

# 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	250 400 600	1 1,6 2,5 4 6 10 16 25 40 60	160 250 400 500 -1/0 -1/1 -1/2
	in mbar		in barabs
Overpressure limit	100 % F.S.		
Pressure type	Gauge, vacuum, compound and absolute		
Case size	3 inch (75 mm)		
Process connection	G 1/4 B according to EN 837-1, 1/4 NPT according to ANSI/ASME B1.20.1, 1/4 JIS, 1/4 SAE, others on request		
Connection orientation	Lower, optional 3 or 9 o'clock		
Material	Stainless steel 316 (1.4401)		
Process connection	Stainless steel 316 (1.4401)		
Sensor	300 series stainless steel, electropolished		
Case	Lexan		
Display			
Power supply	3 AAA alkaline batteries, battery life > 1000 hours		
Display	LCD with backlight		
Type	5 digit, 99.999 counts, 16 mm high		
Digits, resolution	Bar graph 0 ... 100 % F.S., battery level indicator, warning if pressure is out of range		
Features	0,25 % F.S.   0,1 % F.S.   0,05 % F.S.		
Accuracy	Terminal point, total error band (TEB)		
Method including	Linearity, hysteresis, repeatability and temperature (-18 ... 63 °C)		
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	-18 ... 63 °C, temperature compensated		
Ambient temperature	-40 ... 82 °C		
Storage temperature	Intrinsically safe FM and CSA		
Approvals, explosion proof	Immunity according to EN 50 082-1 (March 1997)		
CE-mark/EMC	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)		

All specification are subject to change without notice.

G6.2089/3089/E

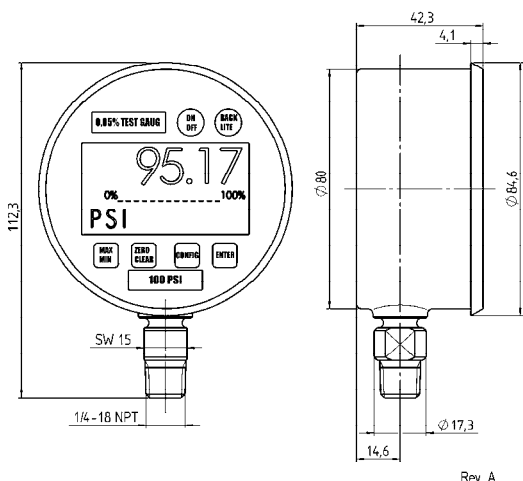
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**General dimensions in mm**



Rev. A

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

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

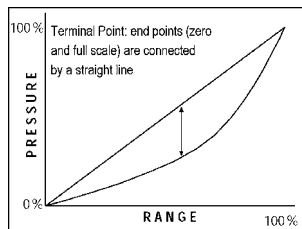
**Ambient Temperature Changes**

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.**

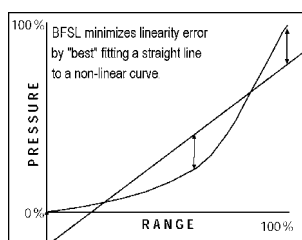
**What you should know about digital gauge accuracy... Terminal Point versus Best Fit Straight Line Accuracy.**

**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.

**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 3089)			
						(2084) Accuracy 0,25 %			-1/ 1		
						(2086) Accuracy 0,1 %			-1/ 2		
						(2089) Accuracy 0,05 %			0/0,25		
									0/ 0,4		
	With HEISE Logo:					(3084) Accuracy 0,25 %			0/ 0,6	(6B) Oxygen cleaned	
						(3086) Accuracy 0,1 %			0/ 1		
						(3089) Accuracy 0,05 %			0/ 1,6		
									0/ 2,5		(TU) Throttle plug
									0/ 4		
	0/ 6	(S7) Weather-proof ABS carrying case									
	0/ 10										
	0/ 16	(B1) Protective EPDM boot (black)									
	0/ 25										
	0/ 40	(B2) Protective EPDM boot (orange)									
	0/ 60										
	0/100	(BARABS) (FF) Front flange									
	0/250										
	0/400	psi and others on request									
	0/500										
	0/ 1										
	0/ 1,6										
	0/ 3,4										

**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