

# TRACEABLE® MANOMETER/PRESSURE/VACUUM INSTRUCTIONS

## SPECIFICATIONS

RANGE AND RESOLUTION CHART

| Cat. No.                         | 3460              | 3461            | 3462            | 3463              |
|----------------------------------|-------------------|-----------------|-----------------|-------------------|
| Maximum Allowed PSI              | 20                | 30              | 60              | 150               |
| PSI Range                        | -5.000 to 5.000   | -15.00 to 15.00 | -30.00 to 30.00 | -100.0 to 100.0   |
| PSI Resolution                   | 0.003             | 0.01            | 0.02            | 0.1               |
| mbar Range                       | -345.0 to 345.0   | -1034 to 1034   | -2068 to 2068   | -6895 to 6895     |
| mbar Resolution                  | 0.2               | 1               | 2               | 4                 |
| bar Range                        | -0.3450 to 0.3450 | -1.034 to 1.034 | -2.068 to 2.068 | -6.895 to 6.895   |
| bar Resolution                   | 0.001             | 0.001           | 0.002           | 0.004             |
| cm/H <sub>2</sub> O Range        | -351.0 to 351.0   | -1055 to 1055   | -2109 to 2109   | -7031 to 7031     |
| cm/H <sub>2</sub> O Resolution   | 0.2               | 1               | 2               | 4                 |
| inch/H <sub>2</sub> O Range      | -138.0 to 138.0   | -415.0 to 415.0 | -830.0 to 830.0 | -2768 to 2768     |
| inch/H <sub>2</sub> O Resolution | 0.1               | 0.3             | 0.5             | 2                 |
| feet/H <sub>2</sub> O Range      | -12.00 to 12.00   | -35.00 to 35.00 | -69.00 to 69.00 | -231.0 to 231.0   |
| feet/H <sub>2</sub> O Resolution | 0.01              | 0.02            | 0.04            | 0.2               |
| mm/Hg Range                      | -259.0 to 259.0   | -776.0 to 776.0 | -1551 to 1551   | -5171 to 5171     |
| mm/Hg Resolution                 | 0.2               | 0.5             | 1               | 3                 |
| inch/Hg Range                    | -10.00 to 10.00   | -31.00 to 31.00 | -61.00 to 61.00 | -204.00 to 204.00 |
| inch/Hg Resolution               | 0.01              | 0.03            | 0.1             | 1.0               |
| kg/cm <sup>2</sup> Range         | -0.350 to 0.350   | -1.060 to 1.060 | -2.110 to 2.110 | -7.030 to 7.030   |
| kg/cm <sup>2</sup> Resolution    | 0.001             | 0.001           | 0.002           | 0.004             |
| oz/inch <sup>2</sup> Range       | -80.00 to 80.00   | -240.0 to 240.0 | -480.0 to 480.0 | -1600 to 1600     |
| oz/inch <sup>2</sup> Resolution  | 0.05              | 0.2             | 0.3             | 1                 |
| kPa Range                        | -34.50 to 34.50   | -103.0 to 103.0 | -207.0 to 207.0 | -690.0 to 690.0   |
| kPa Resolution                   | 0.02              | 0.1             | 0.2             | 0.4               |

Display: 1/2", 4- digit LCD.  
 Accuracy: ±0.3% of full scale at ±25°C  
 Size/Weight: 2 3/4 x 7 1/8 x 1 1/8 / 5 oz  
 Response time: 0.5 seconds  
 Operating Temp Range: 32-122°F (0-50°C)  
 Features: Memory feature,  
 Backlight display,  
 RS-232 capability.

### CONTROL BUTTONS

 Powers unit off and on  
 REC Record mode  
 HOLD "Freeze" the pressure reading on the display  
 DIF - Differential mode  
 UNIT Cycle meter through pressure units of measurement  
 Backlight function

### OPERATION

#### On / Off / Auto Power Off

Press the  button to turn the meter on. The meter will shut off automatically approximately 20 minutes after every power on. The "auto power off" function can be disabled for recording or operating over longer periods of time by pressing POWER and HOLD buttons simultaneously before power on. An "n" will appear in the middle of the screen at which time the HOLD button can be released, and then the power button. The "auto power off" mode has now been disabled.

### Backlight Feature

Press the  button and the backlight illuminates for approximately 20 seconds then turns off automatically.

### Measurement Modes

The meter can be set to measure pressure in the following modes: bar, mmHg, ozin<sup>2</sup>, kgcm<sup>2</sup>, psi, inH<sub>2</sub>O, kPa, ftH<sub>2</sub>O, inHg, cmH<sub>2</sub>O and mbar. Each press of the UNIT button will cycle the meter through each of the measurement modes. An arrow at the bottom of the LCD will indicate the mode selected. The meter will default to the mode last selected before meter was turned off.

### Clearing Display to Zero

To clear the display to zero disconnect from all pressure and press the HOLD button for 3 seconds. "o o o o" will appear on the LCD and the meter value will be cleared to zero.

### Hold Mode

Pressing the HOLD button once will "freeze" the measurement reading. "HOLD" will appear at the upper left of the LCD indicating the meter is in the hold mode. Press the HOLD button again to return the meter to pressure measurement mode.

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### Differential Mode

Differential pressure is the measurement of the difference between two pressures.

**EXAMPLE:** Use differential pressure sensor to measure gauge pressure by leaving one process connection open at atmosphere and connecting the second sensor port to your system.

Press the DIF button, "DIF" appears at the top of the LCD. The display indicates the relative zero – only the amount of pressure change will be indicated. Press DIF button again and the meter returns to normal pressure measurement mode.

### Recording

1. Turn the meter on and press the HOLD button for 3 seconds. "o o o o" will appear on the display and the pressure reading will be cleared to zero.
2. Press the REC button to begin recording a reading. "REC" will appear in the lower left of the LCD, the timer will begin counting up and the pressure value will display.
3. To turn the record feature off press and hold the REC button for 3 seconds.

**NOTE:** Only the REC, power and backlight buttons will be operable in the Record mode.

### Minimum/Maximum Readings

While in the recording mode the minimum and maximum readings can be recalled.

1. Press the REC button and "MAX" will display in the lower left of the LCD. The display will show the maximum pressure value recorded and the time of recording.
2. Pressing the REC button again displays the "MIN" icon on the screen and the time and value of the minimum pressure recording.
3. Another press of the REC button returns the display to the current timer and pressure readings.

### Error Messages Displayed

- "Err.1" - Pressure value exceeds maximum range
- "Err.2" - Pressure value is less than minimum range
- "Err.3" - When operating in DIF mode, differential pressure value is larger than maximum range
- "Err.4" - Tubing was left connected while setting zero (try resetting zero), if this does not clear the error the sensor or meter is damaged.
- "E10L" or "E2UL" (when operating RS232) - pressure source is less or over range

### ATTACHMENTS

Hose/tubing  
RS-232 serial computer output  
ABS plastic carrying case

### ALL OPERATIONAL DIFFICULTIES

If this unit does not function properly for any reason, replace the battery with a new high-quality battery (see "Battery Replacement" section). Low battery power can occasionally cause any number of "apparent" operational difficulties. Replacing the battery with a new fresh battery will solve most difficulties.

### BATTERY REPLACEMENT

Erratic readings, a faint display, no display, flashing display or "BAT" appearing on the display are all indicators that the battery must be replaced. To replace the battery remove the tubing from the unit. Lay the unit face down on a clean, flat surface. Remove the screw from the battery cover and slide the cover off in the direction indicated. Replace the exhausted battery with a new 9 volt alkaline battery. Replace the battery cover and screw into place. Replacement battery Cat. No. 1112.

### ACCESSORIES

#### Cat. No. 8045 Data Acquisition System Accessory

Captures, displays, and stores readings on any PC computer. Information can be imported into spreadsheets, word processors, databases, and statistical program. Supplied complete with serial cable and CD.