

**Datalogging Manometers
2PSI, 5PSI, 15PSI**

840086, 840098, 840099

Manometers 840086, 840098, 840099

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FIRST TIME USE

Before using the Manometer the first time ensure that the user-defined settings have been configured (see page 5), and that the meter has been calibrated (see page 6).

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INTRODUCTION

This Manometer is ideal for measuring gauge pressure and low differential pressure in clean rooms, test and balance, medical equipment, HVAC, pneumatic systems and computer peripherals.

Features a user-friendly interface with a large backlight display, automatic data logging, measurement of single and multiple points and a tripod mount.

The RS232 port, RS232 to USB cable and software enable communication with a computer.

Powered by 4-AAA batteries (included), or an optional 9V adaptor.

FRONT PANEL DESCRIPTION



Connectors

Display

On Screen prompts correspond to the F1-F4 buttons.

Keypad, press:

- 1 for 1*:\$+ -=,
- 2 for 2abcABC
- 3 for 3defDEF
- 4 for 4ghiGHI
- 5 for 5jklJKL
- 6 for 6mnoMNO
- 7 for 7pqrsPQRS
- 8 for 8tuvTUV
- 9 for 9wxyzWXYZ
- 0 for 0 and space

View previous/next record

Backlight

On/Off

Not Applicable

DC 9V Adaptor Port

RS232 Port

- MEAS**: Normal (Single) measurement
- MEM**: Manually record (99-points) measurement
- LOG**: Automatically record (Logger) measurement
- SET**: Logger, unit, real time, other setting



DO NOT OVERLOAD! OVERLOAD CAUSES PERMANENT DAMAGE

SET-UP PROCEDURE

Turn the meter on using the ON/OFF button. You will see the Welcome menu shown below.

1. Press **F4** (SET) to enter the setup mode. There are three screens/pages that show the 6 setup functions.
2. Use the **▲** or **▼** buttons to move the on-screen cursor, **F2** (EDIT), and the Keypad to input changes.
3. If changes are made, press the **F4** (ENTER) button to save the new settings or **F1** (ABORT) to cancel the change.
4. Press **F4** (NEXT) to access the next screen/page; options are as follows:

Screen/Page 1:

- a. LCD Cont. (1-5): Display contrast, 5 = least contrast.
- b. Auto Off: 1~20 minutes, Enable/Disable.

Screen/Page 2:

- c. Set Clock: Select the date mode MM-DD-YY, DD-MM-YY or YY-MM-DD and set local time. This date format must be exactly the same as the date format **under the auto datalogging mode**. If not, your meter will fail to auto datalog.
- d. Set ID: Enable/Disable datalogging.
- e. ID: Alpha/numeric user name.

Screen/Page 3:

- f. Select Item: The X = not selected, and the ✓ = selected. Press the **F2** (EDIT) to toggle between X and ✓. To move the cursor over to unit of measure, use the **▲** or **▼** buttons. Once selected, press **F2** (EDIT) to cycle through the 11 units of measure shown below:

PSI	inH2O	kPa	ftH2O	inHg	cmH2O
mbar	bar	mmGh	ozin2	kgcm2	

5. Press **F1** (EXIT) to return to the Welcome menu.

CALIBRATION

1. Full (HI-LOW) calibration requires a standard manometer calibrator and should be performed by a professional calibration laboratory. Contact Sper Scientific.
2. To perform a ZERO calibration, disconnect all tubes and do not apply pressure to the connectors.
3. Press **F1** (MEAS) followed by **F3** (CALI) - "Calibration" is displayed.
4. Press **F4** (ZERO) and "Cali: 0.000 PSI" will be displayed.
5. Press **F4** (ENTER) again - after approximately 3 seconds the meter will display "OK" to indicate that the calibration was successful.
6. If NG (No Good) is displayed, perform the calibration again. If the meter fails to calibrate after three (3) attempts, it should be returned to Sper Scientific.

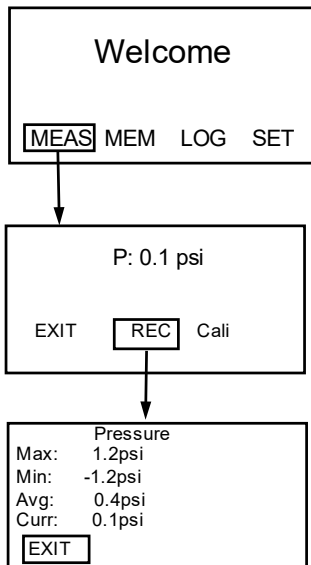
MEASUREMENT PROCEDURES

The unit offers three (3) measurement modes:

1. **F1** (MEAS) Single Measurement
2. **F2** (MEM) Multiple Measurement
3. **F3** (LOG) Auto Logging

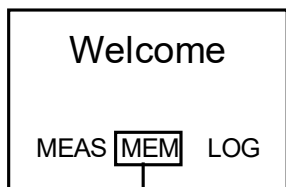
Single Measurement

1. Ensure the tubing is connected and not leaking or damaged.
2. Press **F1** (MEAS) to take a single pressure measurement.
3. Once a pressure is detected the reading is displayed.
4. If desired, press **F2** (REC) to display the real-time Max., Min. and Avg. pressure and last pressure readings.
5. Press **F1** (EXIT) to return to the Welcome menu.

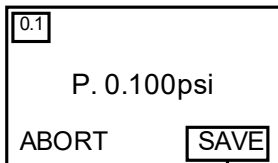
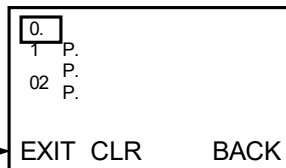
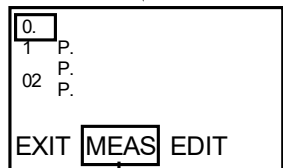


Multiple Measurement

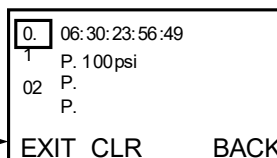
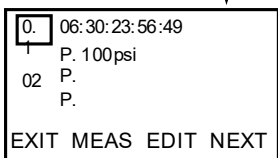
Manually record up to 99 data points with time & date and your filename.



1. Press **F2** (MEM) to enter Multiple Measurement mode.
2. Press **F2** (MEAS) to take a measurement.



3. Once a pressure is detected the reading is displayed
4. Press **F4** (SAVE) to save the reading or press **F1** (ABORT) to exit the current reading.



5. By default, the first reading will be stored in memory location 01: using the date & time as the filename. The pressure reading is displayed next to the **P:** (for example: 0.025 psi).
6. If desired, press **F3** (EDIT) to edit the filename. Then, use the Keypad to edit the filename. Cycle through the characters by depressing the key until the desired character is highlighted. Once the filename has been defined, press **F4** (ENTER).
7. To take another reading, press the ▼ button to advance to the next memory location and continue with the next reading.
8. Press **F1** (EXIT) to return to the Welcome menu.

Clear Single Memory Record

1. Press **F2** (MEM) to enter Multiple Measurement mode.
2. Use the **▲** or **▼** buttons to move to the desired memory location.
3. Press **F4** (NEXT) then press **F2** (CLR). Once F2 is pressed the “Clear ?” message is displayed. Press **F2** (YES) again to clear the highlighted memory location or **F3** (NO) to cancel the clear function.
4. Press **F1** (EXIT) to return to the Welcome menu.

Clear All Memory Records

1. Press **F2** (MEM) to enter Multiple Measurement mode.
2. Press **F4** (NEXT) then press **F2** (CLR) for two (2) seconds. After two (2) seconds the “Clear All?” message is displayed. Press **F2** (YES) again to clear all 99 memory locations or **F3** (NO) to cancel the clear function.
3. Press **F1** (EXIT) to return to the Welcome menu.

Welcome

MEAS MEM LOG SET

Run Auto Logger

1. Press **F3** (LOG) to enter log mode.
2. Press **F3** (SET) to modify the user-defined parameters.

0023: 06-30 02:28:55
 P: 0.1 psi
 0024:
 P:
 0025:
 P:
 EXIT START SET NEXT

0023 06-30 02:28:55
 P: 0.1 psi
 0024:
 P:
 0025:
 P:
 P-PG N-PG BACK

Begin: 30-06-06
 Start: 02:28:06
 End: 02-07-05
 Suspend: 03:28:55
 Rate: 60Sec(s)
 Expect: 12000Point(s)
 Remain: 11977Point(s)
 EXIT EDIT VIEW NEXT

3. Use the **▲** and **▼** buttons to select an auto log parameter and press **F2** (EDIT) to edit.

“Begin” date*

“Start” time

“End” date*

“Rate” (1 to 7200 seconds)

“Suspend” time

- For 24 hour logging, set the Start time to 00:00:00 and the Suspend time to 23:59:59.
- “Expect” is the total number of memory points (12,000).
- Remain” shows the number of available memory points (12,000 minus the number already recorded).

Begin: 30-06-06
 Start: 02:28:06
 End: 02-07-05
 Suspend: 03:28:55
 Rate: 60Sec(s)
 Expect: 12000Point(s)
 Remain: 11977Point(s)
 START CLR BACK

4. Press **F4** (ENTER) after modifying a parameter.

Logging. . .

STOP MEAS VIEW

5. Once the parameters have been set press **F4** (NEXT) and **F1** (START) to start the auto logger. The word “Logging...” will be displayed.

0023: 06-30 02:28:55
 P: 0.100 psi
 0024:
 P:
 0025:
 P:
 STOP MEAS ESC

- The meter will automatically start and stop logging according to your chosen parameters. Once the required number of data points is reached, logging stops and the records are held in the data logger.

P: 0.100 psi

ESC

6. During the auto logging press **F2** (MEAS) to take a real-time reading or **F4** (VIEW) to view memory record.
7. To stop auto logging press **F1** (STOP).

8. Use the ▲ and ▼ buttons to scroll through the memory records.
9. Press **F4** (NEXT) to access the previous and next page buttons.
Press **F1** (P-PG) or **F2** (N-PG) to review previous or next 100 data points.
10. Press **F4** (BACK) to access the auto log main menu and press **F2** (START) to continue auto logging or **F1** (EXIT).

Clear Auto Log Data

1. Press **F3** (LOG) to enter log mode.
2. Press **F3** (SET) to enter auto log parameter set-up.
3. Press **F4** (NEXT) to access the clear option.
4. Press **F2** (CLR) for two (2) seconds and the “Clear All?” message is displayed.
5. Press **F2** (YES) to clear all auto log data, or **F3** (NO) to cancel clear function.
6. After clearing all auto log data, press **F4** (BACK) to return to auto log parameter set-up.
7. Press **F1** (EXIT) to return to the Welcome display.

ERROR CODES

- E2:The value is under-range
- E3:The value is over-range
- E4:Error reading sample

AUTO POWER OFF

To prolong battery life, the meter will turn off automatically if no buttons are pressed for your preset (1~20 minutes). To edit or disable this feature, press **F4** (SET) to access the setup mode, then use the **F2** (EDIT), ▲ or ▼ buttons and Keypad to make changes.

BATTERY REPLACEMENT

When the low battery icon is displayed, open the battery cover, install 4-AAA Alkaline batteries and replace the cover. Remove the batteries during prolonged periods of non-use.

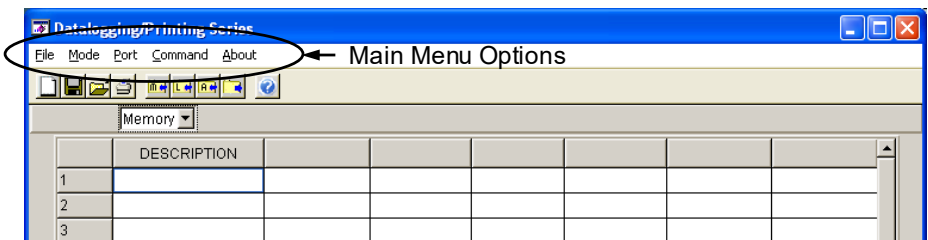
SOFTWARE CONFIGURATION

Use the included USB 2.0-P cable and software to download saved data to a PC for further analysis, or to upload pre-edited filenames to save set-up time.

PC requirements: Win98 or above.

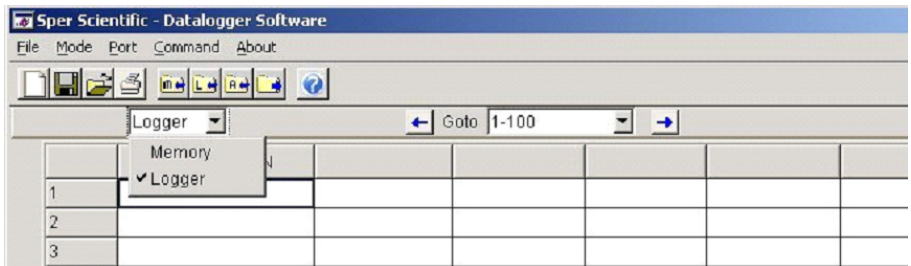
Main Menu Options (see image below)

- File
- Mode
- Port
- Command
- About



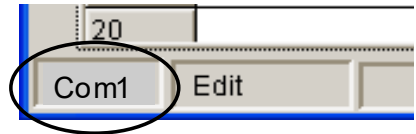
Mode Menu Option

1. There are two (2) data modes: Memory and Logger.
2. Select the data mode from Mode on the main menu or the drop-down menu. (see image below)
3. In Logger mode, select "GoTo" to choose the logged data range you wish to display.



Com Port

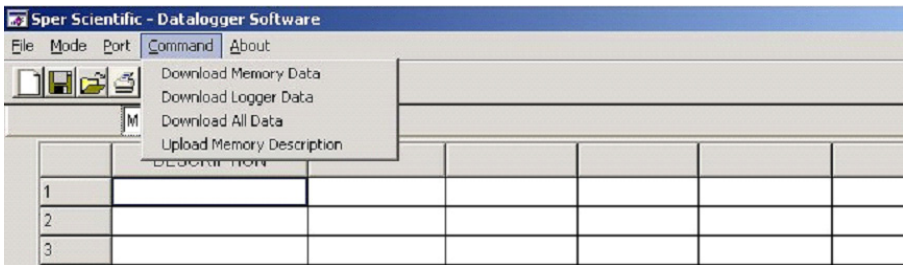
1. Select the Com port and ensure that the meter is communicating with the PC.
2. The selected Com port is displayed in the bottom-left hand corner of the software screen.
3. When connected, “PC Mode” and the Com port number (1-8) are displayed on the meter.



Command Options

There are four (4) command options supported by the software. Choose the correct mode before uploading or downloading data. (see image below)

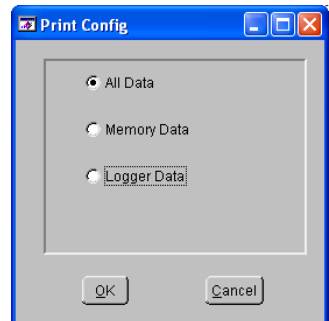
1. Download Memory Data
2. Download Logger Data
3. Download All Data
4. Upload Memory Description



Print Options

Select the data to be printed from the following three (3) choices:

1. All Data (Memory and Logger Data printed in sequential order)
2. Memory Data
3. Logger Data



840086 SPECIFICATIONS

Unit of Measure	Range ±	Resolution
psig	5	0.001
in H ₂ O	138	0.1
kPa	34.5	0.01
ft H ₂ O	11.5	0.01
in Hg	10.2	0.01
cm H ₂ O	352	0.1
mbar	345	0.1
bar	0.345	0.001
mm Hg	259	0.1
oz in ⁻²	80	0.01
kg cm ⁻²	0.35	0.001
Max Pressure	20 psig	

840098 SPECIFICATIONS

Unit of Measure	Range ±	Resolution
psig	2	0.001
in H ₂ O	55.36	0.01
kPa	13.79	0.01
ft H ₂ O	4.614	0.01
in Hg	4.072	0.01
cm H ₂ O	140.6	0.1
mbar	137.9	0.1
bar	0.138	0.001
mm Hg	103.4	0.1
oz in ⁻²	32.48	0.01
kg cm ⁻²	0.141	0.001
Max Pressure	20 psig	

840099 SPECIFICATIONS

Unit of Measure	Range \pm	Resolution
psig	15	0.01
in H ₂ O	415.2	0.1
kPa	103.4	0.1
ft H ₂ O	34.60	0.01
in Hg	30.54	0.01
cm H ₂ O	1054	1
mbar	1034	1
bar	1.034	0.001
mm Hg	775.7	0.1
oz in ⁻²	240	0.1
kg cm ⁻²	1.055	0.001
Max Pressure	20 psig	

840086, 840098, 840099 SPECIFICATIONS

Accuracy	$\pm 0.3\%$ fs @ 25 °C
Repeatability	$\pm 0.2\%$ typ, max $\pm 0.5\%$ fs
Combined linearity & hysteresis	$\pm 0.29\%$ typ, max $\pm 1.0\%$ fs
Manual Memory	99
Auto Log Memory	1200
Battery	4-AAA Alkaline
Weight	9 oz (255g)
Dimensions	208x70x53 mm

WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for period of **one (1) year** 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, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will void the warranty.

To obtain warranty service, ship the unit postage prepaid to:

SPER SCIENTIFIC LTD., 8281 E. Evans Rd, Suite #103
Scottsdale, AZ 85260

The defective unit must be accompanied by a description of the problem and your return address. Register your product online at www.sperwarranty.com within 10 days.