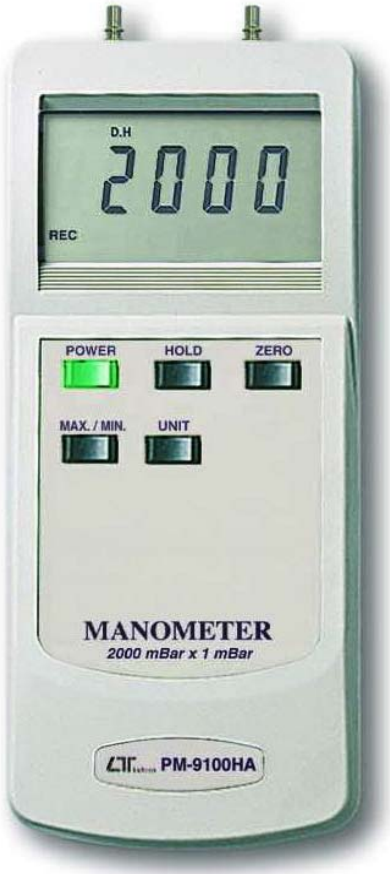
2000 mbar, differential input

MANOMETER

Model : PM-9100HA



Your purchase of this MANOMETER marks a step forward for you into the field of precision measurement. Although this MANOMETER is a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.

OPERATION MANUAL

TABLE OF CONTENTS

1. FEATURES

* Dual & differential input, 2000 mbar max. range.
* Application : Industrial, laboratory, heating, ventilation, medical hospital, used for air or not corrosive and not ionized gas & liquid.
* Sensor is built inside the housing.
* Single lugs for pipe connection.
* 8 kind display units (mbar, psi, Kg/cm 2 mm Hg, inch Hg, meter HF2 , inch HF2 , Atmosphere) select by push button on the front panel
* Auto shut off saves battery life.
* Zero button on the front panel, easy to offset the zero value.
* Microprocessor circuit assures maximum possible accuracy, provides special functions and features,
* Super large LCD display with contrast adjustment for best viewing angle.
* Records maximum & minimum readings with recall.
* Data Hold function for stored the desired value on display.
* Built-in low battery indicator.

2. SPECIFICATIONS

2-1 General Specifications

Circuit	Microprocessor LSI circuit.
Display	61 mm x 34 mm supper large LCD display. 15 mm (0.6") digit size.

Display units	mbar, psi, Kg/cm^2 mm Hg, inch Hg, meter H2O, inch H2O, Atmosphere.
Function	Dual & differential input, data hold, zero/relative, memory.
Zero adjust	Push button on the front panel.
Sensor	* Sensor is built inside the housing.
	* Piezoelectric sensor.
	 *** Used for air or not corrosive and not ionized gas & liquids.**
Data hold	By push button.
Data record	Record maximum & minimum readings.
Sampling time	Approx. 0.8 second.
Power off	Auto shut off, saves battery life or manual off by push button.
Operating temperature	0 to 50 ℃ (32 to 122 ℉).
Operating humidity	Less than 80% R.H.
Power supply	006P DC 9V battery (heavy duty).
Power current	Approx. DC 8.0 mA.
Weight	246 g/0.54 LB .
Dimension	185 x 78 x 38 mm (7.2 x 3.0 x 1.4 inch)
Accessories included	* Instruction manual..... 1 PC. * Hard carrying case..... 1 PC. * PLug for quick coupler..... 2 PCs.

2-2 Electrical Specifications

Unit	*Max. range*	*Resolution*
mbar	2000 mbar	1 mbar
psi	29 psi	0.01 psi
Kg/cm 2	2.040 Kg/cm 2	0.001 Kg/cm 2
mm Hg	1500 mm Hg	1 mm Hg
inch Hg	59.06 inch Hg	0.02 inch Hg
meter HF2	20.40 meter HF2	0.01 meter HF2
inch HF2	802 inch HF2	0.5 inch HF2
Atmosphere	1.974 Atmosphere	0.001 Atmosphere

Unit	*Max. range*	*Accuracy*
mbar	2000 mbar	2 % F. S.
psi	29 psi	
Kg/cm 2	2.040 Kg/cm 2	*Note :*
mm Hg	1500 mm Hg	** 23 5 蚓.*
inch Hg	59.05 inch Hg	** F.S. : full scale*
meter HF2	20.40 meter HF2	** Included linearity,*
inch HF2	802 inch HF2	*hysteresis and*
Atmosphere	1.974 Atmosphere	*repeatability*

Remark :

Measuring unit	Display unit
mbar	**m Bar**
psi	**Psi**
Kg/cm 2	**Kg /cm 2**
mm Hg	**mm /Hg**
inch Hg	**in/Hg**
meter HF2	**m HF2**
inch HF2	**inch HF2**
Atmosphere	**ATP**

3. FRONT PANEL DESCRIPTION

Fig. 1

3-1 Display
3-2 Power Off/On Button
3-3 Hold Button
3-4 Zero Button
3-5 " MAX./MIN. " Button
3-6 Unit Button
3-7 P1 input socket
3-8 P2 input socket
3-9 Battery Compartment /Cover
3-10 PLug/ quick coupler

4. MEASURING PROCEDURE

1) Power on the meter by pressing the " Power Off/On Button " (3-2, Fig. 1).
2) Select the desired temperature units (mbar, psi, Kg/cm 2 mm Hg, inch Hg, meter HF2 , inch HF2 , Atmosphere) by pushing the " Unit Button " (3-6, Fig. 1).
3) **Zero adjusting**
   Adjust the display reading to zero value by pushing the " Zero Button " (3-4, Fig. 1)
4) Install the measuring pipe to " Plug/quick coupler " (3-10, Fig. 1).
5) The meter is build the two input socket (P1 input socket, P2 input socket) for accepting the differential pressure input.
   Connecting the pipe along the " Plug " (3-10, Fig. 1) to

   a. *" P1 input socket " (3-7, Fig. 1) only*
   b. *" P2 input socket " (3-8, Fig. 1) only*
   c. *Both P1 & P2 input socket*

   The LCD will show the measuring pressure value.

   Note :
   ** If the P1 pressure > P2 pressure, the display will get positive reading.*
   ** If the P1 pressure < P2 pressure, the display will get negative reading.*

6) **Data Hold**
* During the measurement, pressing the " Hold Button " (3-3, Fig. 1) will freeze the measured value & the LCD will show " HOLD " symbol.
* Press the " Hold Button " again to cancel the data hold function.

7) **Data Record (Maximum, Minimum reading)**

* The DATA RECORD function displays the maximum and minimum readings. To start the DATA RECORD function, press the " MAX./MIN. Button " (3-5, Fig. 1) once. " REC " symbol will appear on the LCD display.
* With the " REC " symbol on the display :
  (a) Press the " MAX./MIN. Button " (3-5, Fig. 1) once, the " Max " symbol along with the maximum value will appear on the display.
  (b) Press the " MAX./MIN. Button " again, the " Min " symbol along with the minimum value will appear on the display.
  (c) To exit the memory record function, press the " MAX./MIN. Button " continuously for at least 2 seconds. The display will revert to the current reading.

8) **For quick measurement, follow the procedures shown below :**

Main procedures :

POWER ON → *ZERO ADJUST* / *DETERMINE UNIT*

Optional measuring procedures :

DATA HOLD

MEMORY RECORD
Max., Min.

Power management

AUTO POWER OFF (Not activated during Memory Record Selection) or MANUAL POWER OFF

5. AUTO POWER OFF DISABLE

The instrument has built-in " Auto Power Shut-off " in order to prolong battery life. The meter will switch off automatically if none of the buttons are pressed within 10 min.
To de-activate this feature, Select the memory record function during measurement, by pressing the " MAX./MIN. Button " (3-5, Fig. 1).

6. BATTERY REPLACEMENT

1) When the left corner of LCD display show " LBT ", it is necessary to replace the battery. However, in-spec measurement may still be made for several hours after low battery indicator appears before the instrument become inaccurate.
2) Slide the Battery Cover (3-9, Fig. 1) away from the instrument and remove the battery.
3) Install a 9 V battery (PP3 type) and replace the cover.