

# Robust pressure transmitters

Stainless steel housing (1.4305 / AISI 303, SW22)



- Pressure transmitters specially 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
- 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 and with a diverse array of media
- Custom variants (e.g. cleaned for oxygen applications) are available on request

## Technical details

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Type:	<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 $U_B$ :	5 VDC $\pm$ 10 % max. 6.5 VDC	12 – 32 VDC	10 – 32 VDC
Permissible load apparent ohmic resistance:	$\geq 4,7 \text{ k}\Omega$	$\geq 4,7 \text{ k}\Omega$	$\leq (U_B - 10 \text{ V}) / 20 \text{ mA}$
Idle power consumption:	approx. 5 mA		< 4 mA

Type:	<b>0645 / 0650 / 0660</b>							
Standard pressure ranges $p_{nom}$ :	-1 – 0 bar (vacuum)	0 – 1 bar	0 – 4 bar	0 – 6 bar	0 – 10 bar	0 – 16 bar	0 – 40 bar	0 – 100 bar
Overpressure protection $p_U^{1)}$ :	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	20 bar	30 bar	35 bar	40 bar	100 bar	250 bar
Mechanical life expectancy:	10,000,000 pulsations at rise rates to 1 bar/ms at $p_{nom}$							
Permitted pressure change rate:	$\leq 1 \text{ bar/ms}$							
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: -40 °C ... +100 °C (-40 °F ... +212 °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 or FKM						
Standard sensor oil:	Fluorine oil (not suitable for food applications)							
Insulation resistance:	> 100 M $\Omega$ (500 VDC, $R_i > 42\Omega$ )							
Response time 10 – 90%:	< 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> ; 11ms; 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.

# T.2

hex 22  
Stainless steel  
1.4305 / AISI 303

## hidra[matic]

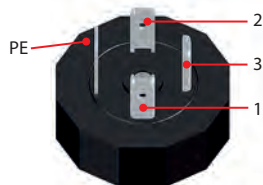
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# 0645 / 0650 / 0660

Electrical connectors and threads

### DIN EN 175301-803-A



0645 + 0650	0660
1: Uv+	1: Uv+
2: Gnd	2: I <sub>out</sub>
3: U <sub>out</sub>	3: nc
PE	⊕

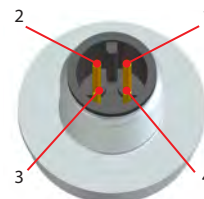
IP65

x ~ 60 mm (without coupler socket)  
x ~ 76 mm (with coupler socket)

d ~ Ø 30 mm

**Order number: 013**

### M 12 – DIN EN 61076-2-101 A



0645 + 0650	0660
1: Uv+	1: Uv+
2: U <sub>out</sub>	2: nc
3: Gnd	3: I <sub>out</sub>
4: nc	4: nc

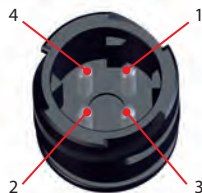
IP67

x ~ 54 mm

d ~ Ø 22 mm

**Order number: 002**

### ISO 15170-A1-4.1



0645 + 0650	0660
1: Uv+	1: Uv+
2: Gnd	2: nc
3: U <sub>out</sub>	3: I <sub>out</sub>
4: nc	4: nc

IP67

x ~ 65 mm

d ~ Ø 27 mm

**Order number: 004**

### Cable connection



1: red  
2: white  
3: black

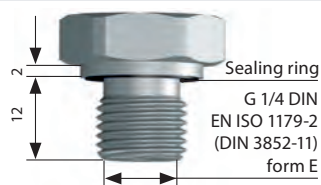
0645 + 0650	0660
1: Uv+	1: Uv+
2: U <sub>out</sub>	2: nc
3: Gnd	3: I <sub>out</sub>

IP67

x ~ 44 mm (+ 20 mm Bend relief)  
Cable length ~ 2 m

d ~ Ø 22 mm

**Order number: 011**



**Thread code: 41**

# 0645 / 0650 / 0660

Order matrix for pressure transmitters

## T.2

hex 22  
Stainless steel

1.4305 / AISI 303

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	Type	Pressure range	Pressure connection	Seal material	Electrical connection
	↓	↓	↓	↓	↓
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>
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

G 1/4 – 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, heating oil, air, nitrogen, water, etc.	-40 °C ... 100 °C (-40 °F ... 212 °F)	<b>1</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>
M 12x1 – 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>Order 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.

