

## Precision Digital Test Gauge Models 2084/3084, 2086/3086 and 2089/3089

Piezoresistive sensor element  
Accuracy 0,25 %, 0,1 % or 0,05 % F.S. **Total Error Band**  
includes all effects of linearity, hysteresis, repeatability and  
temperature from -18 up to 63 °C

### Features

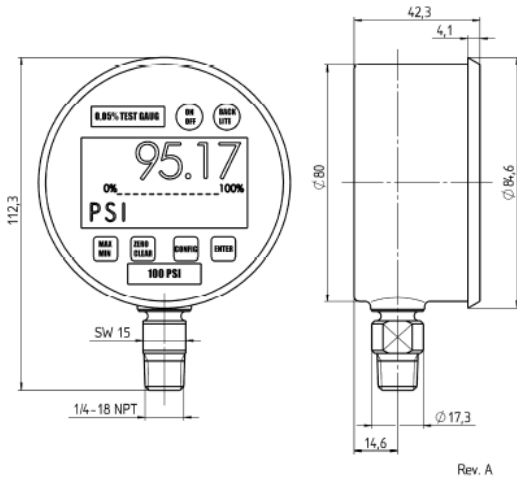
- Industry leading accuracy
- Big display with bar graph
- Rugged stainless steel case
- 12 Engineering units
- Min./max. recall
- 7 Languages
- Adjustable update and dampen modus
- Display backlight
- Field calibration capability
- Disable mode



### Ranges

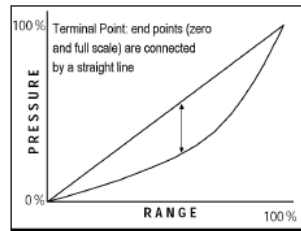
-1 ... 0 bar up to 0 ... 500 bar  
-30 ... 0 in. Hg up to 0 ... 7000 psi

Technical specification	2084/3084	2086/3086	2089/3089																																
Measuring principle	Piezoresistive sensor element with internal stainless steel diaphragm																																		
Range	<table border="0"> <tr> <td>in mbar</td> <td>250</td> <td>400</td> <td>600</td> </tr> <tr> <td>in bar</td> <td>1</td> <td>1,6</td> <td>2,5</td> </tr> <tr> <td></td> <td>4</td> <td>6</td> <td>10</td> </tr> <tr> <td></td> <td>16</td> <td>25</td> <td>40</td> </tr> <tr> <td></td> <td>160</td> <td>250</td> <td>400</td> </tr> <tr> <td></td> <td>500</td> <td>-1/0</td> <td>-1/1</td> </tr> <tr> <td></td> <td></td> <td></td> <td>-1/2</td> </tr> <tr> <td>in barabs</td> <td>1</td> <td>1,6</td> <td>3,4</td> </tr> </table>			in mbar	250	400	600	in bar	1	1,6	2,5		4	6	10		16	25	40		160	250	400		500	-1/0	-1/1				-1/2	in barabs	1	1,6	3,4
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Overpressure limit	100 % F.S.																																		
Pressure type	Gauge, vacuum, compound and absolute																																		
Case size	3 inch (75 mm)																																		
Process connection	G ¼ B according to EN 837-1, ¼ NPT according to ANSI/ASME B1.20.1, ¼ JIS, ¼ SAE, others on request																																		
Connection orientation	Lower, optional 3 or 9 o'clock																																		
Material	<table border="0"> <tr> <td>Process connection</td> <td>Stainless steel 316 (1.4401)</td> </tr> <tr> <td>Sensor</td> <td>Stainless steel 316 (1.4401)</td> </tr> <tr> <td>Case</td> <td>300 series stainless steel, electropolished</td> </tr> <tr> <td>Display</td> <td>Lexan</td> </tr> </table>			Process connection	Stainless steel 316 (1.4401)	Sensor	Stainless steel 316 (1.4401)	Case	300 series stainless steel, electropolished	Display	Lexan																								
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Power supply	3 AAA alkaline batteries, battery life > 1000 hours																																		
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Accuracy	<table border="0"> <tr> <td>Method including</td> <td>0,25 % F.S.</td> <td>0,1 % F.S.</td> <td>0,05 % F.S.</td> </tr> <tr> <td></td> <td>Terminal point, total error band (TEB)</td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3">Linearity, hysteresis, repeatability and temperature (-18 ... 63 °C)</td> </tr> </table>			Method including	0,25 % F.S.	0,1 % F.S.	0,05 % F.S.		Terminal point, total error band (TEB)				Linearity, hysteresis, repeatability and temperature (-18 ... 63 °C)																						
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Engineering units	psi, in. Hg, in. H <sub>2</sub> O, ftSW, bar, mbar, kPa, MPa, mmHg, cmH <sub>2</sub> O, mmH <sub>2</sub> O, kg/cm <sup>2</sup> (inches of water ranges for 3 reference temperatures: 4 °C, 20 °C and 60 °F)																																		
Update rate	4 options: 10, 5, 2 or 1 times per second																																		
Damping	5 options: none, average 2, 4, 6 or 8 readings																																		
Auto off	5 options: never, 2, 5, 15 or 30 minutes																																		
Language of setup menu	English, German, French, Spanish, Portuguese, Italian and Dutch																																		
Permissible	<table border="0"> <tr> <td>Ambient temperature</td> <td>-18 ... 63 °C, temperature compensated</td> </tr> <tr> <td>Storage temperature</td> <td>-40 ... 82 °C</td> </tr> </table>			Ambient temperature	-18 ... 63 °C, temperature compensated	Storage temperature	-40 ... 82 °C																												
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Approvals, explosion proof	Intrinsically safe FM and CSA																																		
CE-mark/EMC	Immunity according to EN 50 082-1 (March 1997) Emission according to EN 50 022 (1995)																																		
Mounting	Direct mounting, optional panel mounting																																		
Protection according EN 60 529/IEC 529	IP65																																		
Weight in kg	0,5																																		
Accessories, Options	Protective carrying pouch, optional 10 point individual calibration chart (standard on type 2089/3089), weatherproof ABS gauge carrying case, protective rubber boot (black or orange)																																		



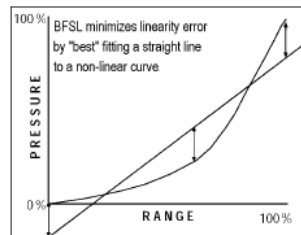
### What you should know about digital gauge accuracy... Terminal Point versus Best Fit Straight Line Accuracy.

#### ASHCROFT/HEISE Precision digital test gauges with terminal point accuracy



- All points between zero and full-scale will be within stated accuracy.
- Allows zeroing of gauge at start-up to eliminate any sensor offset.

#### Competitive digital gauges with best fit straight line (BFSL) accuracy



- Linearity error minimized by "best" fitting a straight line to a non-linear curve.
- BFSL gauges have a zero offset at calibration that must be maintained to ensure accuracy throughout range.

#### Accuracy full scale total error band (TEB) includes:

- Linearity
- Hysteresis
- Repeatability
- temperature influence from -18 up to 63 °C according terminal point method

#### Ambient Temperature Changes

Other manufacturers of digital gauges may specify operating temperature range without specifying the additional error associated with changes in ambient temperature. Errors can range as high as 0.7%/10 K. A 15 K change from an ambient of 20 °C may add an additional 1% to the stated accuracy of the gauge!

The Ashcroft digital gauge with total error band ensures accuracy from -18...63 °C.

#### PROBLEM

- Re-zeroing gauge may invalidate published accuracy specification
- Zero offset at start-up may be the result of either:
  - BFSL Calibration
  - Zero Drift

#### Order information

Size	Type	System material	Execution	Process connection	Connection orientation	Range	Engineering unit	Options
(30) 3" (75 mm)	With Ashcroft Logo:	(S) 316 (1.4401)	(D) IP65	(02) 1/4 NPT male	(L) Lower	-1/ 0	(BAR)	(CD10) 10 point calibration certificate (standard with type 2089/3089)
	(2084) Accuracy 0,25 %			(13) G 1/4 B male	(D) 3 o'clock	-1/ 1		
	(2086) Accuracy 0,1 %			(KJ) 1/4" straight JIS, BSP	(E) 9 o'clock	0/ 0,25		
	(2089) Accuracy 0,05 %					0/ 0,4		
	0/ 0,6							
	0/ 1							
	0/ 1,6							
	0/ 2,5							
	0/ 4							
	0/ 6							
0/ 10	(B1) Protective EPDM boot (black)							
0/ 16								
0/ 25								
0/ 40								
0/ 60								
0/100								
0/160								
0/250								
0/400								
0/500								
0/ 1	(BARABS)							
0/ 1,6								
0/ 3,4								
				others on request			psi and others on request	(FF) Front flange

#### Order example

Size	Type	System material	Execution	Process connection	Connection orientation	Range	Engineering unit	Options
30	3089	S	D	02	L	0/16	BAR	S7