



## Data sheet

# Exhaust gas temperature sensor Type 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

## Data sheet

## Exhaust gas temperature sensor, type MBT 5111

## 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 $\varnothing$ 12	15 s	45 s
MBT 5111 $\varnothing$ 6	2 s	5 s
With pocket	12 s	38 s

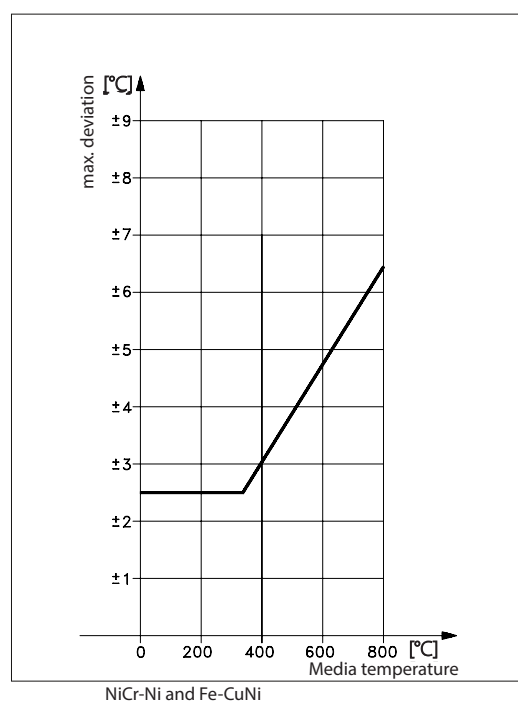
## Mechanical and environmental specifications

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 $\varnothing$ 12	2 x 1.5 mm <sup>2</sup> , armoured silicone (max. 200 °C)
	MBT 5111 $\varnothing$ 6	2 x 0.5 mm <sup>2</sup> , armoured teflon (max. 260 °C)
Enclosure	IP65 according to IEC 60529	

## Net weight

MBT 5111 $\varnothing$ 12	0.45 kg
MBT 5111 $\varnothing$ 6	0.16 kg
1 m cable increases net weight with	approx. 40 g

## Sensor tolerance EN 60584-2 Class 2



**Data sheet**

**Exhaust gas temperature sensor, type MBT 5111**

**Ordering standard**

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

■ 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.

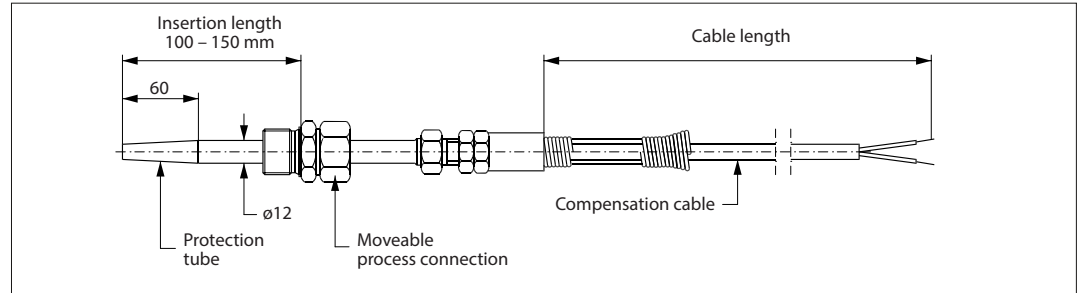
The free length of the cable must be supported for every ½ meter (= 100 × cable diameter).

**Data sheet**

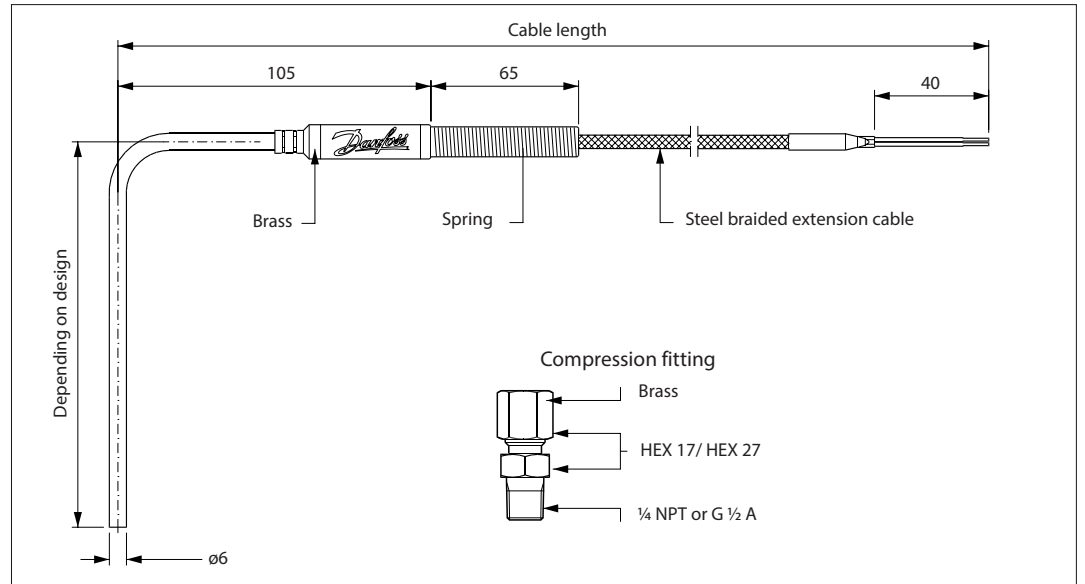
**Exhaust gas temperature sensor, type MBT 5111**

**Dimensions**

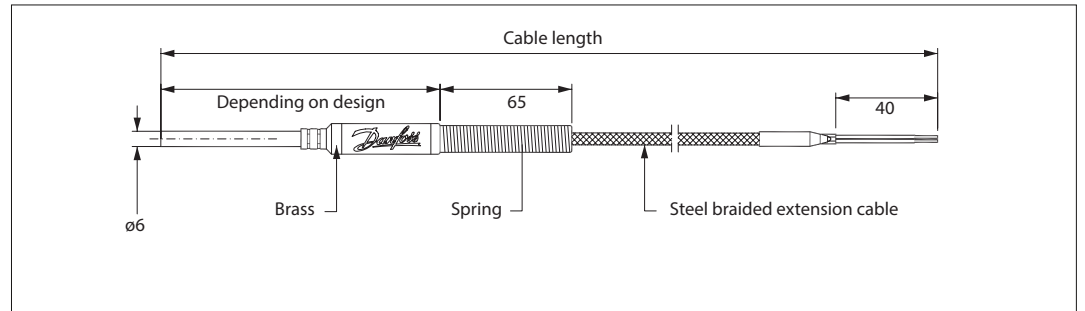
*MBT 5111 – ø12 version*



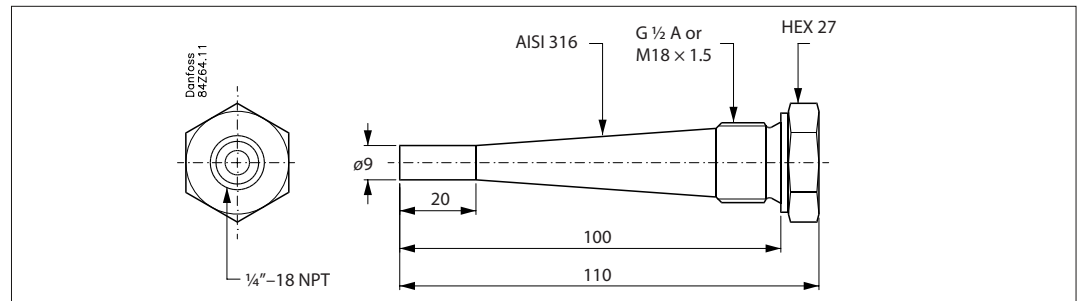
*MBT 5111 – ø6 angle version*



*MBT 5111 – ø6 straight version*



*Pocket for MBT 5111 – ø6 version ((To be used together with compression fitting))*



All dimensions are in millimeters

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without consequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.