

Data sheet

Exhaust gas temperature sensor

MBT 5111



The MBT 5111 is a heavy-duty temperature sensor that can be used for measuring and regulating exhaust gas from diesel engines, turbines and compressors within stationary and marine applications.

This temperature sensor is based on a type K thermo couple, which measures temperatures up to 800 °C. The slim construction gives a short reaction time of $t_{0,5} = 2$ sec. in water.

All parts in contact with the media are made of stainless steel AISI 316 Ti. The sensor is delivered with a 6 m extension cable as standard.

Features

- For measuring exhaust gas in stationary and marine:
 - diesel engines
 - turbines
 - compressors
- With thermocouple for up to 800 °C media temperature
- MBT 5111 with adjustable insertion length up to 150 mm using moveable compression fitting

Approvals

Lloyds Register of Shipping, LR
Germanischer Lloyd, GL
Det Norske Veritas, DNV
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

Sensing element	1 x NiCr-Ni or 2x NiCr-Ni, type K
Measuring range	-40 – 800 °C
Thermocouple design	According to EN 61515
Tolerances	According to EN 60584-2 Class 2
Protection tube	AISI 316 Ti

Response times

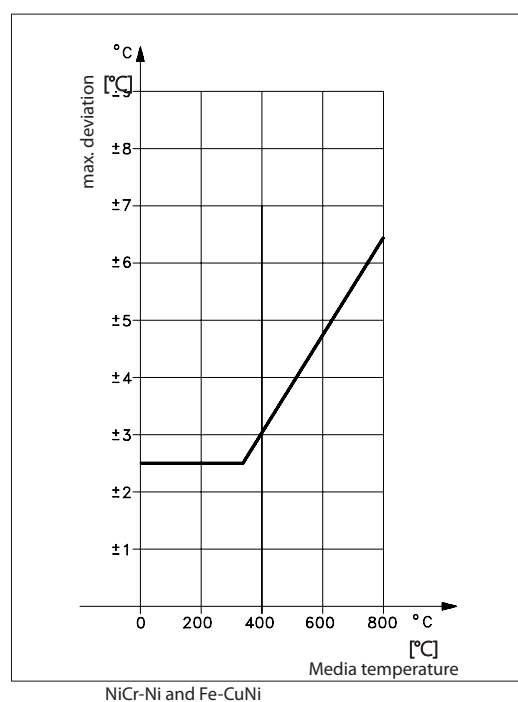
Type	Indicative response times	
	Water 0.2 m/s	
	t _{0.5}	t _{0.9}
MBT 5111 ø12	15 s	45 s
MBT 5111 ø6	2 s	5 s
With pocket	12 s	38 s

Mechanical and environmental specifications

Ambient temperature	Depending on cable	
Vibration stability	Shock	100 g/6 ms
	Vibrations	4 g sine function 2 – 100 Hz, measured acc. to IEC 60068-2-6
Cable	MBT 5111 ø12	2 x 1.5 mm ² , armoured silicone (max. 200 °C)
	MBT 5111 ø6	2 x 0.5 mm ² , armoured teflon (max. 260 °C)
Enclosure	IP65 according to IEC 60529	

Net weight

MBT 5111 ø12	0.45 kg
MBT 5111 ø6	0.16 kg
1 m cable increases net weight with	approx. 40 g

Sensor tolerance EN 60584-2 Class 2


Ordering standard

Type MBT 5111	Sensor		Cable	Accessories	
Thermocouple					
1 × Type K, max 800 °C	0			0000	None
2 × Type K, max 800 °C	1			0030	0.3 m
Other	9			0100	1.0 m
				1000	10 m
				xxx0	Other
Protection Tube					
∅4.5 mm	0			0	None
∅6.0 mm	1			1	Flexible tube
∅8.0 mm	2			2	Spring
Other	9			9	Other
Tolerance					
Class 2 IEC 60584-2	0				
Other	9				
Design					
Straight protection tube	0			0	None
Bended protection tube (90° as standard)	1			9	Other
Protection tube, outside length					
100 mm		0100		0	None
500 mm		0500		1	Jäger straight
1000 mm		1000		3	ITT Cannon
xxxx mm		xxxx		9	Other
Connection type					
None		0		0100	01.0 m
Ajustable fitting, 1 piece		1		0200	02.0 m
Fixed fitting		3		1000	10.0 m
Other		9		xxxx	xx,x m
Connection thread					
None		0 0	1		PFA thermocouple cable, screen, 260 °C
¼" – 18NPT		1	2		FEP thermocouple cable, screen, 205 °C
G ½ A		4	9		Other
Other		9			
Cable type					

Preferred versions

Mounting

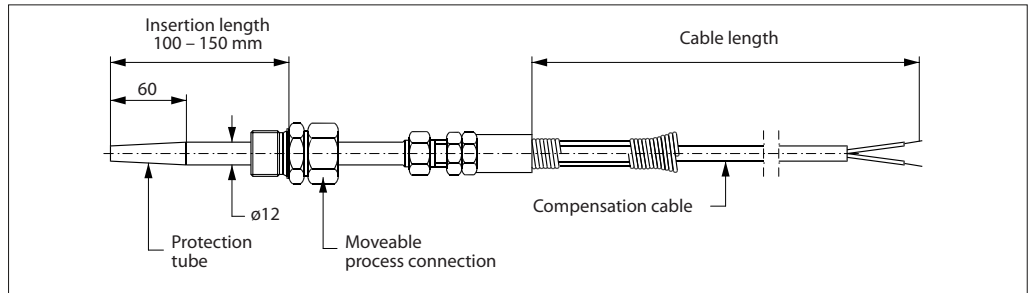
The free insertion length may not exceed 25 × sensor diameter, e.g. 150 mm with a 6 mm sensor diameter.

The free insertion length is defined as the part of the outermost sensor end that is not supported by a pocket or a drilled hole in the machinery.

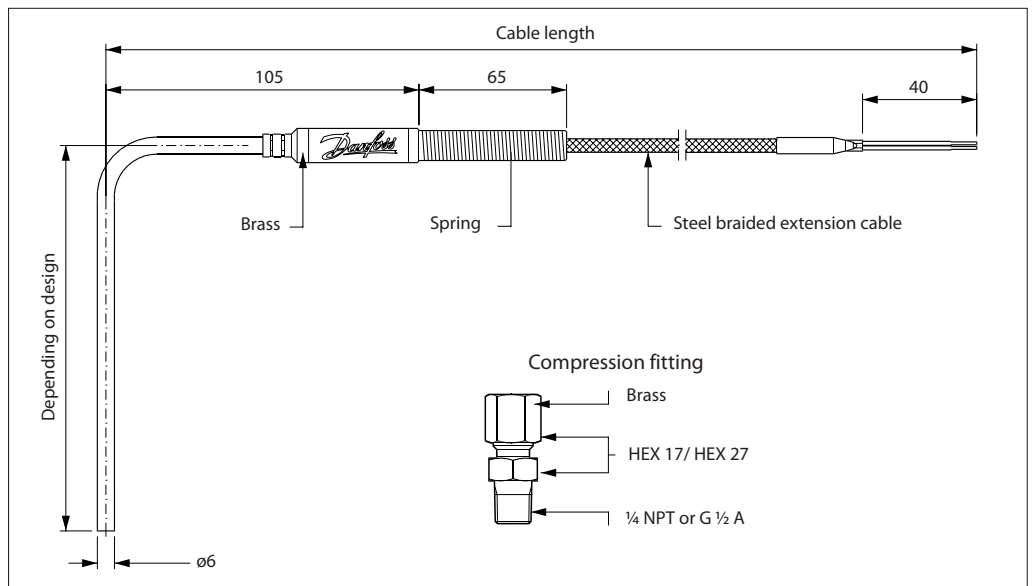
The free length of the cable must be supported for every ½ meter (= 100 × cable diameter).

Dimensions [mm]

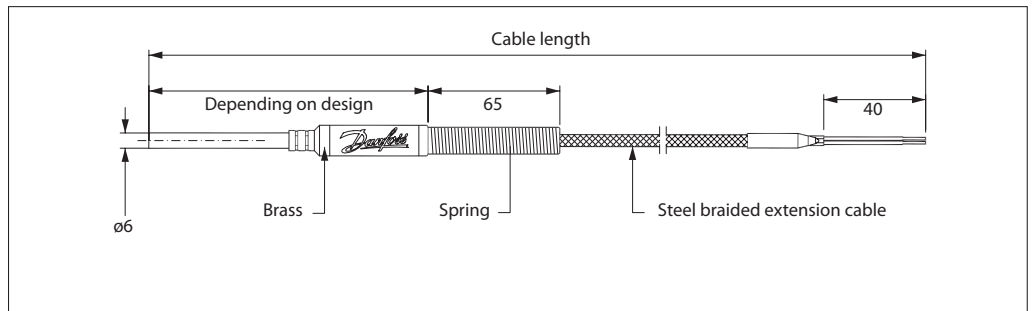
MBT 5111 – $\phi 12$ version



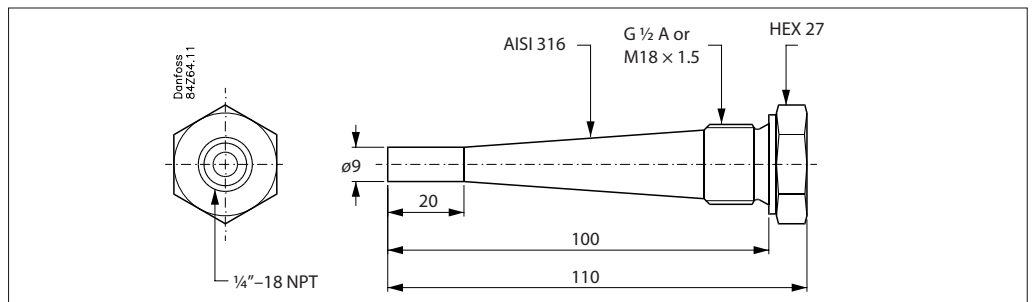
MBT 5111 – $\phi 6$ angle version



MBT 5111 – $\phi 6$ straight version



Pocket for MBT 5111 – $\phi 6$ version ((To be used together with compression fitting)



All dimensions are in millimeters