



Mid-West[®] Instrument

“Bellows Type Tank Level” Differential Pressure Level Gauge & Switch Model 115/116



Model 115, 0-10” H₂O to 0-69.9” H₂O (25 mbar to 2.5 PSID)

Model 116, 0-70” H₂O to 0-800” H₂O (2.5 PSID to 30 PSID)

Model 115/116 multiple diaphragm/bellows design provides a simple, highly accurate, direct-acting, differential pressure indicator. Full Scale Accuracy of $\pm 1\%$.

Typical applications include; Level measurement in closed tanks for the Industrial Liquid Gas Industry. Use with gaseous and liquid media, provide they are not highly viscous. Various Dial scales available to match a wide variety of gases such as He, Ar, O₂, N₂, CO₂, Helium and Hydrogen

BENEFITS:

“Engineered Plastic” gauge front and stainless steel body bolts provide corrosion resistance in “over the road Trailers” outdoor and salt air environments.

Up to a 30 lb. weight savings over competitive Liquid Helium range gauges

- Allows more product to be transported in mobile trailers
- Easier and less labor to panel mount

Low & High range capabilities

- Ideal for He, Ar, O₂, N₂, CO₂, Helium and Hydrogen tank level applications
- For use on Stationary, Over the Road, ISO/IMO containers and LNG bulk tanks

Industry best lead time reduces inventory requirements

Adaptable to wide variety of mounting configurations

Private Brand and Custom Dials available: *Single Scale, Dual Scale, and Tri-Scale*

OVER 50 YEARS experience in the field of supplying quality Differential Pressure Gauges. Tank Level applications are for stationary, over the road, ISO/IMO containers and LNG bulk tanks

Product Description:

Model 115 and 116 design is an all-metal differential pressure gauge capable of operating at low differential pressures. Safe working pressure is 500 PSIG (STD) 1,000 PSIG (optional)

The DPI is equipped with a Bi-directional Over Pressure Relief Valve (OPV). When the Differential Pressure exceeds 130% of the range the OPV equalizes the pressure between the Hi and Lo sides. 1/4" FNPT Dual top and bottom connections are provided as standard. The DPI is also equipped with a Micro adjust pointer, If necessary the pointer can be re-zeroed. Body is made of brass with 316 Stainless Steel internals. Viton Seals are provided as standard. The Dial is 6" diameter with white lettering on a black dial. (white dial with black lettering optional) The 115/116 temperature limits are rated at -40°C to 200°F. Proof pressure is Two Times working pressure at ambient temperature.

Model 116 can be equipped with one or two independently adjustable SPDT snap acting Micro-Switches which can be set on decreasing or on increasing pressure. A switch adjustment screw and a switch lock screw is accessible after removal of the lens and bezel (removal of 4 screws). Interface to the snap acting micro-switch is via color coded 18 AWG flying leads and a 1/2" FNPT conduit connection. Model 116 with switch temperature limits are rated at -20°C to +185°F



Model 116 Brass
Cast Body



Model 116 shown with
Optional S.S. 3-Valve manifold
mounted to gauge body

MANIFOLD SPECIFICATIONS:

Pressure rating: 6000 PSIG (414 bar) @ 200°F (93°C) or 4000 PSIG (276 bar) @ 500°F (260°C)

Mini-Manifold: 3000 PSIG (207 bar) @ 200°F (93°C)

Isolated stem threads: Adjustable packing below stem keeps process fluid away.

Ensures leak proof long service life. Bubble-tight shutoff.

Process Connections: Standard 3 & 5 Valve = 1/2" FNPT / 3-Valve Mini-Manifold: = 1/4" FNPT

Replaceable seat design: Standard 3/16 inch diameter orifice.

Bonnet cap protection: Increases valve life protecting stem threads from atmospheric corrosion.

Rolled stem threads: Increased strength and life

No more stem blowouts: Backseat stem design prevents blowout problems.

Less Parts: Less leak points and less fugitive emissions.

Test Ports: 3 & 5 Valve Manifold = 1/4" FNPT ports which may be used as test connections

3-Valve Mini-Manifold = 1/8" FNPT port test connections

3 & 5 Valve Manifold = **Teflon Packing, Integral (Body Material) Seat, and Stainless Steel Body**

3-Valve Mini-Manifold = **Teflon Packing, Delrin Seat, and Stainless Steel Body**

Model 115/116 Tank Level Gauge

0-400" H₂O
Single Switch



Optional
3/4" FNPT
Stub Mount Shown



Ar, O₂, N₂
Tri-Scale Dial

Model 105
0-10" H₂O / Single Scale

	115	**116
Accuracy	±1% of Full Scale	
DP Range	0-10" H ₂ O to 0-69.9" H ₂ O (25 mbar to 2.5 PSID)	0-70" H ₂ O to 0-800" H ₂ O (2.5 PSID to 30 PSID)
Safe Working Pressure	1500 PSIG	500 PSIG (Standard) 1000 PSIG (Optional)
Body Material	Brass	Brass
Internals	316 S.S. Welded Multiple Diaphragm	316 S.S. Convuluted Bellows
Port	Dual Top and Bottom, 1/4" FNPT connections with optional snubbers	
Seals	Viton Standard, other elastomers available	
Dial	6" Black dial with White lettering (White dial with Black lettering optional)	
Warranty	One Year	
**Model 116 Snap Acting Micro-Switch for Alarm (optional) Ranges: 0-80" H₂O & above.		
Aluminum, Carbon Steel, & Stainless Steel Body Materials Available... Ask about Model's 105, and 106 (SWP of 1,500 & 3,000 PSIG)		



MICRO - SWITCH SPECIFICATION
Model 116 Electrical 0-80" H₂O and above

Input Voltage:	None Required		
Set Pointers:	Quantity	1	With visual set point set on decreasing pressure
	Adjustment:	3% to 100% of Full Scale	
Output(s)	Contact(s)	1 SPDT	@ 30 VDC @ 240 VAC @ 120 VAC
	Contact Rating:	4 Amps Maximum 3 Amps Maximum 5 Amps	
Temperature:	Operating:	-20°F to +185°F	
Environment:	Standard:	Weather-Proof Housing	NEMA 4
Electrical Interface:	Standard:	1/2", 18 Awg., 600 V 105C Color Coded Wire Leads	1/2" FNPT
Gauge Accuracy:	2%	Including Effects of the switch	
Switch Repeatability:	2%	Maximum	

Proof Pressure:

Two times working pressure at ambient temperatures

Temperature Limits:

Gauge w/o/ switch -40°F to 200°F
 Gauge with Snap Acting Switch -20°F to 185°F

These limits are based on the entire instrument being saturated to these temperatures. System (process) temperatures may exceed these limitations with proper installation. Contact our customer service representative for details.

Standards: Model 115/116 Series gauges either conform to and/or are designed to the requirements of the following standards:

- | | | |
|--------------|-----------------|-------------------|
| ASME B1.20.1 | CSA-C22.2 No.14 | NEMA Std. No. 250 |
| ASME B40.100 | UL Std. No. 50 | SAE J514 |

Mid-West[®] Instrument

Standard Tank Level Gauge Ranges: Model 115/116

Range Type						
PSID	H2O	Kpa	Bar	Dual Scale IN/CM		CM & MMH2O
0-3	0-70"	0-20	0-.35	0-80 IN H2O/0-200 CM H2O		0-200 CM H2O
0-5	0-80"	0-35	0-.7	0-100 IN H2O/0-250 CM H2O		0-380 CM H2O
0-10	0-100"	0-70	0-1.0	0-150 IN H2O/0-380 CM H2O		0-500 CM H2O
0-15	0-120"	0-100	0-1.4	0-200 IN H2O/0-500 CM H2O		0-1000 CM H2O
0-20	0-150"	0-140	0-1.75	0-300 IN H2O/0-750 CM H2O		0-1024 CM H2O
0-25	0-200"	0-172	0-2.0	0-400 IN H2O/0-1000 CM H2O		0-1250 CM H2O
0-30	0-250"	0-200		0-500 IN H2O/0-1270 CM H2O		0-1500 CM H2O
	0-300"			0-600 IN H2O/0-1500 CM H2O		0-1524 CM H2O
	0-400"			0-700 IN H2O/0-1800 CM H2O		0-2500 MM H2O
	0-450"			0-800 IN H2O/0-2050 CM H2O		0-3,000 MM H2O
	0-500"					0-5,000 MM H2O
	0-600"					0-7,600 MM H2O
	0-700"					0-10,000 MM H2O
	0-800"					0-12,700 MM H2O
						0-15,000 MM H2O

The above mentioned ranges are some of the most popular requested today. Mid-West Instrument can provide special un-cataloged dial range requirements. As well as multiple scale dials, multiple color dials and special decals. Please consult factory for complete information.

Model 115 Range Conversions						
"H2O	CM H2O	MM H2O	PSID	Bar	mBar	Kpa
0-10	0-25	0-254	0-.36	0-.02	0-25	0-2.5
0-15	0-38	0-381	0-.54	0-.03	0-37	0-3.7
0-20	0-50.8	0-508	0-.72	0-.05	0-50	0-5
0-25	0-64	0-635	0-.90	0-.06	0-62	0-6.2
0-30	0-76.2	0-762	0-1.08	0-.07	0-75	0-7.5
0-40	0-101.6	0-1016	0-1.44	0-.09	0-100	0-10
Model 116 Range Conversions						
0-70	0-180	0-1775	0-2.5	0-.17	0-174	0-17.3
0-80	0-200	0-2032	0-2.9	0-.20	0-200	0-20
0-100	0-250	0-2540	0-3.6	0-.25	0-250	0-25
0-150	0-380	0-3810	0-5.4	0-.37	0-373	0-37
0-200	0-500	0-5080	0-7.2	0-.50	0-498	0-50
0-300	0-760	0-7620	0-10.8	0-.75	0-747	0-75
0-400	0-1000	0-10,200	0-14.5	0-.99	0-996	0-100
0-500	0-1270	0-12,700	0-18.0	0-1.2	0-1245	0-124
0-600	0-1500	0-15,240	0-21.6	0-1.5	0-1494	0-150
0-700	0-1800	0-17,750	0-25.3	0-1.74	0-1740	0-174
0-800	0-2000	0-20,300	0-28.9	0-2.00	0-2000	0-200