1071-8041-310

MONARCH INSTRUMENT

Instruction Manual

CE

Monarch 315

Mini Humidity Temperature Meter

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Safeguards and Precautions

1. **Read and follow all instructions in this manual carefully, and retain this manual for future reference.**

2. **Do not use this instrument in any manner inconsistent with these operating instructions or under any conditions that exceed the environmental specifications stated.**

3. **Do not touch or manipulate the sensor.**

4. **Do not expose the sensor to direct light. This may cause false readings.**

5. **Do not expose the sensor to static electricity.**

6. **Making measurements of high or low temperatures can be dangerous. Keep the hand holding the temperature probe well away from the object being measured.**

7. **This instrument is not user serviceable. For technical assistance, contact the sales organization from which you purchased the product or Monarch Instrument directly.**

LIMITED WARRANTY

SELLER warrants hardware products to be free from any defect in materials or workmanship for a period of one (1) year from date of shipment to BUYER. SELLER's entire liability and BUYER's sole and exclusive remedy resulting from any defect in workmanship or material in the hardware product covered by this limited warranty shall be limited to and fully discharged by the SELLER's option of replacement or repair of such item without charge. The limited warranty provided in this clause is in lieu of all other warranties, expressed or implied, arising by law or otherwise. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. This limited warranty shall not be modified except by an arrangement signed by both parties specifically referencing this clause.

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This limited warranty does not extend or apply to consumables (including, but not limited to, lamps and batteries, if applicable) or equipment, instruments or accessories which are warranted separately by the original manufacturer of these items.

DECLARATION OF CONFORMITY

Monarch Instrument
Division of Monarch International Inc.
15 Columbia Drive, Amherst NH 03031 USA

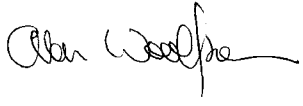
declares that the product:

Name: Humidity Temperature Meter
Model: Monarch 315

to which this declaration relates is in conformity with the following standards:

EMC: EN55011/1991, CISPR 11, Class A
EN50082-2/1995 / EN61000-4

and therefore conforms in accordance with 89/336/EEC-EMC Directive. The testing of this product was performed by GesTek EMC Lab. in February and March of 2002. (Ref. No. 0202033E).



6th March 2002
Importer (Amherst,NH)

Alan Woolfson, VP Engineering (Authorized Signature)

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1.0 Introduction:

This instrument is a digital Humidity / Temperature meter incorporating a polymer capacitive humidity sensor and a semiconductor temperature sensor in a compact self-contained enclosure.

2.0 Specifications:

Measurement Range:
Humidity: 1%RH ~ 99%RH
Temperature: -20°C ~ 60°C (-4°F ~ 140°F)

Accuracy: at 23°C ± 5°C

Feature	Range	Accuracy
Humidity	5%RH ~ 95%RH	±3% RH
Temperature (°C)	-20°C ~ 60°C	±0.8°C
Temperature (°F)	-4°F ~ -140°F	±1.6°F

Resolution:
Humidity: 0.1%RH
Temperature: 0.1°C / 0.1°F

Response Time:
Humidity: 180 sec. in slowly moving air
Temperature: 10 sec. in slowly moving air

Display: Dual four digit display
Sample Rate: 2.5 times per second
Power: 9 Volt Battery, NEDA 1604 or JIS 006P or IEC6F22
Battery Life: Approx. 85 hours of continuous operation with alkaline battery. Low battery indication.

Operating Condition:
- Operating Temperature – Humidity: 0°C ~ 40°C (32°F ~ 104°F) @ < 80% RH
- Storage Temperature – Humidity: -10°C ~ 60°C (14°F ~ 140°F) @ < 70% RH
- Altitude: Up to 2000 meters (6500 feet).

Dimension: 240×54×34 mm (9.5×2.1×1.3 in)
Weight: Approx.180g (6.4 oz)
Accessories: Battery, Instruction Manual
Options:
33% RH Humidity standard
75% RH Humidity standard

5.4 Notes on Temperature and Humidity Calibrations:

1. During either calibration, pressing the ⏻ button at any time will return the instrument to the normal operating mode, and no calibration data will be changed.
2. While performing the humidity calibration, the environment should be maintained at stable conditions (i.e. constant temperature and constant humidity) to optimize the accuracy.
3. Always begin the temperature calibration process with the 0°C (32°F) temperature-controlled chamber and the humidity calibration process with the 32.8% RH@25°C standard cavity. For maximum efficiency, insert the probe into the conditioned environment 10 minutes for temperature or 30 minutes for humidity before applying power to the instrument and starting the calibration process.
4. Whenever the probe is inserted into a standard humidity cavity or temperature-controlled chamber, always allow at least 30 minutes to ensure ambient conditions have stabilized.

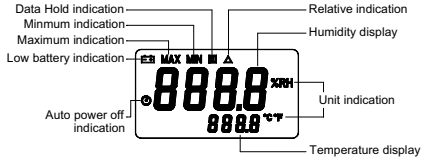
5.2 Humidity Calibration

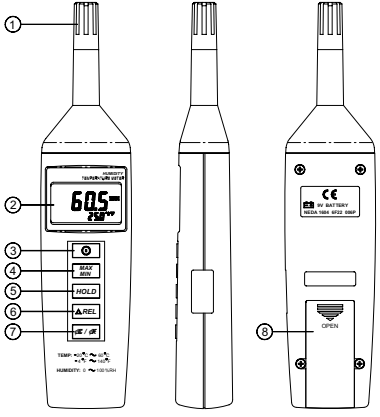
1. Turn the unit off. Press and hold the **HOLD** and **°C/°F** buttons. While these two buttons are pressed, turn the power on. Release all buttons and all the segments on the display will blink.
2. Within 3 seconds of releasing these buttons, press the **△REL** button to enter the calibration mode, or the instrument will revert to normal operating mode.
3. Upon entering the calibration mode, 'CAL1' will appear on the second display.
4. Place the probe in a stable 32.8% RH environment at 25°C and allow the system to stabilize for 30 minutes. Press the **MAX MIN** button to initiate calibration. A single long beep will indicate calibration is complete, and the instrument will advance into the 'CAL2' mode, as indicated on the second display.
5. Insert the probe in a stable 75.3% RH environment at 25°C and again allow the system to stabilize for 30 minutes. Press the **MAX MIN** button to initiate calibration. A single long beep will indicate calibration is complete, and the instrument will revert to normal operating mode.

5.3 Restoring Factory Calibration

1. To restore factory default calibration values, turn the instrument off. Press the **HOLD** and **°C/°F** buttons. While these two buttons are pressed, turn the power on. Release all buttons and all the segments on the display will blink.
2. Within 3 seconds of releasing these buttons, again press the **HOLD** button to restore factory calibration values. A single long beep will indicate restoration is complete.

3.0 Symbol Definition and Button Locations:





Feature Locations:

1) Dust mask
2) LCD display
3) ON/OFF button
4) MAX MIN button
5) HOLD button
6) RELATIVE button
7) °C, °F control button
8) Battery cover

4.0 Operating Instructions:

4.1 Preparation for Measurement:
To measure ambient humidity and temperature, hold the instrument in the environment of interest and allow sufficient time for the sensors to respond to ambient conditions. (See Section 2.0 – Response Time.)

4.2 Power:
Press the ⏻ button to turn the instrument ON or OFF.

4.3 Selecting the Temperature Scale
When first turned on, the instrument defaults to reading in Celsius (°C). The instrument toggles between Celsius (°C) and Fahrenheit (°F) each time the **°C/°F** button is pressed. The instrument remembers the scale setting when last turned off and powers on in that setting the next time.

4.4 Data-Hold Function
The present reading is held on the display by pressing the **HOLD** button. Pressing the **HOLD** button again releases the hold function and returns the instrument to continuous reading.
In the **HOLD** mode, the **△REL, MAX MIN** and **°C/°F** buttons are disabled, as indicated by two consecutive beeps when pressed.

4.5 Relative Operation
Pressing the **△REL** button internally memorizes the present reading and the main display shows the difference between the new reading and the memorized value. Press the **△REL** button again to exit the Relative operation.

4.6 MAX/MIN Operation
Press the **MAX MIN** button to enter the MAX/MIN mode. In this mode, both the maximum and minimum values are simultaneously retained in memory and updated with every new data sample. The instrument first enters the MAX mode, and the MAX symbol and value are both displayed. Pressing **MAX MIN** again advances the display to the MIN symbol and value. The next press of the **MAX MIN** button will cause both the MAX and MIN symbols to blink. This indicates that the maximum and minimum values have been updated in memory and the displayed reading is the present value. Each successive press of the **MAX MIN** button circulates the display mode among these options. To exit the MAX/MIN mode, press and hold **MAX MIN** for two seconds.
In the MAX/MIN mode, the**, △REL** and **°C/°F** buttons are disabled, as indicated by two consecutive beeps if pressed.

4.7 Auto Power Off
By default, the instrument powers on in the 'Auto Power Off' mode and will automatically shut off 30 minutes after the last key operation.
To disable this feature, press and hold the **HOLD** button and then power on the meter. Two successive beeps indicate that 'Auto Power Off' is disabled.

4.8 Low Battery Condition
When the battery voltage is at or below the minimum for proper operation, the 🔋 symbol will show on the display indicating that the battery must be replaced.

4.9 Calibration Points:
Room temperature: 23°C ± 5°C
Temperature calibration points: 0°C and 40°C
Humidity calibration points: 32.8% RH@25°C and 75.3% RH@25°C

5.0 Calibration Procedure:

Note: Conduct temperature calibration before humidity calibration.

5.1 Temperature Calibration

1. Turn the unit off. Press and hold the **HOLD** and **°C/°F** buttons. While these two buttons are pressed, turn the power on. Release all buttons and all the segments on the display will blink.
2. Within 3 seconds of releasing these buttons, again press the **°C/°F** button to enter the calibration mode, or the instrument will revert to normal operating mode.
3. Upon entering the calibration mode, 'CAL1' will appear on the second display.
4. Insert the probe into a temperature-controlled chamber at 0°C (32°F) and allow the system to stabilize for 10 minutes. Press the **MAX MIN** button to initiate calibration. A single long beep will indicate calibration is complete, and the instrument will advance into the 'CAL2' mode, as indicated on the second display.
5. Insert the probe into a temperature-controlled chamber at 40°C (104°F) and again allow the system to stabilize for 10 minutes. Press the **MAX MIN** button to initiate calibration. A single long beep will indicate calibration is complete, and the instrument will revert to normal operating mode.