

Data Sheet

Temperature sensor
Type **MBT 5310**

For monitoring of bearing temperatures in Wind turbines, engines and gearboxes applications



The MBT 5310 temperature sensor series is specially designed for measuring the temperature in bearings where there is a risk of overheating.

To get a very short reaction time the measuring element is placed in a way to secure a reaction time of down to $t_{0.5} = 6$ sec. in water.

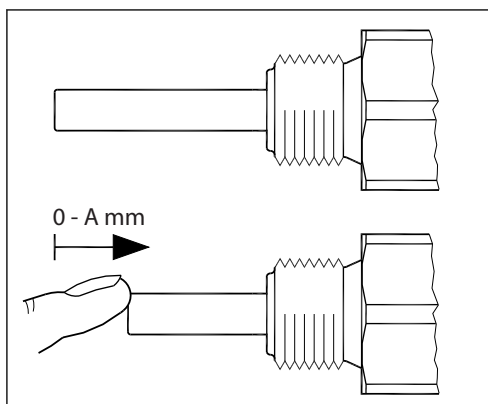
The sensor is fitted with an adjustable spring loaded protection tube which ensures metallic contact between bearing and sensor at all times.

Features

- For monitoring of bearing temperatures where there is risk of overheating, in applications such as:
 - Wind Turbines
 - Engines
 - Gearboxes
- Based on Pt 100 / Pt 1000 technology for use up to 200 °C
- Spring loaded to ensure good contact with the bearing

Functions

Spring function



Brass process connection

A = 15 mm

Stainless steel process connection

A = 12 mm

Product specification

Technical Data

Table 1: General data

Measuring range	-50 – 200 °C
Sensing element	Pt 100, Pt 1000
Protection tube	ø8 × 1 mm

Table 2: Response time

Protection tube	Indicative response times			
	Water 0.2 m/s		Air 1 m/s	
	$t_{0,5}$	$t_{0,9}$	$t_{0,5}$	$t_{0,9}$
ø8 × 1 mm	6 s	20 s	35 s	140 s

Table 3: Materials

Protection tube in contact with the media	AISI 316
O-ring	FPM
Nut	Nickel plated brass
Process connection	AISI 316 / Brass
Gasket	Silicone
Plug EN 175301-803-A	PA (max. 125 °C)
B-head	Die cast aluminium

Table 4: Mechanical and environmental specifications

Sensor tolerance	EN 60751 Class B: $\pm (0.3 \text{ °C} + 0.005 \times t)$ t = temperature of medium, numerical value	
Vibration stability	Shock	100 g/6 ms
	Vibrations	4 g sine function 2 – 100 Hz, acc. to IEC 60068-2-6
Enclosure	IP65 according to IEC 60529	
B-head	Pg 11	
Plug EN 175301-803-A	Pg 9, Pg 11	

Technical Data Drawings

Figure 1: Dimensions [mm]

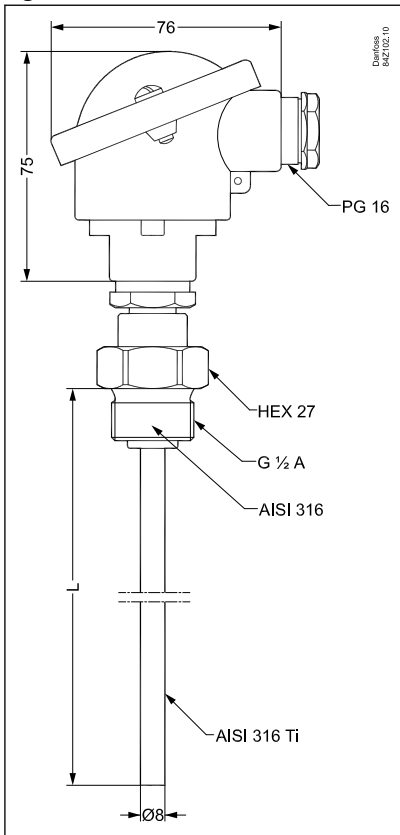
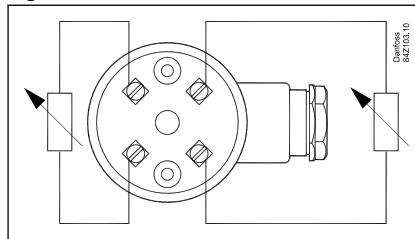
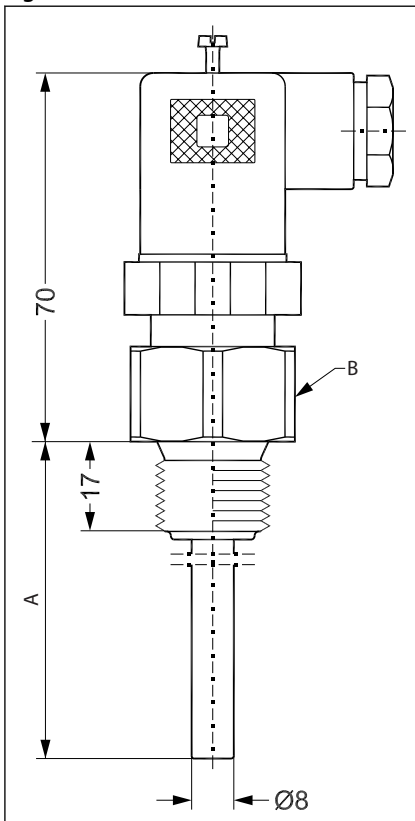


Figure 2: Electrical connection



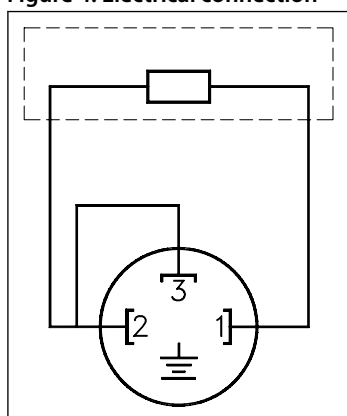
Electrical connection and dimensions

Figure 3: Dimensions



- | | |
|---|----------------------------|
| A | Insertion length, variable |
| B | Stainless or Brass |

Figure 4: Electrical connection



- 2 wire
 - 3 terminals
- Ground not connected

Technical data Cable version

Table 5: General data

Measuring range	-50 – 200 °C
Sensing element	Pt 100, Pt 1000
Protection tube	ø8 × 1 mm

Table 6: Response time

Protection tube	Indicative response times			
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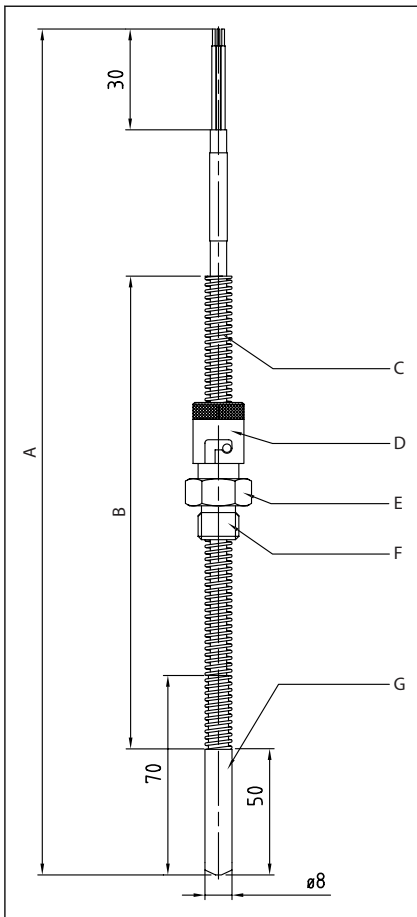
Table 7: Materials

Protection tube in contact with the media	AISI 316
Spring material	Stainless steel
Cable	FEP or Polyolefin, depending on selection
Process connection, bayonet	AISI 316

Table 8: Mechanical and environmental specifications

Sensor tolerance	EN 60751 Class B: $\pm (0.3 \text{ °C} + 0.005 \times t)$ t = temperature of medium, numerical value	
Vibration stability	Shock	100 g/6 ms
	Vibrations	4 g sine function 2 – 100 Hz, acc. to IEC 60068-2-6
	Enclosure	IP67 according to IEC 60529

Cable Dimensions [mm]



A	Total length
B	Insertion length
C	Spring: Stainless steel
D	Bayonet cap: Stainless steel 316
E	Hex 17
F	2 Pin adapter G1/4A: Stainless steel 316
G	Bayonet tip: Stainless steel 316

Ordering

Ordering standard Plug and B-head

Type MBT 5310																										
Resistance value 1 × Pt 100 2 × Pt 100 ¹⁾ 1 × Pt 1000 2 × Pt 1000 ¹⁾ Other	0 1 2 3 9	Tolerance EN 60751 Class B	Process connection 0 G ½ A Stainless steel 1 G ¾ A Stainless steel 2 G ½ A Brass 3 G ¾ A Brass 7 ½ –14 NPT Stainless steel 9 Other																							
Protection Tube, W.nr. 1.4571 (AISI 316 Ti) Acid-proof steel, ø8 × 1 mm Other	0 9																									
Insertion length (working range) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Brass</th> <th style="text-align: left;">Stainless</th> <th style="text-align: center;">Length</th> </tr> </thead> <tbody> <tr> <td>70 – 85 mm</td> <td>73 – 85 mm</td> <td style="text-align: center;">85</td> </tr> <tr> <td>85 – 100 mm</td> <td>88 – 100 mm</td> <td style="text-align: center;">100</td> </tr> <tr> <td>145 – 160 mm</td> <td>148 – 160 mm</td> <td style="text-align: center;">160</td> </tr> <tr> <td>210 – 225 mm</td> <td>213 – 225 mm</td> <td style="text-align: center;">225</td> </tr> <tr> <td>225 – 240 mm</td> <td>228 – 240 mm</td> <td style="text-align: center;">240</td> </tr> <tr> <td>555 – 570 mm</td> <td>558 – 570 mm</td> <td style="text-align: center;">570</td> </tr> <tr> <td>Other</td> <td></td> <td style="text-align: center;">xxx</td> </tr> </tbody> </table>	Brass	Stainless	Length	70 – 85 mm	73 – 85 mm	85	85 – 100 mm	88 – 100 mm	100	145 – 160 mm	148 – 160 mm	160	210 – 225 mm	213 – 225 mm	225	225 – 240 mm	228 – 240 mm	240	555 – 570 mm	558 – 570 mm	570	Other		xxx	85 100 160 225 240 570 xxx	Electrical Connections 0 EN 175301-803-A, plug Pg 11 (IP65) 2 wire / 3 terminals 1 EN 175301-803-A, plug Pg 9 (IP65) 2 wire / 3 terminals 3 B-mini head 2 wire / 3 terminals 4 B-mini head 4 wire / 4 terminals 5 B-head standard, 4 wire / 4 terminals 6 B-mini head 2 wire / 2 terminals 7 EN 175301-803-A, plug Pg 9 (IP65) 4 terminals no grounding pin 8 EN 175301-803-A, plug Pg 11 (IP65) 4 terminals no grounding pin A M12 plug 2 wire 4 pins B M12 plug 4 wire 4 pins
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Other		xxx																								
 Preferred versions																										

¹⁾ Not all electrical connections are possible

Ordering standard cable version

Type MBT 5310

Resistance value	Protection Tube, Stainless Steel / Brass	Insertion length	Cable length	Cable type	Tolerance	Process connection	Electrical Connections
1 × Pt 100	Acid-proof steel, ø8 × 1 mm	100 mm	0100	None	EN 60751 Class B	Bayonet coupling	2-Wire
2 × Pt 100 ¹⁾	Acid-proof steel, ø10 × 2 mm	300 mm	0500	FEP cable	Other	Other	3-Wire (only 1 × element)
1 × Pt 1000	Acid-proof steel, ø12 × 1 mm	xxx mm	1000	Polyolefin cable			4-Wire (only 1 × element)
2 × Pt 1000 ¹⁾	Other		xxxx	Other			Other
Other							

Preferred versions

¹⁾ Not all electrical connections are possible

Certificates, declarations, and approvals

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.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 9: Certificates and declarations

File name	Document type	Document topic	Approval authority
060G9688.00	Manufacturers Declaration	-	Danfoss
097R0004.01	Manufacturers Declaration	RoHS	Danfoss
UA.10146.D.00075-19	UA Declaration	EMCD/LVD	LLC CDC EURO TYSK
084R1022.01	Manufacturers Declaration	China RoHS	Danfoss
087R0017.00	Manufacturers Declaration	Simple apparatus	Danfoss

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