OPERATION MANUAL

HAND HELD DIGITAL
RS232 MANOMETER

CE

Model: ■ 8205   (0~ ±   5 psi)
        ■ 8215   (0~ ± 15 psi)
        ■ 8230   (0~ ± 30 psi)
        ■ 82100 (0~ ±100 psi)

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 see DATALOGGER, Y/M/D, REL, AVG ..these are not available for the meter but for the meters with datalogger features named 8205D/8215D/8230D/82100D. Please contact the store or the place you purchased.

✓ The LCD is divided into two distinct sections : One large (Primary) top screen and one smaller right-bottom screens (Relative Clock). The 2 display areas keep you constantly updated of the pressure measurements.

✓ The Meter measures Guage pressure-a measure of pressure in psi that is reference to ambient pressure and Differential pressure -a measure of the difference between two pressures .

✓ 11 pressure units are selectable for Imperial and Metric in the different area .: bar ,mmHg, ozin², kgcm², psi, inH2O, kPa, ftH2O,inHg ,cmH2O,mbar.

4 models Manometer for your choice:

Pressure range:0~ ± 5 psi (#8205)

       "   :0~ ± 15 psi (#8215)

       "   :0~ ± 30 psi (#8230)

       "   :0~ ±100psi(#82100)

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

CONVERSION & RESOLUTION

	PSI	5 Resolution	15 Resolution	30 Resolution	100 Resolution
psi	1.000000	0.003	0.01	0.02	0.1
Inch of H2O	27.680517	0.1	0.3	0.5	2
bar	0.068948	0.001	0.001	0.002	0.004
mbar	68.948253	0.2	1	2	4
mm of Hg	51.712016	0.2	0.5	1	3
oz/inch^2	16.000844	0.05	0.2	0.3	1
kg/cm^2	0.070309	0.001	0.001	0.002	0.004
kPa	6.894859	0.02	0.1	0.2	0.4
ft of H2O	2.306719	0.01	0.02	0.04	0.2
cm of H2O	70.309000	0.2	1	2	4

Quick Conversion Sheet ±

model \ unit	Psi	inH2O	mbar	kg/cm²
AZ8205	5	138	345	0.35

AZ8215	15	415	1034	1.05
AZ8230	30	830	2068	2.10
AZ82100	100	2768	6895	7.03

CONTROLS AND INDICATORS
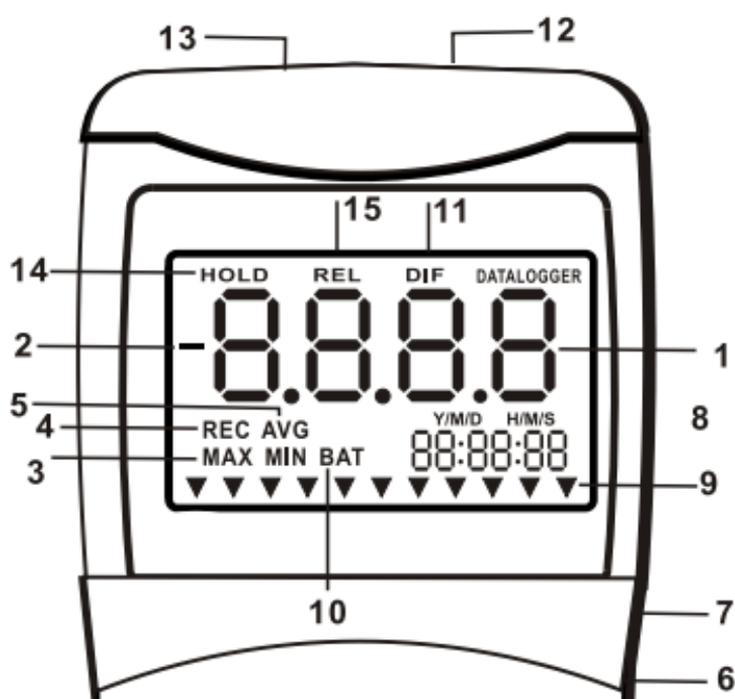
1. Primary Data Screen displays pressure value.
2. **"-"** . Minus pressure display.
3. **MAX MIN** presssure recorded.
4. **REC** starts recording mode and displays max./min. pressure recorded.
5. **AVG**. Average records (N/A).
6. **DC** Power input jack.
7. **RS232** output port.
8. **H/M/S** 88:88:88 displays data for Hour / Minute / Second.
9. **▼**. Pressure unit indication.
10. **BAT**. Low battery indicator.
11. **DIF**. Differential pressure mode.

12. **"+"**   Positive pressure hose plug.
13. **"-"**   Negative pressure hose plug.
14. **HOLD**. Freezes pressure reading.
15. **REL**.   Establish a relative zero
               for the primary screen
               information.(N/A)

"-" Negative   "+" Positive
pressure   pressure

AUTO POWER OFF (SLEEP FUNCTION)

This instrument shuts off automatically
in approx. 20 minutes of inactivity.
For recording or operating over longer
periods of time, you can disable the
sleep mode by pressing ⬤ and ⬤
simultaneously before power on.
An **"n"** will appear in the middle of the
screen at which time you can release
the ⬤ button. (See Fig. A) The
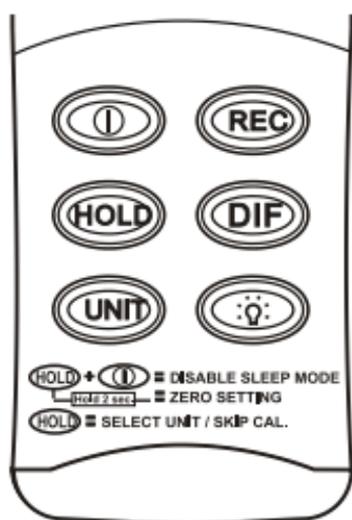disabled sleep mode will be invalid after
power off.

Fig. A ➜

MODE OPTIONS

There are six function keys for mode
selection and measuring operation.

For your convenience, the meter defaults the setting used in the last operation. The following lists the operation for each function key.

⊙ 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 (Fig. B) other button functions are locked out except **Power** 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.
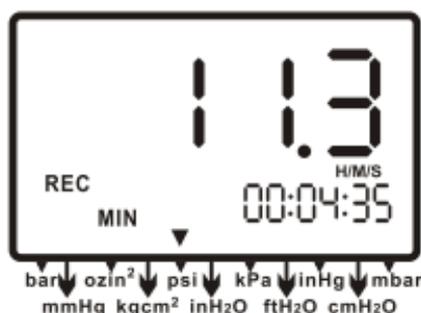Press and hold REC for 3 seconds to turn off the record function to the normal mode.
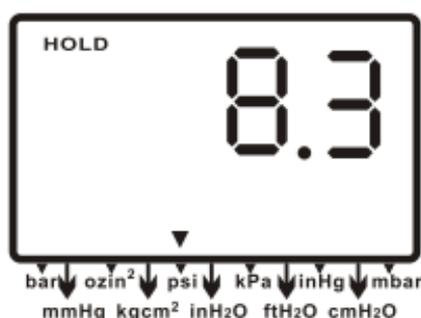
Fig. B →

Fig. C →

REC
MAX
00:10:35 H/M/S

15.3

bar ozin² psi kPa inHg mbar
mmHg kgcm² inH₂O ftH₂O cmH₂O

Fig. D →

REC
MIN
00:04:35 H/M/S

11.3

bar ozin² psi kPa inHg mbar
mmHg kgcm² inH₂O ftH₂O cmH₂O

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

Fig. E →

HOLD

8.3

bar ozin² psi kPa inHg mbar
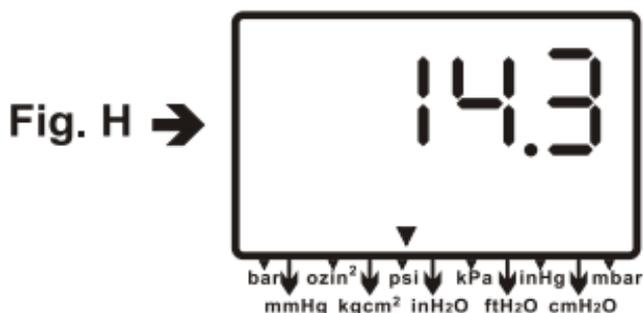mmHg kgcm² inH₂O ftH₂O cmH₂O

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 →

DIF

0.0

bar ozin² psi kPa inHg mbar
mmHg kgcm² inH₂O ftH₂O cmH₂O

6

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

(UNIT) Press momentarily and the unit will cycle through **"bar" , "mmHg","ozin2","kgcm2" ,"psi","inH2O","kPa","ftH2O" ,"inHg" ,"cmH2O" ,"mbar"** ,which indicated on the bottom of the display (See Fig.G &H).

Fig. G →

bar $ozin^2$ psi kPa $inHg$ $mbar$
$mmHg$ $kgcm^2$ inH_2O ftH_2O cmH_2O

Fig. H →

bar $ozin^2$ psi kPa $inHg$ $mbar$
$mmHg$ $kgcm^2$ inH_2O ftH_2O cmH_2O

(☼) Press momentarily and the backlight 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.

✓ To maintain the meter in the good condition for use , recommend to calibrate the meter after long time using.

✓ When properly maintained , the meter will maintain an 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 to set zero before measurement .Refer to the zero setting procedure in page 10.

Cleaning:
Ue 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.
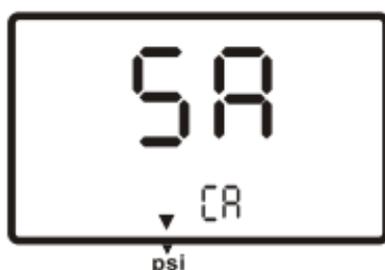
CALIBRATION MODE

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

1. First , please manually set the display to zero (no pressure applied to the connector), refer to the Manual zero procedure.
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 pressure unit to be pointed under the arrow mark **" ▼ "** is **"psi"** to start positive (+) pressure calibration

Fig. I →

4. The meter has defaulted as 80 psi calibration point , the adjustable pressure range is from 78.0 to 82.0 . if calibration pressure source is not 80psi , to increase the figure by pressing (DIP) key , or decrease the figure 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-skip to the negative pressure(-) point for next calibration mode.

Fig. J ➡

$$5A$$

CA
psi

6. Follow the same procedure as step 4 for the negative pressure calibration point by pressing **UNIT** key, the LCD now displays " -80.0 " and small **"CA"** (See Fig.K), do the necessary calibration figure refer to your pressure standard if needed.

Fig. K ➡

$$-80.0$$

CA
psi

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

Fig. L ➡

$$-End$$

CA
psi

If you can't save by press **REC** key, i.e. no **"SA"** appeared , please check : (a) The cabliration pressure source is between 75.0 and 85.0, or check (b) if you enter the right positive pressure (+) or negative pressure (-) .

10

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

Above calibration is an example for model 82100 , i.e. the pressure range is from 0 to +100psi (Positive pressure) or from 0 to -100 psi (Negative pressure).

Calibration point reference

Model:	psi range	Calibration point(±)	Reommend (±)
AZ8205	0~± 5	4.000	3.900~4.100
AZ8215	0~± 15	12.00	11.70 ~12.30
AZ8230	0~± 30	24.00	23.40~24.60
AZ82100	0~±100	80.00	78.00~82.00

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 display **"0 .0.0.0"** from right to left (See Fig.M) and then disappear each "0" from left back to right , the LCD display shows a normal mode (See Fig.N) .

Fig. M →

Fig. N →

bar ozin² psi kPa inHg mbar
mmHg kgcm² inH₂O ftH₂O cmH₂O

TROUBLESHOOTING

? **Power on but no display.** Check the battery are in place and making good contact or correct polarity , replace a new battery or attach optional AC adaptor for the weak battery caused.

? **BAT indication.** Replace with a new battery when LCD display **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 exceed the maximum range , **"Err.1"** appears on the display (See Fig. O) ,please change the sensor , otherwise, the sensor will be hurt for going on the overrange measurement.

Fig.O →

? Err.2. For the measurement pressure is less than minimum range ,**"Err. 2"** will appear (See Fig.P),recommend to change the sensor (meter).

Fig. P ➔

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Err.2
```

? Err.3.For operating the **DIF** function , the differential pressure value is larger than maximum display digit , **Err.3** appears on the display (See Fig.Q).

Fig. Q ➔

```
Err.3
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? Err.4. When you set zero ,make sure you have disconnected the tubing ,no pressure applied to the connector. Then if you see an **Err.4** appears on the display , it means the sensor or meter damaged (See Fig.R).Return the unit to the store you purchased for repaired .

P.S. Err.4 will be also appeared while the tube or hose is connecting during setting zero mode.

Fig.R ➔

```
Err.4
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? **E1OL 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 the battery by screw driver and observe indicated polarity and close the cover after replacing with a new battery.
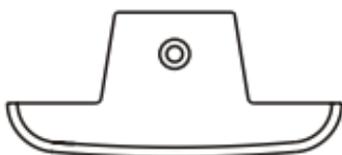
Remove battery from instruments that you do not plan to use for a month or more.

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.

Model	Max.Pressure
AZ8205	20 psi
AZ8215	30 psi
AZ8230	60 psi
AZ82100	150 psi

SPECIFICATION

	Pressure
Range	0~±(5 or 15 or 30 or 100 psi)
Resolution	See Page 8 data sheet
Accuracy	Combined accuracy ± 1.0% FS
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)

The meter Pressure measurement instruments are not suitable for the absolute pressure measurement.

The meter instruments are fitted with two 4.8mm lugs. Before you connect the instruments to a pressure sources , check carefully the security of all fitting.

MATERIAL SUPPLIED

This package contains:

✓ The meter x 1
✓ Battery x 1 (9.0 volt)
✓ Operation manual
✓ Hard carrying case
✓ Connection hose 4mm(ID)x6mm (OD) x 500mm length x 2 pcs

OPTIONAL ACCESSORY:

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

RS232 OUTPUT:

The meter can link with personal computer to capture on-line datas , display pressure records with real-time output, you can retrieve file , save the datas for operating data analysis, records statistic ,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. Instert 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.
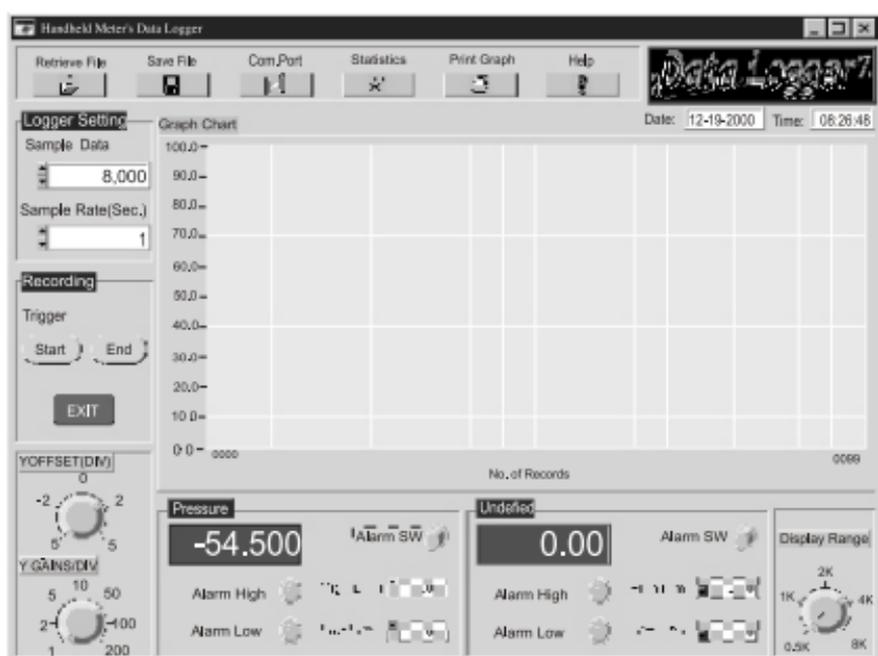
WARRANTY

The meter is warranted to be free from defects in material and workmanship for a period of one year from the date of purchase. This warranty covers normal operation and does not cover battery, misuse, abuse, alteration, tampering, neglect , improper maintenance, or damage resulting from leaking batteries . Proof of purchase is required for warranty repairs . Warranty is void if the meter has been opened .

RETURN AUTHORIZATION

Authorization must be obtained from the supplier before returning items for any reason .
When requiring a RA (Return Authorization), please include data regarding the defective reason, the meters are to be returned along with good packing to prevent any damage in shipment and insured against possible damage or loss .

Accuracy, the Zenith of
Measuring / Testing Instruments !

⚠ Hygrometer/Psychrometer
⚠ Thermometer
⚠ Anemometer
⚠ Sound Level Meter
⚠ Air Flow meter
⚠ Infrared Thermometer
⚠ K type Thermometer
⚠ K.J.T. type Thermometer
⚠ K.J.T.R.S.E. type Thermometer
⚠ pH Meter
⚠ Conductivity Meter
⚠ T.D.S. Meter
⚠ D.O. Meter
⚠ Saccharimeter
⚠ Manometer
⚠ Tacho Meter
⚠ Lux / Light Meter
⚠ Moisture Meter
⚠ Data logger
⚠ Temp./RH transmitter
⚠ Wireless Transmitter ....