# ANAHEIM SCIENTIFIC
Division of **B&K PRECISION**



**Humidity/Temp. Meter**
*DEW point*
*Data Logger*

**Model H300**

# INSTRUCTION MANUAL

Models: H300
**Humidity/Temp Meter**
**with DEW Point and Data Logger**

CE

# Table of Content

To see all available accessories and downloadable software, please visit
www.anaheimscientific.com

# 1. Product Introduction

## 1-1  Features
- Humidity, Temperature and Dew Point measurements
- 0.01 Resolution for Temperature and RH measurements
- Fast response time
- High level of accuracy
- Large LCD display
- Two year warranty

## 1-2 Applications
- Science Experiments
- HVAC
- Plant Maintenance
- Manufacturing
- Agriculture
- Quality Control

## 2. Safety Information ⚠

Read the following safety information carefully before attempting to operate or service the meter. Only qualified personnel should perform repairs or servicing not covered in this manual.

### 2-1 Cautions!

- **DO NOT** submerge the products mentioned in this manual in water or any other types of liquids.
- This product is not designed for use in medical applications. The product can only be used to measure body temperature simply for reference.

### 2-2 Safety Symbols

⚠ Dangerous, refer to this manual before using the meter.

CE Conforms to requirements of European Union and European Fare Trade Association (EFTA).

▭ Battery level is low.

⌧ Don't dispose this product as unsorted municipal waste.

This instrument conforms to the following standards:
**EN61326:** Electrical equipment for measurement, control and laboratory use.
**IEC61000-4-2:** Electrostatic discharge immunity test.
**IEC61000-4-3:** Radiated, radio-frequency, electromagnetic field immunity test.
**IEC61000-4-8:** Power frequency magnetic field immunity test.

## 5. Specifications

| Display | 5 Digit LCD with bar graph indicator | |
|---|---|---|
| Unit of Measurement | Humidity: %RH (Relative Humidity) | |
| | Temperature: °C or °F | |
| | Dew Point: °C or °F | |
| Temperature Compensation | Automatic for humidity function | |
| Sampling Time of Data Logger | Manual | Pushing the data logger button once will save data one time |
| | Auto | 1, 2, 10, 30, 60, 600, 1800, 3600 seconds |

**Humidity / Temperature**

| | Range | 0% to 95% RH |
|---|---|---|
| Humidity | Resolution | 0.01% RH |
| | Accuracy | $\geq$70%RH $\pm$(3% rdg. $\pm$ 3% RH) 10% to 70%RH $\pm$ (3% rdg. $\pm$1%RH) |
| | Range | 32°F to 122°F, (0°C to 50°C) |
| Temperature | Resolution | 0.01 degree |
| | Accuracy | °C = $\pm$ 0.8°C / °F= $\pm$ 1.5°F |

**Dew Point**

| | Range | -25.3°C to 48.9°C |
|---|---|---|
| °C | Resolution | 0.01°C |
| °F | Range | -13.5°F to 120.1°F |
| | Resolution | 0.01°F |
| Dew Point | Accuracy | sum of RH and Temperature accuracies |

| Data Hold | Display freeze |
|---|---|
| Memory | Saves MAX. or MIN values with recall |
| Sampling Time | Approximately 0.8 seconds |
| Power Off | Auto or manual control |
| Data Output | RS-232 Serial data output |
| Operating Environment | 32° to 122°F (0° to 50°C), <85% R.H. |
| Power Supply | 6 Pieces of DC 1.5V Batteries (UM4, AAA or equivalent) |
| Weight (approx.) | 0.74lbs. (336g) |
| Dimensions (approx.) | Main instrument: 6.9 x 2.7 x 1.7" (174 x 68 x 42mm) |
| | Sensor probe length: 7.8" (197mm) |
| Included Accessories | Instruction manual, battery, carrying case |

* = Note : Accuracy applicable in environments with RFI <3V/M with Hz <30MHz, and temperatures between 20°C to 26°C, after 20 minutes of acclimation.

Specifications and information are subject to change without notice
Please visit www.anaheimscientific.com for the most current product information.

## 4. Operation Instructions

The H300 could take as long as ten minutes for the display to completely "settle" and display the actual temperature or relative humidity level if the meter is exposed to two vastly different environments. The sensors used to make the environmental measurements must have time to acclimate to the test environment.
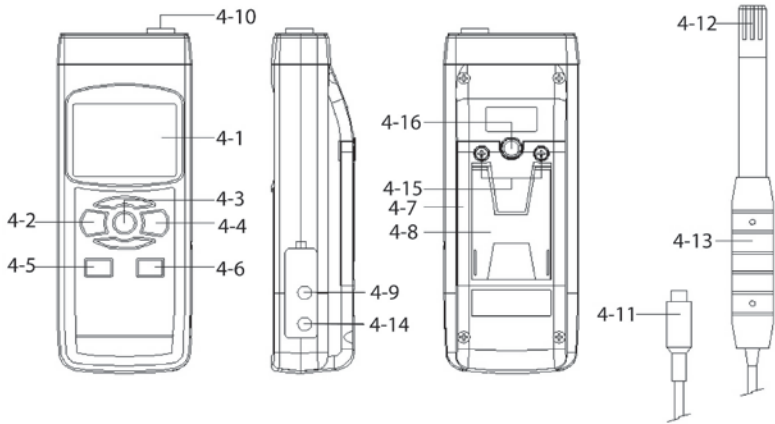
## 4-1 Unit Diagram



**Fig. 1**

4-1  LCD Display
4-2  Power button
4-3  Hold Button (ESC Button)
4-4  REC Button (Enter Button)
4-5  Function Button (Send Button)
4-6  Set Button (Logger Button)
4-7  Battery Compartment
4-8  Stand

4-9   RS232 Socket
4-10 Probe Input Socket
4-11 Probe Plug
4-12 Probe Head (Humidity & Temp.)
4-13 Probe Handle
4-14 DC 9V Adapter Input Socket
4-15 Battery Cover Screw
4-16 Tripod Screw Mount

## 4-2 Measuring Procedure

The H300 default unit of measure is °C. To switch to °F see section 5-1. The sampling time default for data logging is set at 2 seconds. To change this sampling time see section 4-7.

## 4-3 Humidity & Temperature Measurement

1. Plug the "Probe Plug" (4-11, Fig. 1) into the "Probe Input Socket" (4-10, Fig. 1).
2. Power on the meter by pressing the "Power Button" (4-2, Fig.1) for 2 seconds. The LCD will show the units of measure on the display after a quick self test. It will display the %RH in the main display and temperature in the bottom section of the LCD.
3. The meter displays temperature in °C by default, t o switch to °F see section 5-1.

## 4-4 DEW Point Measurement

To measure DEW Point follow the instructions shown in section 4-3 and then press the "Function Button" (4-5, Fig. 1) momentarily once. The LCD will show the word DEW in the main display and temperature below.

## 4-5 Data Hold

While taking measurements you can freeze the displayed value by pressing the "Hold Button" (4-3, Fig. 1) once. The HOLD symbol will be displayed along with the held measured value on the LCD. By pressing the "Hold Button" (4-3, Fig. 1) a second time will release the displayed value and turn off the data hold function.

## 4-6 Data Record (MAX/MIN)

1. To record the maximum and minimum readings, press the "REC Button" (4-4, Fig. 1). The REC symbol will be displayed on the LCD. By pressing the "REC Button" (4-4, Fig. 1) you can toggle through the Max and Min values.
2. To delete the recorded values press and hold the "Hold Button" (4-3, Fig. 1) for about 3 seconds.
3. To stop using the REC function, press and hold the "REC Button" (4-4, Fig. 1) for at least 3 seconds.

## 4-7 Auto Data Logger

Setup process will be described first because the Auto Data Logger function will not work if the sampling seconds is set to 0. If you do not need to setup your meter, skip to step 7.
1. Press and hold the "SET Button" (4-6, Fig.1) for about 3 seconds to enter the settings menu (you will see the word code on the bottom of the LCD).
2. Pressing the "Enter Button" (4-4, Fig. 1) will bring you to the unit of measure for temperature (see section 5-1 if you wish to change the unit of measure).
3. Press the "Logger Button" (4-6, Fig.1) and SEC will be displayed on the bottom of the LCD.
4. To cycle through the number of seconds you would like meter to wait between loggings, press the "Function Button" (4-5, Fig. 1). By pressing the "Function Button" (4-5, Fig. 1) the following number of seconds will be displayed on the top of the LCD: 1, 2, 10, 30, 60, 600, 1800 or 3600.
5. Once the number seconds you require is displayed on the LCD, press the "Logger Button" (4-6, Fig.1).
6. Press the "Enter Button" (4-4, Fig. 1) to exit the settings menu, then press the "ESC Button" (4-3, Fig. 1).

7. Press the "REC Button" (4-4, Fig.1) momentarily to start the data log function. The REC symbol will be displayed on the LCD. The data logger function can save up to 1000 values of measure (either Humidity & Temp. or Dew Point & Temp).

8. Press the "Logger Button" (4-6, Fig.1) and the meter will start logging. You will see the A flashing on the top of the LCD every time a logging event has occurred. The A flashing will match the number of seconds you set in the setup of the data logger function.

9. If the A in the top of the LCD and the lower display are flashing then, it indicates that the memory is full. Please view the "Clears the existing saving data from the memory" section in the "Advanced Measuring Procedures" section.

## 4-8 Manual Data Logger (set sample time to 0 seconds)

1. Press the "REC Button" (4-4, Fig.1) momentarily to start the data log function. The REC symbol will be displayed on the LCD. The data logger function can save up to 1000 values of measure (either Humidity & Temp. or Dew Point & Temp).

2. Press the "Logger Button" (4-6, Fig.1) every time you would like the meter to record a value. You will see an A flash in the top of the LCD. The meter will not record another measurement until you press the "Logger Button" (4-6, Fig.1) again.

3. If the A in the top of the LCD and the lower display are flashing then, it indicates that the memory is full. Please view the "Clears the existing saving data from the memory" section in the "Advanced Measuring Procedures" section.

## 5. Advanced Measuring Procedures

Note: Cancel any Hold or Record functions before trying to perform and advanced measuring procedures.

1. Press and hold the "SET Button" (4-6, Fig. 1) for about 3 seconds until the LCD displays "Code". Once you release the button you should see 1000 in the main display. 1000 Is the password code to allow advanced measuring procedures. To leave the setting menu press the "ESC Button" (4-3, Fig.1).

2. Press the "Enter Button" (4-4, Fig. 1).

4. Now you are in the setting area to set or change the temperature unit of measure. Pressing the "Set Button" (4-6, Fig. 1) will cycle through the following setting sections:

**°F**...... Change the Temp C or F (section 5-1)
**SEC**... Change the data logger sampling rate (section 5-2)
**Cnt**..... To show the balance data in memory (section 5-3)
**CLr**.... Clear saved data in memory (data logger data) (section 5-4)
**OFF**... Auto power ON/OFF management (section 5-5)

## 5-1 Change Unit of Measure from °C to °F

1. Press and hold the "Set Button" (4-6, Fig. 1) for about 3 seconds until you see the word "COde" in the bottom of the LCD.

2. Press the "Enter Button" (4-4, Fig. 1). Now you may select between °C & °F by pressing the "Function Button" (4-5, Fig. 1). When a "0" is in the main LCD the unit will display temperature in °C. When a "1" is in the main LCD then the unit will display temperature in °F.

3. Once you have selected either a 0 or a 1, press the "REC Enter" button and then press the "Hold ESC" button to escape and go back to the normal testing mode.

## 5-2 Change Data Logger Sampling Time

1. Press and hold the "Set Button" (4-6, Fig.1) for more than 3 seconds.

2. The main LCD should then display1000. Now press the "Enter Button" (4-4-, Fig. 1)

3. Now press the "Set Button" (4-6, Fig.1). You will see SEC in the bottom left of the LCD.

4. Use the "Function Button" (4-6, Fig. 1) to cycle through the available seconds settings. Stop on either 0, 1, 2, 10, 30, 60, 600, 1800 or 3600. The value you select will tell the meter how often to log an event. Note that 0 SEC can only be used in the manual logging function.

5. Press the "Enter Button" (4-4, Fig.1) to confirm your selection and save it to the meters memory.

6. Press the "ESC Button" (4-3, Fig.1) to go to the normal measurement mode.

## 5-3 Show Memory Balance

1. Press and hold the "Set Button" (4-6, Fig.1) for about 3 seconds.

2. The main LCD should then display1000. Now press the "Enter Button" (4-4-, Fig. 1)

3. Press the "Set Button" (4-6, Fig.1) twice and you will see the Cnt marker in the bottom of the LCD. The top number is the number of available data points.

4. Press the "ESC Button" (4-3, Fig.1) to go to the normal measurement mode.

### 5-4 Clear Memory

1. Press and hold the "Set Button" (4-6, Fig.1) for about 3 seconds.

2. The main LCD should then display1000. Now press the "Enter Button" (4-4-, Fig. 1).

3. Press the "Set Button" (4-6, Fig.1) three times and you will see the CLr marker in the bottom of the LCD. The top number is the number of stored data points.

4. Press the "Function Button" (4-5, Fig. 1) and the top number will go to zero.

5. Press the "Enter Button" (4-4-, Fig. 1) to clear memory.

6. You can press the "ESC Button" (4-3, Fig. 1) return to the normal measurement mode.

### 6. Auto Power Off Disable

This instrument has a "Auto Power Off " function that can prolong battery life. The meter will shut off automatically if none of the buttons are pressed in approx. 10 min.

To disable this function, select the memory record function during a measurement by pressing the " REC. Button" (4-4, Fig. 1 ).

### 7. Send Data from RS232 Socket
1. Cancel Hold and REC functions.
2. Press and hold the "Send Button" (4-5, Fig. 1) for about 2 seconds. You will see 232 in the bottom of the LCD.
3. Press the "Send Button" (4-5, Fig. 1) and both the top and bottom display will begin to flash. At this time the data is being sent out the "RS232 Socket" (4-9, Fig.1).

## 8. RS232 PC Serial Interface Information
This instrument has RS232 PC serial interface via a 3.5 mm terminal (4-12, Fig. 1).

The data output is a 16 digit stream which can be utilized for user's specific application.

A RS232 lead with the following connection will be required to link the instrument with the PC serial port.

Visit www.anaheimscientific.com to see any available downloadable software for your instrument.
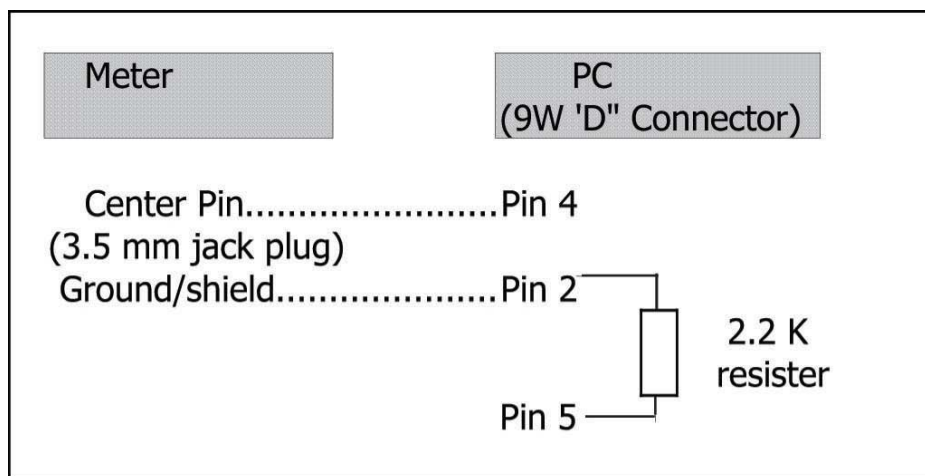
**The 16 digit data stream will be displayed in the following format:**

| D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1D0 |
| --- |

**Each digit indicates the following status:**

| D15 | Start Word | | |
| --- | --- | --- | --- |
| D14 | 4 | | |
| D12 & D11 | Indicator for Display | | |
| | °C = 01 | °F = 02 | % RH = 04 |
| D10 | Polarity: 0 = Positive / 1 = Negative | | |
| D9 | Decimal Point (DP), position from right to left 0 = No DP, 1 = 1 DP, 2 = 2 DP, 3 = 3 DP | | |
| D8 to D1 | Display reading, D1 = LSD, D8 = MSD Example: If the display reading is 1234, then D8 to D1 is: 00001234 | | |
| D0 | End Word | | |

**RS232 Setting**

| Baud Rate | 9600 |
| --- | --- |
| Parity | No Parity |
| Data bit # | 8 Data bits |
| Stop bit | 1 Stop bit |

## 9. Battery Replacement

1. When the LCD display shows the "⊏⁺⁻⊐" low battery symbol, It is necessary to replace the battery. The specifications listed for this instrument do not apply when the low battery symbol is displayed.

2. Open the "Battery Compartment" (4-7, Fig. 1) by first loosening the "Battery Cover Screws" (4-15, Fig. 1).

3. Replace the batteries with "good" batteries noting the correct polarity. Replace "Battery Compartment" (4-7, Fig. 1) and "Battery Cover Screws" (4-15, Fig. 1). Ensure the cover is securely fastened.

## 10. Service Information

**Warranty Service:** Please return the product in the original packaging with proof of purchase to the address below. Clearly state in writing the performance problem and return any leads, probes, connectors and accessories that you are using with the device.

**Non-Warranty Service:** Return the product in the original packaging to the address below. Clearly state in writing the performance problem and return any leads, probes, connectors and accessories that you are using with the device. Customers not on open account must include payment in the form of a money order or credit card. For the most current repair charges please visit www.anaheimscientific.com and click on "service/repair".

Return all merchandise to Anaheim Scientific with pre-paid shipping. The flat-rate repair charge for Non-Warranty Service **does not** include return shipping. Return shipping to locations in North American is included for Warranty Service only. For overnight shipments and non-North American shipping fees please contact Anaheim Scientific.

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714-921-9095

**Include with the returned instrument your complete return shipping address, contact name, phone number and description of problem.**

## 11. Limited Two-Year Warranty

Anaheim Scientific warrants to the original purchaser that its products and the component parts thereof, will be free from defects in workmanship and materials for a period of two years from date of purchase from an authorized Anaheim Scientific distributor.

Anaheim Scientific will, without charge, repair or replace, at its option, defective product or component parts. Returned product must be accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing the warranty registration form on www.anaheimscientific.com within fifteen (15) days of purchase.

**Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. The warranty is void if the serial number is altered, defaced or removed.**

Anaheim Scientific shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitations of incidental or consequential damages. So the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may have other rights, which vary from state-to-state.

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