bürkert
FLUID CONTROL SYSTEMS

Pressure measuring device

- Ceramic/thick film measuring cell
- 2-wire variant for 4...20 mA output
- Compact, stable construction for the highest operational reliability

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 8802
Continuous control valve systems ELEMENT – overview

Type 8611
eCONTROL – Universal controller

Type 8619
multiCELL – multi-channel/ multi-function transmitter/ controller

Type description

The compact Type 8316 pressure measuring device meets the highest requirements with regard to mechanical loading, EMC characteristics and operational reliability. It is particularly suitable for demanding industrial applications.

For aggressive media where stainless steel is not resistant, process connections in PVDF are available.

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Visit product website

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1. General technical data

Product properties	
Material	
Make sure the device materials are compatible with the fluid you are using. Further information can be found in chapter "3.1. Bürkert resistApp" on page 6.	
Non-wetted parts	
Housing	Stainless steel 1.4404 (316L)
Wetted parts	
Process connection	Stainless steel 1.4404 (316L)
Measuring element	• Variant $P_{max.}$ ≤ 0.6 bar: ceramic Al_2O_3 (99.6 %) • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: ceramic Al_2O_3 (96 %) • Variant 0...100 bar: stainless steel
Seal	• Variant $P_{max.}$ ≤ 0.6 bar: FKM (others on request) • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: FKM (others on request) • Variant $P_{max.}$ = 100 bar: none
Dimensions	Further information can be found in chapter "4. Dimensions" on page 6.
Weight	• Variant $P_{max.}$ ≤ 0.6 bar: approx. 120 g • Variant $P_{max.}$ > 0.6 bar: approx. 90 g
Measurement technology	• Variant $P_{max.}$ ≤ 0.6 bar: ceramic • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: ceramic • Variant $P_{max.}$ = 100 bar: metallic
Measured quantity	Relative pressure (absolute pressure on request)
Measuring range	• Variant $P_{max.}$ ≤ 0.6 bar 0...0.05, 0.1 or 0.25 (0...0.4 or 0.6 bar on request) • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: – 0...1, 4, 6, 10, 16, 40 (0...60 bar on request) – 0...50, 150 or 300 PSI • Variant $P_{max.}$ = 100 bar : 0...100 bar
Performance data	
Temperature coefficient	• Variant $P_{max.}$ ≤ 0.6 bar: ± 0.07 % of full scale /10 K (the zero point and range at - 15...+ 85 °C (+ 5...+ 185 °F)) • Variant $P_{max.}$ > 0.6 bar: ± 0.2 % of full scale /10 K (in the range - 15...+ 85 °C (+ 5...+ 185 °F))
Measuring range resolution	< 0.1 % of full scale
Measurement deviation	Sum of linearity, hysteresis and reproducibility, balancing accuracy of zero point and full scale • Variant $P_{max.}$ ≤ 0.6 bar: ± 0.35 % of full scale (for full scale < 100 mbar: ± 0.7 % of full scale) • Variant $P_{max.}$ > 0.6 bar: ± 0.5 % max. of full scale (typical; ≤ 0.3 % of full scale)
Response time	Suitable for static and dynamic measurements • Variant $P_{max.}$ ≤ 0.6 bar: < 150 ms • Variant $P_{max.}$ > 0.6 bar: < 2 ms, typical 1 ms
Load cycle	< 100 Hz
Overload / bursting pressure	• Variant $P_{max.}$ ≤ 0.6 bar: 2 bar • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: – 3 x full scale (variant ≤ 0...4 bar) – 2.5 x full scale (0...4 bar < variant ≤ 0...60 bar) • Variant $P_{max.}$ = 100 bar: – 3 x full scale (overload) – 6 x full scale (bursting pressure)

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Electrical data	
Operating voltage (U)	• Variant $P_{max.}$ ≤ 0.6 bar : 10...33 V DC, unregulated (variant with 4...20 mA output) • Variant $P_{max.}$ > 0.6 bar : 7...33 V DC, unregulated (variant with 4...20 mA output), 12...33 V DC, unregulated (variant with 0...10 V DC output)
DC reverse polarity protection	Yes
Short circuit protection	Yes
Protection class	Class III
Current consumption	Max. 23 mA
Load	• Variant $P_{max.}$ ≤ 0.6 bar: < (U - 10 V) / 0.02 A (in Ω) • Variante $P_{max.}$ > 0.6 bar: < (U - 7 V) / 0.02 A (in Ω)
Insulation voltage	500 V DC
Output	• Variant $P_{max.}$ ≤ 0.6 bar: standard signal 4...20 mA (two-wire) • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: standard signal 4...20 mA (two-wire) or 0...10 V DC (three-wire) • Variant $P_{max.}$ = 100 bar: standard signal 4...20 mA (two-wire)
Medium data	
Fluid temperature	• Variant $P_{max.}$ ≤ 0.6 bar: - 15...+ 85 °C (+ 5...+ 185 °F) • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: - 15...+ 125 °C (+ 5...+ 257 °F) • Variant $P_{max.}$ = 100 bar: - 40...+ 135 °C (- 40...+ 275 °F)
Product connections	
Process connection	• Thread G ¼ according to DIN 3852 Form E • Thread NPT ¼
Electrical connection	M12 × 1 male connector
Approvals and conformities	
Directives	
CE directive	Further information on the CE Directive can be found in chapter "2.3. Standards" on page 5.
Pressure Equipment Directive	• The device does not meet the requirements for "safety accessories" within the meaning of the Pressure Equipment Directive 2014/68/EU. • Complying with article 4, paragraph 1 of 2014/68/EU directive. Further information on the Pressure Equipment Directive can be found in chapter "2.4. Pressure Equipment Directive (PED)" on page 5.
North America (USA/Canada)	UL Listed for US and Canada (UL 61010-1 + CAN/CSA-C22.2 No. 61010-1)
Environment and installation	
Ambient temperature	• Variant $P_{max.}$ ≤ 0.6 bar: – Operation: - 25...+ 85 °C (- 13...+ 185 °F) – Storage: - 40...+ 85 °C (- 40...+ 185 °F) • Variant $P_{max.}$ > 0.6 bar : – Operation: - 30...+ 85 °C (- 22...+ 185 °F) – Storage: - 50...+ 100 °C (- 58...+ 212 °F)
Application range	Indoors and outdoors Protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions.
Degree of protection according to IEC/EN 60529	IP67
Mounting condition	• Variant $P_{max.}$ ≤ 0.6 bar : as required (position error: with horizontal mounting: + 0.1 mbar, with vertical mounting, pressure connection upward: + 0.2 mbar) • Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar: as required, preferably with pressure connection in downward position • Variant $P_{max.}$ = 100 bar: as required

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2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available variants can be supplied with the below mentioned approvals or conformities.

2.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

2.4. Pressure Equipment Directive (PED)

The device conforms to article 4, paragraph 1 of the Pressure Equipment Directive (PED) 2014/68/EU under the following conditions:

Device used on a pipe

Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure (in bar), DN = nominal diameter of the pipe

Type of fluid	Conditions
Fluid group 1, article 4, paragraph 1.c.i	DN ≤ 25
Fluid group 2, article 4, paragraph 1.c.i	DN ≤ 32 or PS*DN ≤ 1000
Fluid group 1, article 4, paragraph 1.c.ii	DN ≤ 25 or PS*DN ≤ 2000
Fluid group 2, article 4, paragraph 1.c.ii	DN ≤ 200 or PS ≤ 10 or PS*DN ≤ 5000

Device used on a vessel

Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure (in bar), V = vessel volume

Type of fluid	Conditions
Fluid group 1, article 4, paragraph 1.a.i	V > 1 L and PS*V ≤ 25 bar.L or PS ≤ 200 bar
Fluid group 2, article 4, paragraph 1.a.i	V > 1 L and PS*V ≤ 50 bar.L or PS ≤ 1000 bar
Fluid group 1, article 4, paragraph 1.a.ii	V > 1 L and PS*V ≤ 200 bar.L or PS ≤ 500 bar
Fluid group 2, article 4, paragraph 1.a.ii	PS > 10 bar and PS*V ≤ 10000 bar.L or PS ≤ 1000 bar

2.5. North America (USA/Canada)

Approval	Description
c UL us LISTED	**Optional: UL Listed for the USA and Canada** The product variants $P_{max.}$ > 0.6 bar are UL Listed for the USA and Canada according to: • UL 61010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 1: General Requirements) • CAN/CSA-C22.2 No. 61010-1 Certificate number: 20171018-E312665

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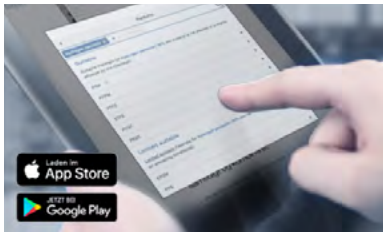
3. Materials

3.1. Bürkert resistApp



Bürkert resistApp – Chemical resistance chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

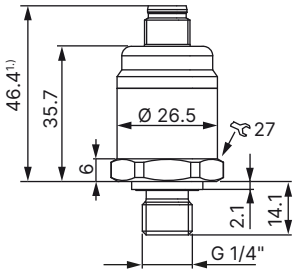
Start chemical resistance check

4. Dimensions

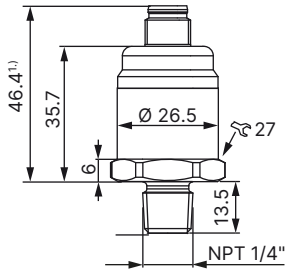
4.1. Variant $P_{max.}$ ≤ 0.6 bar

Note:
Dimensions in mm, unless otherwise stated

With process connection G ¼



With process connection NPT ¼

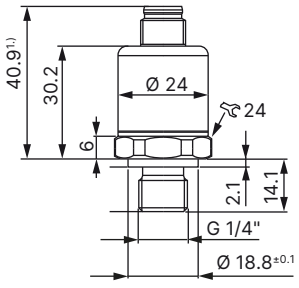


1.) The total height is increased by the height of the used famale connector and cable.

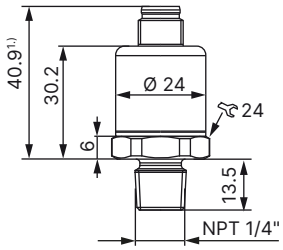
4.2. Variant $P_{max.}$ > 0.6 bar and ≤ 60 bar

Note:
Dimensions in mm, unless otherwise stated

With process connection G ¼



With process connection NPT ¼



1.) The total height is increased by the height of the used female connector and cable.

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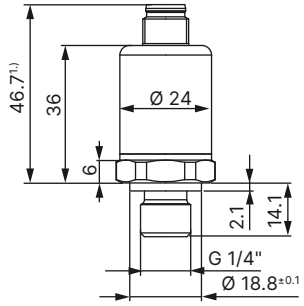
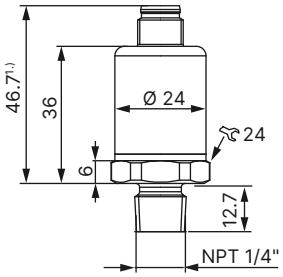
4.3. Variant $P_{max.}$ = 100 bar

Note:
Dimensions in mm, unless otherwise stated

With process connection G ¼



With process connection NPT ¼



1.) The total height is increased by the height of the used female connector and cable.

5. Ordering information

5.1. Bürkert eShop

Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

5.2. Bürkert product filter

Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements?
Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

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5.3. Ordering chart

Variant with process connection G ¼

Pressure range [bar]	Operating voltage [V DC]	Output	UL approval	Electrical connection	Article no.
0...0.05	10...33	4...20 mA	–	M12 male connector	570536
0...0.10	10...33	4...20 mA	–	M12 male connector	567953
0...0.25	10...33	4...20 mA	–	M12 male connector	570721
0...1.00	7...33	4...20 mA	UL Listed	M12 male connector	563777
0...4.00	7...33	4...20 mA	UL Listed	M12 male connector	563778
0...6.00	7...33	4...20 mA	UL Listed	M12 male connector	563779
0...10.0	7...33	4...20 mA	UL Listed	M12 male connector	563780
	12...33	0...10 V DC	UL Listed	M12 male connector	563784
0...16.0	7...33	4...20 mA	UL Listed	M12 male connector	563781
0...40.0	7...33	4...20 mA	UL Listed	M12 male connector	563782
0...100.0	7...33	4...20 mA	UL Listed	M12 male connector	563783

Variant with process connection NPT ¼

Pressure range [PSI]	Operating voltage [V DC]	Output [mA]	UL approval	Electrical connection	Article no.
0...60	7...33	4...20	UL Listed	M12 male connector	564466
0...150	7...33	4...20	UL Listed	M12 male connector	564467
0...300	7...33	4...20	UL Listed	M12 male connector	564468

Further variants on request			
Process connection NPT ¼ and more		**Pressure** Other relative or absolute measuring ranges	
Electrical connection Connectors: mini DIN, DIN and more		**Additional** Electrical outputs: 0...10 V DC, 0...5 V DC	
Material EPDM seal, PVDF process connection			

5.4. Ordering chart accessories

Note:
The following accessories are intended for all variants of the pressure measuring device.

Description	Article no.
M12 female connector with plastic threaded clamping ring, 5-pin, straight, to be wired	917116
M12 female connector with moulded cable (shielded), 5-pin, straight, cable length: 2 m	438680

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