

Differential Pressure Manometers

Model PS101, PS106, and PS115



Introduction

Congratulations on your purchase of the Extech PS100 Series Differential Pressure Manometer. These manometers measure gauge pressure (a measure of pressure with reference to ambient pressure) and differential pressure (the difference between two pressure measurements). In addition, the meter can display a value that represents the actual reading minus a stored reference (DIF mode).

The PS101 (± 1 psi), PS106 (± 6 psi), and the PS115 (± 15 psi) models offer 11 units of measure, a 99 reading storage utility, MAX/MIN recording with Relative mode, Time Stamp, Data Hold, Auto Power OFF, Zero function, and large Backlit LCD. These devices are portable and battery operated and perfect for HVAC technicians as well as those in the pneumatic and medical fields.

This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide.

Safety

International Safety Symbols

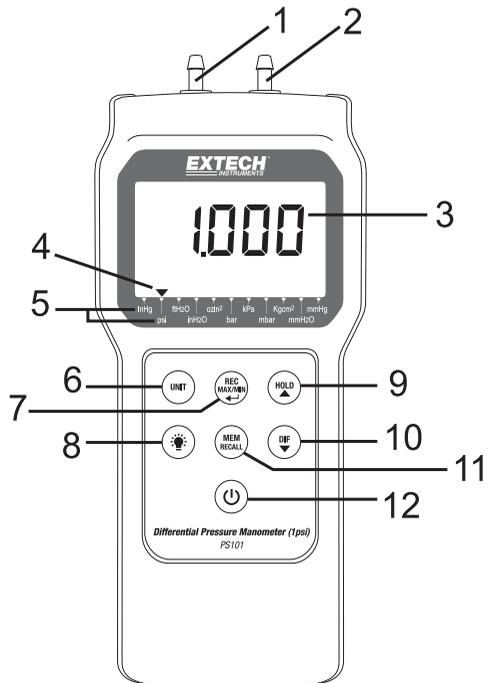


This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.

Description

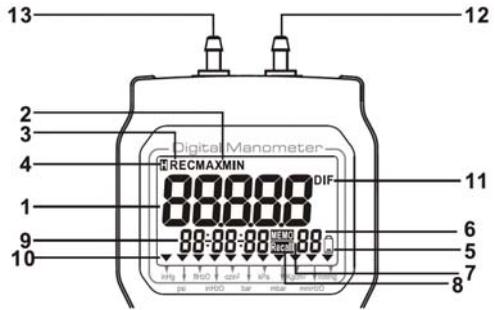
Meter Description

1. Positive Pressure connector
2. Negative Pressure connector
3. Measurement reading on LCD
4. Unit selector arrow
5. Unit of measure selections
6. UNIT of measure key
7. REC - MX/MN – Return key
8. LCD Backlight key
9. HOLD - up arrow key
10. DIF - down arrow key
11. MEM - RECALL key
12. Power ON-OFF key



Display Description

1. Primary Display Area
2. MAX-MIN mode active
3. Recording active
4. Data Hold active
5. Low battery voltage
6. Stored reading memory location
7. Single reading storage mode
8. Review stored data record
9. Elapsed timer
10. Unit of measure selector arrows
11. Difference mode (actual reading minus reference value)
12. Negative pressure connector
13. Positive pressure connector



Keypad Description



Power ON/OFF



Press momentarily to store a reading. The MEMO icon and the storage location number will appear on the display with a flashing reading. Press and hold for 3 seconds to access the Recall mode (use up and down arrow keys to navigate stored readings). Momentarily press again to exit recall mode. To delete all records, press and hold key for 3 seconds while in Recall mode.



Press momentarily to switch ON the display backlight for approximately 10 seconds



Unit of Measure selector key. Press momentarily to step through available units.



Press momentarily to enter Record mode. REC icon appears and the elapsed timer starts. Press to step through MAX and MIN readings. Other keys are locked in this mode except for the backlight and the Power key. Press and hold for 3 seconds to exit the record mode and to return to the normal mode of operation.



Press to freeze current reading. Press again to release.



Press momentarily to store the current reading as a reference (the DIF icon will switch ON). Subsequent readings represent the current measurement minus the reference value. Note that this display is NOT the differential pressure between the two pressure inputs.

Getting Started

Power ON-OFF and the AUTO POWER OFF Feature

- Power the meter by momentarily pressing the power key .
- Press the power key again to switch the meter OFF.
- The meter is powered by six (6) 1.5VDC 'AAA' batteries. If the meter will not switch ON please check that fresh batteries are installed in the rear battery compartment.
- The meter is equipped with AUTO POWER OFF which switches the meter OFF after 20 minutes of inactivity. To disable this feature press and hold the Power and Hold keys simultaneously while switching the meter ON. Release the Hold key when the 'n' icon appears on the display. The Auto Power OFF feature is now disabled but will be re-enabled when the meter's power is cycled again.

ZERO Adjustment

To zero the display (with no pressure applied), press and hold the up arrow key  for five (5) seconds. The display will scroll 0.0.0.0 from right to left as it zeros the meter.

Display Backlight

To switch the display backlight ON, press the backlight  key. The backlight will switch OFF automatically after approximately 10 seconds to conserve battery energy.

Connections

Pressure hoses are connected to the meter via the connectors at the top of the meter. Note the range for each meter model: PS101 (± 1 psi), PS106 (± 6 psi), and the PS115 (± 15 psi).

Units of Measure

The arrow on the bottom of the LCD points to the currently selected unit of measure. To change the unit of measure, press the UNIT key until the arrow points to the desired unit of measure. Refer to the table below for a brief description of the units

UNIT SYMBOL	DESCRIPTION
in Hg	inches of mercury
psi	pounds per square inch
ft H ₂ O	feet of water
in H ₂ O	inches of water
oz in ²	ounces per square inch
bar	atmospheric pressure
kPA	kilo-pascals
mbar	milli-bar (1000mbar = 1 bar)
kg cm ²	kilograms per square centimeter
mm H ₂ O	millimeters of water
mm Hg	millimeters of mercury

Difference (DIF) Display

The meter can display readings that represent the current measurement minus a stored reference value. To store a reference value, press the DIF ▼ key when the desired reference value is on the display. The **DIF** icon will appear on the LCD indicating that the difference mode is active. Subsequent readings will now represent the current measurement minus the stored reference.

This is NOT the normal differential pressure mode where the reading represents the difference between the positive and negative pressure inputs (at the top of the meter) but rather a simple difference between a stored value and the actual reading.

Press the DIF key again momentarily to exit this mode (the DIF display icon will switch OFF and the meter will return to the normal operating mode).

Data Hold

To freeze a displayed reading on the LCD, momentarily press the HOLD key (the **H** icon will appear above the reading). To exit HOLD, press the HOLD key again (the **H** icon will switch OFF).

MAX-MIN Recording with Elapsed Timer

For a given measurement session, the meter can record the highest (MAX) and the lowest (MIN) readings.

1. Press the REC MX-MN key momentarily (the REC icon appears and the elapsed timer starts).
2. The meter is now recording the MAX and MIN readings.
3. Press the REC MX-MN key again to view the current MAX reading (MAX icon appears). The reading on the display is now the highest reading encountered since the REC icon switched on (when the REC MX-MN key was first pressed).
4. Press the REC MX-MN key again to view the current MIN reading (MIN icon appears). The reading on the display now represents the lowest reading encountered since the REC icon switched on (when the REC MX-MN key was first pressed).
5. To exit the MAX-MIN mode, press and hold the REC MX-MN key for at least 2 seconds. The REC-MAX-MIN icons will switch off, the MAX-MIN memory will clear, and the meter will return to the normal operating mode.

99-Reading Memory (MEM key)

1. To store a reading into the meter's internal memory, press the MEM-RECALL key momentarily.
2. The next available memory location (00-99) will appear on the lower right corner of the LCD and the current reading (flashing) will be stored into that memory location. The **MEMO** display icon will switch ON to indicate Memory mode. The MEMO icon will switch OFF a few seconds later and the meter will return to the normal operating mode.
3. To recall readings, press and hold the MEM-RECALL key until the **MEMO** display icon appears. Now step through the available readings using the up and down arrow keys. The memory location number is shown on the lower right and the reading associated with the memory location will be shown on the primary LCD viewing area.
4. The display will flash the word FULL when the 99 reading memory has been filled.
5. To clear (delete) all readings press and hold the MEM key for 3 seconds while in the Recall mode.
6. To exit this mode, switch the meter OFF by pressing the ON-OFF button.

Battery Replacement and Disposal

When the low battery icon appears on the LCD, the batteries must be replaced. Several hours of accurate readings are still possible in this condition; however batteries should be replaced as soon as possible:

- Remove the Phillips screws from the rear of the meter.
- Open the battery compartment and replace the six (6) 1.5V 'AAA' batteries observing polarity.
- Replace the battery compartment cover with the Phillips screws.



EU users are legally bound by the battery ordinance to return used batteries to community collection points or to wherever batteries / accumulators are sold. Disposal as household waste is prohibited.

Specifications

General Specifications

Display	Backlit multifunction LCD
Status indicators	Multifunction display icons and low battery indicator
Ranges	Model PS101: 1psi Model PS106: 6psi Model PS115: 15 psi
Measurement Units	bar, mbar, psi, Kg/cm ² , mm Hg, inch Hg, meters of H ₂ O, inches of H ₂ O, hPA, kPA, and ozin ² .
Accuracy (Meter)	± (0.3% full scale) at ambient temperature 25°C (± 73°F)
Repeatability	± (0.2% to 0.5% full scale)
Linearity/Hysteresis	± (0.29% to 1.0% full scale)
Combined accuracy	± (1.0% full scale)
Data Hold	Freezes the displayed reading
Max-Min Record/Recall	Record and Recall the Maximum and Minimum readings
Internal reading memory	99-reading internal memory storage with instant recall
Display update rate	0.5 seconds (approx.)
Hose dimensions	4mm lug (orange hose 500mm length)
Operating Temperature	0 to 50°C (32 to 122°F)
Operating/Storage Humidity	90% R.H. max.
Storage Temperature	-20 to 50°C (-4 to 122°F)
Auto Power OFF	After 20 minutes of inactivity (can be disabled)
Power Supply	Six (6) 1.5 VDC 'AAA' batteries
Weight	200g (7.0 oz.) with batteries
Dimensions	169 x 78.3 x 34.4mm (6.7 x 3.1 x 1.4")

Input Range and Resolution table

	Model PS101	Model PS106	Model PS115
in Hg	2.036	12.216	30.540
psi	1.000	6.000	15.000
ft H ₂ O	2.307	13.840	34.600
in H ₂ O	27.68	166.08	415.20
oz in ²	16.00	96.00	240.00
bar	0.069	0.414	1.034
kPA	6.89	41.36	103.42
mbar	68.9	413.7	1034.2
kg cm ²	0.070	0.422	1.055
mm H ₂ O	703	4218	10546
mm Hg	51.7	310.3	775.7