Operating Instructions
for
Temperature Sensor

Model: TWL

Explosion Proof Protection Ex d

1 Contents

Manufactured by:

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2 Note

Please read these operating instructions before unpacking and putting the unit in operation. Follow the instructions precisely as described herein.
The instruction manuals on our website WWW.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that correspond to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

3 Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.
Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:
The standard delivery includes:

- Device model: TWL

4 Regulation Use

The temperature sensors of series TWL are suitable for all applications where processes involving fluids, solid bodies or materials, or gases, require temperature recording and measurement. Our temperature sensors are suitable for use in the following industrial areas: chemicals, petrochemicals, water, feed, food, sanitary, etc.

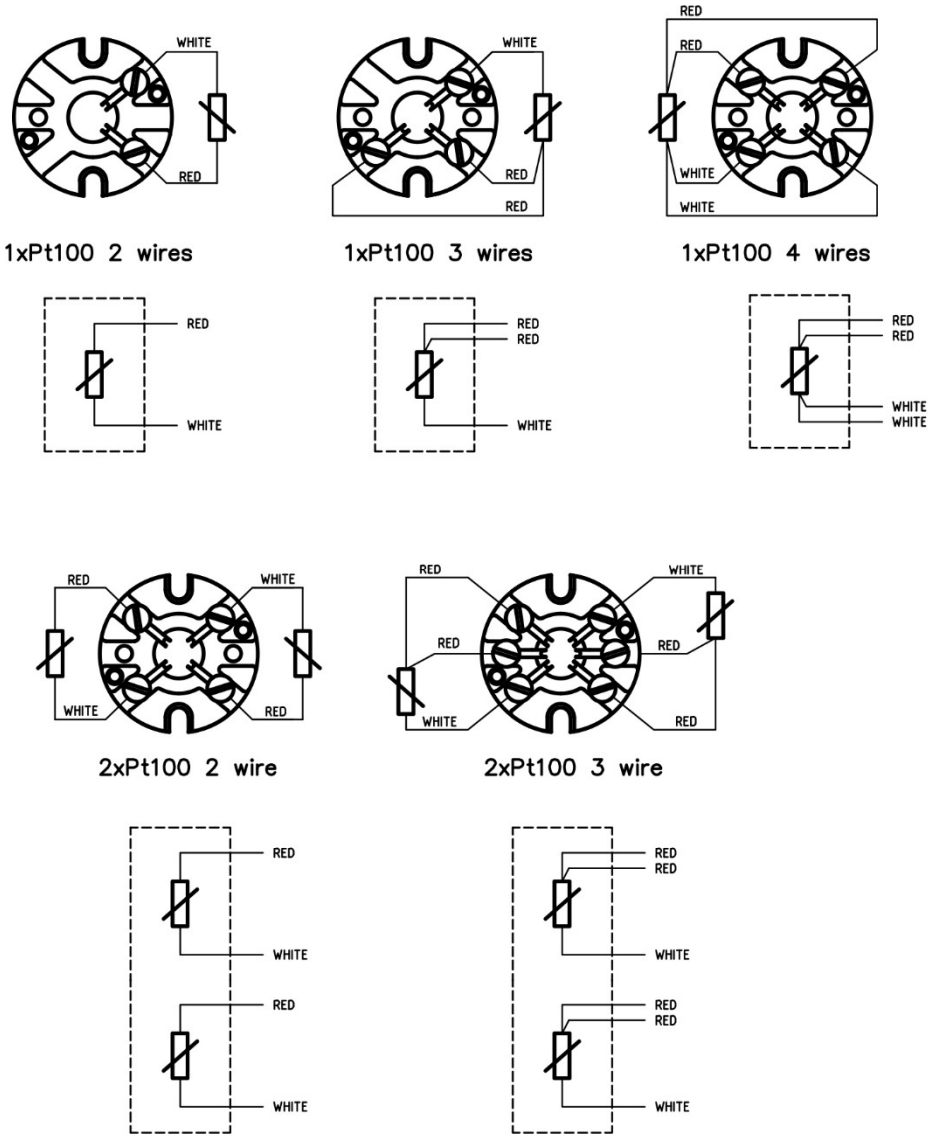
Any use of the Temperature Sensor, model: TWL, which exceeds the manufacturer’s specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5 Operating Principle

Resistance thermometers work by using the continuous change of resistance of metals subject to temperature rising and decreasing. The most common resistance material used is platinum, as it is very stable and has very good repeatability. The temperature coefficient of platinum is positive, so its resistance increases as the temperature rises. This property is defined in the IEC751 standard, which defines measurements deviations categories A and B.

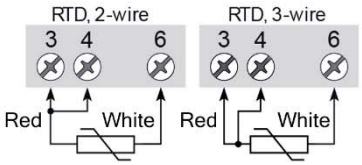
6 Electrical connection

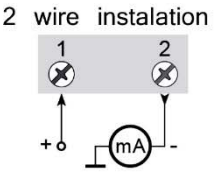
6.1 Sensor wiring diagram with head



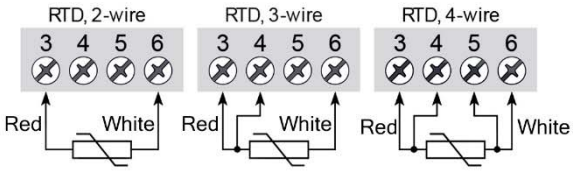
6.2 Transmitter wiring diagram

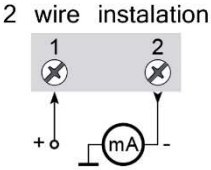
Mod. 5333D



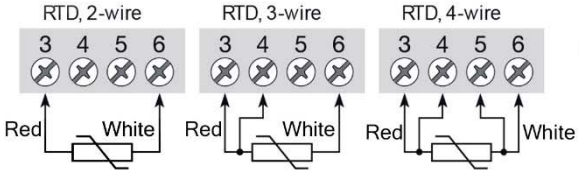


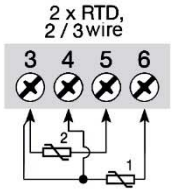
Mod. 5337D





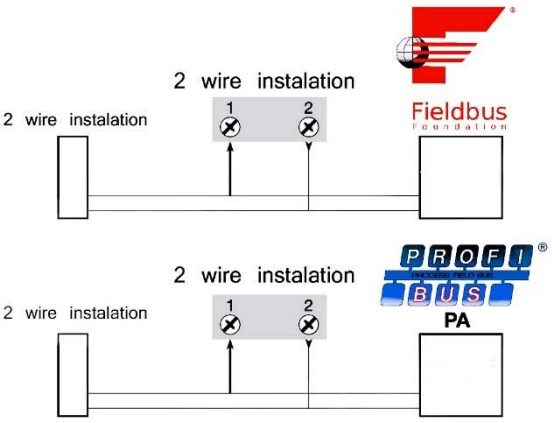
Mod. 5350B





1) 6 White
4 Red
3 Red

2) 5 White
3 Red



7 Use in hazardous Areas

7.1 Area of validity

These security instructions apply to TWL Series temperature sensors and their accessories for use in explosion-proof atmospheres conform to **CE certificate LOM 08ATEX2016 X**

7.2 Guidelines

The TWL Series temperature measuring instruments work according to the heat resistance measuring principle. This measuring principle acts to check and measure the temperature also in explosion-proof areas.

TWL devices can be with a standard 4 to 20 mA signal transmitter, Hart protocol, Profibus/Fieldbus or with direct access to the sensor. They are appropriate for use in Group IIC and Categories 2G/D explosion-proof atmospheres.

The sensor element can be installed in Category 2 explosion-proof areas in accordance with Certification 2G Ex d. The mechanical connecting element to the process can be installed in Category 2 explosion-proof areas, conform to Certification 2G Ex d.

Devices labelled “Ex d” which have a mechanical separating element, such as a thermowell, are approved for Zone 0/20 to Zone 1/21, when using a sensor certified as 2GD.

The temperature class and/or the surface temperature relates solely to a device operated at ambient temperature. On installation the actual temperature class for process operation must be determined.

The inlet bushings used must conform to the certification for their type in accordance with the directive.

The requirements of Regulation 2014/34/EU, and the applicable national regulations for the use of measuring instruments in explosion-proof areas, such as EN 60079-0, EN 60079-1, EN 60079-31 and other regulations relating to this certification type, must be fulfilled.

Only qualified specialist personnel may install devices in explosion-proof areas.

7.3 General

- When installing the sensor, it is necessary to follow all the instructions and regulations for explosion-proof areas and the safety instructions included in these instructions.

- Make sure that the details on the sensor’s type label correspond to the working conditions for the application.

- When installing the device, make sure you do not create any mechanical deformation as a result of solder spots or the application of mechanical force.

- **Important**: Make sure there is an electrical connection between the device's earth and the earth of the system.

  Make sure the lid is closed before putting the device into operation.

- Before re-opening the lid, remove the plug from the mains or de-energise the device and make sure there is no danger of explosion.

- Only use cable glands according to norms for Ex d protection.

- **Important**: Due to the use of a flame path and its fit tolerance it is not permissible to use standard measuring inserts as spare parts

- The use in zone 0 of heads made of aluminium should be restricted to locations where the risk of ignition due to mechanical impact is not possible.

7.4 Protection against E.S.D. (Electrostatic Discharge)

Temperature sensors with plastic parts that can become electrically charged bear a warning label. Electrical charging must be avoided at all costs. Pay attention to the following:
- Avoid rubbing the device
- Never clean the device dry
- Do not install the device near material airflows or near steam outlets

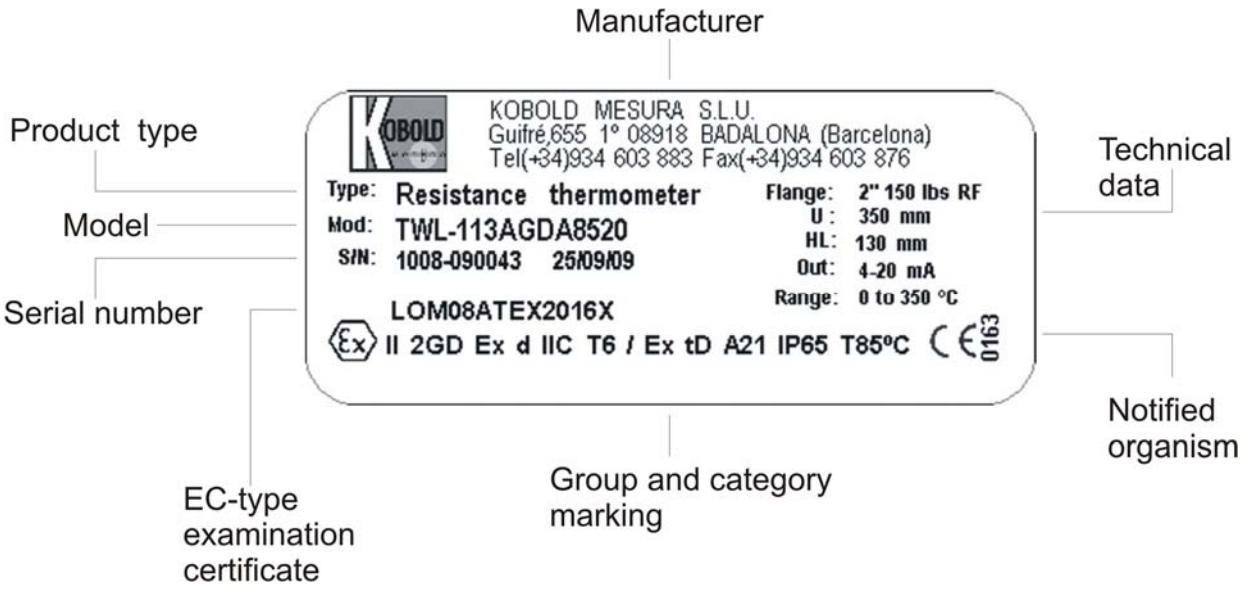
7.5 Maintenance and repairs

The instrument does not require maintenance or servicing.
Repairs must be only carried out by Kobold Mesura (manufacturer)

7.6 Storage

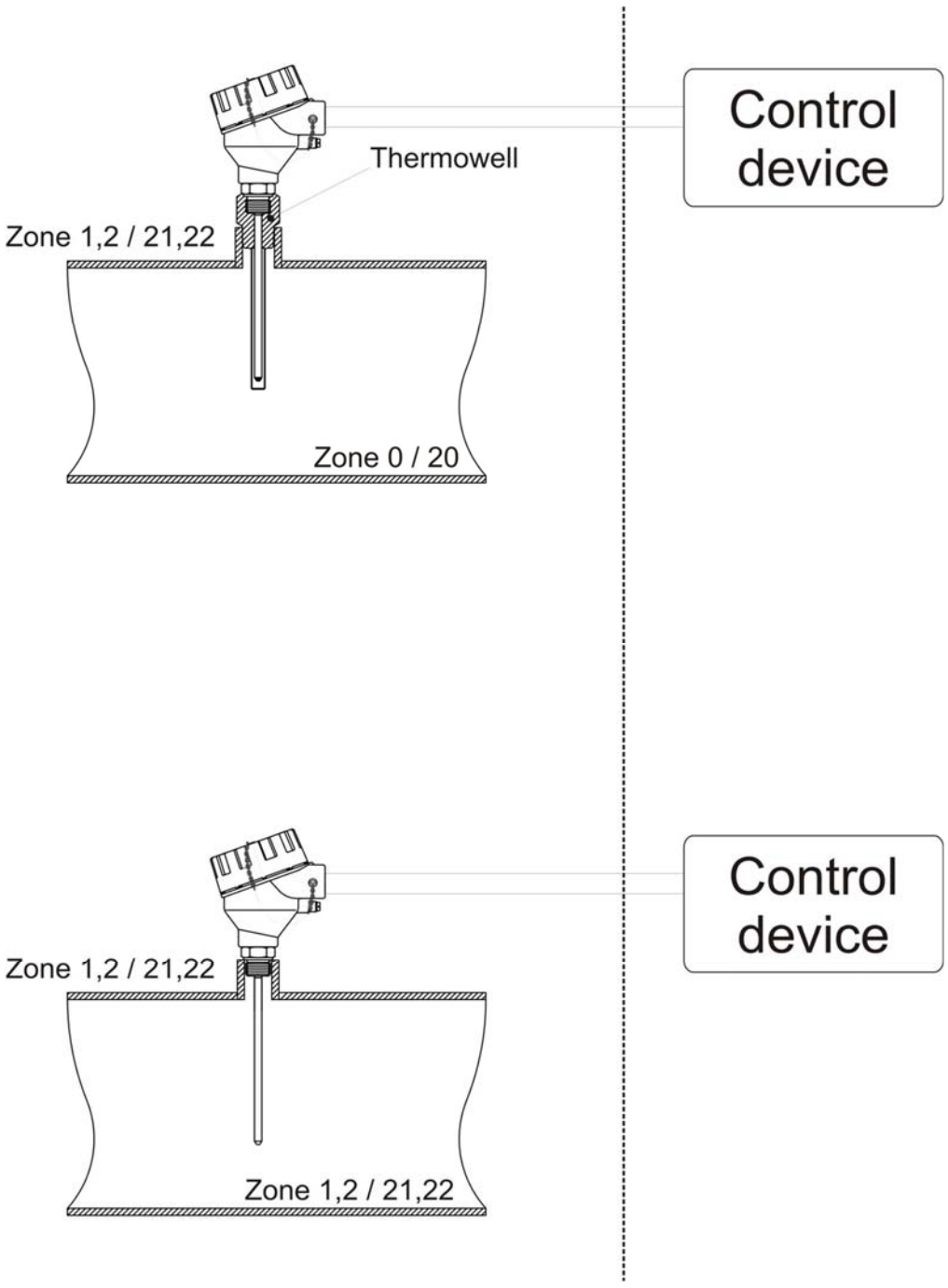
Measuring instruments should be protected against humidity and dust.
Storage temperature: -40ºC….+85ºC for sensors without transmitter.
Storage temperature: See manual of the corresponding transmitter and display model.

8 Description of the Factory Label



9 Installation in the classified area

9.1 Examples of installation in explosion-proof areas conform to the protection type “Ex d”



10 Technical Details

10.1 Sensor wiring

- 2 wires Error due to the lead resistance of the sensor
- 3 wires With connecting wires up to 25 m, lead resistance is negligible.
- 4 wires The lead resistance of the connecting wires is negligible

Sensor according to IEC 60751
-Class B
-Class A
-Class 1/3
-Class 1/10
The nominal value of Pt100 sensors is 100Ω at 0 ºC.

Tolerance class

-Class B	±0.3 + 0.005 * t
-Class A	±0.15 + 0.002 * t
-Class 1/3	±0.10 + 0.005 * t
-Class 1/10	±0.03 + 0.0017 * t

t= measuring temperature in ºC without sign

10.2 General details

Ambient temperature: -40…+150ºC with ceramic terminal base
-40… +85ºC with transmitter
-20… +70ºC with LCD display
-20…+80ºC with led display

Meas. Range: -30…+550ºC
-80...+600ºC (other on request)

Operating pressure: 250 bar (depending on thermowell)

Connection head: form XD (IP54÷IP68 depending on cable gland and sealing “not included” M20 x 1,5mm)

10.3 Materials

Sensor: Stainless steel 1.4404 (others on request)

Thermowell: Stainless steel 1.4404 (others on request)

Neckpipe: Stainless steel 1.4404 (others on request)

Connection head: Aluminium, painted

Terminal base: Ceramic (without transmitter)

10.4 Process connection

Thread: G1/2”, G3/4, G1”, ½” NPT, ¾” NPT, 1” NPT

Din-flange: DN 15, 20, 25, 32, 40, 50

Ansi flange: ½”, ¾”, 1”, 1 ½”, 2“

Weld-in: ¾”, 1”, 1 ¼”

10.5 ATEX-approval

 II 2 GD Exd IIC T6 / Ex tD A21 IP65 T85 ºC

10.6 Head transmitter

- Output:	analogue output 4…20 mA
- Communication:	HART®-protocol PROFIBUS®/Fieldbus
- Minimum meas. span:	standard transmitter 25ºK transmitter with HART® 10ºK transmitter with PROFIBUS®/Fieldbus 5ºK
- Supply voltage:	8…35 Vdc for standard transmitter and transmitter with Hart 9…32 Vdc for transmitter with PROFIBUS®/Fieldbus

Note

For programming of transmitter please refer to their separate programming manual.
Sensors model TWL-SN and TWL-SA have not head transmitter, you must use remote transmitter.

Transmitter 5333D

Ambient temperature:	-40...+85 ºC
Power supply:	8...35 V
Accuracy:	Absolute accuracy ≤ ±0.3 ºC Temp. Coefficient (≤ ±0.01 ºC/ºC)
Current Output:	4...20 mA
Load resistance:	≤ (V supply - 8) / 0.023
Sensor error detection:	Programmable 3.5…23 mA NAMUR NE43 Upscale and NAMUR NE43 Downscale

Transmitter 5337D

Ambient temperature:	-40...+85 ºC
Power supply:	8...35 V
Accuracy:	Absolute accuracy ≤ ±0.1 ºC Temp. Coefficient (≤ ±0.005 ºC /ºC)
Current Output:	4...20 mA HART®
Load resistance:	≤ (V supply - 8) / 0.023
Sensor error detection:	Programmable 3.5…23 mA NAMUR NE43 Upscale and NAMUR NE43 Downscale

Transmitter 5350D

Ambient temperature:	-40...+85 ºC
Power supply:	9...32 V
Accuracy:	Absolute accuracy ≤ ±0.1 ºC Temp. Coefficient (≤ ±0.002 ºC / ºC)
Output:	PROFIBUS® PA protocol FOUNDATIONTM FIELDBUS protocol

10.7 Display

- Only for 4..20 mA or Hart transmitters.

- Type:	4 digit LCD or LED
- Supply:	loop powered
- Voltage drop out:	LCD max. 2,5 Vdc LED 3,3 V at 4 mA 3,7 V at 20 mA

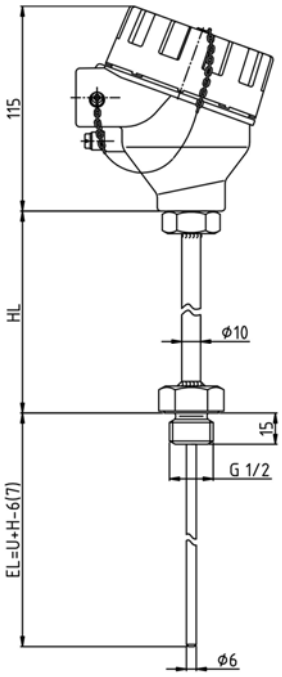
Note

For programming of transmitter and display please refer to their separate programming manuals.

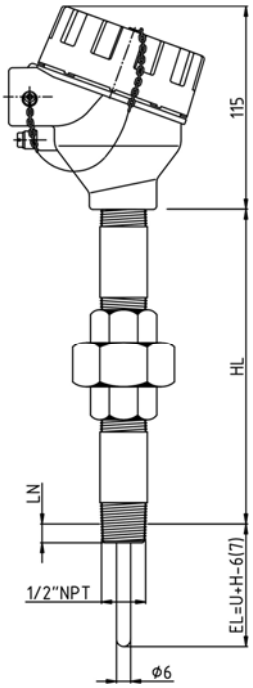
11 Dimensions

11.1 Sensors

Dimensions Temperature Sensor TWL-1

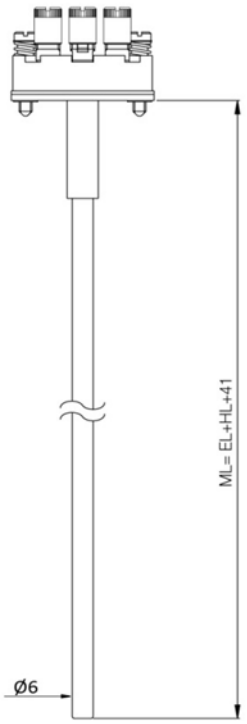


Dimensions Temperature Sensor TWL-2

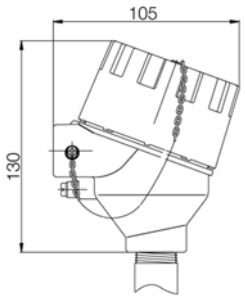


HL: Neckpipe length 130 mm TWL-1 (other on request)
150 mm TWL-2 (other on request)
LN: Screw-in-length by hand (approx. 8,1 mm at ½"NPT)
U: Immersion length thermowell (see drawing thermowell)
H: Length thermowell (see drawing thermowell)
EL: Immersion length
EL: U+H-7 mm for thermowell type B
EL: U+H-8 mm for thermowell type G and D

Measuring Insert TWL-3



Dimensions Connection Head with Display



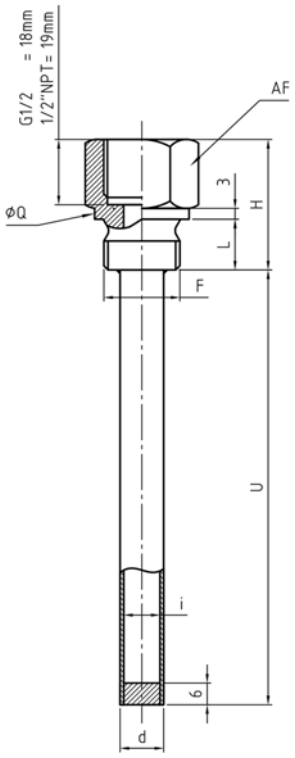
IMPORTANT!!
*** Due to the use of a flame path and its fit tolerance it is no permissible to use standard measuring inserts as spare parts.**

HL = neckpipe length
EL = immersion length
ML= measuring insert length

11.2 Thermowells

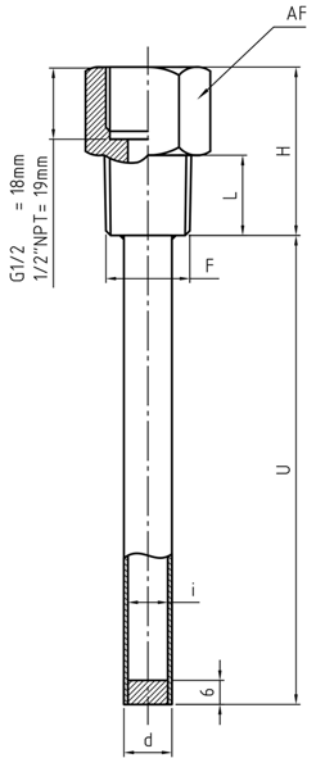
Dimensions Thermowell Model TWL-…B…

Nominal pressure: max. PN25 at 20ºC
Cylindrical thermowell, welded with process connection G-thread



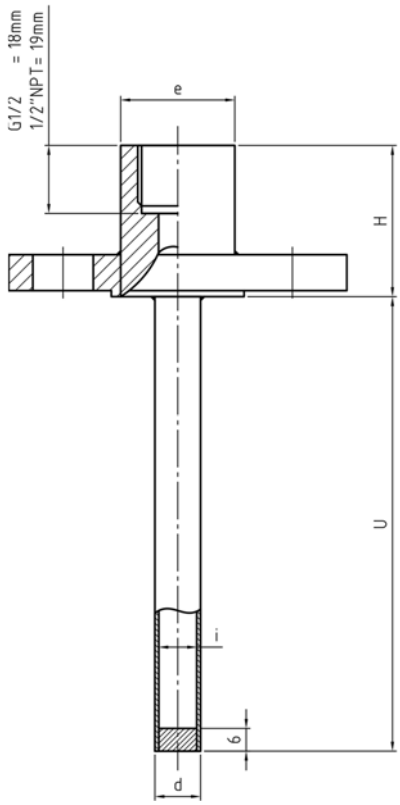
Process Connection	Max. Total length	AF	F	i	d	H	L	Q
G-thread	5000 mm	27	G ½ B	10	12	36	14	26
				12	14			
		36	G ¾ B	10	12	38	16	31.7
				12	14			
		41	G 1 B	10	12	40	18	39
				12	14			

Nominal pressure: max. PN25 at 20ºC
Cylindrical thermowell, welded, with process connection NPT- thread



Process Connection	Max. Total length	AF	F	i	d	H	L
NPT-thread	5000 mm	27	½ NPT	10	12	42	20
				12	14		
		27	¾ NPT	10	12	43	
				12	14		
		36	1 NPT	10	12	46	24
				12	14		

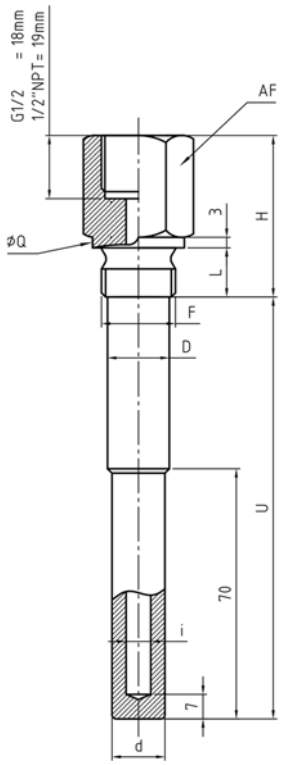
Nominal pressure: max. PN6..40 at 20ºC
Cylindrical thermowell, welded, with process connection flange acc. DIN or ANSI



Process connection		Max. Total Length	i	d	H	e
With flange	ANSI ½"	5000mm	10/12	12/14	40	30
	ANSI ¾"					
	ANSI 1"					35
	ANSI 1" ½					
	ANSI 2"					
	DIN DN 15		10/12	12/14	40	30
	DIN DN 20					
	DIN DN 25					35
	DIN DN 32					
	DIN DN 40					
	DIN DN 50					

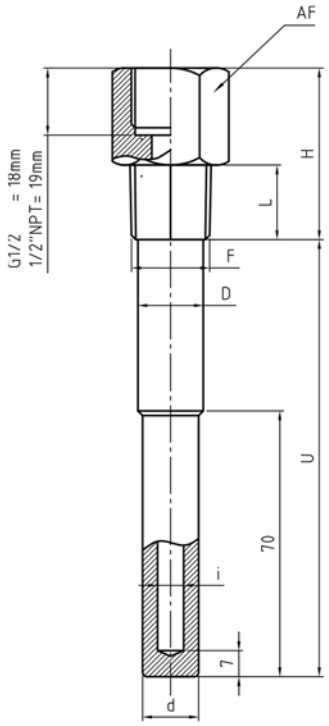
Dimensions Thermowell Model TWL-…G…

Nominal pressure: max.PN100 at 20ºC
Cylindrical thermowell out of solid material with stepped shaft and process connection G-thread



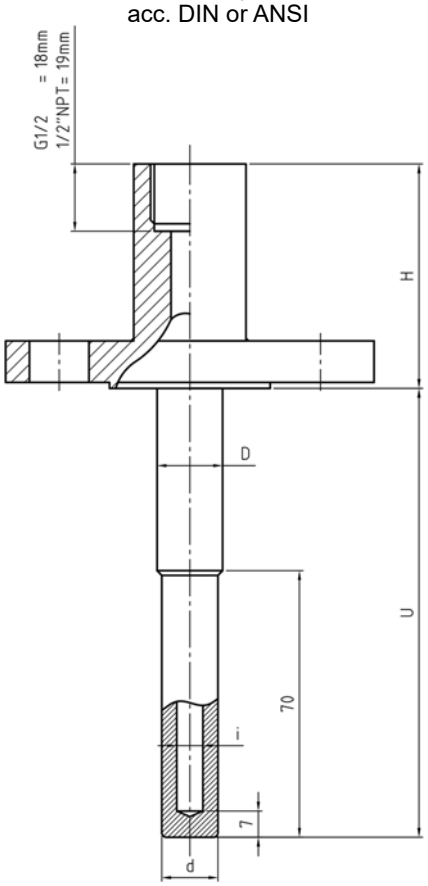
Process Connection	Max. Total Length	AF	F	i	d	D	H	L	Q
G-thread	1000mm	27	G ½ B	7-8-9	15	17.5	46	14	26
				10-12	17,5	17,5			
		36	G ¾ B	7-8-9	15	18		16	31.7
				10-12	18	21			
		41	G 1 B	7-8-9	15	21	51	18	39
				10-12	18	25			

Nominal pressure: max. PN100 at 20ºC
Cylindrical thermowell out of solid material with stepped shaft and process connection NPT-thread



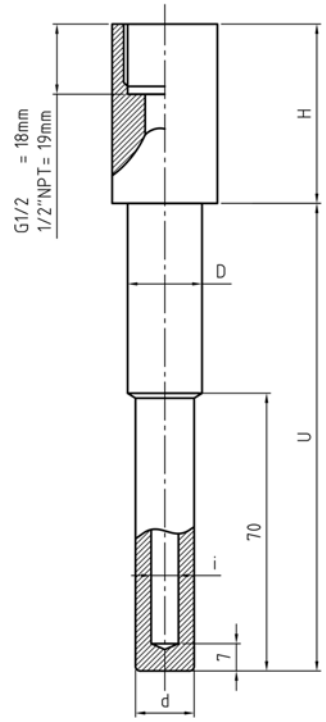
Process Connection	Max. Total Length	AF	F	i	d	D	H	L
NPT-thread	1000mm	27	½ NPT	7-8-9	15	17.5	46	20
				10-12	17,5	17,5		
		27	¾ NPT	7-8-9	15	18		
				10-12	18	21		
		36	1 NPT	7-8-9	15	21	51	24
				10-12	18	25		

Nominal pressure: as flange rating (max. PN100 at 20ºC)
Cylindrical thermowell out of solid material with stepped shaft and process connection flanges acc. DIN or ANSI



Process Connection		Max.total Length	i	d	D	H	e
Flange	ANSI ¾"	1000mm	7-8-9	15	17.5	60	30
			10-12	17,5	17,5		
	ANSI 1"		7-8-9	15	18		
			10-12	18	21		
	ANSI 1 ½"		7-8-9	15	21		35
			10-12	18	25		
	ANSI 2"		7-8-9	15	21		
			10-12	18	25		
	DIN DN 20		7-8-9	15	17.5	60	30
			10-12	17,5	17,5		
	DIN DN 25		7-8-9	15	18		
			10-12	18	21		
	DIN DN 32		7-8-9	15	21		35
			10-12	18	25		
	DIN DN 40		7-8-9	15	21		
			10-12	18	25		
	DIN DN 50		7-8-9	15	21		
			10-12	18	25		

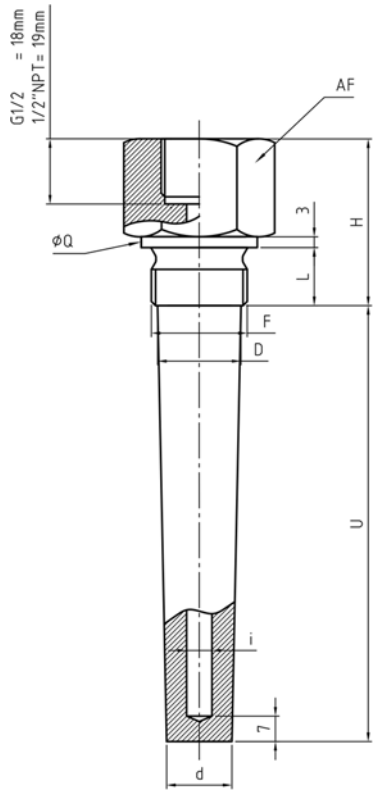
Nominal pressure : PN100 at 20ºC
Cylindrical thermowell out of solid material with stepped shaft and process connection for weld-on



Process Connection		Max. Total Length	F	i	d	D	H
For weld-on	DN ¾"	1000	26,9	7-8-9	15	19	46
				10-12	18		
	DN 1"		33.4	7-8-9	15	22	51
				10-12	18		

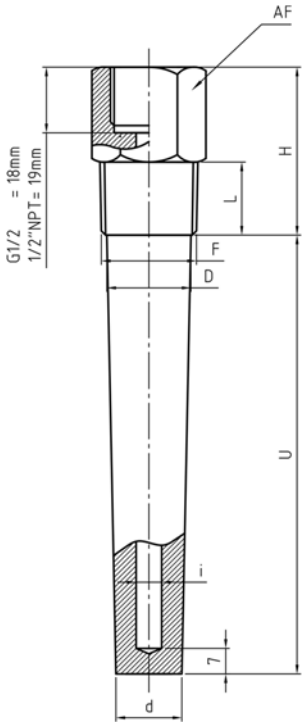
Dimensions Thermowell Model TWL-…D…

Nominal pressure: PN250 at 20ºC
Conical thermowell out of solid material with process connection G-thread



Process Connection	Max. Total Length	AF	F	i	d	D	H	L	Q
G-thread	1000mm	36	G ¾ B	7-8-9	18	23	46	20	31.7
				10-12	21				
		41	G 1 B	7-8-9	18	29	51	25	39
				10-12	21				

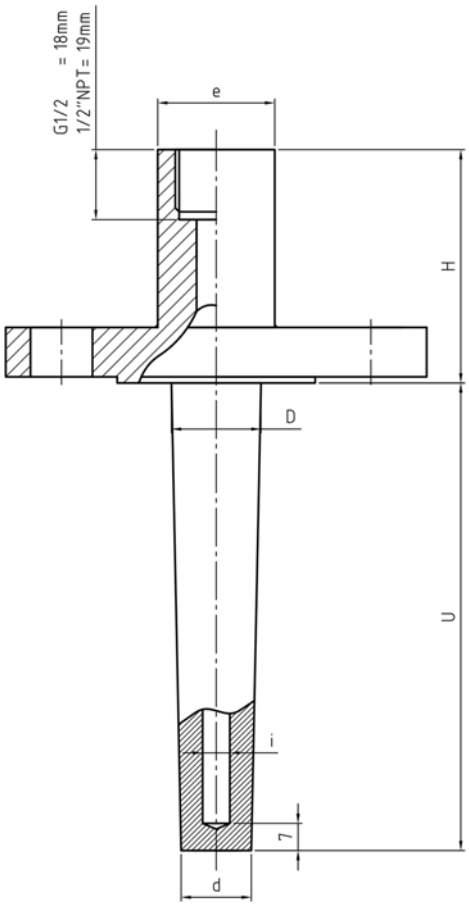
Nominal pressure: PN250 at 20ºC
Conical thermowell out of solid material with process connection NPT-thread



Process Connection	Max. Total Length	AF	F	i	d	D	H	L
NPT-thread	1000mm	27	¾ NPT	7-8-9	18	23	46	20
				10-12	21			
		36	1 NPT	7-8-9	18	29	51	24
				10-12	21			

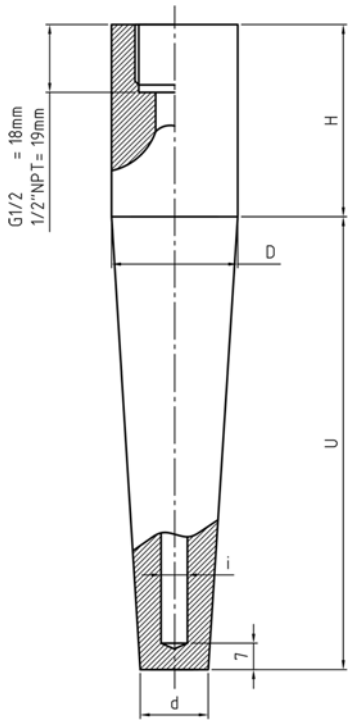
Nominal pressure: as flange rating (max. PN250 at 20ºC)

Conical thermowell out of solid material with process connection flange acc, DIN or ANSI



Process Connection		Max. Total Length	i	d	D	H	e
Flange	ANSI 1”	1000mm	7-8-9	18	23	60	30
			10-12	21			
	ANSI 1 ½”		7-8-9	18	29		35
			10-12	21			
	ANSI 2”		7-8-9	18			
			10-12	21			
	DIN DN 25		7-8-9	18	23		30
			10-12	21			
	DIN DN 32		7-8-9	18	29		35
			10-12	21			
	DIN DN 40		7-8-9	18			
			10-12	21			
	DIN DN 50		7-8-9	18			
			10-12	21			

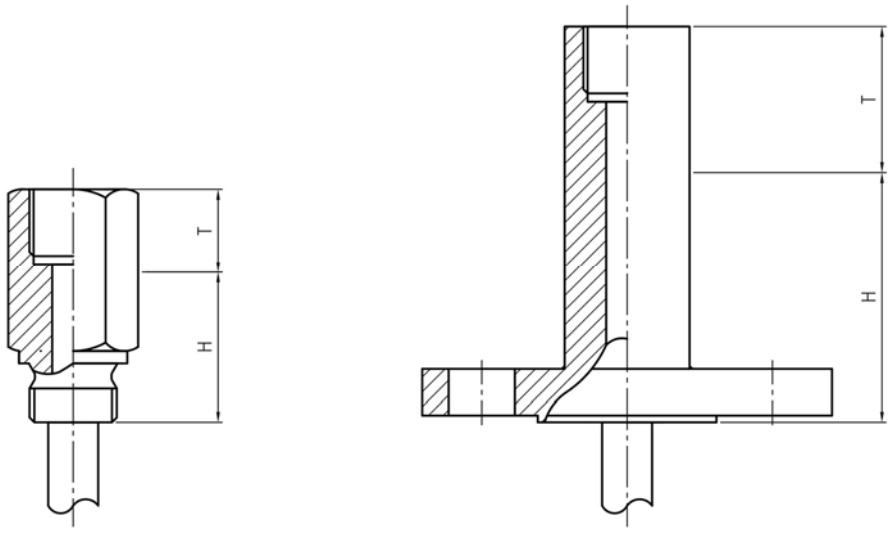
Conical thermowell out of solid material with process connection flange acc. DIN or ANSI



Process Connection		Max. Total Length	i	d	D	H
For weld-on	DN 1”	1000mm	7-8-9	18	33.4	51
			10-12	21		
	DN 1 ¼”		7-8-9	18	38.1	51
			10-12	21		

11.3 Lagging extension at thermowell “T”.

In case of ordering with lagging extension at thermowell please see drawing and specify length “T” (total length is “T”+”H”). “H” is fix.



12 Order details

Order Details (example: **TWL-113LGBG4AA0**)

Model	Sensor specification				
	Sensor type	**Sensor type/cat.**	**Sensor wiring**	**Connection head/transmitter**	**Sensor connection**
TWL-	**0** = without	**0** = without	**0** = without	**0** = without	
	1= standard **2**= with nipple and union	**1**= 1 x Pt100 cat B -30…+550ºC **2**= 2 x Pt100 cat B -30…+550ºC **3**= 1 x Pt100 cat B -80…+660ºC **4**= 2 x Pt100 cat B -80…+660ºC **5**= 1 x Pt100 cat A -30…+550ºC **6**= 2 x Pt100 cat A -30…+550ºC **7**= 1 x Pt100 cat A -80…+660ºC **8**= 2 x Pt100 cat A -80…+660ºC	**2**= 2-wire **3**= 3-wire **4**[1]= 4-wire	**L**= without transmitter **A**= with programmable 2-wire transmitter (model 5333D) **B**= with 2-wire transmitter HART® protocol (model 5337D) **C**= with transmitter Profibus®/ Fieldbus (model 5350A)	**N**[2]=1/2" NPT male **G**= G1/2" male **X**= special
	3= measuring insert	**X**= special			**0**= without

Order Details continued:

Thermowell specification				Length (meas. Insert, sensor, thermowell)[4]	Special option
Thermowell type	**Process connection**	**Process connection size**	**Nominal pressure (process connection)**		
0 = without	**0** = without	**0** = without	**0** = without	**Only for TWL-0** (only thermowell) **0** = without lagging extension "T" **1** = with lagging extension "T" **Sensor with thermowell** (only for TWL-1/TWL-2) **A** = with standard neckpipe "HL" and without lagging extension "T" **B** = with standard neckpipe "HL" and with lagging extension "T" **C**[5] = without neckpipe "HL" and with lagging extension "T" **D**[5] = without neckpipe "HL" and without lagging extension "T" **E** = with special neckpipe "HL" length and with lagging extension "T" **F** = with special neckpipe length "HL" and without lagging extension "T" **Sensor without thermowell** (only TWL-1/TWL-2) **G** = with standard neckpipe "HL" **H** = with special neckpipe "HL" **J** = without neckpipe length "HL" **X** = special option (specify in clear text) **Only TWL-3** **M** = measuring insert (only for TWL-3, specify length "ML")	**0** = without **1**[6] = with LCD display **2**[6] = with led display **Y** = special option (specify in clear text)
B = cylindrical, multipart, welded **G** = cylindrical, bar stock/drilled with stepped shank **D** = tapered shank, bar stock/drilled **X** = special option	**G** = G-thread	**4** = 1/2" (not for thermowell type D) **5** = 3/4" **6** = 1 " **Y**= special	**A** = PN25 (only for thermowell type B) **B** = PN100 (only for thermowell type G) **C** = PN250 (only for thermowell type D)		
	N = NPT-thread	**4** = 1/2" (not for thermowell type D) **5** = 3/4" **6**= 1" **Y** = special	**A** = PN25 (only for thermowell type B) **B** = PN100 (only for thermowell type G) **C** = PN250 (only for thermowell type D)		
	S[3] = welded	**5** = 3/4" (only for thermowell type G) **6** = 1" **7** = 1 1/4" (only for thermowell type D) **Y** = special	**B** = PN100 (only for thermowell type G) **C** = PN250 (only for thermowell type D)		
	F = DIN flange	**4** = DN15 **5** = DN20 **6** = DN25 **7** = DN32 **8** = DN40 **9** = DN50 **Y** = special	**1** = PN6 **2** = PN16 **3** = PN40 **4** = PN100 **Y** = special		
	A = ANSI flange	**4** = 1/2" **5** = 3/4" **6** = 1" **8** = 1 1/2" **9** = 2" **Y** = special	**5** = 150 lbs **6** = 300 lbs **7** = 600 lbs **8** = 900 lbs (not for 1/2") **9** = 1500 lbs (not for 1/2") **Y** = special		

[1] 4-wire only for 1 sensor
[2] choose N for TWL-2
[3] not for thermowell type B
[4] immersion length "**U**" and hole dia. "**i**" (when ordering a/with thermowell) or "**EL**" (when ordering without thermowell), neckpipe length "**HL**" (when different from stdd. i.e. for TWL-1 stdd. Is 130 mm, for TWL-2 standard is150 mm), lagging extension "T" (when ordering) and measuring insert length "**ML**" (when ordering TWL-3) must be specified in clear text when ordering. Pls. check lengths very precisely in order to ensure a perfect match between sensor and thermowell.
[5] not for TWL-2
[6] display only available for 4...20 mA or Hart transmitters.
NOTE: Nominal pressure for TWL-3 and sensors without thermowell is atmospheric pressure.

Order Details for ordering <u>only</u> the thermowell (example: **TWL-0000NBG4A00**)

Model	Sensor specification				
	Sensor type	**Sensor type/cat.**	**Sensor wiring**	**Connection head/transmitter**	**Sensor connection**
TWL-	**0** = without	**0** = without	**0** = without	**0** = without	**N**[1]=1/2" NPT male **G**= G1/2" male **X**= special

[1] choose N for TWL-2

Order Details for ordering <u>only</u> the thermowell continued:

Thermowell specification				Length (meas. Insert, sensor, thermowell)[1]	Special option
Thermowell type	**Process connection**	**Process connection size**	**Nominal pressure (process connection)**		
Please use the specification codes according to order table shown on page 16				0 = without lagging extension "T" 1 = with lagging extension "T"	**0** = without **Y** = special option (specify in clear text)

[1] immersion length "**U**" , hole dia. "**i**" and lagging extension "**T**" must be specified in clear text when ordering. Pls. check lengths very precisely in order to ensure a perfect match between sensor and thermowell.

13 EU-Certificates

DECLARACIÓN DE CONFORMIDAD EU

EU DECLARATION OF CONFORMITY
EU-KONFOMITÄTSERKLÄRUNG
DÉCLARATION DE CONFORMITÉ
DICHIARAZIONE DI CONFORMITÀ EU

KOBOLD MESURA SLU
Avda. Conflent 68 nave 15 08915 Badalona (España)

Declara, bajo la propia responsabilidad, que el producto
Declares under our sole responsibility, that the product
Erklärt in alleiniger Verantwortung, daß das produkt
Déclare sous sa seule responsabilité, que le produit
Dichiara sotto la propia responsabilità, che il prodotto

TWL-1……. **TWL-X…….**
TWL-2…….

A los cuales se refiere esta declaración, son conformes a las siguiente Directivas Europeas:
To which this declaration relates is in conformity with the following European Directives:
Mit folgenden Richtilinien:
À auxquels se réfère cette déclaration, ils sont conformes aux Directives Européennes suivant :
A ai quali si riferisce questa dichiarazione, sono conformi alle direttive europee seguente:

EMC2014/30/EU LVD2014/35/EU Atex2014/34/EU RoHS2011/65/EU

Normas armonizadas y documentos de la normativa aplicados:
Applied harmonised standards and normative documents:
Angewandte harmonisierte Normen oder normativer Dokumente:
Normes harmonisées et documents normatifs appliqués
Norme armonizzate e documenti normativi applicati:

EN 61010-1 :2011
EN 61000-6-2 :2019
EN 60079-1:2004 (acc.EN 60079-1:2015)
EN 61241-1:2004 (acc. EN 60079-31:2016)
EN 60079-0:2006 (acc. EN 60079-0 :2021)

Certificado de examen CE de tipo
EC-type examination certificate
EG-baumusterprübescheinigung
Attestation d´examen CE de type
Certificazione per esame di tipo CE

LOM 08ATEX2016 X

Marcado
Marking
Markierung
Inscription
Marcatura

II 2 GD Exd IIC T6 / Ex tD A21 IP65 T85 ºC

Fabricado en: **KOBOLD MESURA SLU Avda. Conflent 68 nave 15 08915 BADALONA (Spain)**
Made in:
Hergesteltlt in:
Fabriqué dans:
Fabbricato in:

Organismo notificado : **LOM 0163**
Notified organism
Mitgeteilter Organismus
Organization annoncée
Organismo informato

Número notificación : **LOM 05ATEX9070**
Number notification
Zahlmitteilung
Nombre notification
Notifica di numero

Badalona june 2017

Gerente
Azzam Charmand

14 ATEX-Certificates

LABORATORIO OFICIAL J. M. MADARIAGA

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres Directive 94/9/EC

(3) EC-Type Examination Certificate nr **LOM 08ATEX2016 X**

(4) Equipment or protection system: Temperature sensors Types TWL... and TTL...

(5) Applicant: KOBOLD MESURA, S.L.U.

(6) Address: Grifé, 655
08918- Badalona (BARCELONA)
ESPAÑA

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) Laboratorio Oficial J.M. Madariaga (LOM), notified body number 0163 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in confidential report nr. **LOM 07.165 PP**

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

-	Standards	**EN 60079-0:2006**	**EN60079- 1:2004**
		EN 61241- 0:2006	**EN61241-1:2004**

(10) If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive apply to the manufacture and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

Ex d IIC T6
II 2 GD Ex tD A21 IP65 T85 °C
-20 °C ≤ Ta ≤ +60 °C

Madrid, 28th March 2008

OFICIAL LABORATORIO J.M. MADARIAGA LOM

RCPCER 07.3/2

Carlos Fernández Ramón
DIRECTOR OF THE LABORATORY

Angel Vega Remesal
Head of the ATEX

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UNIVERSIDAD POLITÉCNICA DE MADRID
ENSAYOS E INVESTIGACIONES DE MATERIALES Y EQUIPOS PARA ATMÓSFERAS EXPLOSIVAS Y MINERÍA
(Real Decreto 334/1992 de 3 de Abril - BOE 1992-04-29)

Alenza, 1 - 28003 MADRID • (34) 91 4421366 / 91 3367009 • (34) 91 4419933 • lom@lom.upm.es

LABORATORIO OFICIAL J. M. MADARIAGA

(A1) SCHEDULE

(A2) EC-Type Examination Certificate: **LOM 08ATEX2016 X**

(A3) Description of equipment or protective system

Temperature sensors based on thermocouple (TTL series) o thermoresistor RTD (TWL series) having a head in three formats and a sheath that contains the sensor element. Also is included an ambient thermometer (ST head) that uses a metallic enclosure.

Sensors with their heads are foreseen to be used in combustible dust explosive atmospheres.

The variants having the head type L can be used in gas explosive atmospheres of the group IIC. These variants have a head type XD-AD.. with component certificate FTZÚ 03 ATEX 0074U.

Sensors can be connected either directly or indirectly by means transmitters placed into the head. They can be used any type of electronic transmitter but the internal free volume must be greater than 40% of any cross section y the its internal dissipated power is limited to 15 W

Type codification: T L

- Generic reference(series) TWL or TTL
- Sub-type
- Immersion length
- Process connection type
- Type and number of sensor element
- RTD wiring (only TWL series)
- Head type
  Head types BR1, BR2, B and L
  ST variant is used as ambient thermometer
- Transmitter type
  0 = without transmitter
  E = with transmitter
- Sheath diameter
- Type of protection
  E3 = combustible dusts
  E4 = gases and combustible dusts
- Option code

OFICIAL LABORATORIO J.M. MADARIAGA LOM

RCPCER 07.3/2

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LABORATORIO OFICIAL J. M. MADARIAGA

(A1) SCHEDULE

(A2) EC-Type Examination Certificate: **LOM 08ATEX2016 X**

(A4) Test report nr **LOM 07.165 PP**

(A5) Special conditions for safe use

- The marked temperature class or surface temperature only refers to the equipment operating t ambient temperature. It must be determined the real process temperature in the installation. Head temperature must not be greater than 60 °C.

(A6) Individual tests

Each flameproof manufactured unit, including threaded flameproof joint sheaths, must be submitted to static pressure test at 20 bar according 15.1.3 of EN 60079-1:2004.

(A7) Essential Health and Safety Requirements

Explosion safe requirements are covered by application of the standards indicated in page 1/3 of this certificate.

(A8) Descriptive Documents

		Rev.	Date
- Technical description nr.:	DT0315	-	2008-02-25
- Technical manuals nr:	CT3225	-	2008-02-25
	CT3226	-	2008-02-25
- Drawings nr.:	PM0507R0	0	2007-10-23
	PM0508R0	0	2007-10-23
	PM0509R0	0	2007-10-23
	PM0510R0	0	2007-10-23
	PM0511R0	0	2007-10-23
	PM0512R0	0	2007-10-23
	PM0529R0	0	2007-10-23
	PM0530R0	0	2007-10-23
	PM0531R0	0	2007-10-23
	PM0532R0	0	2007-10-23
	PM0533R0	0	2007-10-23
	PM0534R0	0	2007-10-23
	PM0535R0	0	2007-10-23
	PM0536R0	0	2007-10-23
	PM0537R0	0	2007-10-23
	PM0538R0	0	2007-10-23
	PM0539R0	0	2007-10-23
	PM0540R0	0	2007-10-23
	DT0340	-	2008-01-02
	DT0342	-	2008-01-02
	DT0316	-	2008-01-02

OFICIAL LABORATORIO J.M. MADARIAGA LOM

RCPCER 07.3/2

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LABORATORIO OFICIAL J. M. MADARIAGA

EC-TYPE EXAMINATION CERTIFICATE SUPPLEMENT

(1)

(2) Equipment or protective system intended for use in potentially explosive atmospheres Directive 94/9/EC

(3) Supplement nr. 1 to EC-Type Examination Certificate number **LOM 08ATEX2016 X**

(4) Equipment or protection system — Temperature sensors Types TWL..., TTL...

(5) Applicant — KOBOLD MESURA, S.L.U.

(6) Address — Guifré, 665
08918 BADALONA(BARCELONA)
SPAIN

(7) Test report nr.: **LOM 09.496 GP**

(8) Variations included in this certificate

To update de type codification:

Variants with type of protection Ex d

T L _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

- General code (type) TWL or TTL
- Sub-type
- Type and number of elements
- Sensor wiring
- Head type and transmitter
- Process connection (Sensor)
- Type of thermowell
- Process connection (Thermowell)
- Process connection (size)
- Nominal pressure (Process connection)
- Immersion length and neck pipe
- Option codes

OFICIAL LABORATORIO J.M. MADARIAGA LOM

This supplement must be an inseparable part together with the base certificate **LOM 08ATEX2016 X**

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RCPCER 07.4/2 Rev. 0

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(Real Decreto 334/1992 de 3 de Abril - BOE 1992-04-29)

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LABORATORIO OFICIAL J. M. MADARIAGA

(3) Supplement nr. 1 to EC-Type Examination Certificate number **LOM 08ATEX2016 X**

(8) Variations included in this certificate (continue)

Variants with type of protection Ex tD

T_L _ _ _ _ _ _ _

- General code(type) TWL ó TTL
- Sub-type
- Immersion length
- Process connection
- Type and number of elements
- Sensor wiring
- Head type
- Transmitter type
- Options codes

(9) Changes in marking

Only those that correspond to the new type codification

(10) Descriptive documents

		Rev.	Date
- Description nr.:	DT0387	-	2009-07-14
	DT0388	-	2009-07-14

OFICIAL LABORATORIO J.M. MADARIAGA LOM

Madrid, 2009-10-21

Carlos Fernández Ramón
DIRECTOR OF THE LABORATORY

Angel Vega Remesal
Head of ATEX area

RCPCER 07.4/2 Rev. 0

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Technical data
Subject to change without prior notice