

## T.2

hex 22

stainless steel

1.4305 / AISI 303

# Robust pressure transmitters

Stainless steel housing (1.4305 / AISI 303, hex 22)



- Pressure transmitters especially for low pressures, including vacuum applications
- High overpressure protection (up to 3 x)
- Long life time even under high pressure change rates
- Housing and wetted parts are made of stainless steel providing excellent media compatibility
- Suitable for hydrogen and oxygen applications<sup>1)</sup>
- The highly-sensitive piezo-resistive sensor in the measuring cell filled with oil guarantees high level of accuracy, repeatability and long-term stability
- The availability of different sealing materials enables deployment in a broad temperature range with a diverse array of media

<sup>1)</sup> For oxygen applications, the EPDM diaphragm can only be used up to 10 bar and a media temperature of max. +60°C.

# Robust pressure transmitters

## Technical details

	<b>0645</b>	<b>0650</b>	<b>0660</b>
Output signal:	0.5 - 4.5 V ratiometric	0 - 10 V (3-wire)	4 - 20 mA (2-wire)
Supply voltage $U_{V+}$ :	5 VDC $\pm$ 10 % max. 6.5 VDC	12 - 32 VDC	10 - 32 VDC
Permissible load / apparent ohmic resistance:	$\geq$ 4.7 k $\Omega$	$\geq$ 4.7 k $\Omega$	$\leq (U_{V+} - 10 \text{ V}) / 20 \text{ mA}$
Idle power consumption:	approx. 5 mA		< 4 mA

		<b>0645 / 0650 / 0660</b>								
Standard pressure ranges $p_{\text{nom}}$ :		-1 - 0 bar (vacuum)	-1 - 1 bar (compound)	0 - 1 bar	0 - 4 bar	0 - 6 bar	0 - 10 bar	0 - 16 bar	0 - 40 bar	0 - 100 bar
Overpressure protection $p_u$ <sup>1)</sup> :		3 bar	3 bar	3 bar	8 bar	12 bar	20 bar	32 bar	80 bar	200 bar
Burst pressure <sup>1)</sup> :		10 bar	10 bar	10 bar	20 bar	30 bar	35 bar	40 bar	100 bar	250 bar
Mechanical life expectancy:		10,000,000 pulsations at rise rates to 1,000 bar/s at $p_{\text{nom}}$								
Permitted pressure change rate:		$\leq$ 1,000 bar/s								
Accuracy:		$\pm$ 0.5 % full scale (FS) at room temperature, $\pm$ 0.25 % BFSL								
Long term stability:		< $\pm$ 0.2 % of full scale (FS) per year								
Repeatability <sup>2)</sup> :		$\pm$ 0.1 % FS								
Temperature error <sup>2)</sup> :		$\pm$ 0.02 % of full scale (FS) / °C; -1 ... 1 bar $\pm$ 0.03 % of full scale (FS) / °C								
Compensated temperature range:		-10 °C ... +70 °C (14 °F ... 158 °F)								
Temperature range ambient:		-40 °C ... +100 °C (-40 °F ... 212 °F)								
Temperature range media:		with NBR seal: -30 °C ... +100 °C (-22 °F ... +212 °F)								
		with EPDM seal: -30 °C ... +125 °C (-22 °F ... +257 °F)								
		with FKM seal: -20 °C ... +125 °C (-4 °F ... +257 °F)								
Wetted parts material	Housing:	Stainless steel 1.4305 (AISI 303)								
	Measuring cell:	Stainless steel 1.4404 (AISI 316L)								
	Seal material:	NBR, EPDM or FKM								
Standard sensor oil:		Fluorine oil <sup>3)</sup>								
Insulation resistance:		> 100 M $\Omega$ (35 VDC)								
Response time 10 - 90 %:		$\leq$ 2 ms								
Vibration resistance:		20 g at 4 - 2000 Hz sine wave; DIN EN 60068-2-6								
Shock resistance:		half sine wave 500 m/s <sup>2</sup> ; 11 ms; DIN EN 60068-2-27								
Protection class		Refer to the electrical connections								
Electromagnetic compatibility:		EMC 2014/30/EU, EN 61000-6-2:2005, EN 61000-6-3:2007								
Max. length of connection cable:		30 m								
Protection against reverse polarity, short-circuit and overvoltage:		Built-in								
Weight:		approx. 80 g (DIN EN 175301 approx. 110 g, cable output approx. 135 g)								

<sup>1)</sup> Static pressure, dynamic value is 30 to 50% lower. Values refer to the hydraulic/pneumatic part of the pressure transmitter.

<sup>2)</sup> Within the compensated temperature range.

<sup>3)</sup> not suitable for food applications

# T.2

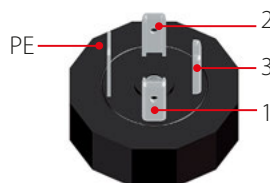
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# 0645 / 0650 / 0660

Electrical connectors and threads



## DIN EN 175301-803-A



Pin	0645 / 0650	0660
1	$U_{V+}$	$U_{V+}$
2	Gnd	$I_{out}$
3	$U_{out}$	nc
PE		

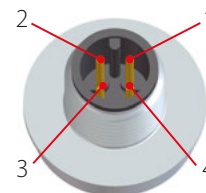
IP65

$x \sim 60$  mm without socket device  
 $x \sim 76$  mm with socket device

$d \sim \varnothing 30$  mm

**Connection code: 013**

## M12 – DIN EN 61076-2-101 A



Pin	0645 / 0650	0660
1	$U_{V+}$	$U_{V+}$
2	$U_{out}$	nc
3	Gnd	$I_{out}$
4	nc	nc

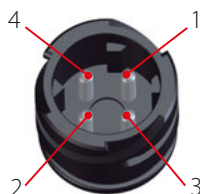
IP67

$x \sim 54$  mm

$d \sim \varnothing 22$  mm

**Connection code: 002**

## ISO 15170-A1-4.1



Pin	0645 / 0650	0660
1	$U_{V+}$	$U_{V+}$
2	Gnd	nc
3	$U_{out}$	$I_{out}$
4	nc	nc

IP67

$x \sim 65$  mm

$d \sim \varnothing 27$  mm

**Connection code: 004**

## Cable connection



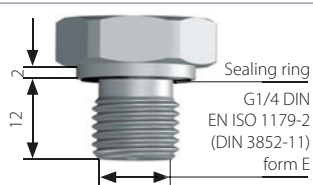
Pin	0645 / 0650	0660
1	$U_{V+}$	$U_{V+}$
2	$U_{out}$	nc
3	Gnd	$I_{out}$

IP67

$x \sim 44$  mm (+ 20 mm bend relief)  
Cable length  $\sim 2$  m

$d \sim \varnothing 22$  mm

**Connection code: 011**



**Thread code: 41**

# 0645 / 0650 / 0660

Article matrix for pressure transmitters

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	Type	Pressure range	Pressure connection	Seal material	Electrical connection
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0.5 - 4.5 V ratiometric	<b>0645</b>
0 - 10 V, 3-wire	<b>0650</b>
4 - 20 mA, 2-wire	<b>0660</b>

Pressure range	Max. Overpressure <sup>1)</sup>	
-1 – 0 bar (Vacuum, approx. -29.6 inHg)	3 bar	<b>000</b>
-1 – 1 bar (Compound pressure range) <sup>2)</sup>	3 bar	<b>V01</b>
0 - 1 bar (approx. 14.5 PSI)	3 bar	<b>100</b>
0 - 4 bar (approx. 58 PSI)	8 bar	<b>400</b>
0 - 6 bar (approx. 87 PSI)	12 bar	<b>600</b>
0 - 10 bar (approx. 145 PSI)	20 bar	<b>101</b>
0 - 16 bar (approx. 232 PSI)	32 bar	<b>161</b>
0 - 40 bar (approx. 580 PSI)	80 bar	<b>401</b>
0 - 100 bar (approx. 1,450 PSI)	200 bar	<b>102</b>

### Pressure connection

G1/4 – DIN EN ISO 1179-2 (DIN 3852-11), form E	<b>41</b>
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### Seal material – Application areas

<b>NBR</b>	Hydraulic/machine oil, air, nitrogen, water, etc.	-30 °C ... +100 °C (-22 °F ... +212 °F)	<b>1</b>
<b>EPDM<sup>3)</sup></b>	Brake fluid, water, acetylene, hydrogen, etc.	-30 °C ... +125 °C (-22 °F ... +257 °F)	<b>2</b>
<b>FKM</b>	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	-20 °C ... +125 °C (-4 °F ... +257 °F)	<b>3</b>

### Electrical connection

DIN EN 175301-803-A (DIN 43650-A); socket device included	<b>013</b>
M12x1 - DIN EN 61076-2-101-A	<b>002</b>
Bayonet ISO 15170-A1-4.1 (DIN 72585-A1-4.1)	<b>004</b>
Cable connection (length of cable 2 m standard)	<b>011</b>

<b>Article number</b>	<b>06XX</b>	<b>XXX</b>	<b>41</b>	<b>X</b>	<b>XXX</b>
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<sup>1)</sup> Static pressure, dynamic pressure 30 to 50% lower. Values refer to the hydraulic or pneumatic part of the pressure transmitter.

<sup>2)</sup> For oxygen applications, the EPDM diaphragm can only be used up to 10 bar and a media temperature of max. +60°C.

