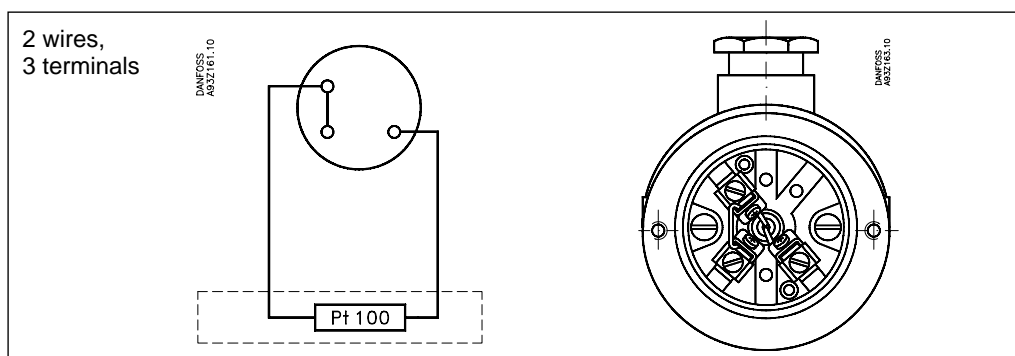
Weight approx. [kg]

| Insertion length [mm] | Process connection | |
|--------------------------|--------------------|---------|
| | G 1/2 A | G 3/4 A |
| 100 | 0.51 | 0.57 |
| 120 | 0.53 | 0.62 |
| 150 | 0.57 | 0.69 |
| 170 | | 0.73 |
| 200 | | 0.81 |
| 250 | | 0.94 |
| 300 | | 1.04 |

Mechanical and environmental specifications

| | |
|--------------------------|--|
| Max. ambient temperature | 90°C with 600°C media temperature |
| Sensor tolerance | EN 60751 Class B: $\pm (0.3 + 0.005 \times t)$ t = temperature of medium, numerical value |
| Insulation resistance | Minimum 0.5 M Ohm at 600°C according to EN 60751 |
| Vibration stability | Shock: 100 g in 6 ms Vibrations: 4g sine function 2 - 200 Hz, measured acc. to IEC 68-2-6 |
| Enclosure | IP 65 according to IEC 529 |
| Cable entry | PG 16 |

Electrical connection



Ordering

- Measuring range: -50 to +600°C
- Resistance value: 1 × Pt 100
- Tolerance: EN 60751 Class B
- Extension length: 100 mm, $\varnothing 15 \times 2$
- Electrical connection: PG 16 (IP 65)

| Insertion length [mm] | Process connection | |
|--------------------------|-------------------------------|-------------------------------|
| | G 1/2 A | G 3/4 A |
| 100 | 084Z8257 ¹⁾ | 084Z8250 ¹⁾ |
| 120 | 084Z8258 | 084Z8251 |
| 150 | 084Z8259 ¹⁾ | 084Z8252 ¹⁾ |
| 170 | | 084Z8253 |
| 200 | | 084Z8254 ¹⁾ |
| 250 | | 084Z8255 |
| 300 | | 084Z8256 |

¹⁾ Preferred versions

Other specifications on request

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