Vacuum Meter

840064

Instruction Manual

SPER
SCIENTIFIC LTD.

CONTENTS

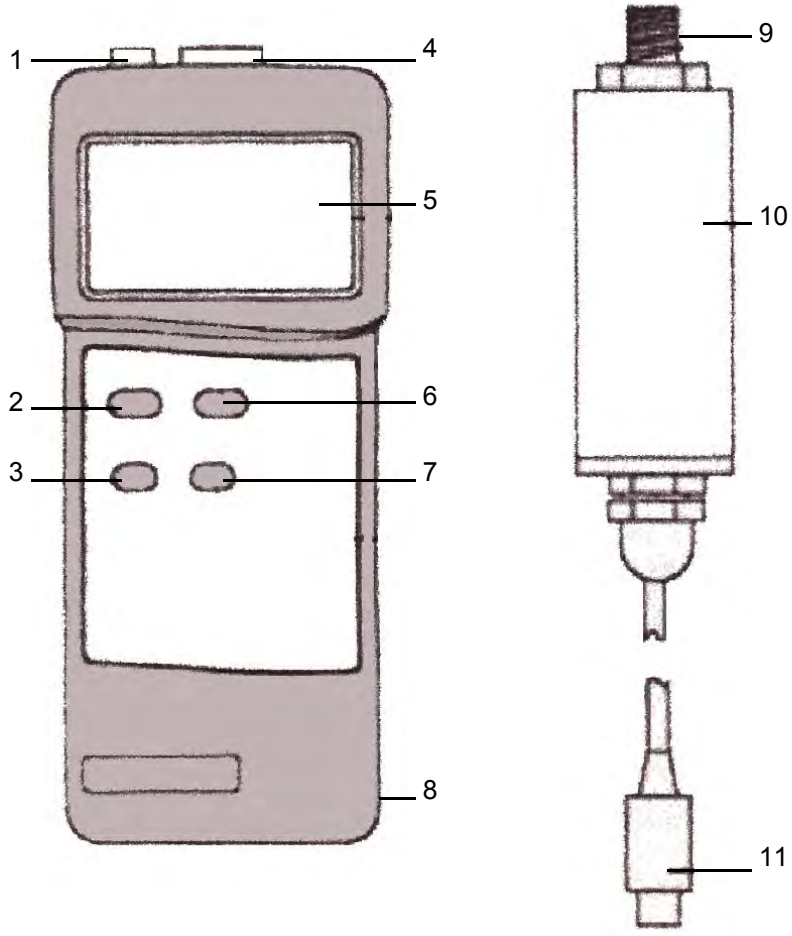
INTRODUCTION

Portable meter for absolute vacuum pressure measurements in hospital labs, crystal growing, solvent recovery, distillation, and rotary evaporation. Also used in HVAC, automotive and other industrial applications. Includes a detachable heavy-duty probe with ¼ PS connector for liquid, air, oil and gas.

Features a large display, min-max, hold, low battery indicator, auto power off, an RS232 computer interface, and 8 units of measure: torr, mm Hg, micron, mbar, KPa, PA, inch Hg, and PSI.

Comes ready to use in a foam-lined, hard-shell carrying case, with 9V battery and instructions.

2. METER DESCRIPTION



1. RS232 Output Terminal
2. Power Button
3. Max/Min Button
4. Input Socket
5. Display
6. Hold
7. Unit Button
8. Battery Compartment (back)
9. Sensor Input
10. Sensor Body
11. Probe Plug

3. OPERATING INSTRUCTIONS - See item 2 on page 3 for button locations and description.

3-A. NOTES - READ BEFORE FIRST USE

- Do not insert objects into the **Sensor Input** (9) or the diaphragm can be damaged and the warranty voided.
- The sensor is compatible with industrial gases and liquids that are also compatible with ceramic material.
- The sensor must be attached to the meter in order to display the ambient barometric pressure (in/Hg). Otherwise, "0" will be displayed.
-

3-B. MEASUREMENT PROCEDURES

- Connect the **Probe Plug** (11) to the meter's **Input Socket** (4).
- Press the **Power** (2) button to turn on the meter.
- Press the **Unit** (7) button to select one of the eight units of measure: torr, mm Hg, micron (u*HG*), mbar, KPa (- - *PA*), PA, inch Hg (in/Hg), or PSI.
- Remove the protective cap and connect the threaded **Sensor Input** (10) to the vacuum source to be measured.
- The measurement will appear on the **Display** (5).

3-C. HOLD

- Press the **Hold** (6) button during measurement to freeze the displayed reading. "HOLD" and the reading are displayed.
- Press the **Hold** (6) button a second time to resume measurement.

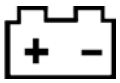
3-D. MAXIMUM / MINIMUM RECORDING

- Press the **Max/Min** (3) button once. The LCD display will indicate "REC" as the data recording function begins.
- Press the **Max/Min** (3) and "REC Max" (along with the maximum recorded reading) will appear on the LCD display.
- Press the **Max/Min** (3) again and "REC Min" (along with the minimum recorded reading) will appear on the display.
- Press and hold the **Max/Min** (3) for approximately 2 seconds to exit this function and resume measurment.

3-E. AUTOMATIC SHUT OFF

- This unit has a built-in automatic shut off function to prolong battery life. The meter will shut off automatically if no buttons are pressed within 10 minutes.
- To deactivate this feature, press the **Max/Min** (3) button.
- When "REC" is displayed, automatic shut off is not available.

3-F. BATTERY REPLACEMENT



- Replace the battery when the low battery icon is displayed in the left corner of LCD.
- In-spec measurements may be made for several hours after the low battery indicator appears.
- Slide the battery cover away from the meter, remove the battery and replace it with a 9V battery (alkaline or heavy duty type).
- Close the battery cover.

3-G. OPTIONAL ACCESSORIES

- 850080 Software
- 840094 RS232 to USB Adaptor Cable
- 840055 48" RS232 Cable (required for use w/software)
- 840090 Water Resistant Instrument Pouch

3-H. RS232 PC SERIAL INTERFACE

The unit features an RS232 output via 3.5 mm Terminal. The output is a 16 digit data stream which can be utilized by user's specific application. An RS232 lead with the following connection will be required to link the insrument with the PC serial input.

Meter (3.5 mm jack plug)	PC (9W "D" Connector)
Center Pin	Pin 2
Ground/Shield	Pin 5

The 16 digit data stream will be displayed in the following format.

<table>
<tr><td colspan="4">D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1</td></tr>
<tr><td>DO</td><td colspan="3">End Word</td></tr>
<tr><td>D1 to D8</td><td colspan="3">Display reading, D1=LSD, D8=MSD</td></tr>
<tr><td>D9</td><td colspan="3">Decimal Point(DP), position from right to the left
0 = No DP, 1 = 1 DP, 2 = 2 DP, 3 = 3 DP</td></tr>
<tr><td>D10</td><td colspan="3">Polarity: 0 = Positive, 1 = Negative</td></tr>
<tr><td rowspan="2">D11 & D12</td><td colspan="3">Annunciator for Display</td></tr>
<tr><td>Psi = 23
mbar = 86
uHg = 77</td><td>mm/Hg = 78
Pa = 87
torr = 90</td><td>inch/Hg = 25
K Pa = 88</td></tr>
<tr><td>D13</td><td colspan="3">1</td></tr>
<tr><td>D14</td><td colspan="3">4</td></tr>
<tr><td>D15</td><td colspan="3">Start Word</td></tr>
<tr><td colspan="4">RS232 FORMAT: 9600, N, 8, 1</td></tr>
</table>

4. SPECIFICATIONS

Unit	Range	Resolution	Accuracy
mbar	0~1500 mbar	1 mbar	± 1% Full Scale (at 23°C ±5°C) including linearity, hysteresis and repeatability
Kpa	0~150.0 Kpa	0.1 Kpa	
Pa	0~150,000 Pa	100 Pa	
torr	0~1125 torr	1 torr	
mm Hg	0~1125 mmHg	1 mm Hg	
micron	0~1125,000 micron	1000 micron	
In Hg	0~44.30 inch Hg	0.02 inch Hg	
PSI	0~21.75 psi	0.01 psi	

Dimension	Meter: 7×3×1 ½" (180×75×35 mm) Probe cord: 49" (125 cm)
Display	61 mm x 34 mm super large LCD display. 15 mm (0.6") digit size
Weight	Meter with battery: 8 oz (220 g) Probe: 6 oz (170 g)
Sampling time	Approx. 0.8 second
Operating conditions	Temperature: 32~122°F (0~50°C) Humidity: Less than 80% RH
Power supply	Alkaline/heavy duty DC 9V battery
Power consumption	Approx. DC 6 mA
Circuit	Exclusive microcomputer circuit

WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of five (5) years from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover probes, batteries, or damage resulting from accident, misuse, or abuse of the product. In order to obtain warranty service, simply ship the unit postage prepaid to:

SPER SCIENTIFIC. 7720 East Redfield, Suite 7 Scottsdale, AZ 85260
(480) 948-4448, info@sperscientific.com, www.sperscientific.com

The defective unit must be accompanied by a description of the problem and your return address. Register your product online or return your warranty card within 10 days of purchase.