User's Guide

EXTECH INSTRUMENTS

Heavy Duty
Differential Pressure Manometer

Model 407910

Specifications

General Specifications

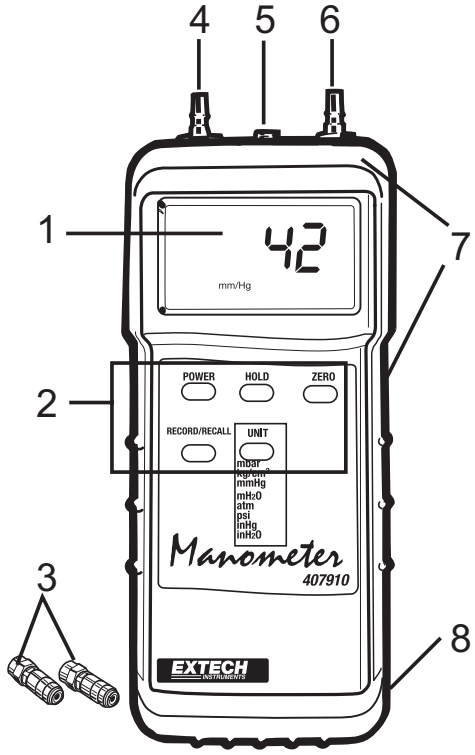
Circuit	Custom one-chip LSI microprocessor circuit
Display	0.6" (16mm) 2000 count LCD with function indicators
Units of Measure	mBAR, psi, kg/cm^2, mm Hg, inches Hg, meter H_2O, inches H_2O and Atmospheres
Input circuit	Differential inputs (P1 and P2)
Data Hold	Freezes displayed reading
Sensor	Built-in piezoelectric sensors
Zero Adjust	Front panel push-button
Sample rate	0.8 sec. (approx.)
Compatibility	Air or non-corrosive and non-ionized gas
Auto Power OFF	Meter turns off after approx. 10 minutes to conserve energy
Data Output	RS-232 PC serial interface
Ambient conditions	32 to 122^{o}F (0 to 50^{o}C); < 80% RH
Battery power	9V alkaline battery
Power Consumption	6mA DC (approx.)
Dimensions	7.1 x 2.8 x1.3" (180 x 72 x 32 mm)
Weight	0.76 lbs (345 g)
Accessories	Quick-disconnect fittings (2), rubber jacket, and 9V battery

Range Specifications

Range/Units (Max.)	**Resolution**	**Accuracy**
± 2000 mbar	1	± 2% full scale @ 23±5^{o}C Note: Accuracy includes linearity, hysteresis and repeatability effects
± 29 psi	0.02	
± 2.040 Kg/cm^2	0.001	
± 1500 mm Hg	1	
± 59.05 inches Hg	0.05	
± 20.40 meters H_2O	0.01	
± 802 inches H_2O	0.5	
± 1.974 atmospheres	0.001	

Meter Description

1. LCD Display – Indicates the measurement data, unit of measure, and user alert symbols as described in this manual
2. Push-buttons:
   - POWER – Press to turn the meter ON or OFF
   - HOLD – Press to freeze the displayed reading
   - ZERO – Press to null the display (with fittings disconnected)
   - RECORD/RECALL – Press to access the MIN/MAX recording mode as described later in this manual
   - UNIT – Press to select the unit of measure
3. 0.16” (4mm) Quick-disconnect fittings (supplied)
4. P1 Input – 0.16” (4mm) accepts quick disconnect connector
5. RS-232 PC interface jack (3.5mm) – For use with data acquisition software/hardware interface kit model 407001
6. P2 input – 0.16” (4mm) accepts quick disconnect connector
7. Rubber protective holster (removable)
8. Battery compartment (on rear) – Remove rubber jacket to access compartment



Basic Operation

Meter Power

This device uses a 9V battery for power. If the meter does not switch on when the POWER button is pressed or if the display shows **LBT**, replace the battery (refer to the Battery Replacement section later in this manual).

In order to conserve battery life, the meter has an automatic power off feature (after 10 minutes). To defeat this feature, access the RECORD mode by pressing the RECORD/RECALL button. In the RECORD mode, the meter will remain on until the user turns it off or until the battery weakens.

Unit of measure

Press the UNIT button to select the unit of measure. This meter offers eight (8) units of measure as listed below, in the specifications chart earlier in this manual, and on the face-plate of the meter.

Units	**Displayed Symbol**
MBAR	"m" at bottom of the LCD and "Bar" at the top
Kg/cm2	Kg /cm^2
mm of Hg	mm /Hg
m H_2O	m H_2O
Atmospheres	ATP
PSI	PSI
Inches of Hg	in/Hg
Inches of H_2O	inch H_2O

Zero Adjust and Offset function

Before use and without fittings attached to the meter, press the ZERO button to calibrate the meter's circuitry. The display should then indicate zero.

If it is desired to offset the meter's display, press the ZERO button while taking a measurement. Subsequent readings will be the difference between the current measurement and the measurement that was on the display when the ZERO button was pressed.

Fittings Connection

Connect tubing to the quick-disconnect fittings and then snap the supplied quick-disconnect fitting(s) to the P1, P2 (or both) input port(s). If both inputs are used (differential mode), the meter displays a positive pressure reading if the P1 pressure is greater than P2 and a negative reading if P2 is greater than P1.

MIN/MAX Record/Recall Mode

The Record/Recall function tracks the maximum and minimum readings for recall at any time.

1. Press the RECORD/RECALL button once. The REC indicator will appear on the display.
2. Press the RECORD/RECALL button again to view the highest (MAX) reading taken since the RECORD/RECALL button was first pressed. The MAX indicator and maximum reading will appear on the display.
3. Press the RECORD/RECALL button again, the MIN indicator and the minimum value will appear on the display.
4. To return to normal operation, press and hold the RECORD/RECALL button until the display indicators REC, MAX, and MIN disappear.

RS-232 PC Interface

The meter has a built-in RS-232 serial port for use with the optional PC Interface Data Acquisition Software/Hardware kit Model 407001.

Battery Replacement

When the low battery indicator **LBT** appears on the display or if the meter does not switch on when the POWER button is pressed, it is necessary to replace the battery.

To replace the battery:

1. Remove the meter's rubber protective jacket by stretching it over the bottom of the meter.
2. Pry open the battery compartment located on the back of the meter using a small coin or screwdriver.
3. Replace the 9V alkaline battery
4. Replace the battery compartment cover and the protective jacket.

Useful Conversions

Useful conversion Factors		
From	**To**	**Multiplier**
In of H_2O	In of Hg	0.07355
In of H_2O	Cm of Hg	2.54
mm of Hg	In of H_2O	0.03937