

Bourdon Tube Pressure Gauges with Electrical Output Signal Stainless Steel, Safety Case Version Type PGT23.063 UHP for Ultra-Pure Gas Applications

WIKA Datasheet PGT23.063 UHP



Applications

- Acquisition and display of process values
- Suitable for all UHP (Ultra High Purity) applications
- Transmission of process value to the control room, 4 to 20 mA
- Semiconductor and flat panel industry, gas distribution
- Safety-related application

Special features

- "Plug and play" with no configuration necessary
- VCR® compatible face seal fittings
- Helium leak tested
- Surface finish of the process connection $Ra \leq 0.5\mu\text{m}$
- Solid front, blow-out back safety case

Description

In any application with limited space, where the process pressure has to be indicated locally, and, at the same time, a signal needs to be transmitted to a central controller or remote control room, the model PGT23.063 UHP intelliGAUGE can be used.

Through the combination of a mechanical measuring system and electronic signal processing, the process pressure can still be read, even if the power supply is lost. The model PGT23.063 UHP intelliGAUGE fulfills all safety-related requirements of the relevant standards and regulations for the on-site display of the operating pressure of pressure vessels. An additional measuring point for the mechanical pressure indication is not longer necessary.

The model PGT23.063 UHP is based on a high-quality, stainless steel pressure gauge with a solid-front, blow-out back safety case (Type 23x.30) with nominal size of 2½". The pressure gauge is manufactured in accordance with ASME B40.1 and EN 837-1.

intelliGAUGE®

intelliGAUGE Type PGT23.063 UHP

The durable, fully-welded Bourdon tube measuring system produces a pointer rotation proportional to the pressure. An electronic angle encoder, proven in safety-critical automotive applications, determines the position of the pointer shaft. The encoder is a non-contact sensor and therefore completely free from wear and friction. From this, the pressure-proportional, 4 to 20 mA electrical output signal is generated.

The electronic WIKAL transmitter, integrated into the high-quality mechanical pressure gauge, combines the advantages of electrical signal transmission with the advantages of a local mechanical display.

The measuring span (electrical output signal) is set automatically to match the mechanical display, i.e. the scale over the full display range corresponds to 4 to 20 mA.

Standard Features

Design

ASME B40.100 & EN 837-1

Size

2½" (63 mm)

Accuracy class

± 2/1/2% of span (ASME B40.100 Grade A)

Ranges

0/15 PSI to 0/6,000 PSI

or other equivalent units of pressure or vacuum

Pressure connection

Material: 316L stainless steel

Lower mount (LM)

VCR® compatible face seal fittings:

with female swivel nut

with male swivel nut

or with fixed nut 9/16-18 UNF

1/4" NPT or G 1/4B, 14 mm flats

Bourdon tube

Material: 316L stainless steel

< 1,500 PSI; C-type

≥ 1,500 PSI; helical-type

Measuring system in gap free design,

dynaflow extrude hone passivated after welding

Ra < 0.5 µm (Ra < 20 µ inch)

Leak tightness: lead rate ≤ 10⁻⁹ mbar x l / s

Test method: helium mass spectrometry

Movement

Copper alloy

Dial

White aluminum with black lettering

Pointer

Black aluminum

Case

Stainless steel, with solid baffle wall and blow-out back, electropolished, scale ranges ≤ 0/200 PSI with compensating valve to vent case, NEMA 4X / IP 54 weather protection

Window

Polycarbonate

Cover ring

Stainless steel, bayonet-type, electropolished

Connection

Cable with flying leads, 2 meter length

Optional extras

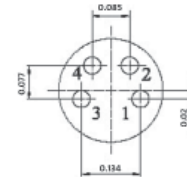
- Other pressure connections
- Finer surface finish on the process connection
Ra ≤ 0.25 µm
- Inverted electrical output signal
- Electrical connection via miniature plug connector
M8 x 1, 4-pin (cable plug with 5 meter length)
- Other cable lengths, bare wire ends with 2 or 5 meter length. Others on request
- Panel mounting flange, stainless steel or polished
- Rear mounting flange, stainless steel
- Laminated safety glass window (max. ambient temperature 140°F (60°C))
- Custom dial layout
- Other pressure scales available
bar, kPa, MPa, kg/cm² and dual scales

Cable connection



Electrical data

Power supply U_B	DC V	$12 < U_B \leq 30$																				
Supply voltage effect	% v. FS/10 V	≤ 0.1																				
Permissible residual ripple	% ss	≤ 10																				
Output signal		4 to 20 mA, 2-wire																				
Permissible max. load R_A		$R_A \leq (U_B - 12 \text{ V})/0.02 \text{ A}$ with R_A in Ohm and U_B in Volt, however max. 600Ω																				
Effect of load	% FS	≤ 0.1																				
Accuracy																						
■ Long-term stability of electronics	% FS/a	< 0.5																				
■ Electrical output signal		$\leq 1.6\%$ of measuring span																				
■ Linearity	% of span	$\leq 1.6\%$ (limit point calibration) ¹																				
EMC directive		2007/108/EC Interface emission (Limit Class B) and immunity to EN 61 326-1																				
Wiring		Flying leads with optional miniature plug connector M8 x 1, 4-pin																				
Wiring protection		NEMA 4X / IP 54 per EN 60 529 / IEC 529, filled NEMA 6 / IP65																				
Connection details		<table border="0"> <tr> <td>Cable</td> <td>Plug Connector</td> <td>Meaning</td> <td></td> </tr> <tr> <td>red</td> <td>Pin 1</td> <td>$U_B + / \text{Sig} +$</td> <td></td> </tr> <tr> <td>black</td> <td>Pin 4</td> <td>$0 \text{ V} / \text{Sig} -$</td> <td></td> </tr> <tr> <td>brown</td> <td>Pin 2</td> <td>n.c.</td> <td></td> </tr> <tr> <td>- - -</td> <td>Pin 3</td> <td>n.c.</td> <td></td> </tr> </table>	Cable	Plug Connector	Meaning		red	Pin 1	$U_B + / \text{Sig} +$		black	Pin 4	$0 \text{ V} / \text{Sig} -$		brown	Pin 2	n.c.		- - -	Pin 3	n.c.	
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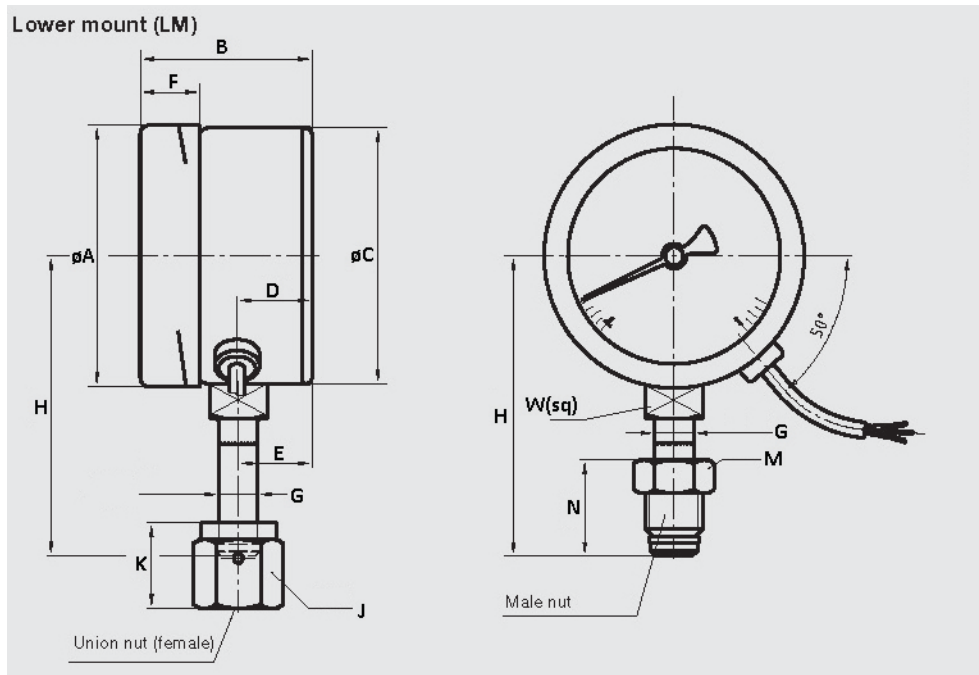


Mechanical data

Mechanical design		Safety pressure gauge with solid-front and blow-out back
Display		Nominal size 2 1/2" (63 mm)
Measuring ranges	PSI	0/15 to 0/6,000 PSI or other equivalent units of pressure or vacuum
Process connection		VCR® compatible face seal fittings: with female swivel nut, with male swivel nut, with fixed nut 9/16-18 UNF, or 1/4" NPT
Damping options		
■ for dynamic pressure		restrictor in the pressure channel
■ for vibration		fluid filling of case
Pressure limitation		
■ Steady		3/4 x full scale value
■ Fluctuating		2/3 x full scale value
■ Short time		full scale value
		The recommendations for the use of mechanical measuring systems in accordance with ASME B40.100 and EN 837-1 must be observed
Accuracy		
■ Mechanical display		$\leq 2/1/2\%$ of measuring span (ASME B40.100 Grade A) ¹
Permissible temperature range of		
■ Medium	°F / (°C)	-40°F to +212°F (-40°C to +100°C)
■ Ambient	°F / (°C)	-40°F to +175°F (-40°C to +80°C) (max 140°F for safety glass)
Temperature influence		Additional error when temperature changes from reference temperature of 68°F (20°C) $\pm 0.4\%$ for every 18°F (10°C) rising or falling. Percentage of span.
Weather protection (front)		NEMA 4X / IP 54, filled NEMA6 / IP 65
■ Pressure Equipment Directive		97/23/EC

1) Readings in the area between zero and the first scale marking may fall outside of the stated accuracy due to metallurgical properties of the measuring system.

Dimensions



Dimensions		A	B	C	D	E	F	G	H	J	K	M	N	W	Weight
2½"	mm	63	42	62	18.5	18	14.5	9.53	72	19	20.6	17	23.2	14	0.25 kg
	in	2.48	1.65	2.44	0.73	0.71	0.57	.038	2.83	0.75	0.81	0.67	0.91	0.55	0.44 lb

