

OPERATION MANUAL

HAND HELD DIGITAL RS232 MANOMETER



Model: 8252

Congratulations on your purchase of the Manometer ! This instrument is portable, battery operated pressure measuring device.

The Manometer is ideal for HVAC/R technicians measuring pressure level ,Medical equipment ,Computer peripherals , Pneumatic Controls.

INTRODUCTION

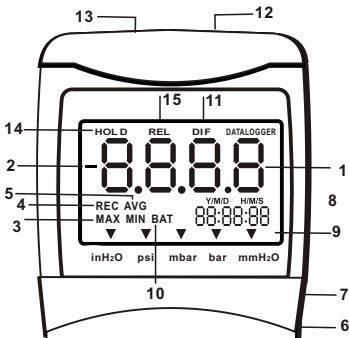
- ✓ The meter will display all LCD segments when it is first turned on for approx. 3 seconds. Though you might have seen DATALOGGER, Y/M/D, REL, AVG ..these are not available for the meter.
- ✓ The LCD is divided into two distinct sections : One large (Primary) top screen and one smaller right-bottom bottom screen (Relative Clock). The 2 display areas keep you constantly updated with the pressure measurements.
- ✓ The Meter measures:
 - * Gauge pressure-a measure of pressure in psi that is referenced to ambient pressure.
 - * Differential pressure- a measure of the difference of two pressures .
- ✓ Meter has 5 selectable units of measure. : InH₂O,psi,mbar, bar , mmH₂O.

- ✓ Please check the tubing is not leaking or damaged before using.

CONVERSION & RESOLUTION

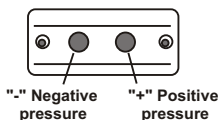
1 mbar =		
		Resolution
inch of H ₂ O	0.401	0.01
psi	0.0145	0.001
mbar	1	0.1
bar	0.001	0.001
mm of H ₂ O	10.2	1

CONTROLS AND INDICATORS



1. Primary Data Screen displays pressure value.
2. "-" . Minus pressure display.
3. **MAX MIN** pressure recorded.
4. **REC** starts recording mode and displays max./min. pressure recorded.
5. **AVG**. Average records (N/A).
6. **DC** power in Jack.
7. **RS232** output port.
8. **H/M/S** 88:88:88 displays time for Hour / Minute / Second.
9. ▼. Pressure unit indication.
10. **BAT**. Battery low indicator.
11. **DIF**. Differential pressure mode.
12. "+" Positive pressure connection.
13. "-" Negative pressure connection.
14. **HOLD**. Freezes pressure reading.

15. **REL.** Establish a relative zero for the primary screen information.(N/A)



AUTO POWER OFF (SLEEP FUNCTION)

This instrument will shut off automatically in approx. 20 minutes for every power on. For recording or operating over longer periods of time, you can disable the sleep mode by pressing **①** and **HOLD** simultaneously before power on.

An "n" will appear in the middle of the screen at which time you can release the **HOLD** button. (See Fig. A) The disable sleep mode will be invalid after power off.

Fig. A →

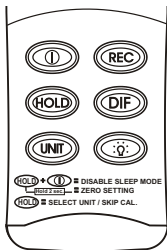


MODE OPTIONS

Delete and replace with programmable user selectable start-up mode.

The display will default to the mode last used.

The following table lists the modes of operation that can be invoked by pressing the button indicated.



- I** Turns instrument on (Default setting) and off.
- REC** Press momentarily and relative clock starts in the lower right screen.

REC is displayed in the middle left of screen(Fig.B).Other button functions are locked out except **Power** , **Unit** and **Backlight**. Press momentarily again and the unit cycles through **MAX** (Fig. C) and **MIN** (Fig.D) and back to current pressure ; the record mode is displayed on the LCD. Press and hold **REC** for 3 seconds to turn off the record function and return to normal mode.

Fig. B →



Fig. C →

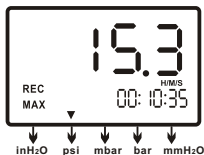
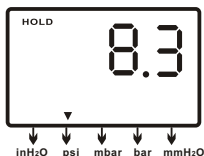


Fig. D →



(HOLD) Press momentarily to freeze the pressure reading . (Fig.E)

Fig. E →



(DIF) Press momentarily ,**DIF** appears on top of the LCD and the display indicates the relative zero (Relative zero causes the value of the display to show as "0.0")-only the amount of pressure change will be indicated. Press momentarily again and the unit returns to the normal mode of pressure differential (see Fig.F).

Fig. F →



Differential Pressure : A measure of the difference between two pressures , i.e. use differential pressure sensor to measure gauge pressure by leaving one process connection open to atmosphere and connecting the second sensor port to your system.

UNIT Press momentarily and the units will cycle through "**inH₂O**", "**psi**", "**mbar**", "**bar**", "**mmH₂O.**", "**mbar**", which are indicated on the bottom of the display (See Fig.G &H).

Fig. G →

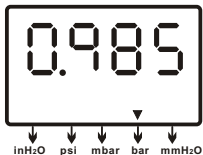
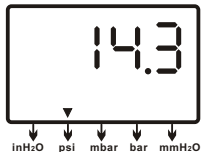


Fig. H →



Light Press momentarily and the back-light illuminates for approx. 30 seconds then turns off automatically.

Or press momentarily to decrease the figure when calibration is being performed.

MAINTENANCE

- ✓ The meter is calibrated in house before shipping.
- ✓ When properly maintained , the meter will maintain its accuracy specification, to ensure your meter is performing at its peak, send it to the factory or a qualified instrument calibration facility for annual calibration.
- ✓ Recommend always set zero before measurement .Refer to the zero setting procedure in page 11.

Cleaning:

Use a damp cloth and mild soap to clean the case of the Manometer, do not use harsh detergents or abrasives as these may mar the finish or damage the unit's case with an adverse chemical reaction.

CALIBRATION MODE

Calibration mode is only applicable for a standard Manometer calibrator or any qualified meter calibration facility for annual calibration.

1. First , manually set the display to zero (no pressure applied to the connector), refer to the manual zero procedure(in page11).

2. Turn the meter off.
3. Press **REC** & **①** simultaneously , "**CA**" appears on the display, (See Fig. I)the meter enters to the calibration mode ,make sure the units setting on "**PSI**" to start positive (+) pressure calibration

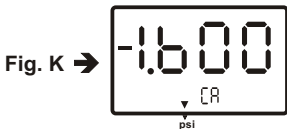


4. The meter has defaulted as 1.6 psi calibration point , the adjustable pressure range is from 1.5 to 1.7 . if calibration pressure source is not 1.6 psi ,increase by pressing **REL** key , or decrease by pressing **⏏** key to set calibration point as required.
5. Save the calibration point by pressing **REC** key , "**SA**" and small "**CA**" appears on the display (See Fig. J) in 2 seconds , the meter auto-skips to the negative pressure (-) point for next calibration mode.



6. Follow the same procedure as step 4 for the negative pressure calibration point , **REC** .

The LCD now displays " -1.600 " and small **"CA"** (See Fig.K) , do the necessary calibration figure refer to your pressure standard if needed.



7. Again save the calibration point by pressing **REC** key, **"SA"** and **"CA"** appears in 2 seconds and then pressing **"unit"**, **"End"** and **"CA"** appears in another 2 seconds, the meter turns back to the normal mode (See Fig. L).



If you can't save by pressing **UNIT** key, i.e. no **"SA"** appeared , please check:
(a) The cabliration pressure source is between 1.5 and 1.7, or check (b) if you entered the right positive pressure (+) or negative pressure (-).

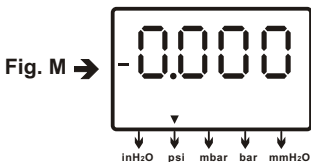
If you want to skip positive (+) calibration when in the Calibration mode , press **UNIT** to skip to negative (-) calibration point.

Calibration point reference

psi range	Calibration point(\pm)	Reommend (\pm)
0~ \pm 2	1.6	1.5~1.7

MANUAL ZERO SETTING

When you set the display to zero(no pressure applied to the connector), press button **(HOLD)** for 2 seconds , now the meter displays **"- 0 .000"** from right to left (See Fig.M) and then disappears , the LCD display shows a normal mode .



TROUBLESHOOTING

- ? **Power on but no display.** Check the battery connections, Replace with new battery or attach optional AC adaptor.
- ? **BAT indication.** Replace with a new battery when LCD displays **BAT** at the middle bottom.
- ? **No Display.** Make sure battery is not empty , if the display disappear, check sleep mode is active . Refer to the Disable sleep mode function for a long time using the measurement. Or check the tubing is connected to the meter tightly.
- ? **Err.1.** For the pressure value exceeding the maximum range , "**Err.1**" appears on the display (See Fig. O).Do not exceed rated over pressure range of manometer. Sensor will be damaged.

Fig.O →



- ? **Err.2.** For the measurement pressure less than minimum range , "**Err. 2**" will appear (See Fig.P).

Fig. P →



? **Err.3.** For a differential pressure value larger than maximum display, **Err.3** appears on the display (See Fig.Q).

Fig. Q →

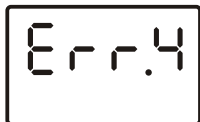


? **Err.4.** When you set zero ,make sure you have disconnected the tubing. If you see an **Err.4** appear on the display, it means the manometer is damaged (See Fig.R).

P.S. Err.4 will be also appear.

If the tubing is connected during zero set.

Fig.R →



? **E10L or E2UL.** When you see the errors while operating Rs232 software, it means pressure source is less or over than the range of the instrument.

REPLACING THE BATTERY

Replace your 9-volt battery when:

- ✓ The BAT icon appears on the right of the screen.
- ✓ The meter will not power on.
- ✓ Use of the back-light causes the BAT icon to appear.

Even if the battery was recently replaced, check its voltage level if you get no response from your instrument.

To replace the battery:

1. Remove the tubing of the instrument.
2. Lay the instrument face-down on a clean, flat surface.
3. Remove battery cover.



Remove battery from instruments that you do not plan to use for a month or more.

Do not leave battery in instrument.

OPERATING CONDITIONS

- ✓ Compensated temperature range:
0~50°C.
- ✓ Operating temperature 0°~50°C
(32~122°F)
- ✓ Storage temperature range:
-20~60°C

- ✓ Operating Humidity Max. 80% RH
- ✓ Power : One 9.0 volt battery
- ✓ Exceeding Maximum pressure will cause permanent sensor damage.

SPECIFICATION

	Pressure
Range	0~± 2 psi
Resolution	See Page 2 data sheet
Accuracy	±0.3% of full scale at±25°C
Dimension	72 x 182 x 30 mm (meter)
Unit Weight	Approx. 220 gram (with battery)
Response time	0.5 seconds
Format	Baud Rate : 2400 bit/sec Data Bit : 8 , Stop Bit : 1 P XXXXX , P - XXXXX (unit)

MATERIAL SUPPLIED

This package contains:

- ✓ The meter
- ✓ Battery (9.0 volt)
- ✓ Operation manual
- ✓ Pouch
- ✓ Connection hose 4mm(ID)x6mm(OD) x 500mm length x 2 Purchase

OPTIONAL ACCESSORY:

- ✓ RS232 software disk or CD with D-sub connector
- ✓ DC Adaptor

RS232 OUTPUT:

The meter can link with a personal computer to capture on-line data, display pressure records with real-time output, you can retrieve files, save the data for operating data analysis, record statistics, multi-files display in the screen,....versatile functions for your choice.

Connection procedures:

- 1.Plug the optional accessory RS232 cable onto the DC jack port (at the right side of the meter)
- 2.Insert the D-sub 9P type connector onto computer's Com.1 or 2 port or..
- 3.Start to set up RS232 software by inserting the CD-ROM or Floppy diskette.
4. When installing the RS232 software, please follow the operation manual procedure in the software package.

