

Datalogging Manometer

840086, 840098 and 840099

Instruction Manual

SPER
SCIENTIFIC

Environmental Measurement Instruments

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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 7)

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, cable and software enable communication with a computer.

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

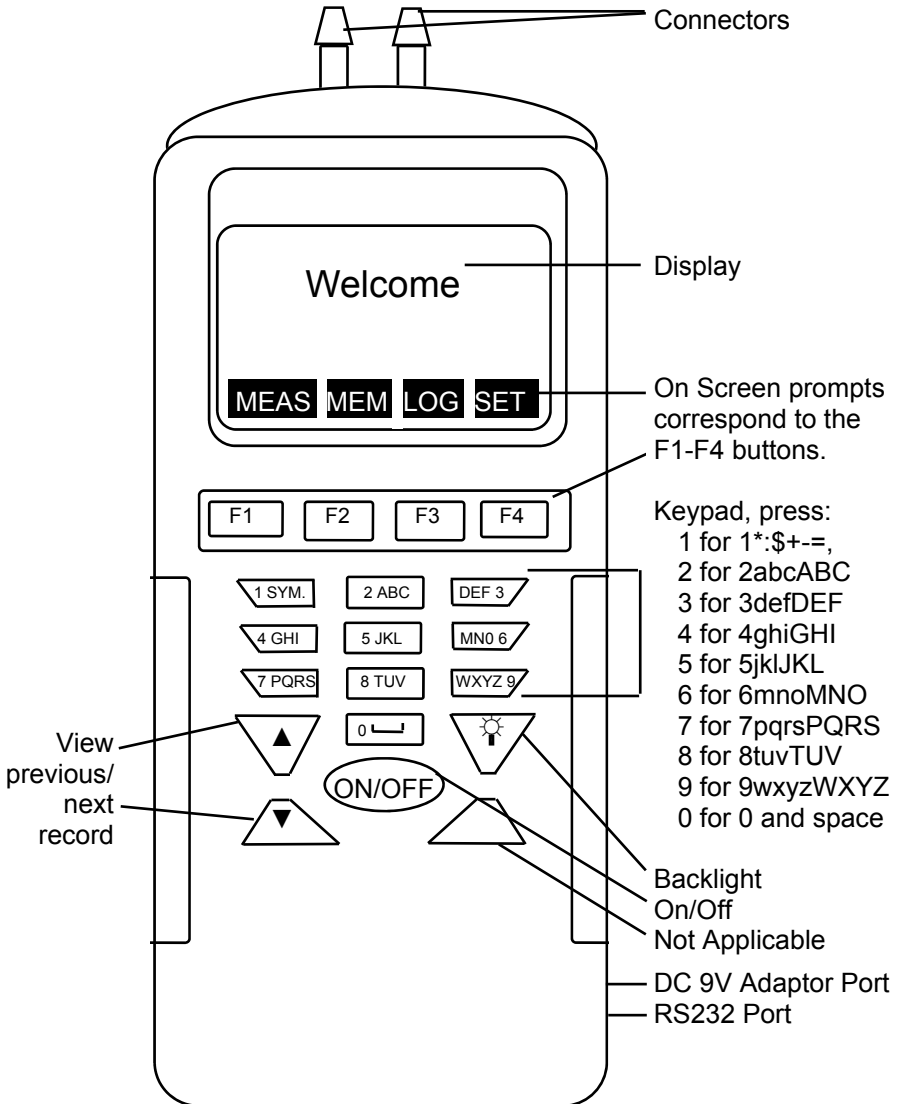
Gauge Pressure:

A measure of pressure in PSI that refers to ambient pressure.

Differential Pressure: Measurement of the difference between two pressures.



FRONT PANEL DESCRIPTION



SET-UP PROCEDURE

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

Welcome

MEAS MEM LOG SET

LCD Cont. (1-5): 3
Prn Cont. (1-9): 5
Auto Off: 20mins
 Enable

EXIT EDIT NEXT

Set Clock:
MM-DD-YY HH:MM:SS
06-30-05 18 : 29 : 20
Set ID: Disable
ID: User Name

EXIT EDIT NEXT

Select Item

P ✓ psi

EXIT EDIT BACK

1. Press **F4** (SET) to enter the set-up mode.
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 page.
5. Press **F1** (EXIT) to return to the Welcome menu.

SET-UP PROCEDURE

Welcome

MEAS MEM LOG SET

LCD Cont. (1-5): 3
 Prn Cont. (1-9): 5
 Auto Off: 20mins
 Enable

EXIT EDIT NEXT

Set Clock:
MM-DD-YY HH:MM:SS
 06-30-05 18 : 29 : 20
 Set ID: Disable
 ID: User Name

EXIT EDIT NEXT

Select Item

P ✓ psi

EXIT EDIT BACK

1. **LCD Cont.** (1-5): Display contrast, 5 = least contrast.

2. **Auto Off:** 1~20 minutes, Enable/Disable.

3. **Set Clock:** Select the date mode MM-DD-YY, DD-MM-YY or YY-MM-DD and set local time.

4. **Set ID:** Enable/Disable datalogging.

5. **ID:** Alpha/numeric user name.

6. **Select Item:** Press **F2** (EDIT) to select X = not selected, ✓ = selected.

7. Press the **F2** (EDIT), ▲ or ▼ buttons to cycle through the 11 units of measure shown below:

PSI	inH2	kPa	ftH2	inHg	cmH2
mbar	bar	mmHg	ozin	kgcm	

CALIBRATION

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.
3. Press **F4** (ZERO) and "Cali: 0.000 PSI" will be displayed.
4. Press **F4** (ENTER) again - after approximately 3 seconds the meter will display "OK" to indicate that the calibration was successful.
5. 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.**

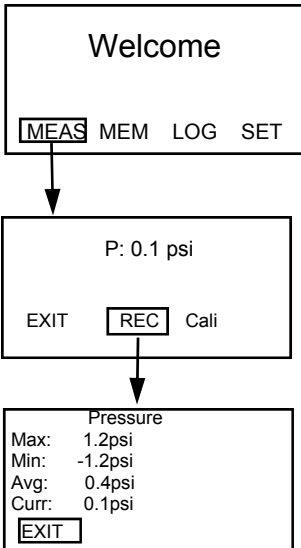
MEASUREMENT PROCEDURES

Measurement Modes

The unit offers three (3) measurement modes:

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

Single Measurement

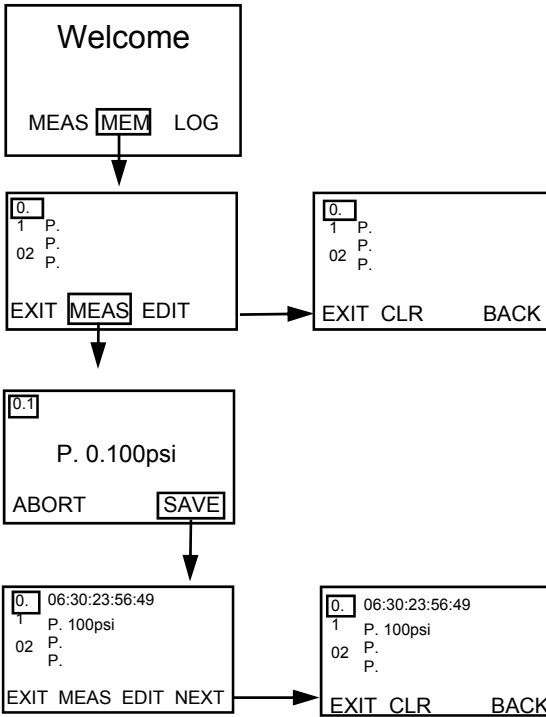


1. Ensure the tubing is connected and not leaking or damaged.
2. Press **F1** (MEAS) to take a single pressure measurement.
3. Once a pressure is detected the reading is displayed.
4. If desired, press **F2** (REC) to display the real-time Max., Min. and Avg. pressure and last pressure readings.
5. Press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

MEASUREMENT PROCEDURES

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.

MEASUREMENT PROCEDURES

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.

MEASUREMENT PROCEDURES

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

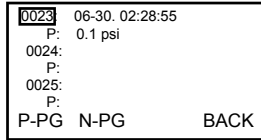
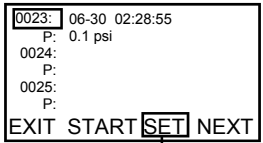
1. Press **F2** (MEM) to enter Multiple Measurement mode.
2. Press **F4** (NEXT) then press **F2** (CLR) for two (2) seconds. After two (2) seconds the “**Clear All?**” message is displayed. Press **F2** (YES) again to clear all 99 memory locations or **F3** (NO) to cancel the clear function.
3. Press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

MEASUREMENT PROCEDURES

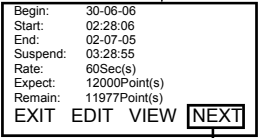
Run Auto Logger



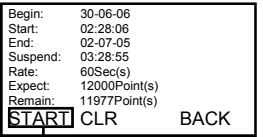
1. Press **F3** (LOG) to enter log mode.
2. Press **F3** (SET) to modify the user-defined parameters.



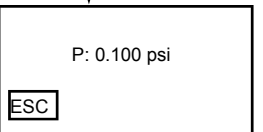
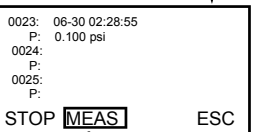
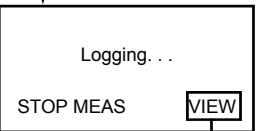
3. Use the ▲ and ▼ buttons to select an auto log parameter and press **F2** (EDIT) to edit.



- “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).



* *Ensure date formats are consistent*

MEASUREMENT PROCEDURES

4. Press **F4** (ENTER) after modifying a parameter.
5. Once the parameters have been set press **F4** (NEXT) and **F1** (START) to start the auto logger. The word "Logging..." will be displayed.
 - 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.
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).

MEASUREMENT PROCEDURES

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.

840086 SPECIFICATIONS

Unit of Measure	Range	Resolution
PSI	±5	0.001
inH ₂ O	±138	0.1
kPa	±34.5	0.01
ftH ₂ O	±11.5	0.01
inHg	±10.2	0.01
cmH ₂ O	±352	0.1
mbar	±345	0.1
Bar	±0.345	0.001
mmHg	±259	0.1
oz / inch ²	±80	0.01
Kg / cm ²	±0.35	0.001
Max Pressure	20 PSI	

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

840098 SPECIFICATIONS

Unit of Measure	Range	Resolution
PSI	±2	0.001
inH ₂ O	±55.36	0.01
kPa	±13.79	0.01
ftH ₂ O	±4.614	0.01
inHg	±4.072	0.01
cmH ₂ O	±140.6	0.1
mbar	±137.9	0.1
Bar	±0.138	0.001
mmHg	±103.4	0.1
oz / inch ²	±32.48	0.01
Kg / cm ²	±0.141	0.001
Max Pressure	20 PSI	

840099 SPECIFICATIONS

Unit of Measure	Range	Resolution
PSI	±15	0.01
inH ₂ O	±415.2	0.1
kPa	±103.4	0.1
ftH ₂ O	±34.6	0.01
inHg	±30.54	0.01
cmH ₂ O	±1054	1
mbar	±1034	1
Bar	±1.034	0.001
mmHg	±775.7	0.1
oz / inch ²	±240	0.1
Kg / cm ²	±1.055	0.001
Max Pressure	30 PSI	

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 Figure 1)

- File
- Mode
- Port
- Command
- About

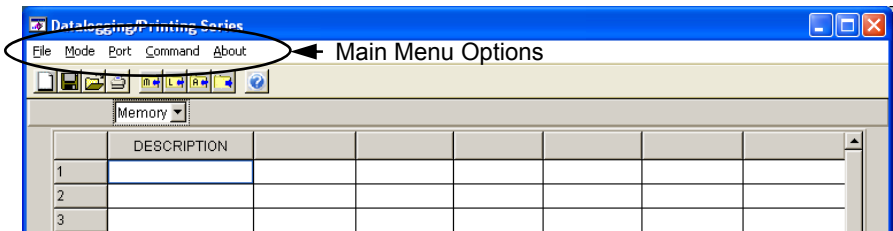


Figure 1.

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 Figure 2)
3. In Logger mode, select "GoTo" to choose the logged data range you wish to display.

SOFTWARE CONFIGURATION

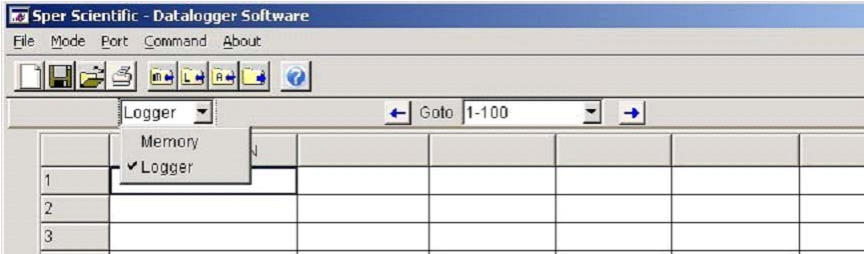
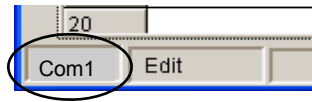


Figure 2.

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 Figure 3)

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

SOFTWARE CONFIGURATION

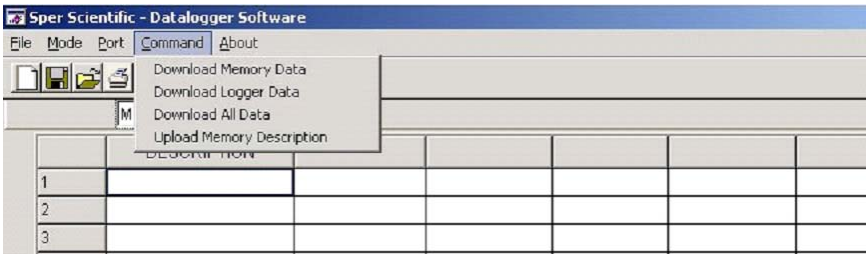


Figure 3.

Print Options

Select the data to be printed from the following three (3) choices: (see Figure 4)

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

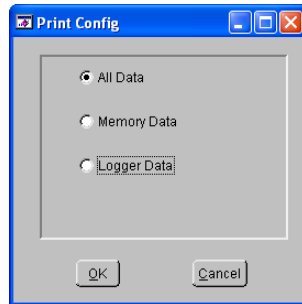


Figure 4.

ACCESSORIES

- 840089 Rubber Holster
- 840090 Water Resistant Pouch
- 840096 AC Adapter

Sper Scientific warrants this product against defects in materials and workmanship for a 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
7720 E Redfield Rd, Suite 7
Scottsdale, AZ 85260
WWW.SPERSCIENTIFIC.COM
INFO@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.

