



STANDARD OPERATING PROCEDURES

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TEMPERATURE/RELATIVE HUMIDITY DETERMINATION USING A OMEGAETTE HUMIDITY TEMPERATURE METER

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TEMPERATURE/RELATIVE HUMIDITY DETERMINATION USING A OMEGAETTE HUMIDITY TEMPERATURE METER

1.0 SCOPE AND APPLICATION

This standard operating procedure (SOP) describes the procedures required for the measurement of temperature and percent relative humidity (%RH) using an OMEGAETTE HH314 digital humidity temperature meter.

This procedure is applicable for measurements obtained in a zero to 50 degrees Celsius ($^{\circ}\text{C}$) environment with a maximum RH of 90%.

2.0 METHOD SUMMARY

Temperature is measured using either a semiconductor sensor or a K-type thermocouple, and %RH using a polymer capacitive. Results are digitally displayed on the liquid crystal display (LCD) screen. The instrument can be operated with either a 9-Volt (V) battery or a 9-V alternate current (AC) adapter. Data is stored in the internal memory (up to 16300 readings). A RS-232 interface provides bi-directional communication with a personal computer (PC).

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING AND STORAGE

This section is not applicable to this SOP.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

The combination temperature and %RH meter is relatively free from interferences. The meter works best at altitudes up to 2000 meters, a maximum RH of 90% and temperatures between zero and 50 $^{\circ}\text{C}$. Abrasives or solvents should not be used on this instrument.

5.0 EQUIPMENT/APPARATUS

- OMEGAETTE HH314 humidity temperature meter
- Software for HH310-SW test-Link, version 3.1
- RS-232 Cable
- 9-V battery or AC adapter: 9-V direct current/ 10 milliamp (mA) minimum

6.0 REAGENTS

This section is not applicable to this SOP.

7.0 PROCEDURES

7.1 Symbol Definition and Button Locations

$^{\circ}\text{C}/\text{F}$ Centigrade and Fahrenheit indicator



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| | |
|-----|---|
| %RH | Relative Humidity indicator |
| MAX | The maximum value is being displayed |
| MIN | The minimum value is being displayed |
| Ⓞ | Auto power off is enabled |
| H | Indicator of display data being held |
| m:d | Month and day |
| h:m | Hour and minute |
| Y | Year |
| — | Battery life is low |
| REC | Data is being recorded; blinking indicates memory is full |
| K | Temperature type indicator |



7.2 General Operation

A diagram of the meter is presented in Figure 1, Appendix A.

1. Set up the instrument clock as per the instructions provided in the User's Guide (Appendix B).
2. Push the power button to turn the meter on.
3. Press °C/F to select the temperature scale.
4. Place the sensor probe in the test environment and measure the temperature and %RH.
5. The instrument will turn itself off after 30 minutes, if the AUTO OFF is not disabled.

7.3 Recording of Temperature and Percent Relative Humidity

1. Set recording interval (typically every 15 minutes) as per the instructions in the User's Guide.
2. Press the ON/OFF and REC buttons simultaneously to clear all data from the memory.
3. Press the ON/OFF and HOLD buttons simultaneously to disable AUTO OFF.
4. Press the REC button to begin recording data. REC will appear on the LCD. The temperature and %RH will be recorded every 15 minutes and stored in the memory.
5. Press the REC button again to stop recording. The data points will be stored in the memory until the ON/OFF and REC buttons are simultaneously pressed again.

7.4 Installation of Test-Link Software

1. Install the Test-Link software on a PC using the instructions provided in the instruction manual.

7.5 Downloading Data on the PC

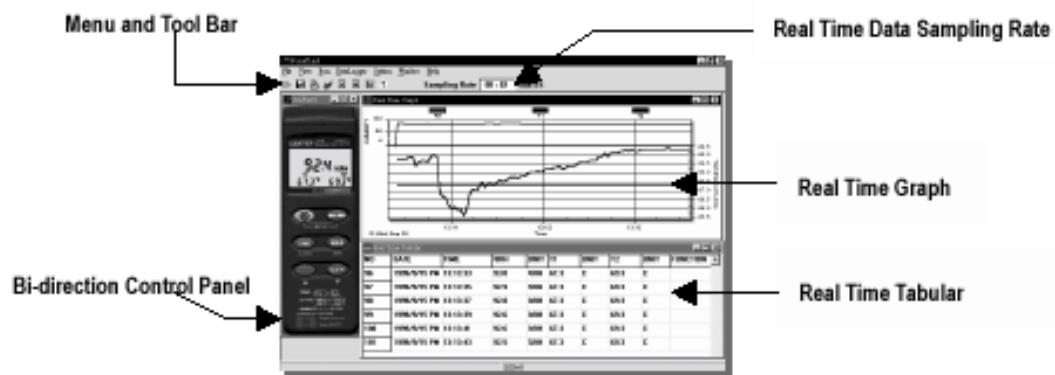


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1. Select Test-Link or SE-310 icon from the desktop of the PC.
2. Connect the Omegaette data logger to the PC via the RS-232 cable.
3. The PC monitor will display the SE-310 screen as shown below.
4. The REC indicator on the data logger should be OFF before the data is downloaded.
5. Click on the “Data Logger” on the menu bar and the stored data will be downloaded on to the computer. Save the data after it has been downloaded.



7.6 Battery Replacement

The data logger can be used with either an 9-V battery or with an AC adapter. Even if the AC adapter is used, the battery should always be in the logger to ensure no data is lost in the event of a power failure. If the data logger is used with a battery only, the battery needs to be replaced every 100 hours.

8.0 CALCULATIONS

The values displayed on the logger are read directly as temperature and %RH. The downloaded data can also be saved as a comma separated value (.csv) file and imported into Excel.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

There are no specific quality assurance (QA) activities which apply to the implementation of these procedures. However, the following general QA procedures apply:

- All data must be documented on field data sheets or within site or laboratory notebooks.



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- All instrumentation must be operated in accordance with the manufacturer's instructions. Equipment check-out procedures must occur prior to collecting data and must be documented.

10.0 DATA VALIDATION

This section is not applicable to this SOP.

11.0 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, OSHA, and Lockheed Martin health and safety procedures. General laboratory safety practices should be followed. Refer to SERAS SOP #3013, *Laboratory Safety Program*.

12.0 REFERENCES

Omega Engineering, Inc., 1999. *OMEGAETTE HH314 Humidity Temperature Meter User's Guide*.

13.0 APPENDIX

- A - OMEGAETTE HH314 Humidity Temperature Meter
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APPENDIX A
OMEGAETTE HH314 Humidity Temperature Meter
SOP #1727
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FIGURE 1. OMEGAETTE HH314 Humidity Temperature Meter

