

Data sheet

# Exhaust gas temperature sensors

## Type MBT 5113 and MBT 5116



Heavy-duty sensors used for measuring exhaust gas from diesel engines, turbines and compressors within stationary and marine applications.

MBT 5113 – based on thermocouple technology for media temperatures up to 800 °C.

MBT 5116 – based on a Pt 100 element technology for standardised signals, high accuracy and media temperature up to 600 °C.

### Features

#### MBT 5113

- Up to 800 °C media temperatures
- B-head for standard installations
- Changeable inserts
- Solid drilled protection tube for high resistance to shock and vibrations

#### MBT 5116

- Up to 600 °C media temperatures
- 2- or 3 wire connections
- Solid drilled protection tube for high resistance to shock and vibrations
- Available in 2 versions:
- Slim-line for compact installations
- B-head for standard installations
- Changeable insert

### 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

General data MBT 5113

Measuring range	-50 – 800 °C
Sensing element	1 × NiCr-Ni, type K
Protection tube	ø24 / ø14, AISI 316

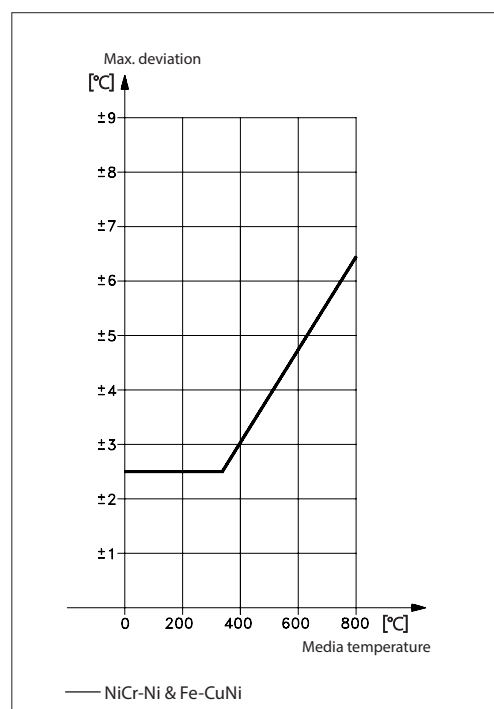
Response times

Protection tube	Indicative response times			
	Water 0.2 m/s		Air 1 m/s	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
ø24 / ø14	30 s	95 s	200 s	700 s

Mechanical and environmental specifications

Max. temperature	Ambient:	90 °C with 600 °C media temperature
Vibration stability	Shock:	100 g / 6 ms
	Vibrations:	4 g sine function, 2 – 100 Hz , measured according to IEC 60068-2-6
Enclosure	IP65 according to IEC 60529	
Cable entry	Pg 16	

Sensor tolerance EN 60584-2 class 2

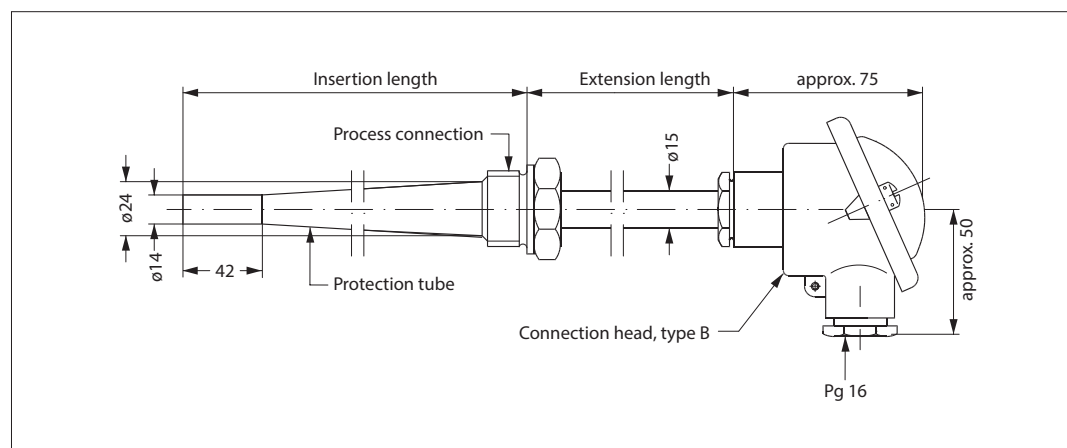


Ordering standard

Type MBT 5113		Sensor			
<b>Connection head</b> B-head (-50 – 800 °C)	B			<b>Tolerance</b> EN 60584-2 Class 2	0
<b>Resistance value</b> 1 x NiCr-Ni, Type K	0			<b>Process connection</b> G ½ A	0
Other	9			G ¾ A	1
<b>Protection Tube</b> ø24 / ø14, Tapered	0			Other	9
Other	9				
<b>Extension length</b>				<b>Insertion length</b>	
050 mm	1	080		080 mm	
100 mm	2	100		100 mm	
Other	9	150		150 mm	
		200		200 mm	
		250		250 mm	
		300		300 mm	
		xx0		xx0 mm	

■ Preferred versions

Dimensions  
MBT 5113



Net weight [kg]

Insertion length [mm]	Process connection	
	G ½"	G ¾"
080	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

**Technical data  
MBT 5116**

*General data MBT 5116*

Measuring range	-50 – 600 °C
Sensing element	Pt 100
Protection tube	ø24 / ø14, AISI 316

*Response times*

Protection tube	Indicative response times			
	Water 0.2 m/s		Air 1 m/s	
	$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
ø24 / ø14	30 s	95 s	150 s	450 s

*Mechanical and environmental specifications*

Max. ambient temperature	Slim-Line:	75 °C with 600 °C media temperature
	B-Head:	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 EN60751	
Vibration stability	Shock:	100 g / 6 ms
	Vibrations:	4 g sine function, 2 – 200Hz, measured according to IEC 60068-2-6
Enclosure	IP65 according to IEC 60529	
Cable entry	Slim-Line	Pg 13.5
	B-Head	Pg 16

*Material*

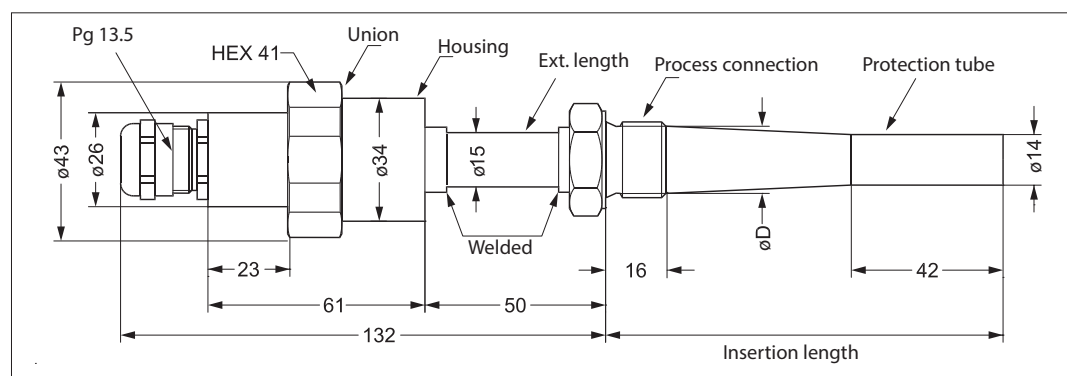
Slim-Line	Housing	Nickel plated brass
	Union	Nickel plated brass
	Cover	Nickel plated brass
	Spring (internal mounted)	W.no. 1.4568
	Extension length	AISI 316
	Protection tube in contact with media	AISI 316
B-Head	Union	Nickel plated brass
	Connection head	Die cast aluminium
	Extension length	AISI 316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

Ordering standard

Type MBT 5116		Sensor			
<b>Connection head</b>				<b>Connection</b>	
B-head (-50 – 600 °C)	B			0	2 wire 3 terminals
Slimline (-50 – 600 °C)	S			1	2 wire 4 terminals
Cable (-50 – 600 °C)	C				
<b>Resistance value</b>				<b>Process connection</b>	
1 x Pt 100	0			0	G ½ A
Other	9			1	G ¾ A
<b>Protection Tube</b>					
ø24 / ø14, Tapered	0			3	M33 x 2
Other	9			9	Other
<b>Extension length</b>				<b>Insertion length</b>	
050 mm	1	080		080 mm	
100 mm	2	100		100 mm	
Other	9	120		120 mm	
		150		150 mm	
		200		200 mm	
		250		250 mm	
		300		300 mm	
		xx0		xx0 mm	
<input checked="" type="checkbox"/> Preferred versions					

Dimensions

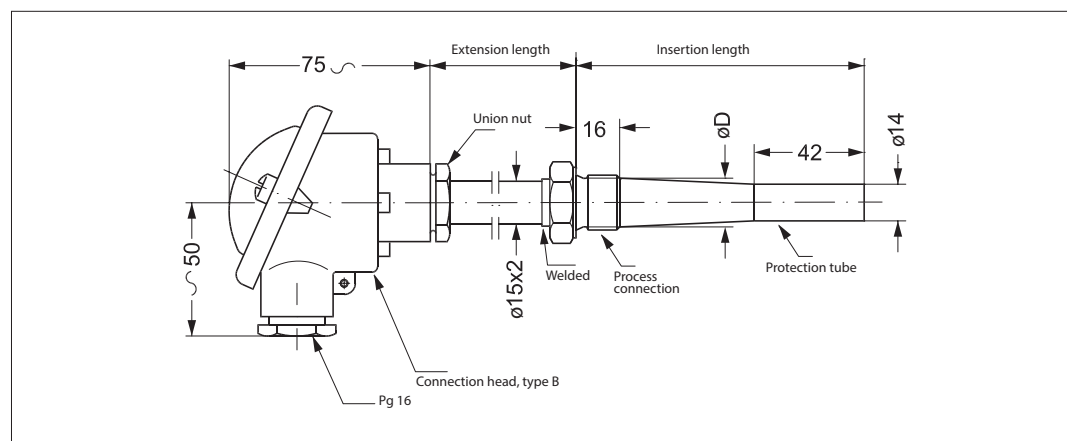
MBT 5116 Slim-line



Process connection	G ½ A	G ¾ A
Width across flats	HEX 27	HEX 32
$\varnothing D$	18 mm	24 mm

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

MBT 5116 B-head



Process connection	G ½ A	G ¾ A
Width across flats	HEX 27	HEX 32
$\varnothing D$	18 mm	24 mm

Net Weight [kg]

Insertion length [mm]	Process connection			
	Slim-line		B-head	
	G 1/2"	G 3/4"	G 1/2"	G 3/4"
080	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
200	–	0.76	–	0.76
250	–	0.89	–	0.85
300	–	0.99	–	1.04