APPLICATON NOTE: 902

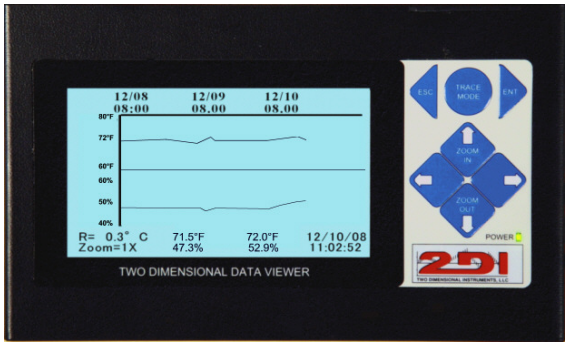
TWO DIMENSIONAL INSTRUMENTS, LLC

Electronic Hygrometer with Wireless Sensors

A Hygrometer is an instrument used for measuring humidity and temperature. A recording hygrometer not only displays the temperature and humidity on a minute by minute basis, it also documents the conditions over time. Traditionally the records were made by marking a paper chart or long strip of paper with a pen. This gradually gave way to data loggers which record the data electronically. However a big drawback of data loggers is that the user has no way of knowing what was recorded until it is downloaded to a computer. The instant information aspect of the chart recorder is lost with a data logger.

This electronic Hygrometer, the ThermaViewer, using wireless temperature/humidity sensors has all the advantages of the data logger and a chart recorder in one instrument. It not only shows the current temperature and humidity on its display, it also draws a chart so that the **conditions over time are charted.** The user can view months of temperature/RH history on the display without ever having to download the data to a computer. It can, of course, be downloaded to a computer and a chart printed out, but there is no requirement to do so.

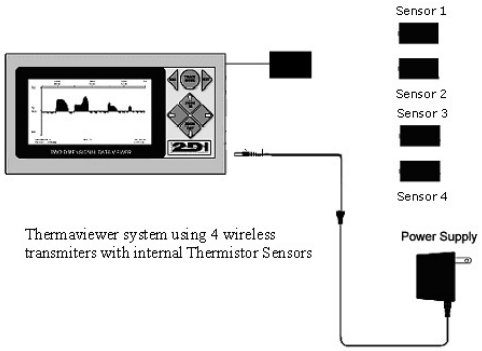
The ThermaViewer is an ideal instrument for monitoring and documenting the temperature and humidity of operating rooms, incubators, laboratories, warehouses, cleanrooms, paint booths, computer rooms, museums, etc… When linked to one or more temperature/RH sensors (± 0.3°C & ± 3%), it monitors and documents temperature and humidity in one or more different rooms or areas. It is accurate and automatic, providing continuous monitoring and indicating trends so that corrective action can be taken. It requires no special skills to read and interpret the data and comes equipped with a dry-contact N/O relay to trigger an alarm or auto dialer if out-of-spec conditions occur.



Using a Wireless Hygrometer is simple, with minimum set-up required.

Installation of the Wireless hygrometer is a simple 6-step process:

1. **Plug in the Hygrometer with base station attached**
2. **Set the date and time.**
3. **Insure that the sensor is linked to the base station.**
4. **Position the sensor and insure that the signal is good.**
5. **Attach the auto dialer (if purchased).**
6. **Set the Alarm Settings (if used).**



Thermaviewer system using 4 wireless transmiters with internal Thermistor Sensors

What to Order:

- WTDVD Hygrometer w base station, PC cable & software $ 499.00
  1-4 sensors
- WS4HITMIHM Wireless sensors with internal thermistor & RH sensors $ 99.00

Optional Items:

- APD-10 Auto-dialer with cable $ 189.00
- CB-1 Calibration to NIST (1 temp/RH sensor) $ 99.00
- AV15 External alarm $ 50.00

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Installation and setup

Mount the Wireless Hygrometer display and base station unit in the room or office area near the area to be monitored. Position each sensor (100 foot clear line-of-sight and attach the auto dialer (if purchased) to the relay connection.

The following are suggested settings. You should use the settings required by your standards.

Suggested settings:

Sensor 1	
Store Data every	10 minutes
Type of Averaging	Med
Relay Enabled[1]	
Activate Relay for	0:10 (min:sec)
If Temp > 80° for more than	00:30:00 HHMMSS
If Temp< 60° for more than	00:30:00 HHMMSS
Humidity> 65% for more than	00:20:00HHMMSS
Humidity< 40% for more than	00:30:00HHMMSS

Sensor 2	
Store Data every	10 minutes
Type of Averaging	Med
Relay Enabled[1]	
Activate Relay for	0:10 (min:sec)
If Temp > 80° for more than	00:30:00 HHMMSS
If Temp< 60° for more than	00:30:00 HHMMSS
Humidity> 65% for more than	00:20:00HHMMSS
Humidity< 40% for more than	00:30:00HHMMSS

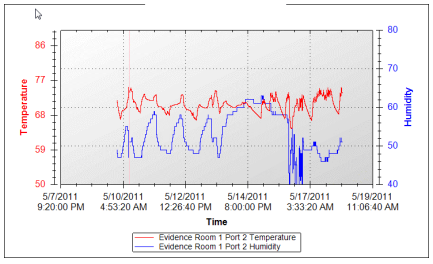
Alarm Delay: Each alarm setting has a delay to eliminate false alarms. If, for example, the humidity rises above 65% in he example above, and then immediately drops back below 65% you would not want the alarm to sound. However, if it rose above 65% for more than 30 minutes you would definitely want to be notified. Each sensor will store 30,000 temperature and 30,000 humidity measurements; so if you are storing one every ten minutes, the Wireless Hygrometer will store about 5 months of temperature and humidity history. If you store a value every ½ hour more than 1.3 years of data will be stored in the monitor.

The alarm: Any time an alarm is triggered, whether the monitor is operating on wall power or backup battery power the internal buzzer will sound and the screen will flash indicating the alarm condition. Additionally the relay will also closed. In addition to the temperature and humidity alarm a ***power failure alarm*** will also sound (if enabled) and trigger the relay if the unit is operating on battery power.

Calibration: The Thermistor/humidity sensors can be calibrated and any corrections entered into a three-point calibration table. The calibration data is stored in the base station so if sensors are moved to a different base station is will be necessary to reenter any calibration offsets.

Downloading data:

The Wireless Hygrometer will hold and chart approximately 5 months of temperature/humidity history for each sensor with the above settings. A regular schedule for downloading data from the ThermaViewer should be established so that a back up copy of the data is maintained in your computer. You can also print out a copy of the chart with the same program that downloads data to your computer (TView). Access to the unlicensed TView software is provided with the ThermaViewer. It can be installed on multiple computers to download the stored data.



[1] Enable the relay even if you do not have anything wired to the external relay. Enabling the relay also enables the audible and visual alarm.