M-Zert
Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Industrial Resistance Thermometers according to DIN

Ignition Protection Exia

KOBOLD

measuring • monitoring • analysing

TWL-Exia

- 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 with or without measuring insert material: stainless steel 1.4404, others on request
- For ATEX applications, ignition protection Exia

T2

KOBOLD companies worldwide:

AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHINA, CZECHIA, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, RUSSIA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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Description

The KOBOLD resistance thermometers model TWL comprise a rugged installation fitting made of stainless steel with thread, flange or weld-on connection, a connection head form B out of aluminium casting. Models with removable measuring insert can be replaced without interrupting the process.

The instruments are supplied with the ignition protection Exia as a standard and therefore can be installed in relevant hazardous areas.

A Pt100 temperature sensor according to IEC 751, category A or B is fitted in the measuring insert as standard. Depending on customer request the temperature sensor can be carried out as 2-, 3- or 4-wire circuit.

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 and transmitter with HART® protocol or with Profibus®/ Fieldbus® are there to choose from.

Beside the available resistance thermometers according to DIN standard, there are customised versions relating to the immersion length, the connection head, the materials, the process connection or the tolerance classes deliverable on request.

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.

For all applications in hazardous areas, the instruments are supplied with the ignition protection Exia.

Technical Details

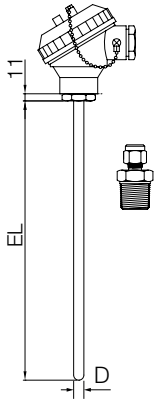
Measuring principle:	temperature depending resistor
Measuring range:	-70...+250 °C -70…+400 °C -70…+600 °C -198…+100 °C
Sensor:	Pt100 single or double sensor (1 x Pt100 or 2 x Pt100) IEC 751
Accuracy:	class A, class B, 1/3 DIN, 1/10 DIN
Ambient temperature:	-40...+150 °C with ceramic terminal block (without transmitter) -40...+85 °C (with transmitter) -20...+80 °C (with LCD display)
Connection head:	"G" screwed cover, with chain, "B" cover with two screws, "Z" BUZ, hinged cover "H" 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:	aluminium, painted, stainless steel, and PP (others on request)
Terminal block:	ceramic (without transmitter)
Process connection:	
Thread:	G ¼, G ½, G ¾, G 1 male, ¼" NPT, ½" NPT, ¾" NPT, 1" NPT male
DIN-flange:	DN 15, 20, 25, 32, 40, 50 PN 10, 16, 40
ANSI flange:	½", ¾", 1", 1½", 2" class 150, class 300
Max. pressure:	30 bar
Sensor wiring:	2, 3 or 4-wire
Output:	resistance value, 4...20 mA, HART® Profibus®/Fieldbus®
Protection:	connection head IP 54...68 IP 68 depending on cable gland and sensor sealing
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Measuring insert exchangeable	Protection tube / P_{max}
TWL-C, E, D	yes	yes/30 bar
TWL-F, G, W[1)]	yes	no/P_{atm}
TWL-A, B, L	no	yes/30 bar

[1)] Model F/G/W only with thermowell TWL-0

Minimum meas. span:	standard transmitter 25 °C transmitter with HART® 10 °C transmitter with Profibus®/Fieldbus® 5 °C
Supply voltage:	8 - 35 V_{DC} for standard transmitter and transmitter with HART® 9 - 32 V_{DC} for transmitter with Profibus®/Fieldbus®

1/01 - 2022



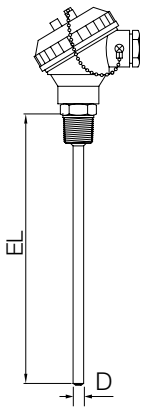
Model TWL-A compact compression fitting

Specifications:

Sensor element:	Pt 100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Electrical connection:	M20x1.5
Max. pressure:	30 bar (at 20 °C)
Protection tube:	according to DIN 43772, filled with magnesium oxide (MgO)
Material:	stainless steel 1.4404 (316L)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[5]/ protection tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-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 G½-M **C15** = compression fitting ½" NPT-M **XXX** = special options	**A** = 1 x Pt 100 class B (-70…+250 °C) **B** = 2 x Pt 100 class B (-70…+250 °C) **C** = 1 x Pt 100 class A (-70…+250 °C) **D** = 2 x Pt 100 class A (-70…+250 °C) **E** = 1 x Pt 100 class B (-70…+400 °C) **F** = 2 x Pt 100 class B (-70…+400 °C) **G** = 1 x Pt 100 class A (-70…+400 °C) **H** = 2 x Pt 100 class A (-70…+400 °C) **I** = 1 x Pt 100 class B (-70…+600 °C) **J** = 2 x Pt 100 class B (-70…+600 °C) **K** = 1 x Pt 100 class A (-70…+600 °C) **L** = 2 x Pt 100 class A (-70…+600 °C) **M** = 1 x Pt 100 class 1/3 DIN (-70… +250 °C) **N** = 1 x Pt 100 class 1/10 DIN (-70… +250 °C) **O** = 1 x Pt 100 class 1/3 DIN (-70… +400 °C) **P** = 1 x Pt 100 class 1/10 DIN (-70… +400 °C) **Q** = 1 x Pt 100 class cryogenic (-198…+100 °C) **X** = special options	**2** = 2-wire **3** = 3-wire **4**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2)4)] = 5333D transmitter 4 - 20 mA 2-wire **B**[2)4)] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2)4)] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code »3« [5] Please specify length »EL« in clear text, while ordering



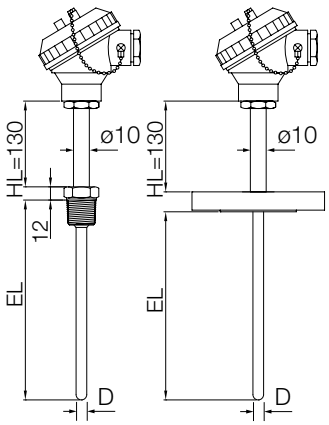
Model TWL-L compact fixed thread

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)
Protection tube:	according to DIN 43772, filled with magnesium oxide (MgO)
Material:	stainless steel 1.4404 (316L)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[5]/ protection tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-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 ¼-M **G15** = G ½-M **G20** = G ¾-M **G25** = G1-M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" 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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2)4)] = 5333D transmitter 4 - 20 mA 2-wire **B**[2)4)] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2)4)] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



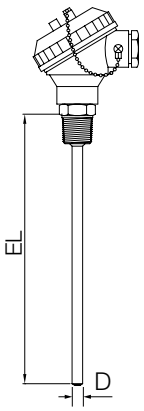
Model TWL-B compact threaded or flanged with neck pipe

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)
Protection tube:	according to DIN 43772, filled with magnesium oxide (MgO)
Material:	stainless steel 1.4404 (316L)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[5]/ protection tube diameter (D)	Process connection	Sensor type / category	RTD wiring	Terminal head	Head transmitter	Options
TWL-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 **G15** = G ½-M **G20** = G ¾-M **G25** = G 1-M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" NPT-M **N25** = 1" NPT-M **F15** = DN15 PN16 **F20** = DN20 PN16 **F25** = DN25 PN16 **F32** = DN32 PN16 **F40** = DN40 PN16 **F50** = DN50 PN16 **H15** = DN15 PN40 **H20** = DN20 PN40 **H25** = DN25 PN40 **H32** = DN32 PN40 **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	**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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2][4] = 5333D transmitter 4 - 20 mA 2-wire **B**[2][4] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2][4] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



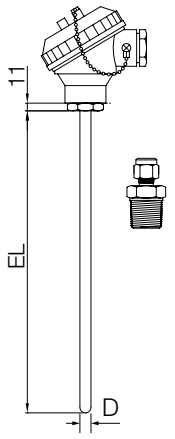
Model TWL-C compact with removable measuring insert

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)
Protection tube:	according to DIN 43772
Material:	stainless steel 1.4404 (316L)
Measuring insert:	filled with magnesium oxide (MgO)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[5]/ protection tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-C	**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 **G15** = G ½-M **G20** = G ¾-M **G25** = G1-M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" 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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2][4] = 5333D transmitter 4 - 20 mA 2-wire **B**[2][4] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2][4] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for sub-sequent mounting of trans-mitter	**0** = without **Y** = acc. to specifi-cations

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



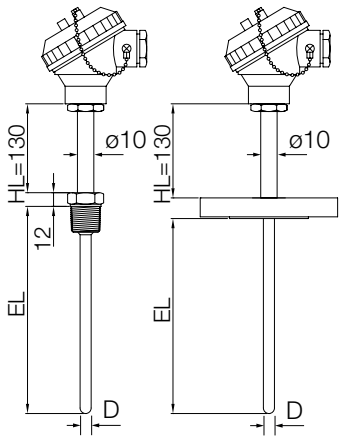
Model TWL-E compact with removable measuring insert and compressing fitting

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)
Protection tube:	according to DIN 43772
Material:	stainless steel 1.4404 (316L)
Measuring insert:	filled with magnesium oxide (MgO)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[5]/ protection tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-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 G½-M **C15** = compression fitting ½" 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[3]** = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M[1]** = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A[2][4]** = 5333D transmitter 4 - 20 mA 2-wire **B[2][4]** = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C[2][4]** = 5350D transmitter Profibus®/ Fieldbus® **D[4]** = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



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

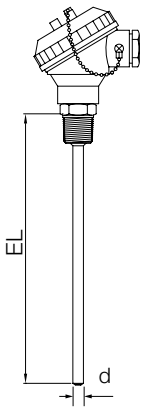
Specifications:

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)
Protection tube:	according to DIN 43772
Material:	stainless steel 1.4404 (316L)
Measuring insert:	filled with magnesium oxide (MgO)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[5]/ protection tube diameter (D)	Process connection	Sensor type / category	RTD wiring	Terminal head	Head transmitter	Options
TWL-D	**6** = tube Ø6 **8** = tube Ø8 **9** = tube Ø9 **A** = tube Ø10 **C** = tube Ø12 **X** = special options	**G08** = G ¼-M **G15** = G ½-M **G20** = G ¾-M **G25** = G 1-M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" NPT-M **N25** = 1" NPT-M **F15** = DN15 PN16 **F20** = DN20 PN16 **F25** = DN25 PN16 **F32** = DN32 PN16 **F40** = DN40 PN16 **F50** = DN50 PN16 **H15** = DN15 PN40 **H20** = DN20 PN40 **H25** = DN25 PN40 **H32** = DN32 PN40 **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	**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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2][4] = 5333D transmitter 4 - 20 mA 2-wire **B**[2][4] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2][4] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1 x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering

1/01 - 2022



Model TWL-F compact fixed thread with removable measuring insert[1], for mounting in thermowell
Specifications:

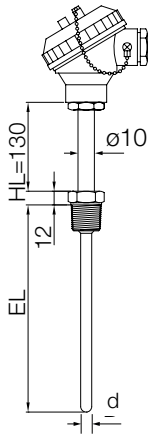
Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Process connection:	threaded
Electrical connection:	M20x1.5
Max. pressure:	P_{atm} only with thermowell TWL-0
Measuring insert:	according to DIN 43772, filled with magnesium oxide (MgO)
Material:	stainless steel 1.4404 (316L)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

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

[1] Without protection tube

Model	Immersion length[5]/ measuring insert diameter (d)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-F	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**G08** = G ¼-M **G15** = G ½-M **G20** = G ¾-M **G25** = G 1-M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" 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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2][4] = 5333D transmitter 4 - 20 mA 2-wire **B**[2][4] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2][4] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for sub-sequent mounting of trans-mitter	**0** = without **Y** = acc. to specifi-cations

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



Model TWL-G compact with removable measuring insert[1] and neck pipe, for mounting in thermowell

Specifications:

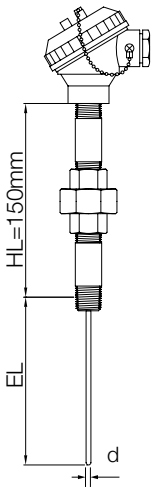
Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Neck pipe HL:	130 mm
Electrical connection:	M20x1.5
Max. pressure:	P_{atm} only with thermowell TWL-0
Measuring insert:	according to DIN 43772, filled with magnesium oxide (MgO)
Material:	stainless steel 1.4404 (316L)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

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

[1] Without protection tube

Model	Immersion length[5]/ measuring insert diameter (d)	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-G	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**G08** = G ¼-M **G15** = G ½-M **G20** = G ¾-M **G25** = G 1-M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" 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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2][4] = 5333D transmitter 4 - 20 mA 2-wire **B**[2][4] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2][4] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



Model TWL-W compact with removable measuring insert[1] and neck pipe (nipple union nipple), for mounting in thermowell

Specifications:

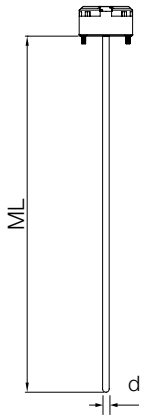
Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Neck pipe HL:	150 mm, (nipple union nipple)
Electrical connection:	M20x1.5
Max. pressure:	P_{atm} only with thermowell TWL-0
Measuring insert:	according to DIN 43772, filled with magnesium oxide (MgO)
Material:	stainless steel 1.4404 (316L)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

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

[1] Without protection tube

Model	Immersion length[5]/ measuring insert diameter (d)	Process connection	Sensor type / category	RTD wiring	Terminal head	Head transmitter	Options
TWL-W	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**N15** = ½" 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**[3] = 4-wire	**G** = screw-cap with chain, aluminium **I** = screw-cap with chain, stainless steel 1.4401 **P** = screw-cap with chain, PP **M**[1] = mini head screw-cap with chain, aluminium **K** = head screw-cap, stainless steel 1.4401 **B** = DIN B cover, aluminium **Z** = BUZ hinged cover, aluminium **H** = BUZ-H high model with hinged cover, aluminium **D** = with LCD display, stainless steel 1.4301 **R** = as D + 2 relays **X** = special options	**0** = without, only with ceramic terminal **A**[2][4] = 5333D transmitter 4 - 20 mA 2-wire **B**[2][4] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2][4] = 5350D transmitter Profibus®/ Fieldbus® **D**[4] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1] Only with head transmitter option 0 [2] Please specify the measuring range in clear text, while ordering [3] With 1 x Pt100 only
[4] For options A, B, C, D choose RTD wiring code '3' [5] Please specify length »EL« in clear text, while ordering



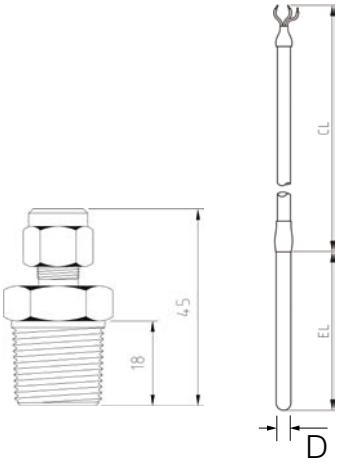
Model TWL-M measuring insert

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)
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[4]/ measuring insert diameter (d)	Process connection	Sensor type / category	RTD wiring	Terminal head	Head transmitter	Options
TWL-M	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**000** = without	**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**[1]= 4-wire	**0** = without	**0** = without, only with ceramic terminal **A**[2)3)] = 5333D transmitter 4 - 20 mA 2-wire **B**[2)3)] = 5337D transmitter 4 - 20 mA with HART® protocol 2-wire **C**[2)3)] = 5350D transmitter Profibus®/Field-bus® **D**[3)] = prepared for subsequent mounting of transmitter	**0** = without **Y** = acc. to specifications

[1)] With 1 x Pt100 only [2)] Please specify measuring range in clear text while ordering. Only possible for wiring code '3'
[3)] For options A, B, C, D choose RTD wiring code '3' [4)] Please specify length »ML« in clear text, while ordering



Model TWL-S

Specifications:

Limited temperature depending on the selected cable

Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Max. pressure:	30 bar (at 20 °C) only metallic immersion
Protection tube:	according to DIN 43763
Material:	stainless steel 1.4404 (SS316L)
Max. temp. cable:	PVC max. 80 °C silicone max. 200 °C PTFE max. 220 °C fibreglass 350 °C
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[1]/ protection tube diameter (D)	Process connection	Sensor type / category	RTD wiring	Cable[2]	Terminal	Options
TWL-S	**3** = tube Ø3[3] **4** = tube Ø4[3] **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**000** = without **K15** = compression fitting G ½-M **C15** = compression fitting ½" 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) **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 (-200…+100 °C) **X** = special options	**2** = 2-wire **3** = 3-wire **4** = 4-wire	**S** = silicone **T** = teflon **P** = PVC **F** = fibreglass with steel braid	**0** = without **X** = special connector	**0** = without **1** = with spring strain relief **Y** = according to specifications

[1] Please specify length »EL« in clear text [2] Please specify length »CL« in clear text [3] With pot seal Ø6 x 40 for crimping cable

Model TWL-N

Specifications:

Limited temperature depending on the selected cable

Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Max. pressure:	30 bar (at 20 °C) only metallic immersion
Protection tube:	according to DIN 43763
Process connection:	thread
Material:	stainless steel 1.4404 (SS316L)
Max. temp. cable:	PVC max. 80 °C, silicone max. 200 °C PTFE max. 220 °C, fibreglass 350 °C
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

Model	Immersion length[1]/ protection tube diameter (D)	Process connection	Sensor type / category	RTD wiring	Cable[2]	Terminal	Options
TWL-N	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**G08** = G ¼ M **G15** = G ½ M **G20** = G ¾ M **G25** = G 1 M **N08** = ¼" NPT-M **N15** = ½" NPT-M **N20** = ¾" 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) **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 (-200…+100 °C) **X** = special options	**2** = 2-wire **3** = 3-wire **4** = 4-wire	**S** = silicone **T** = teflon **P** = PVC **F** = fibreglass with steel braid	**0** = without **X** = special connector	**0** = without **1** = with spring strain relief **Y** = according to specifications

[1] Please specify length »EL« in clear text [2] Please specify length »CL« in clear text

1/01 - 2022

Model TWL-I

Specifications:

Limited temperature depending on the selected cable

Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Max. pressure:	atmospheric pressure
Handle:	PVC material max. 80°C
Protection tube:	according to DIN 43763
Material:	stainless steel 1.4404 (SS316L)
Max. temp. cable:	PVC max. 80°C silicone max. 200°C PTFE max. 220°C fibreglass 350°C
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85°C -20°C≤Ta≤+60°C

Model	Immersion length[1]/ protection tube diameter (D)	Process connection	Sensor type/ category	RTD wiring	Cable[2]	Terminal	Options
TWL-I	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**000** = PVC handle **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) **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 (-200…+100°C) **X** = special options	**2** = 2-wire **3** = 3-wire **4** = 4-wire	**S** = silicone **T** = teflon **P** = PVC **F** = fibreglass with steel braid	**0** = without **X** = special connector	**0** = without **Y** = according to specifications

[1] Please specify length »EL« in clear text [2] Please specify length »CL« in clear text

Model TWL-P

Specifications:

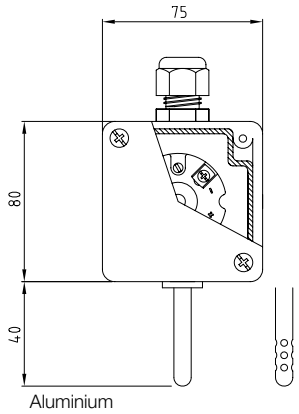
Limited temperature depending on the selected cable

Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10, cryogenic, and others
Max. pressure:	atmospheric pressure
Handle:	PVC material max. 80°C
Protection tube:	according to DIN 43763
Material:	stainless steel 1.4404 (SS316L)
Max. temp. cable:	PVC max. 80°C silicone max. 200°C PTFE max. 220°C fibreglass 350°C
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85°C -20°C≤Ta≤+60°C

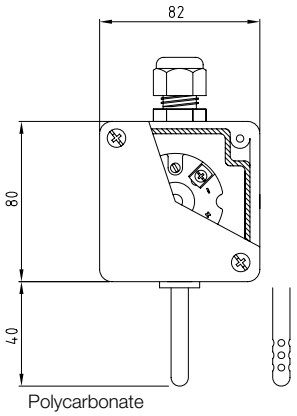
Model	Immersion length[1]/ protection tube diameter (D)	Process connection	Sensor type / category	RTD wiring	Cable[2]	Terminal	Options
TWL-P	**3** = tube Ø3 **4** = tube Ø4 **5** = tube Ø5 **6** = tube Ø6 **8** = tube Ø8 **X** = special options	**000** = PVC handle **XXX** = special options	**A** = 1 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) **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 (-200…+100°C) **X** = special options	**2** = 2-wire **3** = 3-wire **4** = 4-wire	**S** = silicone **T** = teflon **P** = PVC **F** = fibreglass with steel braid	**0** = without **X** = special connector	**0** = without **Y** = according to specifications

[1] Please specify length »EL« in clear text [2] Please specify length »CL« in clear text

1/01 - 2022



Aluminium



Polycarbonate

Model TWL-T

Specifications:

Sensor element:	Pt100 3-wire class B, A, 1/3, 1/10
Max. pressure:	atmospheric pressure
Connection head:	aluminium box or polycarbonate box
Protection type:	without holes outdoor installation with holes indoor installation
Protection tube:	according to DIN 43763
Max. temper. box:	aluminium max. 80 °C polycarbonate max. 80 °C
ATEX-approval:	II 1 GD Exia IIC T4...T6/Ex iaD 20 IP65 T85 °C -20 °C≤Ta≤+60 °C

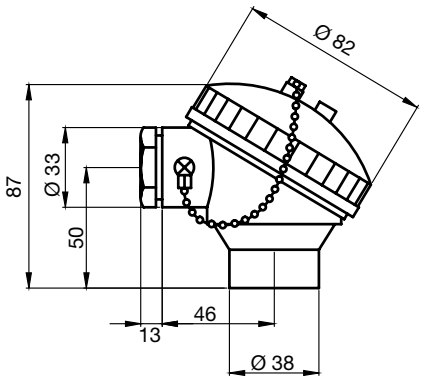
Model	Protection tube diameter	Process connection	Sensor type/ category	RTD wiring	Terminal head	Head transmitter	Options
TWL-T	**6** = tube Ø6 **H** = Ø6 with holes **X** = special options	**000** = without	**A** = 1 x Pt100 class B (-40…+80 °C) **B** = 2 x Pt100 class B (-40…+80 °C) **C** = 1 x Pt100 class A (-40…+80 °C) **D** = 2 x Pt100 class A (-40…+80 °C) **X** = special options	**2** = 2-wire **3** = 3-wire **4** = 4-wire	**A** = aluminium **P** = polycar-bonate **X** = special options	**0** = ceramic terminal **A** = 5333D transmitter 4…20 mA 2-wire **B** = 5337D transmitter 4…20 mA with HART® protocol 2-wire **C** = 5350A transmitter 4…20 mA Profibus®/ Fieldbus® **D** = prepared for subsequent mounting of transmitter	**0** = without **Y** = according to specifications

Accessories / Options

Model	Description
DOK-FR05	3-point calibration report (additional points possible)
DOK-FR03	Inspection certificate 3.1

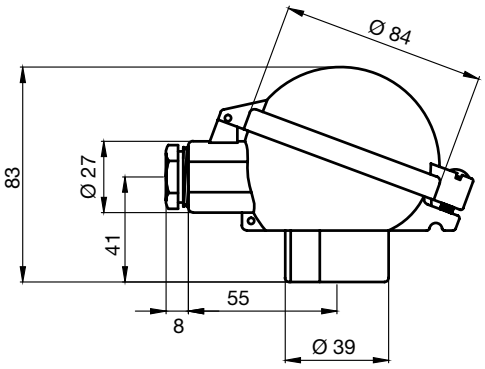
Terminal Heads

Option G Housing material: aluminium
I Housing material: stainless steel 1.4401
P Housing material: PP
Protection: IP65

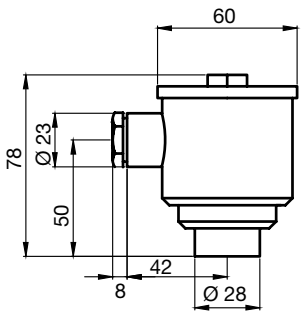


Option Z Housing material: Aluminium
Protection: IP65

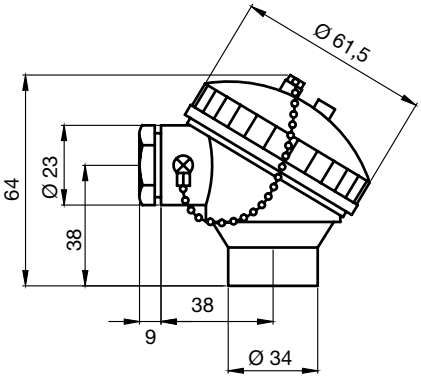
Note: *IP protection depends on cable gland. Higher IP on request.*



Option K Housing material: stainless steel 1.4401
Protection: IP65



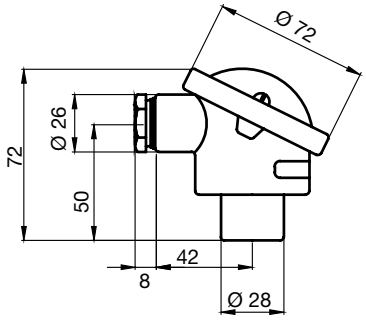
Option M Housing material: aluminium
Protection: IP65



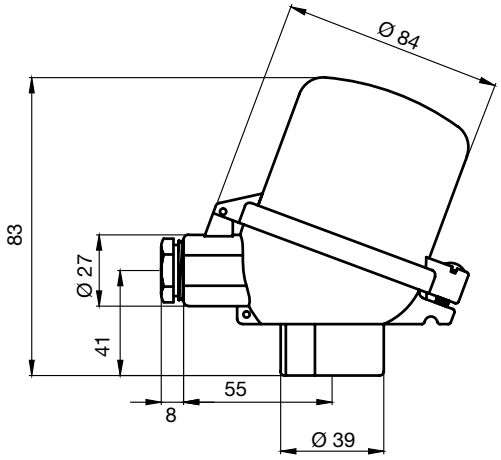
1/01 - 2022

Terminal Heads (continuation)

Option B Housing material: aluminium
Protection: IP 54

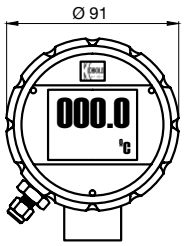


Option H Housing material: aluminium
Protection: IP 65



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:	≤ ±0.1% of input span within -10 … 70 °C ≤ ±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:	≤ 1 s, typical 0.3 s
Start-up time:	≤ 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, .xxxxx, 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

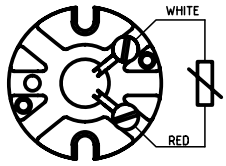
Material:	polycarbonate plastic
Enclosure:	ø 80 mm housing and front ring stainless steel, AISI 304
Protection:	IP 10 on terminals IP 67 in ø 80 mm housing

Relay (option R)

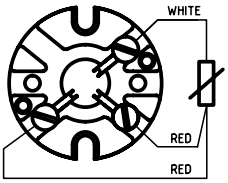
Contacts:	2 solid state relays
Voltage:	60 Vp
Load current:	75 mA

1/01 - 2022

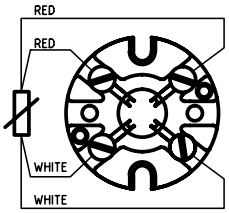
Electrical Connection



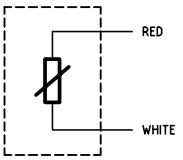
1 x Pt100, 2-wire

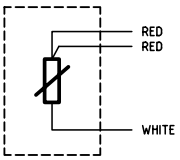


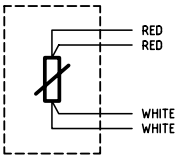
1 x Pt100, 3-wire

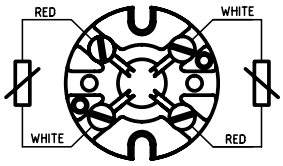


1 x Pt100, 4-wire

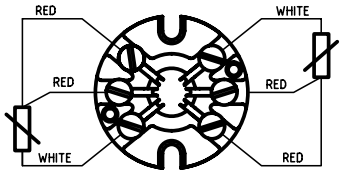








2 x Pt100, 2-wire



2 x Pt100, 3-wire