

## Superior pressure sensors for general applications

with internal diaphragm  
for relative and absolute pressure

Accuracy 1%, 0.5% or 0.25%



### Description

Pressure sensors from tectsis are characterised by their high accuracy, reliability, resistance to corrosion and mechanical load. Due to their wide range of variants they are suitable for many different applications.

This pressure sensor P3278 is designed for critical industrial applications with harsh environments as well as for ambitious applications in research and development. The sensor offers continuous measuring ranges between 0 bar to 0.4 bar and up to the high pressure range of 0 bar to 1,600 bar. It is possible to combine all this pressure ranges with the most common industrial output signals, the most used international process connections and a wide number of electrical connections. For special measuring tasks (e.g.: correction of hydrostatic column) there is optional a zero point adjustment available.

Different accuracy classes, extended temperature ranges and customer specific pin configuration are also as an option available.

The pressure sensor P3278 is a high quality product and resistant against harsh environments in the process industry. Even the lowest temperatures when used outdoors, extreme shock and vibration in machine building or with aggressive media in the chemical industry, this sensor can meet all requirements.

### Features

- Measuring ranges from 0..0.4 bar to 0..1,600 bar
- Corrosion resistant, stainless steel design
- High overload protection
- Highly resistant to shock and vibration
- For dynamic or static measurements
- Good reproducibility
- Simple installation

### Measuring Ranges

#### Over pressure

Negative            -0.4...0 bar    to    -1...59 bar

Positive            0...0.4 bar    to    0...1,600 bar

Absolute pressure    0...0.4 bar    to    0...40 bar

### Applications

Research and development

Process engineering

Plant and apparatus construction

Critical industrial applications

**Model: P3278**

## Technical data

Model	P3278																																				
Pressure type	negative or positive gauge pressure absolute pressure																																				
Output signal	<table style="width:100%; border:none;"> <tr> <td style="width:40%;"></td> <td style="width:20%; text-align:center;">- 2-wire</td> <td style="width:40%; text-align:right;">Power supply:</td> <td style="width:20%;"></td> </tr> <tr> <td>4...20 mA</td> <td style="text-align:center;">- 2-wire</td> <td style="text-align:right;">8...36 VDC</td> <td></td> </tr> <tr> <td>20...4 mA</td> <td style="text-align:center;">- 2-wire</td> <td style="text-align:right;">8...36 VDC</td> <td></td> </tr> <tr> <td>0...10 VDC</td> <td style="text-align:center;">- 3-wire</td> <td style="text-align:right;">12...36 VDC</td> <td></td> </tr> <tr> <td>0,5...4,5 VDC</td> <td style="text-align:center;">- 3-wire</td> <td style="text-align:right;">8...36 VDC</td> <td></td> </tr> <tr> <td>0...5 VDC</td> <td style="text-align:center;">- 3-wire</td> <td style="text-align:right;">8...36 VDC</td> <td></td> </tr> <tr> <td>1...5 VDC</td> <td style="text-align:center;">- 3-wire</td> <td style="text-align:right;">8...36 VDC</td> <td></td> </tr> <tr> <td>0.5...4.5 VDC – ratio</td> <td style="text-align:center;">- 3-wire</td> <td style="text-align:right;">5 VDC ± 10%</td> <td></td> </tr> </table>						- 2-wire	Power supply:		4...20 mA	- 2-wire	8...36 VDC		20...4 mA	- 2-wire	8...36 VDC		0...10 VDC	- 3-wire	12...36 VDC		0,5...4,5 VDC	- 3-wire	8...36 VDC		0...5 VDC	- 3-wire	8...36 VDC		1...5 VDC	- 3-wire	8...36 VDC		0.5...4.5 VDC – ratio	- 3-wire	5 VDC ± 10%	
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Accuracy of F.S. <sup>1)</sup>	1.0% 0.5% 0.25%																																				
Non-repeatability	≤ ±0.1 % of F.S.																																				
Pressure range [bar] <sup>2)</sup>	Relative pressure:		Absolute pressure:		Compound ranges:																																
	0...0,4	0...16	0...600	0...0.4	0...10	-0.4...0	-1...5																														
	0...0,6	0...25	0...1000	0...0.6	0...16	-0.6...0	-1...9																														
	0...1	0...40	0...1600	0...1	0...25	-1...0	-1...15																														
	0...1.6	0...60		0...1.6	0...40	-1...0.6	-1...24																														
	0...2.5	0...100		0...2.5		-1...1.5	-1...39																														
	0...4	0...160		0...4		-1...3	-1...59																														
	0...6	0...250		0...6																																	
	0...10	0...400																																			
Stability (annual)	≤ ± 0.1 % of F.S. at reference conditions																																				
Case	Stainless steel																																				
Zero-point adjustment (as an option) <sup>3/4)</sup>	± 10% of F.S.																																				
Process connection	EN 837	DIN 3852-E	ISO 228	SAE J514 E	ANSI/ASME B1.20.1																																
	G1/2 B	G1/2 A	M12 x 1.5	7/16-20 UNF BOSS																																	
	G1/4 B	G1/4 A	M20 x 1.5	7/16-20 UNF J514 sealing cone 74°	1/2 NPT																																
	G1/4 B female	M14x1.5		9/16-18 UNF BOSS	1/4 NPT																																
	G1/8 B				1/4 NPT female																																
					1/8 NPT																																
Wetted parts	Relative pressure range: ≤ 10bar / 150 psi: 316L > 10 bar / 150 psi: 316L + 13-8 PH  Absolute pressure range: ≤ 1,000 bar / 10,000 psi: ASTM 630 + 13-8 PH > 1,000 bar / 10,000 psi 316L + 13-8 PH																																				
Overload protection	< 10 bar: 3-times ( 5-times on request) ≥ 10 bar: 2-times (3-times on request)																																				
Electr.Connection / IP rating	L-plug DIN EN 175301-803 A		IP65																																		
	L-plug DIN EN 175301-803 C		IP65																																		
	Circuit connector M12x1, 4-pin		IP67																																		
	Bajonett, 6-pin		IP67																																		
	Cable output		IP67 ( option: IP68 and IP6K9K)																																		
	Cable output, FEP		IP68																																		

Current consumption	Current output: Current signal, max. 25 mA Voltage output: max. 12 mA		
Permissible load [Ω]	$\leq \frac{UB - 7.5V}{0.023A}$ for current output (2-wire) $> \frac{\text{max. voltage output}}{1mA}$ for voltage output (3-wire)  $> 4.5 \text{ kOhm}$ for ratiometrical output (3-wire)		
Temperature hysteresis	0.1% of span at >80 °C		
Time response <sup>5)</sup>	3 ms – Current (2-wire) 2 ms – Voltage (3-wire) 2 ms – Ratiometric (3-wire)		
CE conformity <sup>6)</sup> pressure equipment directive EMV-directive	97/23/EG 2004/108/EG, EN 61326 emission (Group 1, class B) and interference immunity (industrial application)		
Electrical protection	Short-circuit resistance, reverse polarity protection, resistance to over - voltage up to 40 VDC		
Insulation voltage <sup>7)</sup>	750 VDC		
Temperature range		Optional	With integrated cooling element
– storage	-40 .... 70 °C		
– medium	-30 .... 100 °C	-40... +125°C	-40... +200°C
– ambient	-30 .... 100 °C	-40... +125°C	-40... +125°C
Weight	~ 0.2 kg		
Vibration resistance	20 g, 10...2000 Hz		
Shock resistance	100 g, 6 ms		

of.F.S. = of Full Scale

<sup>1)</sup> Including hysteresis, zero point and full scale error (corresponds to error of measurement per IEC 61298-2)

<sup>2)</sup> Also in PSI, kPA, MPa and kg/cm<sup>2</sup> available

<sup>3)</sup> In 0.05% steps, customer side

<sup>4)</sup> Only with L-plug DIN175301-803 A, L-plug DIN175301-803 C or circular connector M12x1, 4-pin

<sup>5)</sup> Settling time per IEC 62594

<sup>6)</sup> EC Declaration of Conformity on request

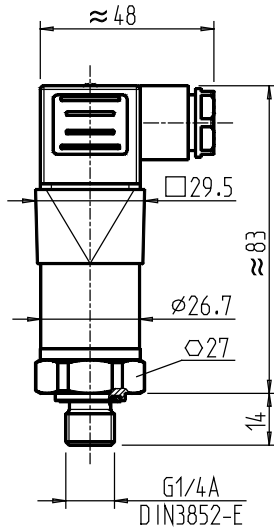
<sup>7)</sup> NEC Class 02 power supply

## Reference conditions (according IEC 61298-1)

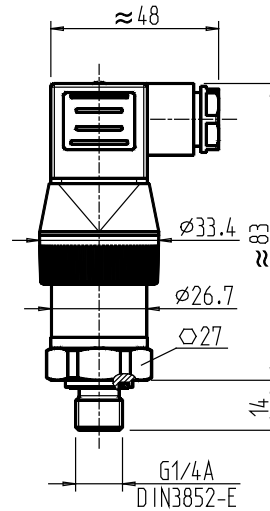
Temperature:	15...25°C
Atmospheric pressure:	860...1060 mbar
Humidity:	45...75% relative
Power supply:	24 VDC (5 VDC with ratiometric output)
Mounting position:	Calibrated in vertical mounting position with pressure connection facing downwards

## Dimensions in mm

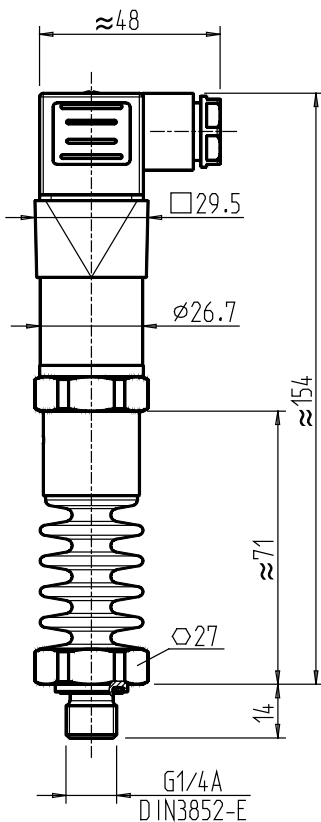
L-plug DIN 175301-803 A



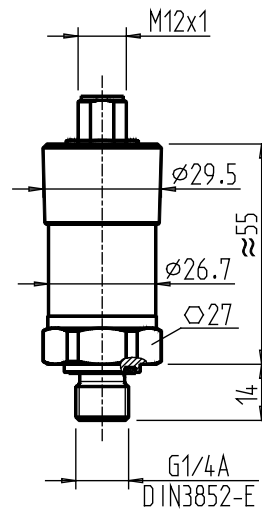
L-plug DIN 175301-803 A and zero point adjustment



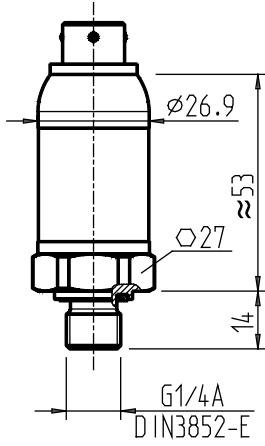
L-plug DIN 175301-803 A and cooling element



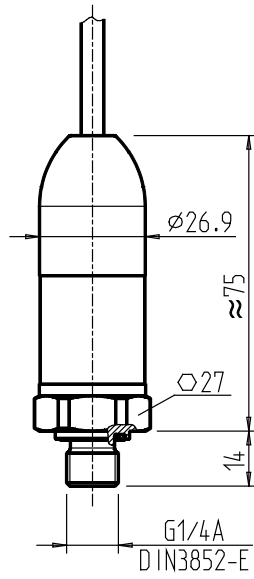
Circular connector M12x1 (4-pin)



Bayonet connector ( 6-polig )



Cable output



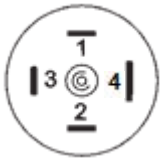
## Electrical connection

L-plug DIN 175301-803 A



	2-wire	3-wire
U <sub>+</sub>	1	1
U <sub>-</sub>	2	2
S <sub>+</sub>	-	3
shield (option)	4	4

L-plug DIN 175301-803 C



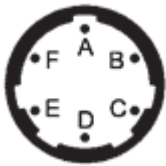
	2-wire	3-wire
U <sub>+</sub>	1	1
U <sub>-</sub>	2	2
S <sub>+</sub>	-	3
shield (option)	4	4

### Circuit connector M12 x 1 (4-pin)



	2-wire	3-wire
U <sub>+</sub>	1	1
U <sub>-</sub>	3	3
S <sub>+</sub>	-	4
Shield (option)	case	Case

### Bayonet connector (6-pin)



	2-wire	3-wire
U <sub>+</sub>	A	A
U <sub>-</sub>	B	B
S <sub>+</sub>	-	C
shield	case	case

#### Order details

1. Model
2. Measuring range
3. Output signal
4. Options

### Cable output



	2-wire	3-wire
U <sub>+</sub>	Brown (BN)	Brown (BN)
U <sub>-</sub>	Blue (BU)	Blue (BU)
S <sub>+</sub>	-	Black (BK)
Shield	Grey (GY)	Grey (GY)

## Electrical protective measures

Do not apply with ratiometric output signal.

- Short circuit protection: S<sub>+</sub> to U<sub>-</sub>
- Reverse polarity protection: U<sub>+</sub> to U<sub>-</sub>
- Overvoltage protection: DC 40 V
- Isolation voltage: DC 750 V

#### Ordering options

1. Model
2. Measuring range
3. Output signal
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Modifications reserved