



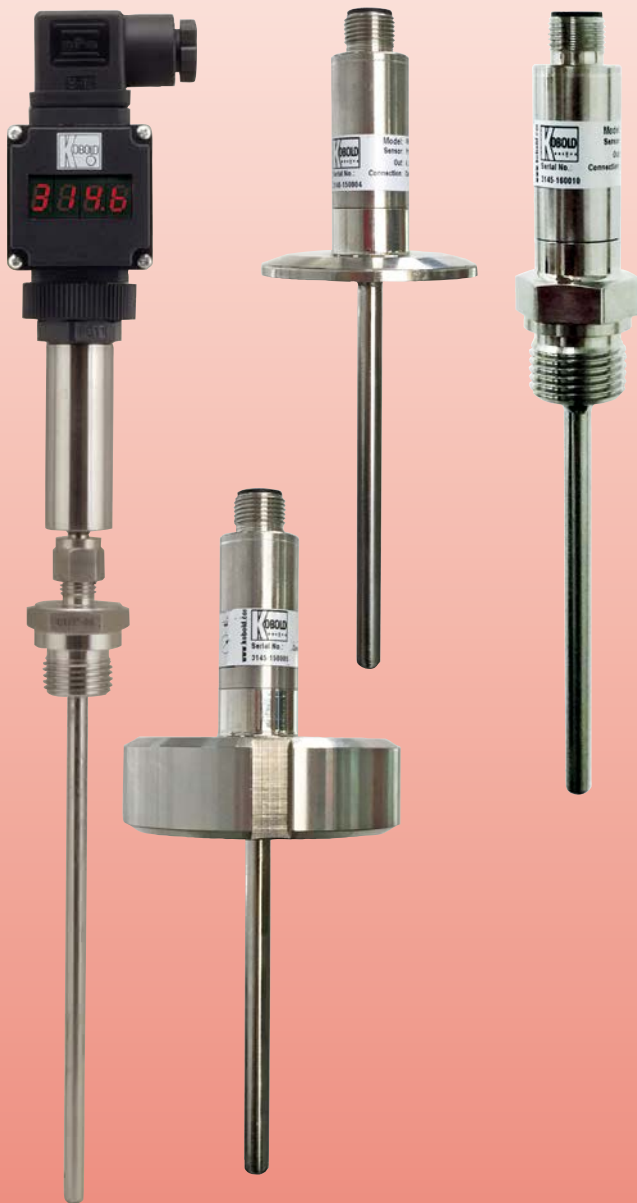
## Insertion Resistance Thermometers

with, or without transmitter



measuring  
•  
monitoring  
•  
analysing

MMA



- Economically-priced digital thermometers with optional plug-on display
- Compact construction with, or without transmitter 4-20 mA output
- Measuring ranges:  
-198 ... +250 °C  
others on request
- Pt100 sensor class A, 1/3 DIN, 1/10 DIN or cryogenic
- Process connection threaded, clamp DIN 32676, VARIVENT®, or union nut DIN 11851
- Electrical connection DIN 43650, or M12
- Material stainless steel
- Good immunity to vibration



T2

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### Description

The screw-in temperature sensors with integrated transmitter can be used with the plug-on display model AUF... as economical digital thermometers with analogue output (4-20 mA). The plug-on display is available with limit contact as an option.

The model MMA-... temperature probe connections are made of stainless steel available in G $\frac{1}{4}$ , G $\frac{1}{2}$ ,  $\frac{1}{2}$ " NPT, clamp DIN32676, VARIVENT® or Union Nut DIN11851. The bulbs have been designed for pressures up to 36 bar, depending on the process conditions.

Due to a DIN43650 connector the transmitter can be cable-connected or retrofitted with the plug-on display very easily. The M12 connector has the same cable-connection properties.

The temperature sensor is equipped with an extension neck for process temperatures >150 °C.

The Pt100 temperature sensor is conform to IEC751, class A,  $\frac{1}{3}$  DIN,  $\frac{1}{10}$  DIN or cryogenic (for further information see order details).

### Integrated Transmitter

Temperature sensors with transmitter are capable of transmitting measuring signals noise-free over long distances.

The two-wire transmitter is integrated in the resistance thermometer. The output-signal is 4-20 mA.

### Applications

- Heating installation, furnace and apparatus construction
- Machine construction and building installations
- Marine engineering
- General industrial
- Food
- Pharmaceutical industry

### Technical Details

#### Temperature probe

Bulb:	stainless steel 1.4404
Thread:	stainless steel 1.4404 G $\frac{1}{4}$ , G $\frac{1}{2}$ , $\frac{1}{2}$ " NPT clamp DIN32676 VARIVENT® union nut DIN 11851
Transmitter housing:	stainless steel
p <sub>max</sub> :	36 bar
Sensor element:	Pt 100 class A, $\frac{1}{3}$ DIN, $\frac{1}{10}$ DIN or cryogenic
Connector:	DIN 43650 or M12
Protection:	IP65

#### Transmitter

Output:	4-20 mA 2-wire
Supply:	7.5 ... 45 V <sub>DC</sub>
Min. measuring span:	50 K
Ambient temperature:	-40 ... +85 °C
Measuring range:	-198 ... +250 °C (MMA-0/MMA-H)
Max. temperature:	400 °C on request
Accuracy:	<0.5% of measuring span

#### Plug-on display

Display:	4-digit, red LED height of digits 7.62 mm
Indicating range:	-1999 ... +9999
Voltage drop:	≤5 V <sub>DC</sub>
Programming:	via 2 buttons, menu-assisted scaling of indicating range decimal point, damping, fault indication, switch point (optional)
Protection:	IP65
Ambient temperature:	0 ... +60 °C

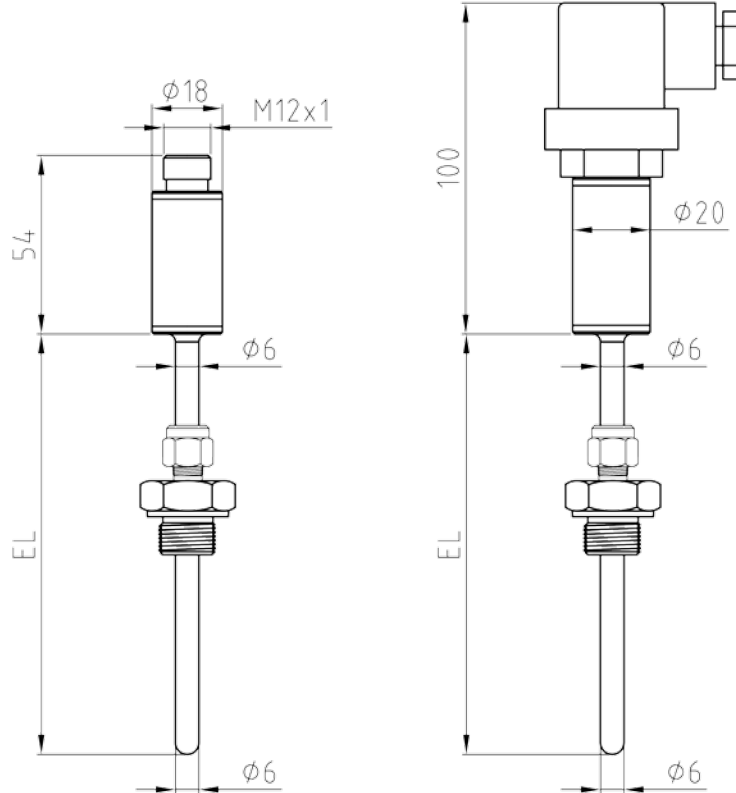
**Order Details Probe** (Example: MMA-H 6 K15 C 2 D 0 0)

Model thread connection	Immersion tube diameter	Process connection	Sensor type / category	RTD wiring	Connector type	Head connection	Options
MMA-H	6 = tube $\varnothing$ 6x1 X = special options	000 = without K15 = compression fitting G 1/2-M L15 = compression fitting 1/2" NPT XXX = special options	C = 1xPt100 class A (-70...+150°C) M = 1xPt100 class 1/3 DIN (-70...+150°C) N = 1xPt100 class 1/10 DIN (-70...+150°C) Q = 1xPt100 class cryogenic (-198...+100°C) X = special options	2 = 2-wire 3 = 3-wire 4 = 4-wire	D = DIN 43650 M = M12	0 = without transmitter A = with 4-20 mA transmitter standard configuration 0...100°C B = with 4-20 mA transmitter special configuration	0 = without Y = according to specifications

**Dimensions [mm]**

**Model MMA-H compression fitting process connection**

with plug and socket connection according to DIN 43650 or M12 connection



**Order Details Probe** (Example: MMA-0 6 G15 C 2 D 0 0)

Model thread connection	Immersion tube diameter	Process connection	Sensor type/category	RTD wiring	Connector type	Head transmitter	Options
<b>MMA-0<sup>1)</sup></b>	<b>6</b> = tube Ø6x1	<b>G08</b> = G ¼-M <b>G15</b> = G ½-M <b>N08</b> = ¼" NPT-M <b>N15</b> = ½" NPT-M <b>XXX</b> = special options	<b>C</b> = 1xPt100 class A (-70...+250°C) <b>M</b> = 1xPt100 class 1/3 DIN (-70...+250°C) <b>N</b> = 1xPt100 class 1/10 DIN (-70...+250°C) <b>Q</b> = 1xPt100 class cryogenic (-198...+100°C) <b>X</b> = special options	<b>2</b> = 2-wire <b>3</b> = 3-wire <b>4</b> = 4-wire	<b>D</b> = DIN 43650 <b>M</b> = M12	<b>0</b> = without transmitter <b>A</b> = with 4-20 mA transmitter standard configuration 0...100°C <b>B</b> = with 4-20 mA transmitter special configuration	<b>0</b> = without <b>Y</b> = according to specifications
<b>MMA-H</b>	<b>X</b> = special options						

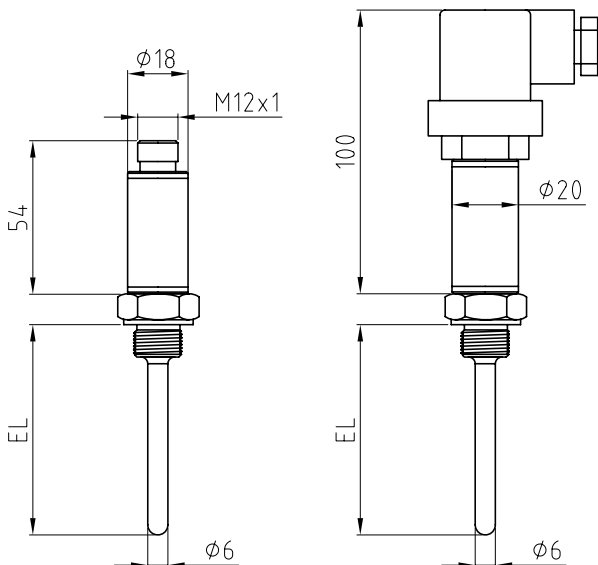
<sup>1)</sup> Maximum range -40...150°C with transmitter

**Dimensions [mm]**

**Model MMA-0 thread process connection**

with plug and socket connection according to DIN 43650 or M12 connection.

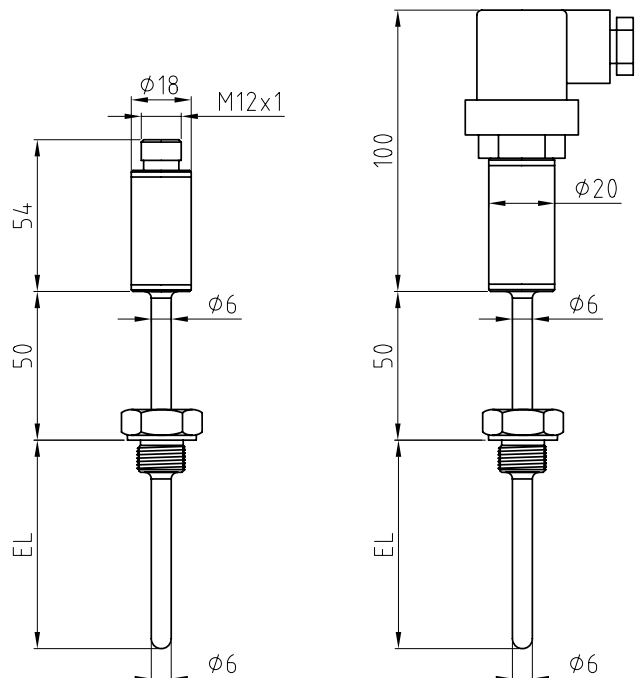
Without extension length 150°C max.



**Model MMA-H thread process connection**

with plug and socket connection according to DIN 43650 or M12 connection.

Extension length 50 mm (Range up to 250°C)



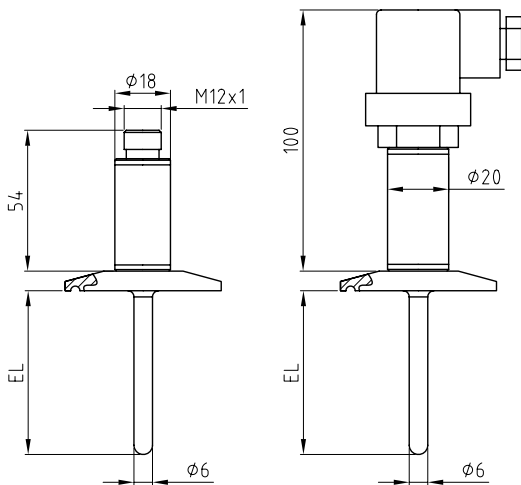
**Order Details Probe** (Example: MMA-0 6 C15 C 2 D 0 0)

Model DIN 32676 connection	Immersion tube diameter	Process connection	Sensor type/ category	RTD wiring	Connector type	Head transmitter	Options
MMA-0 <sup>1)</sup>	6 = tube Ø6x1  X = special options	C10 = Clamp DN10 Ø34)	C = 1xPt100 class A (-70...+250°C)  M = 1xPt100 class 1/3 DIN (-70...+250°C)  N = 1xPt100 class 1/10 DIN (-70...+250°C)  Q = 1xPt100 class cryogenic (-198...+100°C)  X = special options	2 = 2-wire 3 = 3-wire 4 = 4-wire	D = DIN 43650 M = M12	0 = without trans- mitter  A = with 4-20 mA transmitter standard configuration 0...100 °C  B = with 4-20 mA transmitter special confi- guration	0 = without Y = according to specifi- cations
		C15 = Clamp DN15 Ø34)					
MMA-H		C20 = Clamp DN20 Ø34)					
		C25 = Clamp DN25 Ø50.5)					
		C40 = Clamp DN40 Ø50.5)					
		C50 = Clamp DN50 Ø64)					
		D05 = Clamp 1/2" Ø25)					
		D34 = Clamp 3/4" Ø25)					
		D10 = Clamp 1" Ø50.5)					
D15 = Clamp 1 1/2" Ø50.5)							
D20 = Clamp 2" Ø64)							
		XXX = special options					

<sup>1)</sup> Maximum range -40...150°C with transmitter

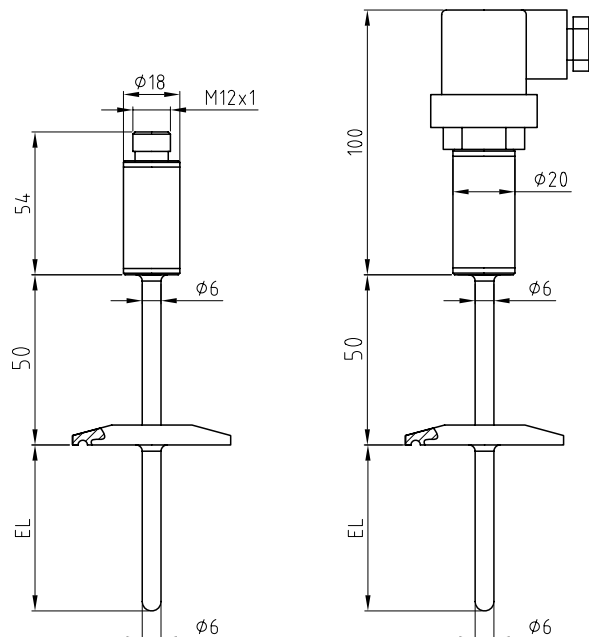
**Dimensions [mm]**

**Model MMA-0 clamp DIN 32676 process connection**  
with plug and socket connection according to DIN 43650 or  
M12 connection



**Model MMA-H clamp DIN 32676 process connection**  
with plug and socket connection according to DIN 43650 or  
M12 connection.

Extension length 50 mm (Range up to 250 °C)



**Order Details Probe** (Example: MMA-0 6 V10 C 2 D 0 0)

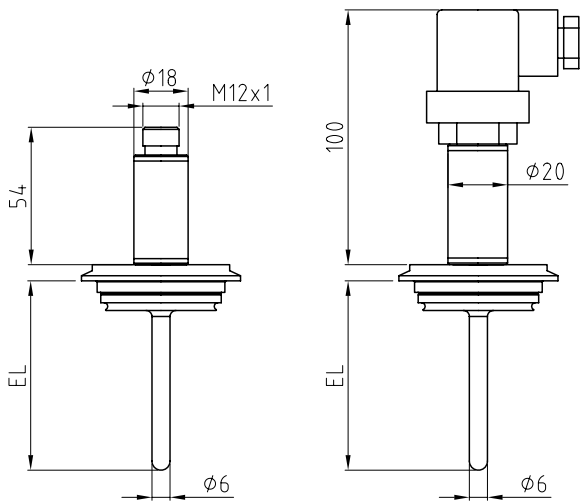
Model VARIVENT® connection	Immersion tube diameter	Process connection	Sensor type/category	RTD wiring	Connector type	Head transmitter	Options
MMA-0 <sup>1)</sup>	6 = tube Ø6x1 X = special options	V10 = VARIVENT® DN10	C = 1xPt100 class A (-70...+250°C)	2 = 2-wire 3 = 3-wire 4 = 4-wire	D = DIN 43650 M = M12	0 = without transmitter A = with 4-20 mA transmitter standard configuration 0...100°C B = with 4-20 mA transmitter special configuration	0 = without Y = according to specifications
		V15 = VARIVENT® DN15	M = 1xPt100 class 1/3 DIN (-70...+250°C)				
MMA-H	X = special options	V25 = VARIVENT® DN25	N = 1xPt100 class 1/10 DIN (-70...+250°C)				
		V32 = VARIVENT® DN32	Q = 1xPt100 class cryogenic (-198...+100°C)				
		V40 = VARIVENT® DN40	X = special options				
V50 = VARIVENT® DN50							

<sup>1)</sup> Maximum range -40...150°C with transmitter

**Dimensions [mm]**

**Model MMA-0 VARIVENT® process connection**

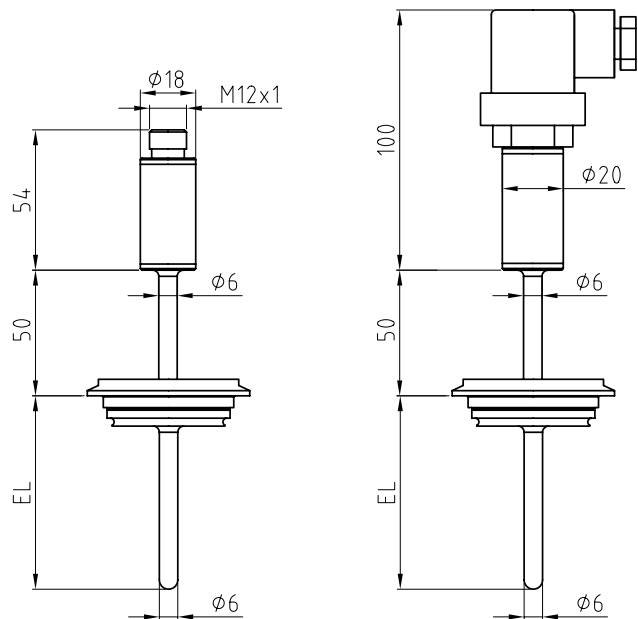
with plug and socket connection according to DIN 43650 or M12 connection



**Model MMA-H VARIVENT® process connection**

with plug and socket connection according to DIN 43650 or M12 connection.

Extension length 50 mm (Range up to 250 °C)



**Order Details Probe** (Example: MMA-0 6 U20 C 2 D 0 0)

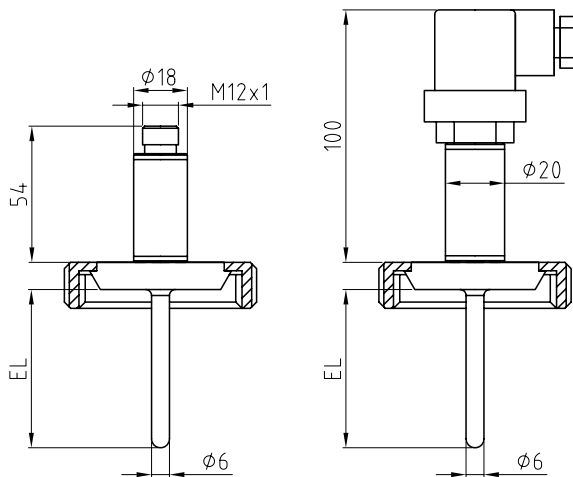
Model DIN 11851 connection	Immersion tube diameter	Process connection	Sensor type/ category	RTD wiring	Connector type	Head transmitter	Options
<b>MMA-0<sup>1)</sup></b>	6 = tube Ø6x1  X = special options	<b>U20</b> = union nut DIN 11851 DN20	<b>C</b> = 1xPt100 class A (-70...+250°C)	<b>2</b> = 2-wire <b>3</b> = 3-wire <b>4</b> = 4-wire	<b>D</b> = DIN 43650 <b>M</b> = M12	<b>0</b> = without trans- mitter <b>A</b> = with 4-20 mA transmitter standard configuration 0...100 °C <b>B</b> = with 4-20 mA transmitter special confi- guration	<b>0</b> = without  <b>Y</b> = according to speci- fications
		<b>U25</b> = union nut DIN 11851 DN25	<b>M</b> = 1xPt100 class 1/3 DIN (-70...+250°C)				
<b>MMA-H</b>	X = special options	<b>U32</b> = union nut DIN 11851 DN32	<b>N</b> = 1xPt100 class 1/10 DIN (-70...+250°C)				
		<b>U40</b> = union nut DIN 11851 DN40	<b>Q</b> = 1xPt100 class cryogenic (-198...+100°C)				
		<b>U50</b> = union nut DIN 11851 DN50	<b>X</b> = special options				

<sup>1)</sup> Maximum range -40...150°C with transmitter

**Dimensions [mm]**

**Model MMA-0 DIN 11851 process connection**

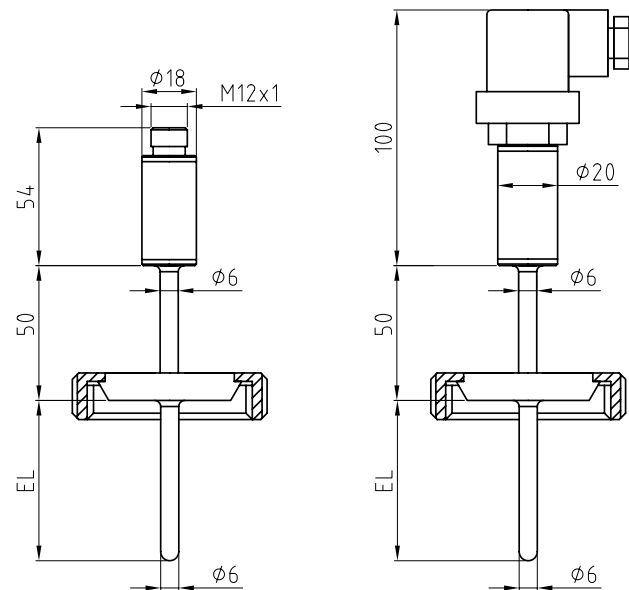
with plug and socket connection according to DIN 43650 or M12 connection



**Model MMA-H DIN 11851 process connection**

with plug and socket connection according to DIN 43650 or M12 connection.

Extension length 50 mm (Range up to 250 °C)



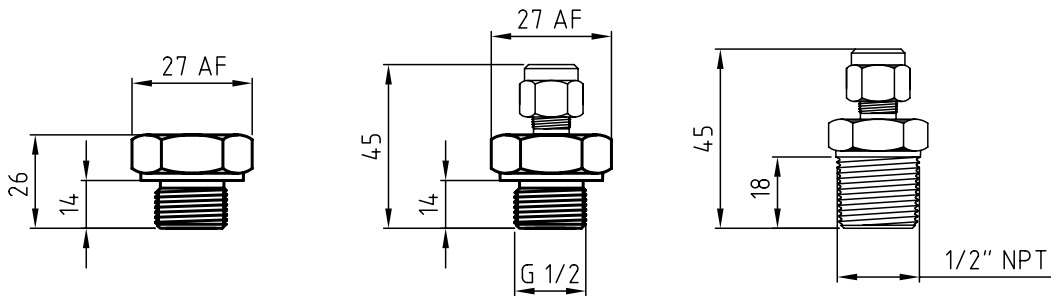
**Accessories**

Reference	Interface	Software included	PC Connection
KM-HART	HART® protocol	Yes (KMSOft)	USB

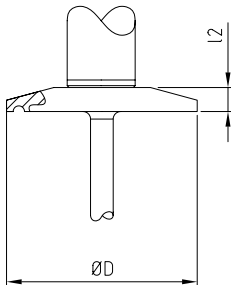
*Note: For more information see data sheet KM*

**Dimensions Process Connection [mm]**

Thread

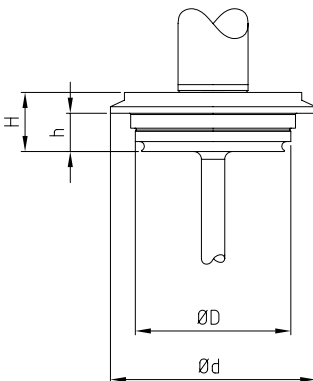


**Clamp DIN 32676**



Connection	Nominal width	PN	ØD [mm]	l2 [mm]
C10 C15 C20	DN10...20	16	34	6.35
C25 C40	DN25...40	16	50.5	6.35
C50	DN50	16	64	6.35
D05 D34	½"...¾"	16	25	4.75
D10 D15	1"...1-½"	16	50.5	6.35
D20	2"	16	64	6.35

**VARIVENT®**

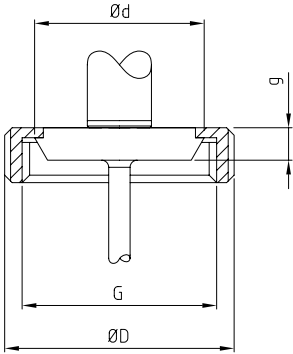


Connection	Nominal width	PN	ØD [mm]	Ød [mm]	H [mm]	h [mm]
V10 V15	DN10, DN15	25	31	52.7	20	13.65
V25 V32	DN25, DN32	25	50	66	18	12.30
V40 V50	DN40, DN50	16	68	84	18	12.30



**Dimensions Process Connection** (continued)

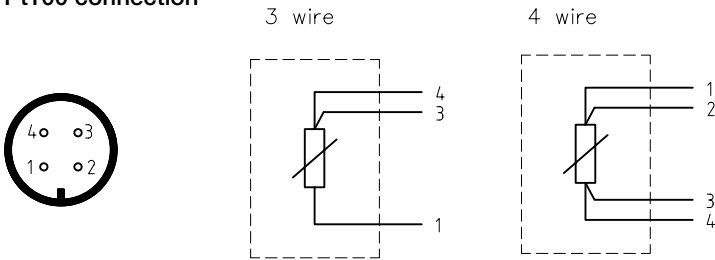
**Union nut DIN 11851**



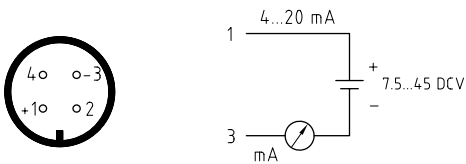
Connection	Nominal width	PN	Ød [mm]	G	ØD [mm]	g [mm]
U20	DN20	40	36.5	RD 44x6	54	8
U25	DN25	40	44	RD 52x6	63	10
U32	DN32	40	50	RD 58x6	70	10
U40	DN40	40	56	RD 65x6	78	10
U50	DN50	25	68.5	RD 78x6	92	11

**Electrical Connection**

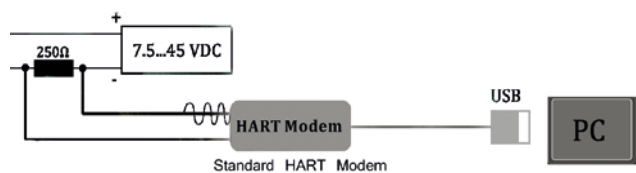
**Pt100 connection**



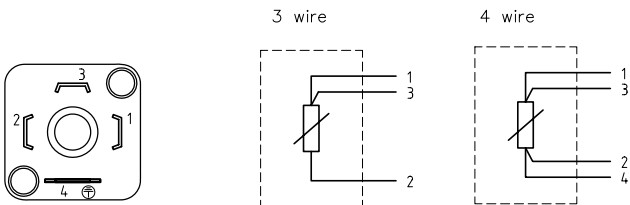
**Transmitter connection**



**Communications**



**Pt100 connection DIN 43650**



**Transmitter connection DIN 43650**

