



Datalogging Dew Point Thermohygrometer

800022

SPER
SCIENTIFIC LTD.



TABLE OF CONTENTS

1. FEATURES	3
2. PANEL DESCRIPTION	4
3. MEASURING PROCEDURE	5
A Ambient Humidity and Temperature Measurement...	5
B Dew Point Measurement	5
C Thermocouple (Type K/J) Thermometer	5
D Data Hold	6
E Data Record (Max, Min, Reading)	6
F Data Logger	6
4. ADVANCED ADJUSTMENTS	7
A Check Remaining Available of Data Points	7
B Clear Memory	7
C Date/Time Setting.....	7
D Sample Time Setting	7
E Auto Power Off Default Setting.....	7
F Temp. Unit Default Setting.....	8
G Escape from Advanced Adjustments	8
5. UPLOADING DATA FROM THE METER.....	8
6. RS232 PC SERIAL INTERFACE.....	9
7. BATTERY REPLACEMENT.....	10
8. TROUBLESHOOTING	10
9. OPTIONAL ACCESSORIES.....	10
10. SOFTWARE	10
11. SPECIFICATIONS	11
12. WARRANTY	12

1. FEATURES

Automatically records up to 16,000 (!) data points in the field along with time and date. These can later be downloaded to a computer via the meter's RS232 port and the results viewed instantly on software which comes with the unit.

The software also enables real time data logging directly from the meter to the computer. Simultaneously displays RH and ambient temperature readings and also reads type-K or J thermocouple probes.

Features min-max, calendar /clock, selectable auto power off, and hold function. This well made unit is extremely accurate, has fast response times, a detachable probe, fold-out tripod and a large easy to read LCD.

Comes ready to use in a protective foam lined carrying case complete with probe, software programs on two (2) CDs, RS232 computer connection cable, and batteries.



Meter dimensions: 7 3/4" x 3" x 1 1/2" (200 x 76 x 37 mm)

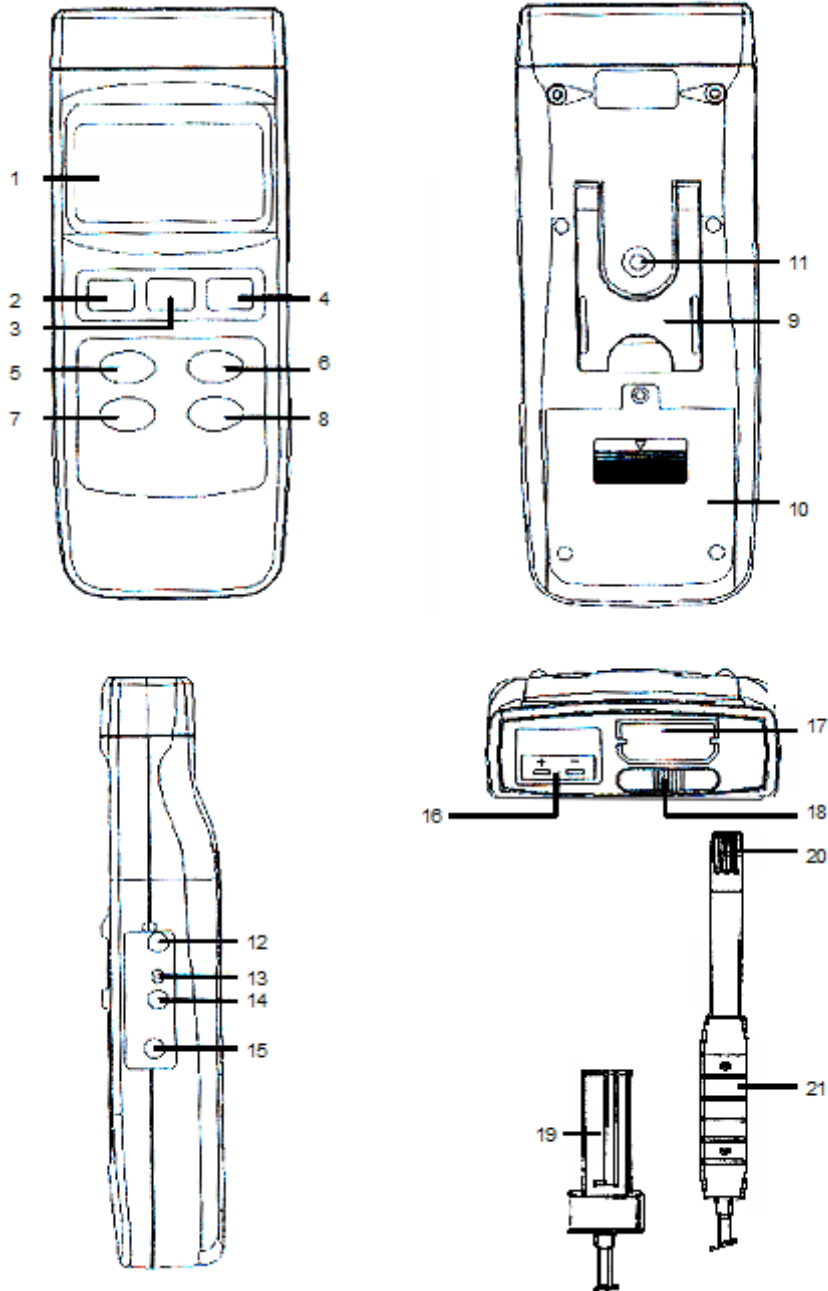
Weight: 31 oz (515g)

Probe handle diameter: 1" (26 mm)

Cable length: 40" (1016 mm)

Probe length: 8" (203 mm)

2. PANEL DESCRIPTION



- 1 DISPLAY
- 2 POWER button
- 3 HOLD / ESC button
- 4 REC / ENTER button
- 5 ▲(UP) button
- 6 FUNCTION / ▼(DOWN) button
- 7 ⌚ (CLOCK) / SEND button
- 8 LOGGER / SET button
- 9 STAND
- 10 BATTERY COMPARTMENT/COVER
- 11 TRIPOD SCREW
- 12 LCD BRIGHTNESS ADJUSTMENT VR
- 13 SYSTEM RESET
- 14 RS232 OUTPUT TERMINAL
- 15 DC 9V POWER ADAPTOR SOCKET
- 16 TYPE K/J PROBE INPUT
- 17 PROBE INPUT SOCKET
- 18 PROBE LOCK SWITCH (◀LOCK ON/OFF)
- 19 PROBE PLUG
- 20 HUMIDITY/TEMPERATURE PROBE HEAD
- 21 PROBE HANDLE

3. MEASURING PROCEDURES

To switch between °C and °F, see "Temp Unit Default Setting" (pg 8).

A. Ambient Humidity and Temperature Measurement

- Insert the **PROBE PLUG** (19) into the **PROBE INPUT SOCKET** (17).
- Slide the **PROBE LOCK SWITCH** (18) to the ◀LOCK position.
- Turn on the meter by pressing the **POWER** button (2). The readings are displayed as %RH and °C or °F.

B. Dew Point Measurement

- The procedures are the same as above (3-A).
- Press the **FUNCTION** button (6) to toggle between the ambient humidity (%RH) and the dew point value (DEW).

NOTE: Press the ⌚ **CLOCK** button (7) to display the time (h-m-s) or date (y-m-d).

C. Type K, J Thermometer Measurement

- Unlock and remove the Humidity probe from the meter and slide the **PROBE LOCK SWITCH** (18) to the ◀LOCK position.
- Insert the thermocouple probe in the **TYPE K/J PROBE INPUT** (16),
- Turn on the meter by pressing the **POWER** button (2).
- Press the **FUNCTION** button (6) to switch between type K or J, "J type" or K type" will be displayed.

D. Data Hold

- While measuring, press the **HOLD** button (3) to freeze the displayed value. The LCD will also display the word: "HOLD."
- Press the **HOLD** button (3) again to exit.

E. Maximum / Minimum

To record the maximum and minimum readings:

- Press the **REC** button (4) once. "REC" appears on the LCD.
- Press the **REC** button (4) again. "MAX", "REC" and the maximum measurement appear on the LCD.
- Press the **REC** button (4) again. "REC Min" and the minimum measurement appear on the LCD.
- To exit this function, press and hold the **REC** button (4) for at least 2 seconds, until the display reverts to the current reading.

F. Data Logger

The data logger function can save up to 16,000 data points along with the time (hour-min-sec) and date (year-month-day). There are 16,000 data points in memory when the display indicates "FULL."

Data Logger Procedures:

To momentarily display the set sampling time, press the **LOGGER** button (8) once. To change the sampling time, see "Sample Time Setting" (pg 7).

Press the **REC** button (4) once, "REC" will be displayed. Depending on your set sampling time, continue to step "a" or "b" (below).

- Auto Data Logger (sampling time can be set for 2 seconds to 8 hours, 59 minutes, 59 seconds):** Press the **LOGGER** button (8) once, "REC DATA" is displayed and "Recording. . . ." flashes at each set interval.
Press the **LOGGER** button (8) once to exit. "REC" is still displayed, but "DATA" is no longer shown. To resume data logging, simply press the **LOGGER** button (8) again. To exit the "REC" function, press and hold the **REC** button (4) for at least 2 seconds.
- Manual Data Logger (sampling time MUST be set to "0" zero):**
Press the **LOGGER** button (8) once to save each data point.
To exit this function, press and hold the **REC** button (4) for at least 2 seconds.

4. ADVANCED AJUSTMENT PROCEDURES

Press the **SET** button (8) for at least two seconds to enter the advanced adjustment procedures. Press the **ESC** (3) button to exit.

Before executing the advanced adjustment procedures,
exit the HOLD and RECORD functions.

A. Check Remaining Available of Data Points

Press the **SET** button (8) at least 2 seconds until the lower display shows:

"XXXXX" is the number of free data points.

XXXXX Memory Space

B. Clear Memory

Press the **SET** button (8) as needed to reach the "clear memory" screen. The number of saved data points is displayed. To delete saved data from memory, press the **ENTER** button (4) once, then press **ENTER** button (4) again to confirm your action. The display shows: "0 Ok ESC:Quit".

107 Clear Memory
Esc:N Enter:Y

If you DO NOT want to clear the memory, press the **SET** button (8) to advance to the next option, or press the **ESC** button (3) to exit.

C. Date/Time Setting

Press the **SET** button (8) as needed to reach the "date/time set" screen. Use the **▲UP** (5), **▼DOWN** (6), and **ENTER** (4) buttons to select the year, month, date, hours, minutes and seconds.

06:01:03 Date/Time Set
y-m-d ^, v ENTER(→)

D. Sample Time Setting

Press the **SET** button (8) as needed to reach the "sample time" screen. Use the **▲UP** (5), **▼DOWN** (6), and **ENTER** (4) buttons to select the sample time (hour-min-sec). Press the **ENTER** button (4), then press the **ESC** button (3) to save the setting and exit this function.

00:00:02 Sample Time
h-m-s ^, v ENTER(→)

E. Auto Power Off Default Setting

The meter will automatic shut off after approximately 10 minutes without activity. Press the **SET** button (8) as needed to reach the "auto power off" screen. Use the **▲UP** (5) and **▼DOWN** (6) buttons to enable / disable this feature. Press the **ENTER** button (4), then press the **ESC** button (3) to save the setting and exit this function.

1 = Auto Power Off - Enabled
0 = Auto Power Off - Disabled

F. Temp Unit Default Setting

Press the **SET** button (8) as needed to reach "temp. unit" screen. Use the **▲UP** (5) and **▼DOWN** (6) buttons to switch between °F and °C. Press the **ENTER** button (4), then press the **ESC** button (3) to save the setting and exit this function.

1 = °F
0 = °C

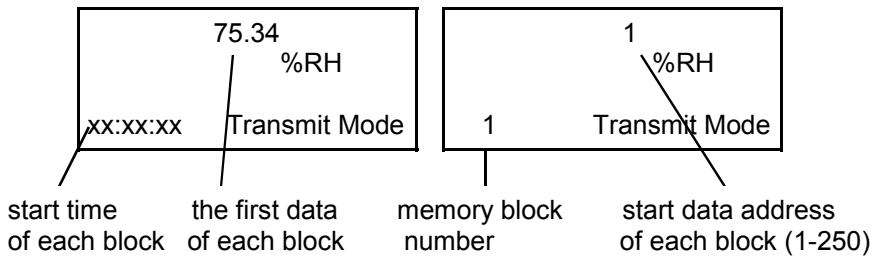
G. Escape from Advanced Adjustments

For the above procedures (B through F), press the **ESC** button (3) before pressing the **ENTER** button (4) to exit advanced adjustments without saving the changes.

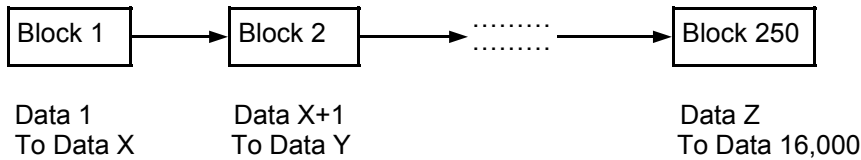
5. UPLOADING DATA FROM THE METER

To upload the data to a computer, connect the RS232 cable and run the software (pg 10). You can only send one memory block at a time.

First, cancel the HOLD and RECORD functions if they are activated. Press the **SEND** button (7) for at least 2 seconds until the bottom right display shows "Transmit mode." Release the button. The following screens flash alternately:



The meter can record up to 16,000 data points, stored in a maximum of 250 memory blocks. All data points saved during one data logging session are stored in one memory block.



Use the **▲UP** (5) and **▼DOWN** (6) buttons to select the desired memory block number (1 to 250) and push the **SEND** button (7) once. The bottom right of the display shows "Sending Data!". When the process has finished, "Transmit mode" is displayed. Push the **ESC** button (3) to exit this function.


6. RS232 PC SERIAL INTERFACE

The instrument features a 3.5 mm **RS232 OUTPUT TERMINAL** (14). The signal output is a 16-digit data stream that can be adapted to user-defined applications. A RS232 lead with the following connection is required to link the instrument with the PC serial interface.

Meter (3.5 mm jack plug)	PC (9W 'D" Connector)
Center Pin.....	Pin 4 Pin 2 } 2.2 K
Ground/shield	Pin 2 Pin 5 } resistor

The 16 digits data stream will be displayed in the following format:	
D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0	
Each digit indicates the following status:	
D0	End Word = 0D
D1 & D8	Display reading, D1 = LSD, D8 = MSD (If the display reading is 1234, then D8 to D1 is: 00001234)
D9	Decimal Point (DP), position from right to the left 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP
D10	Polarity: 0 = Positive 1 = Negative
D11 & D12	Annunciator for Display °C = 01 °F = 02 %RH = 04
D13	The upper display data = 1, The lower display data = 2
D14	4
D15	Start Word = 02
COM port settings: 9600 bits per second, Parity: 0, Data bits: 8, Stop bit: 1	

7. BATTERY REPLACEMENT

When the left corner of the LCD displays the low battery icon install  4 new AA 1.5V batteries. Slide the **BATTERY COVER** (10) away from the instrument to remove the old batteries. When the clock is not accurate, replace the 3V button cell battery located in the compartment behind the AA's. Re-attach the battery cover when you have finished. In-spec measurements may be made for several hours after the low battery indicator appears.

8. TROUBLESHOOTING

To reset the system, slide the **PROBE LOCK SWITCH** (18) between the "On" and "Off" positions once or twice.

Or . . .

Gently insert a pin or small object into the **SYSTEM RESET** (13) while turning on the meter.

9. OPTIONAL ACCESSORIES

840097 AC to DC 9V Adapter

840090 Water Resistant Instrument Pouch

840092 Bench-Top Tripod

840093 Field Tripod

840094 USB RS232 Serial Adapter

Type K and Type J Probes

10. SOFTWARE

To use the software, run the installation setup and follow the instructions.

850080 - Provides real-time data acquisition of multiple sensors, data logging, text display, angular display, chart display, data recorder high/low limit, data query, text report, chart report. The ".mdb" data file can be retrieved in MS Excel, MS Access and other applications.

850090 - Used to download the data log from the meter to the computer. The standard text data file ".dat" may be converted with MS Excel, MS Access and other applications to ".mdb" format.

11. SPECIFICATIONS

	Range	Resolution	Accuracy
RH	0~95%RH	0.01%	>70%RH±3% rdg +1% RH <70%RH±3% RH
Ambient Temp.	-32~122°F -0~50°C	0.01°	±0.8°C, ±1.5°F fs.
Dew Point °C	-25~48.9°C		Combined accuracy of RH & Temp. above.
Dew Point °F	-13.5~120.1°F		
Type K	-58~2372°F -50~1300°C	0.1°	±(0.2% + 1°C) fs. ±(0.2% + 1.8°F) fs.
Type J	-58~2012°F -100~1100°C		
Temperature Compensation		Automatic for the humidity function and the type K/J thermometer.	
Type K/J specification tests under the environment RF Field Strength less than 3 V/M and frequency less than 30 MHz.			
Misc.			
Operating Conditions		0 to 50°C, Less than 80% RH.	
Display Sampling Time		Approximately 1 second.	
Power Drain		Approximately DC 21.5 mA for the meter with the Type K/J Probe installed. DC 27.5mA for the meter with the humidity probe installed.	

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 LTD.
7720 East Redfield, Suite 7, Scottsdale, Arizona 85260
(480) 948-4448, spersscientific.com, info@spersscientific.com

Please Note: The defective unit must be accompanied by a description of the problem and your return address.