



## Industrial Resistance Thermometers according to DIN

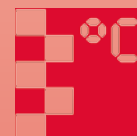


measuring  
•  
monitoring  
•  
analysing

MWD



- Measuring range: -198...+600°C
- Pt100 sensor: class A, class B, class 1/3, class 1/10, or cryogenic
- Output: resistance or analogue 4...20 mA
- Option: head transmitter with HART® -protocol or Profibus® /Fieldbus®, display
- Protection tube/ measuring insert material: stainless steel 1.4404, others on request



T2

KOBOLD companies worldwide:

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KOBOLD Messring GmbH  
Nordring 22-24  
D-65719 Hofheim/Ts.  
Head Office:  
+49(0)6192 299-0  
+49(0)6192 23398  
info.de@kobold.com  
www.kobold.com



### Description

KOBOLD temperature assemblies comprise a rugged installation fitting made of stainless steel with thread, flange or weld-on process connection, a connection head and a measuring element.

A Pt100 temperature sensor according to IEC 751, class A, B, 1/3 DIN or 1/10 is fitted in the measuring element. On request, the measuring element can be removable, thus, allowing to remove the measuring element without interrupting the process as the customised thermowell remains in the installation and seals the process.

Alternatively these sensors can be designed as single or double resistance thermometers, except the 4-wire version, which can only be built with one Pt100 due to lack of space.

As an option the resistance thermometers can be supplied with a head transmitter. Transmitter with a standard 4-20 mA signal, with HART® protocol or with Profibus®/Fieldbus® are there to choose from.

### Head Transmitter

Resistance thermometers with head transmitter are used whenever a measuring signal must be transported long distance without any disturbance.

The head transmitter which is encapsulated in epoxies' resin is located right in the connection head and delivers a temperature-linear output signal of 4-20 mA. The head transmitter is available with standardised communication systems just like HART® protocol or Profibus®/Fieldbus®.

### Applications

- HVAC
- Machinery
- Chemical and petrochemical industries
- Heating/cooling processes
- Industrial uses in general

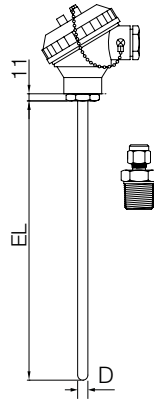
The resistance thermometers with thread and flange connection are favourably used for the temperature measurement in liquids, solids and gaseous media. The reliable water tightness of these installation methods for gauge pressure and vacuum is an important criteria for selection.

### Technical Details

Measuring principle:	temperature depending resistor
Measuring range:	-70...+250 °C -70...+400 °C -70...+600 °C -198...+100 °C
Sensor:	Pt100 single or double sensor (1 x Pt100 or 2 x Pt100) IEC 751
Accuracy:	class A, class B, 1/3 DIN, 1/10 DIN
Ambient temperature:	-40...+150 °C with ceramic terminal block (without transmitter) -40...+85 °C (with transmitter) -20...+70 °C (with LCD display) -20...+80 °C (with LED display)
Connection head:	BR screwed cover, with chain, DIN B cover with two screws, BUZ, hinged cover BUZ-H, high model hinged cover and others
Electrical connection:	M20 x 1.5 standard (others on request)
Materials:	
Sensor:	stainless steel 1.4404
Connection head:	aluminum, painted, stainless steel, and PP (others on request)
Terminal block:	ceramic (without transmitter)
Process connection:	
Thread:	G 1/4, G 1/2, G 3/4, G 1 male, 1/4" NPT, 1/2" NPT, 3/4" NPT, 1" NPT male
DIN-flange:	DN 15, 20, 25, 32, 40, 50 PN 10, 16, 40
ANSI flange:	1/2", 3/4", 1", 1 1/2", 2" class 150, class 300
Max. pressure:	30 bar
Sensor wiring:	2, 3 or 4-wire
Output:	resistance value
Protection:	connection head IP 54 ... 68 depending on cable gland

Model	Measuring insert exchangeable	Protection tube / P <sub>max</sub>
MWD-C, E, D	yes	yes / 30 bar
MWD-F, G, W <sup>1)</sup>	yes	no / P <sub>atm</sub>
MWD-A, B, L	no	yes / 30 bar

<sup>1)</sup> Model F/G/W only with thermowell TWL-0



**Model MWD-A compact compression fitting**

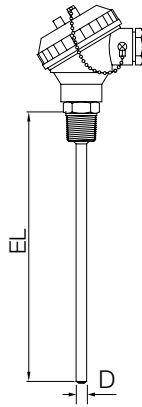
**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Electrical connection: M20x1.5
- Max. pressure: 30 bar (at 20°C)
- Protective tube: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

Model	Protective tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-A	4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 9 = tube Ø9 A = tube Ø10 C = tube Ø12 X = special options	000 = none K15 = compression fitting G1/2-M C15 = compression fitting 1/2" NPT-M XXX = special options	A = 1 xPt100 class B (-70...+250°C) B = 2 xPt100 class B (-70...+250°C) C = 1 xPt100 class A (-70...+250°C) D = 2 xPt100 class A (-70...+250°C) E = 1 xPt100 class B (-70...+400°C) F = 2 xPt100 class B (-70...+400°C) G = 1 xPt100 class A (-70...+400°C) H = 2 xPt100 class A (-70...+400°C) I = 1 xPt100 class B (-70...+600°C) J = 2 xPt100 class B (-70...+600°C) K = 1 xPt100 class A (-70...+600°C) L = 2 xPt100 class A (-70...+600°C) M = 1 xPt100 class 1/3 DIN (-70...+250°C) N = 1 xPt100 class 1/10 DIN (-70...+250°C) O = 1 xPt100 class 1/3 DIN (-70...+400°C) P = 1 xPt100 class 1/10 DIN (-70...+400°C) Q = 1 xPt100 class cryogenic (-198...+100°C) X = special options	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	0 = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4 - 20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4 - 20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4 - 20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter for options A, B, C, D choose RTD wiring code '3'	0 = without Y = acc. to specifications

<sup>1)</sup> Only with head transmitter option '0'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-L compact fixed thread**

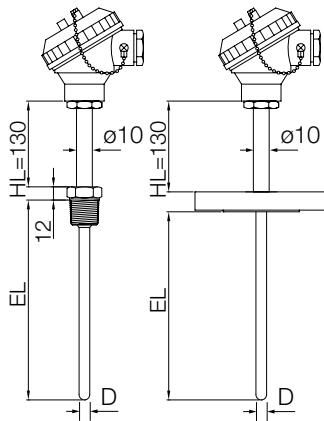
**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Electrical connection: M20x1.5
- Max. pressure: 30 bar (at 20°C)
- Protective tube: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

Model	Protective tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-L	3 = tube Ø3 4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 9 = tube Ø9 A = tube Ø10 C = tube Ø12 X = special options	G08 = G 1/4-M G15 = G 1/2-M G20 = G 3/4-M G25 = G1-M  N08 = 1/4" NPT-M N15 = 1/2" NPT-M N20 = 3/4" NPT-M N25 = 1" NPT-M  XXX = special options	A = 1 xPt100 class B (-70...+250°C) B = 2 xPt100 class B (-70...+250°C) C = 1 xPt100 class A (-70...+250°C) D = 2 xPt100 class A (-70...+250°C) E = 1 xPt100 class B (-70...+400°C) F = 2 xPt100 class B (-70...+400°C) G = 1 xPt100 class A (-70...+400°C) H = 2 xPt100 class A (-70...+400°C) I = 1 xPt100 class B (-70...+600°C) J = 2 xPt100 class B (-70...+600°C) K = 1 xPt100 class A (-70...+600°C) L = 2 xPt100 class A (-70...+600°C) M = 1 xPt100 class 1/3 DIN (-70...+250°C) N = 1 xPt100 class 1/10 DIN (-70...+250°C) O = 1 xPt100 class 1/3 DIN (-70...+400°C) P = 1 xPt100 class 1/10 DIN (-70...+400°C) Q = 1 xPt100 class cryogenic (-198...+100°C) X = special options	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	O = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4 - 20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4 - 20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4 - 20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter  for options A, B, C, D choose RTD wiring code '3'	O = without Y = acc. to specifications

<sup>1)</sup> Only with head transmitter option 'O'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-B compact threaded or flanged with neck pipe**

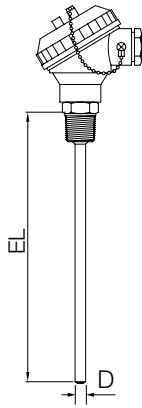
**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Neck pipe HL: 130 mm
- Electrical connection: M20x1.5
- Max. pressure: 30 bar (at 20 °C)
- Protective tube: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

Model	Protective tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-B	4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 9 = tube Ø9 A = tube Ø10 C = tube Ø12 X = special options	G08 = G ¼-M	A = 1 x Pt100 class B (-70...+250 °C)	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	0 = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4 - 20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4 - 20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4...20mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter for options A, B, C, D choose RTD wiring code '3'	0 = without Y = acc. to specifications
		G15 = G ½-M	B = 2 x Pt100 class B (-70...+250 °C)				
		G20 = G ¾-M	C = 1 x Pt100 class A (-70...+250 °C)				
		G25 = G 1-M	D = 2 x Pt100 class A (-70...+250 °C)				
		N08 = ¼" NPT-M	E = 1 x Pt100 class B (-70...+400 °C)				
		N15 = ½" NPT-M	F = 2 x Pt100 class B (-70...+400 °C)				
		N20 = ¾" NPT-M	G = 1 x Pt100 class A (-70...+400 °C)				
		N25 = 1" NPT-M	H = 2 x Pt100 class A (-70...+400 °C)				
		F15 = DN15 PN16	I = 1 x Pt100 class B (-70...+600 °C)				
		F20 = DN20 PN16	J = 2 x Pt100 class B (-70...+600 °C)				
		F25 = DN25 PN16	K = 1 x Pt100 class A (-70...+600 °C)				
		F32 = DN32 PN16	L = 2 x Pt100 class A (-70...+600 °C)				
		F40 = DN40 PN16	M = 1 x Pt100 class 1/3 DIN (-70...+250 °C)				
		F50 = DN50 PN16	N = 1 x Pt100 class 1/10 DIN (-70...+250 °C)				
		H15 = DN15 PN40	O = 1 x Pt100 class 1/3 DIN (-70...+400 °C)				
		H20 = DN20 PN40	P = 1 x Pt100 class 1/10 DIN (-70...+400 °C)				
		H25 = DN25 PN40	Q = 1 x Pt100 class cryogenic (-198...+100 °C)				
		H32 = DN32 PN40	X = special options				
		H40 = DN40 PN40					
		H50 = DN50 PN40					
		A15 = ½" CL150 RF					
		A20 = ¾" CL150 RF					
		A25 = 1" CL150 RF					
		A40 = 1 ½" CL150 RF					
A50 = 2" CL150 RF							
B15 = ½" CL300 RF							
B20 = ¾" CL300 RF							
B25 = 1" CL300 RF							
B40 = 1 ½" CL300 RF							
B50 = 2" CL300 RF							
XXX = special options							

<sup>1)</sup> Only with head transmitter option '0'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-C compact with removable measuring insert**

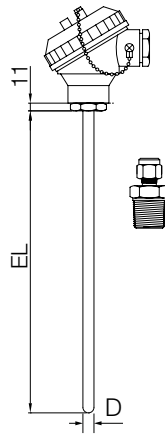
**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Electrical connection: M20x1.5
- Max. pressure: 30 bar (at 20 °C)
- Protective tube: according to DIN 43772
- Material: stainless steel 1.4404 (316L)
- Measuring insert: filled with magnesium oxide (MgO)

Model	Protective tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-C	5 = tube Ø5	<b>G08</b> = G 1/4-M <b>G15</b> = G 1/2-M <b>G20</b> = G 3/4-M <b>G25</b> = G1-M  <b>N08</b> = 1/4" NPT-M <b>N15</b> = 1/2" NPT-M <b>N20</b> = 3/4" NPT-M <b>N25</b> = 1" NPT-M  <b>XXX</b> = special options	<b>A</b> = 1 xPt100 class B (-70...+250°C) <b>B</b> = 2 xPt100 class B (-70...+250°C) <b>C</b> = 1 xPt100 class A (-70...+250°C) <b>D</b> = 2 xPt100 class A (-70...+250°C) <b>E</b> = 1 xPt100 class B (-70...+400°C) <b>F</b> = 2 xPt100 class B (-70...+400°C) <b>G</b> = 1 xPt100 class A (-70...+400°C) <b>H</b> = 2 xPt100 class A (-70...+400°C) <b>I</b> = 1 xPt100 class B (-70...+600°C) <b>J</b> = 2 xPt100 class B (-70...+600°C) <b>K</b> = 1 xPt100 class A (-70...+600°C) <b>L</b> = 2 xPt100 class A (-70...+600°C) <b>M</b> = 1 xPt100 class 1/3 DIN (-70...+250°C) <b>N</b> = 1 xPt100 class 1/10 DIN (-70...+250°C) <b>O</b> = 1 xPt100 class 1/3 DIN (-70...+400°C) <b>P</b> = 1 xPt100 class 1/10 DIN (-70...+400°C) <b>Q</b> = 1 xPt100 class cryogenic (-198...+100°C) <b>X</b> = special options	<b>2</b> = 2-wire <b>3</b> = 3-wire <b>4<sup>3)</sup></b> = 4-wire	<b>G</b> = screw-cap with chain, aluminum <b>I</b> = screw-cap with chain, stainless steel 1.4401 <b>P</b> = screw-cap with chain, PP <b>M<sup>1)</sup></b> = mini head screw-cap with chain, aluminum <b>K</b> = head screw-cap, stainless steel 1.4401 <b>B</b> = DIN B screwed cover, aluminum <b>Z</b> = BUZ hinged cover, aluminum <b>H</b> = BUZ-H high model with hinged cover, aluminum <b>E<sup>1)</sup></b> = aluminium head with LCD display and HART® transmitter included <b>D</b> = with LCD display, stainless steel 1.4301 <b>R</b> = as D + 2 relay <b>X</b> = special options	<b>0</b> = without, only with ceramic terminal <b>A<sup>2)</sup></b> = 5333D transmitter 4-20 mA 2-wire <b>B<sup>2)</sup></b> = 5337D transmitter 4-20 mA with HART® protocol 2-wire <b>C<sup>2)</sup></b> = 5350A transmitter 4-20 mA Profibus®/Fieldbus® <b>D</b> = prepared for subsequent mounting of transmitter  for options A, B, C, D choose RTD wiring code '3'	<b>0</b> = without <b>Y</b> = acc. to specifications
	<b>A</b> = tube Ø10 <b>C</b> = tube Ø12 <b>X</b> = special options						

<sup>1)</sup> Only with head transmitter option '0'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-E compact with removable measuring insert and compressing fitting**

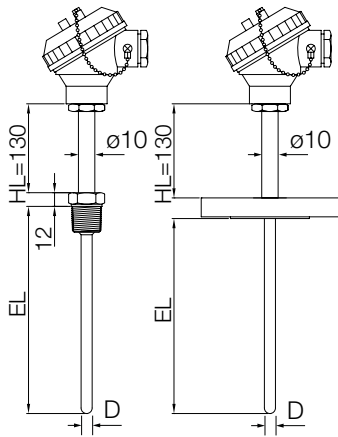
**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Electrical connection: M20x1.5
- Max. pressure: 30 bar (at 20 °C)
- Protective tube: according to DIN 43772
- Material: stainless steel 1.4404 (316L)
- Measuring insert: filled with magnesium oxide (MgO)

Model	Protective tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-E	5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 9 = tube Ø9 A = tube Ø10 C = tube Ø12 X = special options	000 = none K15 = compression fitting G1/2-M C15 = compression fitting 1/2" NPT-M XXX = special options	A = 1 x Pt100 class B (-70...+250 °C) B = 2 x Pt100 class B (-70...+250 °C) C = 1 x Pt100 class A (-70...+250 °C) D = 2 x Pt100 class A (-70...+250 °C) E = 1 x Pt100 class B (-70...+400 °C) F = 2 x Pt100 class B (-70...+400 °C) G = 1 x Pt100 class A (-70...+400 °C) H = 2 x Pt100 class A (-70...+400 °C) I = 1 x Pt100 class B (-70...+600 °C) J = 2 x Pt100 class B (-70...+600 °C) K = 1 x Pt100 class A (-70...+600 °C) L = 2 x Pt100 class A (-70...+600 °C) M = 1 x Pt100 class 1/3 DIN (-70...+250 °C) N = 1 x Pt100 class 1/10 DIN (-70...+250 °C) O = 1 x Pt100 class 1/3 DIN (-70...+400 °C) P = 1 x Pt100 class 1/10 DIN (-70...+400 °C) Q = 1 x Pt100 class cryogenic (-198...+100 °C) X = special options	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	0 = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4-20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4-20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4-20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter for options A, B, C, D choose RTD wiring code '3'	0 = without Y = acc. to specifications

<sup>1)</sup> Only with head transmitter option '0'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-D compact with removable measuring insert and extension neck pipe**

**Specifications:**

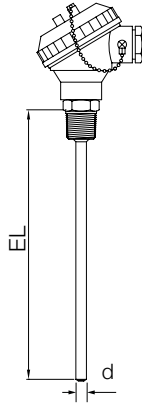
- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Neck pipe HL: 130 mm
- Electrical connection: M20x1.5
- Max. pressure: 30 bar (at 20 °C)
- Protective tube: according to DIN 43772
- Material: stainless steel 1.4404 (316L)
- Measuring insert: filled with magnesium oxide (MgO)

Model	Protective tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-D	6 = tube Ø6 8 = tube Ø8 9 = tube Ø9 A = tube Ø10 C = tube Ø12 X = special options	G08 = G ¼-M	A = 1 x Pt100 class B (-70...+250°C)	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	O = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4-20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4-20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4-20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter for options A, B, C, D choose RTD wiring code '3'	O = without Y = acc. to specifications
		G15 = G ½-M	B = 2 x Pt100 class B (-70...+250°C)				
		G20 = G ¾-M	C = 1 x Pt100 class A (-70...+250°C)				
		G25 = G 1-M	D = 2 x Pt100 class A (-70...+250°C)				
		N08 = ¼" NPT-M	E = 1 x Pt100 class B (-70...+400°C)				
		N15 = ½" NPT-M	F = 2 x Pt100 class B (-70...+400°C)				
		N20 = ¾" NPT-M	G = 1 x Pt100 class A (-70...+400°C)				
		N25 = 1" NPT-M	H = 2 x Pt100 class A (-70...+400°C)				
		F15 = DN15 PN16	I = 1 x Pt100 class B (-70...+600°C)				
		F20 = DN20 PN16	J = 2 x Pt100 class B (-70...+600°C)				
		F25 = DN25 PN16	K = 1 x Pt100 class A (-70...+600°C)				
		F32 = DN32 PN16	L = 2 x Pt100 class A (-70...+600°C)				
		F40 = DN40 PN16	M = 1 x Pt100 class 1/3 DIN (-70...+250°C)				
		F50 = DN50 PN16	N = 1 x Pt100 class 1/10 DIN (-70...+250°C)				
		H15 = DN15 PN40	O = 1 x Pt100 class 1/3 DIN (-70...+400°C)				
		H20 = DN20 PN40	P = 1 x Pt100 class 1/10 DIN (-70...+400°C)				
		H25 = DN25 PN40	Q = 1 x Pt100 class cryogenic (-198...+100°C)				
		H32 = DN32 PN40	X = special options				
		H40 = DN40 PN40					
		H50 = DN50 PN40					
		A15 = ½" CL150 RF					
		A20 = ¾" CL150 RF					
		A25 = 1" CL150 RF					
		A40 = 1 ½" CL150 RF					
A50 = 2" CL150 RF							
B15 = ½" CL300 RF							
B20 = ¾" CL300 RF							
B25 = 1" CL300 RF							
B40 = 1 ½" CL300 RF							
B50 = 2" CL300 RF							
XXX = special options							

<sup>1)</sup> Only with head transmitter option 'O'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering





**Model MWD-F compact fixed thread with removable measuring insert<sup>1)</sup>, for mounting in thermowell**

**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Process connection: threaded
- Electrical connection: M20x1.5
- Max. pressure: P<sub>atm</sub> only with thermowell TWL-0
- Measuring insert: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

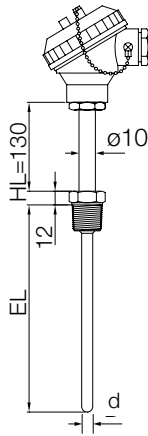
**Note:** For order details of the thermowell see datasheet TWL-0. Without thermowell atmospheric pressure.

<sup>1)</sup> Without protection tube

Model	Measuring insert diameter (d)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-F	3 = tube Ø3 4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 X = special options	G08 = G 1/4-M G15 = G 1/2-M G20 = G 3/4-M G25 = G 1-M  N08 = 1/4" NPT-M N15 = 1/2" NPT-M N20 = 3/4" NPT-M N25 = 1" NPT-M  XXX = special options	A = 1 x Pt100 class B (-70...+250°C)	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	0 = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4-20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4-20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4-20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter  for options A, B, C, D choose RTD wiring code '3'	0 = without Y = acc. to specifications
			B = 2 x Pt100 class B (-70...+250°C)				
			C = 1 x Pt100 class A (-70...+250°C)				
			D = 2 x Pt100 class A (-70...+250°C)				
			E = 1 x Pt100 class B (-70...+400°C)				
			F = 2 x Pt100 class B (-70...+400°C)				
			G = 1 x Pt100 class A (-70...+400°C)				
			H = 2 x Pt100 class A (-70...+400°C)				
			I = 1 x Pt100 class B (-70...+600°C)				
			J = 2 x Pt100 class B (-70...+600°C)				
			K = 1 x Pt100 class A (-70...+600°C)				
			L = 2 x Pt100 class A (-70...+600°C)				
			M = 1 x Pt100 class 1/3 DIN (-70...+250°C)				
			N = 1 x Pt100 class 1/10 DIN (-70...+250°C)				
			O = 1 x Pt100 class 1/3 DIN (-70...+400°C)				
P = 1 x Pt100 class 1/10 DIN (-70...+400°C)							
Q = 1 x Pt100 class cryogenic (-198...+100°C)							
X = special options							

<sup>1)</sup> Only with head transmitter option '0'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-G compact with removable measuring insert<sup>1)</sup> and neck pipe, for mounting in thermowell**

**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Neck pipe HL: 130 mm
- Electrical connection: M20x1.5
- Max. pressure: P<sub>atm</sub> only with thermowell TWL-0
- Measuring insert: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

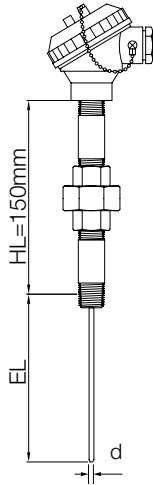
**Note:** For order details of the thermowell see datasheet TWL-0. Without thermowell atmospheric pressure.

<sup>1)</sup> Without protection tube

Model	Measuring insert diameter (d)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-G	3 = tube Ø3 4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 X = special options	G08 = G 1/4-M G15 = G 1/2-M G20 = G 3/4-M G25 = G 1-M  N08 = 1/4" NPT-M N15 = 1/2" NPT-M N20 = 3/4" NPT-M N25 = 1" NPT-M  XXX = special options	A = 1 x Pt100 class B (-70...+250°C) B = 2 x Pt100 class B (-70...+250°C) C = 1 x Pt100 class A (-70...+250°C) D = 2 x Pt100 class A (-70...+250°C) E = 1 x Pt100 class B (-70...+400°C) F = 2 x Pt100 class B (-70...+400°C) G = 1 x Pt100 class A (-70...+400°C) H = 2 x Pt100 class A (-70...+400°C) I = 1 x Pt100 class B (-70...+600°C) J = 2 x Pt100 class B (-70...+600°C) K = 1 x Pt100 class A (-70...+600°C) L = 2 x Pt100 class A (-70...+600°C) M = 1 x Pt100 class 1/3 DIN (-70...+250°C) N = 1 x Pt100 class 1/10 DIN (-70...+250°C) O = 1 x Pt100 class 1/3 DIN (-70...+400°C) P = 1 x Pt100 class 1/10 DIN (-70...+400°C) Q = 1 x Pt100 class cryogenic (-198...+100°C) X = special options	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	O = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4 - 20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4 - 20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4 - 20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter  for options A, B, C, D choose RTD wiring code '3'	O = without Y = acc. to specifications

<sup>1)</sup> Only with head transmitter option 'O'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-W compact with removable measuring insert<sup>1)</sup> and neck pipe (nipple union nipple), for mounting in thermowell**

**Specifications:**

- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Neck pipe HL: 150 mm, (nipple union nipple)
- Electrical connection: M20x1.5
- Max. pressure: P<sub>atm</sub> only with thermowell TWL-0
- Measuring insert: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

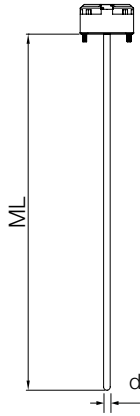
**Note:** For order details of the thermowell see datasheet TWL-0. Without thermowell atmospheric pressure.

<sup>1)</sup> Without protection tube

Model	Measuring insert diameter (d)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-W	3 = tube Ø3 4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 X = special options	N15 = 1/2" NPT-M XXX = special options	A = 1 xPt100 class B (-70...+250°C) B = 2 xPt100 class B (-70...+250°C) C = 1 xPt100 class A (-70...+250°C) D = 2 xPt100 class A (-70...+250°C) E = 1 xPt100 class B (-70...+400°C) F = 2 xPt100 class B (-70...+400°C) G = 1 xPt100 class A (-70...+400°C) H = 2 xPt100 class A (-70...+400°C) I = 1 xPt100 class B (-70...+600°C) J = 2 xPt100 class B (-70...+600°C) K = 1 xPt100 class A (-70...+600°C) L = 2 xPt100 class A (-70...+600°C) M = 1 xPt100 class 1/3 DIN (-70...+250°C) N = 1 xPt100 class 1/10 DIN (-70...+250°C) O = 1 xPt100 class 1/3 DIN (-70...+400°C) P = 1 xPt100 class 1/10 DIN (-70...+400°C) Q = 1 xPt100 class cryogenic (-198...+100°C) X = special options	2 = 2-wire 3 = 3-wire 4 <sup>3)</sup> = 4-wire	G = screw-cap with chain, aluminum I = screw-cap with chain, stainless steel 1.4401 P = screw-cap with chain, PP M <sup>1)</sup> = mini head screw-cap with chain, aluminum K = head screw-cap, stainless steel 1.4401 B = DIN B screwed cover, aluminum Z = BUZ hinged cover, aluminum H = BUZ-H high model with hinged cover, aluminum E <sup>1)</sup> = aluminium head with LCD display and HART <sup>®</sup> transmitter included D = with LCD display, stainless steel 1.4301 R = as D + 2 relay X = special options	0 = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4 - 20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4 - 20 mA with HART <sup>®</sup> protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4 - 20 mA Profibus <sup>®</sup> /Fieldbus <sup>®</sup> D = prepared for subsequent mounting of transmitter for options A, B, C, D choose RTD wiring code '3'	0 = without Y = acc. to specifications

<sup>1)</sup> Only with head transmitter option '0'    <sup>2)</sup> Please specify the measuring range in clear text, while ordering    <sup>3)</sup> with 1xPt100 only

**Note:** Please specify length 'EL' in clear text, while ordering



**Model MWD-M measuring insert**

**Specifications:**

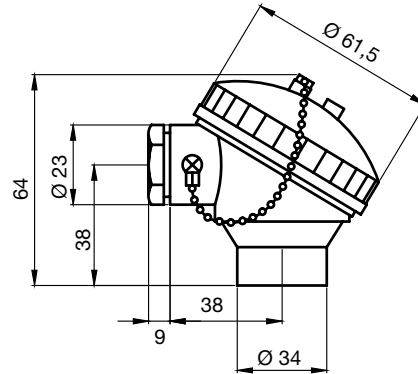
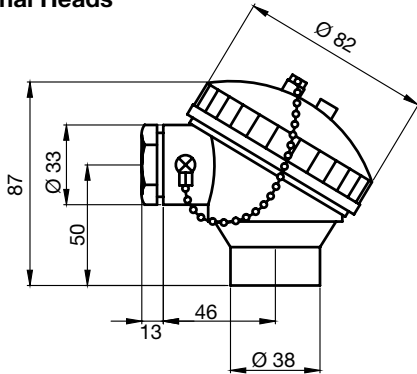
- Sensor element: Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
- Head transmitter: ceramic terminal block or transmitter
- Max. pressure: atmospheric pressure
- Measuring insert: according to DIN 43772, filled with magnesium oxide (MgO)
- Material: stainless steel 1.4404 (316L)

Model	Measuring insert diameter (d)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
MWD-M	3 = tube Ø3 4 = tube Ø4 5 = tube Ø5 6 = tube Ø6 8 = tube Ø8 X = special options	0 = without	A = 1 xPt100 class B (-70...+250°C)	2 = 2-wire 3 = 3-wire 4 <sup>1)</sup> = 4-wire	0 = without	0 = without, only with ceramic terminal A <sup>2)</sup> = 5333D transmitter 4-20 mA 2-wire B <sup>2)</sup> = 5337D transmitter 4-20 mA with HART® protocol 2-wire C <sup>2)</sup> = 5350A transmitter 4-20 mA Profibus®/Fieldbus® D = prepared for subsequent mounting of transmitter  (For options A,B,C and D choose RTD-wiring code '3')	0 = without Y = acc. to specifications
			B = 2 xPt100 class B (-70...+250°C)				
			C = 1 xPt100 class A (-70...+250°C)				
			D = 2 xPt100 class A (-70...+250°C)				
			E = 1 xPt100 class B (-70...+400°C)				
			F = 2 xPt100 class B (-70...+400°C)				
			G = 1 xPt100 class A (-70...+400°C)				
			H = 2 xPt100 class A (-70...+400°C)				
			I = 1 xPt100 class B (-70...+600°C)				
			J = 2 xPt100 class B (-70...+600°C)				
			K = 1 xPt100 class A (-70...+600°C)				
			L = 2 xPt100 class A (-70...+600°C)				
			M = 1 xPt100 class 1/3 DIN (-70...+250°C)				
			N = 1 xPt100 class 1/10 DIN (-70...+250°C)				
			O = 1 xPt100 class 1/3 DIN (-70...+400°C)				
			P = 1 xPt100 class 1/10 DIN (-70...+400°C)				
			Q = 1 xPt100 class cryogenic (-198...+100°C)				
X = special options							

<sup>1)</sup> With 1xPt100 only    <sup>2)</sup> Please specify measuring range in clear text while ordering. Only possible for wiring code '3'

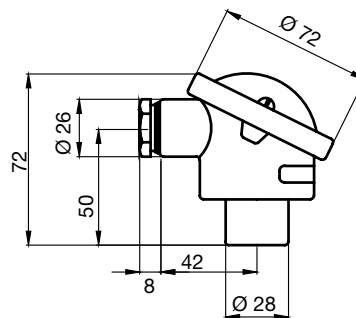
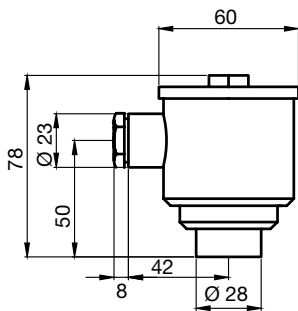
**Note:** Please specify length 'ML' in clear text

**Terminal Heads**



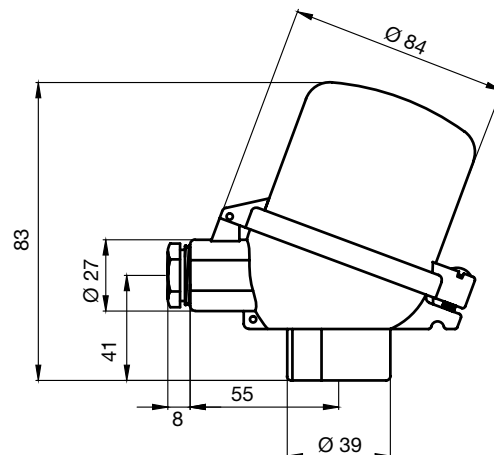
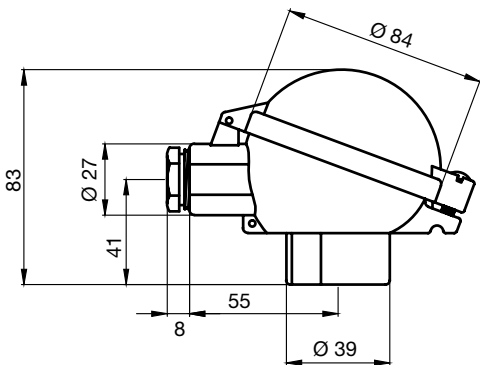
- Option G** Housing material: aluminium
- I** Housing material: stainless steel 1.4401
- P** Housing material: PP
- Protection: IP 65

- Option M** Housing material: aluminium
- Protection: IP 65



- Option K** Housing material: stainless steel 1.4401
- Protection: IP 65

- Option B** Housing material: aluminium
- Protection: IP 54



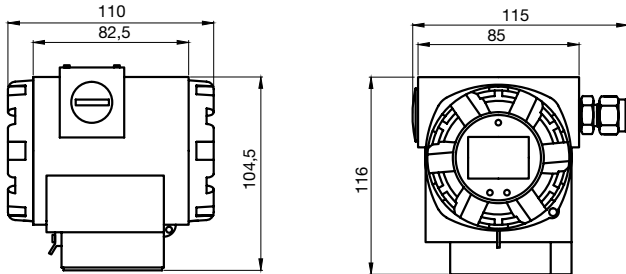
- Option Z** Housing material: Aluminium
- Protection: IP 65

- Option H** Housing material: aluminium
- Protection: IP 65

**Note:** IP protection depends on cable gland.  
Higher IP on request.

**Terminal Heads (continuation)**

**Option E**



**Main Features**


- High accuracy 0.02% of span for Pt100 sensor
- Sensor error detection according to the guidelines in NAMUR NE 89
- Backlight LCD-Display

**Technical Details**

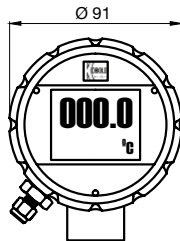
Housing material: aluminium  
 Supply voltage: 7.5 ... 45 V<sub>DC</sub>  
 Output signal: 4 ... 20 mA  
 Load: max. (V<sub>supply</sub> 7.5 V)/0.022 A  
 Signal on alarm: underranging: linear drop to 3.8 mA  
 overranging: linear rise to 20.5 mA  
 sensor break, sensor open-circuit: 3.6 mA or 22 mA

Galvanic isolation: 2000 V<sub>AC</sub> (input/output)  
 Response time: 1 s  
 Long term stability: RTDs ±0.1% of reading or 0.1 °C  
 Switch delay: ≤5 s  
 Influence of ambient: negligible  
 Load influence: negligible  
 Power supply influence: negligible  
 Filter configuring: 0 ... 160 µA  
 Resolution: 0.3 µA  
 Cable entry: M20 internal thread  
 Ambient temperature: -40 ... +85 °C (-40 ... 185 °F)  
 Storage temperature: -40 ... +100 °C (-40 ... 212 °F)  
 Condensation: allowable  
 Protection: IP65  
 Shock and vibration resistance: 4g/2 to 150 Hz as per IEC 60068-26  
 LCD-Display, with backlight: visible range 32.5 x 22.5 mm;  
 main display: 5-digit, 7-segment, digit height 8 mm,  
 range: -19999 ... 99999  
 additional display: 8-digit 14 segment, digit height 5 mm for sensor type and units

**Accessories (for programming the transmitter)**

Model	Description
<p><b>KM-HART</b> (includes configuration software KM-Soft)</p>	<p>HART® modem </p>

**Terminal Heads** (continuation)  
**Option D/R**



**Main Features**

- Graphical display with backlight
- Showing errors and limits by steady or flashing colours
- Programmable by touch screen
- Option R: two configurable relay outputs

**Technical Details**

**Input**

Housing material: stainless steel 1.4301  
 Measuring range: 3.5 ... 23 mA (normal working range  
 4 ... 20 mA)  
 Connections: 2 screw terminals for loop power,  
 signal 4 screw terminals for relay  
 outputs  
 Accuracy:  $\leq \pm 0.1\%$  of input span within  
 -10 ... 70 °C  
 $\leq \pm 0.2\%$  of input span within  
 -30 ... -10 °C / 70 ... 80 °C  
 Loop voltage drop: two levels depending on chosen  
 backlight brightness at 20 mA:  
 low bright backlight (<40%):  
 max. 4 V at 23 °C  
 high bright backlight (>40%):  
 max. 6.5 V at 23 °C  
 Sample time:  $\leq 1$  s, typical 0.3 s  
 Start-up time:  $\leq 5$  s

**User-configurable data**

Measuring range: 4...20 mA  
 Error/warning  
 indication: individually configurable display and  
 backlight indication in white, green  
 or red colour, steady or flashing  
 light; configurable limits between 3.5  
 and 23 mA  
 Zoom on range: minimum 2 mA of input span  
 Damping: 0 ... 30 s  
 Linearisation table: 2 ... 30 points  
 Measuring unit  
 (standard selectable): °C, °F, K  
 User defined unit: 8 x 20 pixels matrix

Dec. point position: xxxxx, xxxx.x, xxx.xx, xx.xxx, x.xxxx,  
 .xxxx, AUTO

**Display**

Type: FSTN graphically LCD  
 Measuring range: -9999 ... 99999  
 Digit height: max. 22 mm

**Environmental conditions**

Optimal readability: -10 ... 70 °C  
 Operating temperature: -30 ... 80 °C  
 Storage temperature: -40 ... 85 °C

**Mechanical data**

Material: polycarbonate plastic  
 Enclosure:  $\varnothing$  80 mm housing and front ring  
 stainless steel, AISI 304  
 Protection: IP 10 on terminals  
 IP 67 in  $\varnothing$  80 mm housing

**Relay (option R)**

Contacts: 2 solid state relays  
 Voltage: 60 Vp  
 Load current: 75 mA

Electrical Connection

