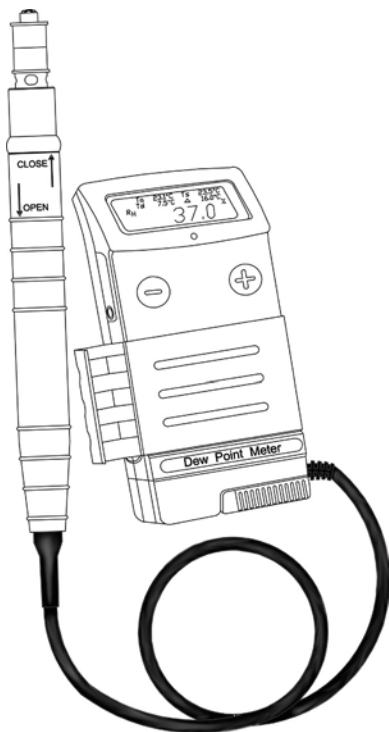


Dew Point Meter

INSTRUCTION MANUAL v. 1.2



DeFelsko[®]

Simple. Durable. Accurate.

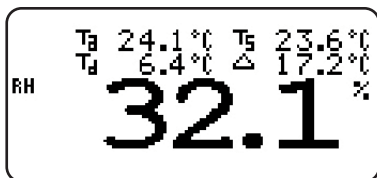
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Introduction

The **Dew Point Meter** is a hand-held, electronic instrument that measures, calculates and records climatic parameters, quickly and accurately. An optional AC model includes a built-in AC port and matching power adapter.

Typical Display



Measured parameters are:

T_a - Air Temperature

RH - Relative Humidity

T_d - Dew Point Temperature

T_s - Surface Temperature

Δ - Surface *minus* Dew Point Temperature

Calibration

All instruments are shipped with a Certificate of Calibration. For organizations with recertification requirements, the instrument may be returned at regular intervals for calibration.

The recommended calibration interval is one year from receipt of the instrument. The interval should be adjusted according to individual usage and environment.

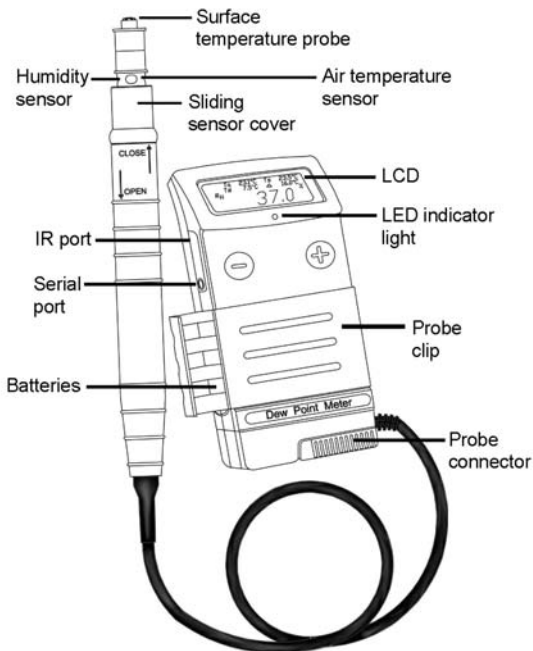
(Written Calibration Procedures are available at no charge.)

Power-up / Power-down

The **Dew Point Meter** powers-up when \ominus or \oplus is pressed.

To preserve battery life, the instrument powers down after 10 minutes of no button activity. To power down immediately, hold both buttons down for 5 seconds. Settings are retained during power-down.

Instrument Features



General Operation

The 5 values displayed on the LCD are measured and updated automatically each second.

T_a - The air temperature sensor is located inside the white plastic portion of the probe tip.



R_H - The relative humidity sensor is also located inside the white plastic portion of the probe tip. Extreme humidity changes may require a longer period to stabilize.


T_d - The dew point temperature is a function of air temperature and the relative humidity (see ISO 8502-4 Annex A). It is the temperature to which a volume of air must be cooled in order to reach saturation.


T_s - A surface temperature thermocouple is located on the tip of the probe. It is spring loaded and designed to quickly self-align on a surface. Press it firmly against a surface and allow a few seconds for the value to stabilize. Wet the surface for a faster response.


D - is the surface minus dew point temperature ($T_s - T_d$).


This value is important in judging the risk of condensation, or dew, forming on a surface. For example, ISO 8502-4 recommends that, unless otherwise agreed, the temperature of a steel surface generally should be at least 3°C (5°F) above the dew point when paints are applied.

The  button cycles through these 5 values. For convenience, all 5 values are displayed at once, but one is always enlarged for easy viewing. Press  to enlarge the other values one at a time.

The  button operates two different HOLD features to enable closer examination of the relationship between values.

Press  once to "freeze" the display. The instrument will measure one more time, then hold all values.

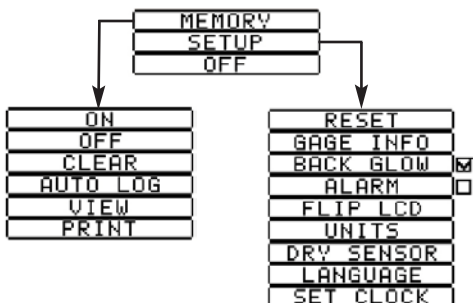
Press and hold  to activate the automatic hold feature. Let go of the button when the instrument begins to beep and blink. Now touch the surface temperature probe to the surface and wait. When the surface temperature has stabilized, the LED will stay lit and the values will hold on the LCD.

Press and hold  again to repeat or press and release to exit.

This automatic hold feature takes the guesswork out of measuring surface temperature. It is also useful in situations where it is difficult to view the LCD during measurement.

Menu Operation

Gage Menu



Press \ominus \oplus simultaneously for **menu options**.

To navigate, press \ominus for **NEXT**, \oplus for **SELECT**. Press both at any time to exit any menu.

When there are more menu buttons than can fit onto one screen, a scroll bar will appear. The dark area indicates what portion of the total menu you are currently viewing.



Some buttons have an adjacent tick box to indicate current status.

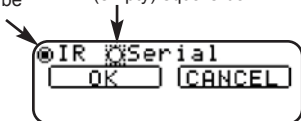


As you navigate using the \ominus button, each element on the display will receive "focus" as indicated by the item reversing color to black, or by being surrounded by dots. The \oplus button acts on the element in focus.

Example:

"Radio" buttons.
Only one can be selected at a time

"Focus" is currently at this unselected (empty) square box.



Memory Menu Option

MEMORY

The **Dew Point Meter** can record up to 1000 datasets, for on screen viewing, for printing to the optional IR printer, for printing to a serial printer, or for downloading to a personal computer using the optional **PosiSoft** software.

A dataset is one set of each of the 5 readings: air temperature, surface temperature, % relative humidity, dew point temperature, and $D (T_s - T_d)$, and includes date and time stamp.


When **MEMORY** is selected, the following menu options are presented:

ON

When selected, the  icon appears.

To store a dataset press \oplus for 1 second. The instrument will beep and blink while waiting for probe to be placed on a surface. When surface temperature has stabilized, LED will stay lit and values will hold and be stored into memory. Use GAGE INFO to determine memory usage. (see pg. 10)

OFF

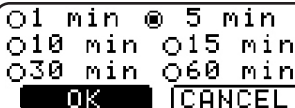
When selected, the  disappears and memory is turned OFF. Stored datasets remain in memory.

CLEAR

Removes all datasets from memory.


AUTO LOG

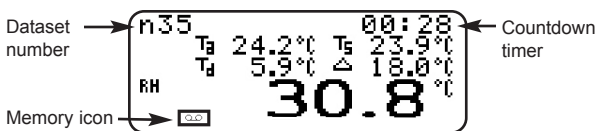
Automatically records datasets at user selected time intervals for unattended operation.




When selected, the above menu will appear on the LCD.

Navigate using the \ominus button. The \oplus button acts on the element in focus.

The  icon is displayed and a countdown timer will appear on the top right of the LCD.







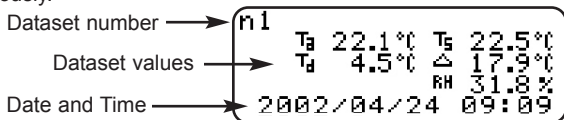
Dataset recording will continue until the user turns OFF Auto Log or the batteries become weak.

NOTE: When the Auto Log mode is ON and the batteries become very low, the  icon will be displayed and the instrument will turn OFF Auto Log and power down. When the user turns the instrument back ON memory will still be on but Auto Log mode will be OFF. To conserve battery power turn the Back Glow and Alarm options OFF. Extreme cold will cause the gage to shut down and the Auto Log option will switch off.

To turn off Auto Log, press the   simultaneously, LOG OFF will appear. Press  to turn off AUTO LOG.

VIEW

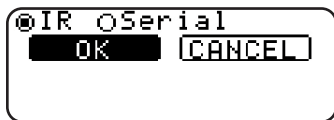
Lists individual datasets onto the LCD. Scroll stored datasets by using the  or  buttons. Exit by pressing   simultaneously.



PRINT

Prints all stored datasets to the optional HP IR printer or serial printer. (RS232 cable required for printing to a serial printer, not included)

Press   to cancel printing.



Downloading Datasets Stored in Memory

Datasets stored in the instrument's memory can be downloaded to a computer using the RS232 serial communication cable supplied with our optional **PosiSoft** software (see Options, pg. 12). Existing communication software can be used providing it can capture data from a COM port. Select the **PRINT** menu button. Datasets are not erased from memory after downloading.

Serial Communications Configuration

8 bit words, no parity, 1 stop bit
115200 baud, No handshaking

The serial cable (*supplied with optional PosiSoft software*) is a 3.5 mm STEREO PLUG to a DB9 F.

Pinout	Description
2	TXD Transmit data (from Instrument)
3	RXD Receive data (from PC / Printer)
5	GROUND

Downloading Datasets As They Are Taken

With MEMORY on and a serial printer, data collector or computer is connected to the instrument using a RS232 serial cable, datasets are immediately sent to the device as they are taken. Output is in the following form (example):

```
{STX}Ta = ###.# C/F{TAB}Ts = ###.# C/F{TAB}Td = ###.#  
C/F{TAB}Ts-Td = ###.# C/F{TAB}RH = ###.# %{TAB}SN =  
#####{CR}{LF}
```

Where: STX = ASCII code 02 = ^B
CR = ASCII code 13 = ^M
LF = ASCII code 10 = ^J

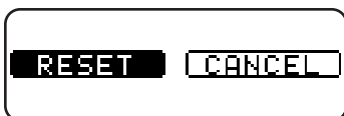
Setup Menu Option

SETUP

When SETUP is selected the following options are presented:

RESET


RESET restores factory settings and returns the instrument to a known, out-of-the-box condition. It is handy when you want to “start all over”. When RESET is selected, the following screen appears:



The following changes are made to the instrument:

- all datasets are erased from memory
- menu settings are changed to the following:

MEMORY = OFF BACKGLOW = ON
ALARM = ON FLIP LCD = Normal

A “hard” RESET can be performed when the instrument is powered down. It is handy when the instrument fails to power-up or operate properly. With the instrument powered OFF: Hold the ⊕ button until the RESET symbol appears.  It performs the same function as a menu RESET with the addition of UNITS = Celsius and LANGUAGE = English.

NOTE: Time and Date are not affected by a RESET.

GAGE INFO

This menu button displays the instrument’s model number, serial number, probe data, revision number and the amount of remaining memory for storage of datasets. Select NEXT to exit.

BACK GLOW

The *Dew Point Meter* has a unique glow screen that evenly lights the LCD to provide better visibility and contrast. In some lighting conditions this is not necessary, so the glow can be switched off for slightly longer battery life.

ALARM

When the Alarm tick box is checked, the instrument will alert the user when the surface temperature is less than 3°C (5°F) above

the dew point temperature. (according to ISO 8502-4, steel surfaces should generally be 3°C (5°F) above the dew point when painting) The instrument will alert the user with an audio tone and the LCD screen will reverse (see sample screen above) when conditions may be unsuitable for painting.



FLIP LCD

This option enables the display to read upside down. Ideal for taking surface temperature measurements with the probe reversed in its clip and LCD conveniently pointed toward the operator.

UNITS

Converts the display and all stored dataset temperatures from Celsius to Fahrenheit or vice versa.

DRY SENSOR

Condensation is always a factor when any instrument is moved from a cold to a warm environment. This option turns on the instrument's built-in heating element to remove condensation from the relative humidity sensor. The wipe icon will slowly move across the LCD until the process is complete. This process will take several minutes.

SET CLOCK

All datasets are date and time stamped when stored in memory. It is therefore important to keep both the date and time current using this menu button. Alternatively, the date and time can be automatically updated when the instrument is connected to the optional **PosiSoft** software (pg.12) using the **SET CLOCK** function in **PosiSoft**.

NOTE: Time is entered and displayed in 24 hour format.

Optional Accessories

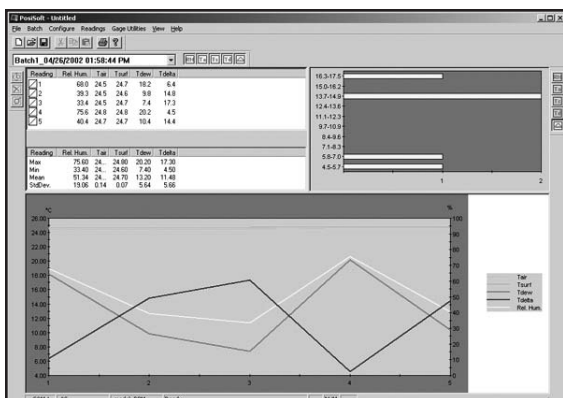
The **Dew Point Meter** has two available accessories for downloading stored datasets. Contact your dealer for assistance in determining which is best for your requirements.

PosiSoft® for Windows® analysis software

PosiSoft® ver.2.8 or higher runs on Windows-based PC computers using Microsoft Windows® 95 or higher version and having a COM port.

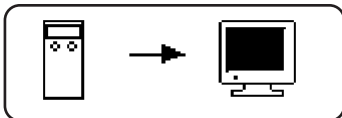


PosiSoft 2.8 Screen Shot



- Allows entry of notes and annotations
- Prints and displays basic Charts and Histograms
- Exports to a document or spreadsheet
- FTP feature allows datasets to be viewed remotely via the Internet.
- Includes serial cable for printer or computer hook-up.

This connection graphic is displayed on the instrument's LCD when communicating with **PosiSoft**. If it remains on the LCD for more than 5 minutes and **PosiSoft** is not connected to the instrument, the instrument can be turned off by opening the battery door.



Complete operating instructions can be accessed by first installing the software, starting the program, then selecting the **HELP - POSISOFT HELP - DOWN LOADING** menu option.

IR Printer

Low cost, battery operated infrared printer receives data from the instrument without connectors or cables. Great for use in the field or back at the office.



Print Sample

	Dew Point Meter	← Gage info
	S/N 55123	

	n1	
Dataset #	2002/04/22 9:15:52	
	RH = 29.6 %	
	Ta = 23.5 °C	← Dataset values
	Ts = 22.8 °C	
	Td = 4.7 °C	
	Ts-Td = 18.1 °C	
	n2	
	2002/04/22 18:22:38	← Date and Time
	RH = 76.2 %	
	Ta = 37.0 °C	
	Ts = 41.4 °C	
	Td = 32.2 °C	
	Ts-Td = 9.2 °C	

Troubleshooting

When the surface temperature probe is not on a surface, Air Temperature and Surface Temperature appear to be different:

Under normal conditions with the surface probe in air T_a and T_s should be within the combined tolerance of each sensor. (Typically 1°C) It is possible for the difference to be larger if the surface probe has recently been in contact with surfaces that are at a different temperature than air.

RH value is slow to stabilize:

If the probe is exposed to a very low humidity for an extended time period and then placed in a high humidity environment the displayed Relative Humidity (RH) may appear to respond slowly. Allow the probe to stabilize 30 minutes for a change of RH greater than 50%. It may take longer if the probe was left at low RH for several months. To increase response time soak the sensor in a wet face cloth overnight to recondition the RH sensor.

RH reads much higher than ambient Relative Humidity:

Condensation may appear on the RH sensor when the probe has been exposed to a cold environment then brought into a warm environment. Use the 'DRY SENSOR' option from the SETUP menu to warm the sensor. Operation of the probe should return to normal.

Surface Temperature reads much higher than expected:

The probe tip may be dirty or damaged. Clean the probe tip by soaking in water or solvent. Be sure to only soak the Stainless Steel components of the probe tip. If T_s continues to read high then return the probe for service.


Surface temperature reported by probe does not agree with expected surface temperature or surface temperature probe is slow to respond:

In some cases the surface being measured is very rough and a good thermal connection from the probe tip to the surface is not possible. If possible place a small drop of water on the surface and then place the probe tip into the water drop. Extremely quick and accurate results can be obtained in this manner.

Why do the Surface Temperature and Air Temperature values differ when holding the probe in the air and away from a surface?

The T_s sensor has a very quick response time. The T_a sensor has a slower reaction time and requires additional time to stabilize. This is most noticeable when moving from one temperature extreme to another.

Changing The Batteries

As the batteries become weak the  symbol will appear and begin flashing during measuring. If the batteries are allowed to become very weak, this symbol will remain on without flashing. USE ONLY AA ALKALINE BATTERIES. Nickel-cadmium and nickel-metal hydride rechargeable batteries will work but the low battery symbol may stay on.

Returning for Service

Before returning the instrument for service...

1. Install new Alkaline batteries in the proper alignment shown on the door.
2. Examine the surface temperature probe tip for dirt or damage.
3. Perform a **RESET**. (pg. 10)

To return an instrument for service print out a service form on our web site.

Technical Data

Conforms to: ISO 8502-4

	<u>Range</u>	<u>Accuracy</u>	<u>Resolution</u>
<u>Surface Temperature</u>	-40° to 80° C	±0.5° C	0.1° C
	80° to 190° C	±1.5° C	0.1° C
	-40° to 175° F	±1° F	0.1° F
	175° to 375° F	±3° F	0.1° F
<u>Air Temperature</u>	-40° to 80° C	±0.5° C	0.1° C
	-40° to 175° F	±1° F	0.1° F
<u>Humidity</u>	0 to 100%	±3 %	0.1 %
<u>Operating range</u>	-40° C to +80° C (-40° F to +175° F)		

Physical Specifications:

Body: 147 x 61 x 25mm (5.8" x 2.4" x 1")

Probe: 220 x 20mm (8.7" x 0.8")

Weight: 170g (6oz) without batteries

Battery Life: 50 hours continuous

Warranty

The manufacturer fully warrants its products against defects in workmanship or materials for a period of one year from date of purchase. In the event that an instrument is found to be defective, return the product with proof of purchase to your dealer, and the defective product will be repaired or replaced at the manufacturer's option.

No responsibility is assumed for incidental or consequential damages.

The warranty is voided if the Instrument has been opened.

Data subject to change without notice.



The Measure of Quality

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