



APPLICATION NOTE: 202

Hygrometer with wired or wireless sensors

If you need to monitor temperature and humidity this is the instrument to do it with. It can be used with two wired or up to four wireless sensors. Each sensor samples the temperature and humidity, storing the data in RAM memory and drawing a chart on the LCD display. If you sample conditions once every 10 minutes it will store almost a year of data for each sensor.

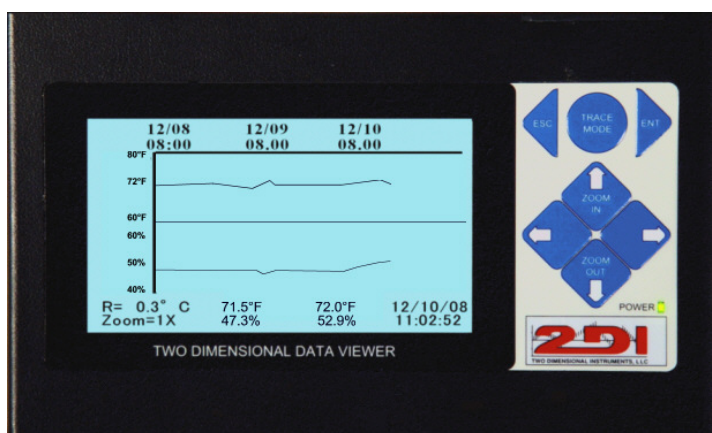
Indoor environments such as clean rooms, operating rooms, or museums usually have temperature/RH limits. In clean rooms, humidity can cause many problems resulting in high reject rates and loss of product. Expensive equipment can be harmed if temperature or humidity gets too high in operating rooms. Low temperatures or humidity can also cause problems, allowing static electricity to develop that can harm stored data and computer equipment.



The ThermaViewer is an ideal instrument for monitoring and documenting the temperature and humidity of enclosed spaces such as

labs, clean rooms and computer rooms. The sensors use Thermistors and RH sensors especially designed for accuracy and consistency ($\pm 0.3^{\circ}\text{C}$ & $\pm 2\%$).

It requires no special skills to read and interpret the data and has a dry-contact relay to trigger an alarm or auto dialer if out-of-spec conditions occur.



The ThermaViewer needs no programming, maintenance, paper or computers to monitor, document, chart and alarm for temperature and humidity.

Installation of the ThermaViewer is a simple 5-step process:

1. Position the two sensor modules (2"x2"x1") in the areas to be monitored.
2. Route and plug in the sensor wires.
3. Plug the power adaptor into a wall socket and into the ThermaViewer.
4. Attach the auto dialer (if purchased).
5. Set the day, time and monitoring frequency (suggested settings).

Wired Sensors:

- TDVD2 Display for wired sensors, relay & software \$ 399.00
Add one or two sensors
- TR-2 Temperature/humidity sensor \$ 109.00



Wireless Sensors

- WTDVD Display for wireless sensors w base station, relay & software \$ 540.00
Add one or two sensors
- WS4HITMIHM High Accuracy wireless Temperature/humidity sensor \$ 129.00





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Optional Items:

- Auto Dialer \$ 189.00
- Extra 100 foot cable \$ 50.00
- Calibrate 2 temp/RH sensors \$ 165.00

Installation and setup

Mount the ThermaViewer display unit in the room or office area near the area to be monitored. Position each sensor in a separate space and attach the auto dialer (if purchased) to the relay connection.

The following are **suggested** settings for a room maintained at 72 °F and 50% RH. (You should use the settings required by your standards).

Suggested settings:

Sensor #1	
Sample Data every 00:10:00 HHMMSS	
Type of Averaging: Med	
Maximum Display Temperature	80°
Minimum Display Temperature	60°
Maximum RH line	70%
Minimum RH line	20%

Sensor #2	
Sample Data every 00:10:00 HHMMSS	
Type of Averaging: Med	
Maximum Display Temperature	80°
Minimum Display Temperature	60°
Maximum RH line	60%
Minimum RH line	40%

Alarm Settings Example:

Sensor 1 – Thermistor/RH Relay: Enabled
 Trigger relay for 10:00 MMSS
 If temperature >78° for more than 00:30:00 HHMMSS
 If temperature <65° for more than 00:20:00 HHMMSS
 If RH >65% for more than 01:00:00 HHMMSS
 If RH <40% for more than 02:00:00 HHMMSS

Sensor 2 – Thermistor/RH Relay: Enabled
 Trigger relay for 10:00 MMSS
 If temperature >78° for more than 00:30:00 HHMMSS
 If temperature <65° for more than 00:20:00 HHMMSS
 If RH >65% for more than 01:00:00 HHMMSS
 If RH <40% for more than 02:00:00 HHMMSS

Power out alarm: If the AC power alarm is set to **enabled**, the internal alarm sounds, the screen blinks with the error condition, and the relay is triggered if a power failure occurs and the unit is operating on its backup battery.

Calibration: A three-point temperature and RH calibration table is built into the ThermaViewer that can be used to characterize the temperature and RH readings. They can be recalibrated in-house and any correction factors entered into this table

Downloading data: The ThermaViewer will hold and graph more than 1 year of temperature/RH history for each sensor with the settings listed above (10 minute interval). If you want to hold more data you can lengthen the store data interval. An interval of 60 minutes will allow almost 10 years of data to be stored for each sensor. 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).

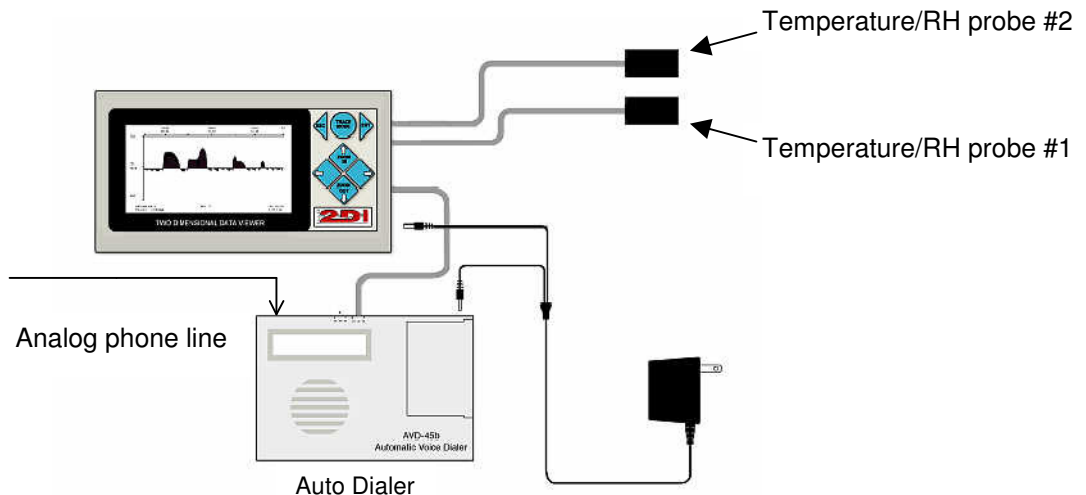
¹ Enable the relay only if you have an alarm or the optional auto-dialer wired to the relay.

Optional Auto-Dialer

The ThermaViewer has its own dry-contact relay to trigger an external alarm or auto dialer. Each sensor can be set to have its own unique high and low temperature and humidity trigger points. The relay will be closed when temperature rises above 78°F for more than 30 minutes or falls below 65°F for more than 20 minutes if the suggested settings above are used. Likewise an alarm will occur if humidity moves outside the set points listed for more than one hour. Once the relay has been triggered, the alarm clock is reset.

If you need faster response time you can decrease the delay time. Setting this value for 1 minute will result in triggering the relay if a high or low temperature is maintained for more than 1 minute. However, if you are sampling temperature every 10 minutes and the alarm is set for one minute you might not see the alarm condition reflected on the chart due to the temperature averaging.

The auto dialer will call four phone numbers (i.e. phone, pager, answering machine or service) and leave a 16 second message when triggered by the ThermaViewer. It will keep calling the four numbers until someone picks up at each number and the message is delivered.



The auto dialer should be set as follows:

- 60 second exit delay
- 20 second entry delay
- N.O. (meaning that the relay is normally open).
- MOM (meaning that it only takes a momentary activation from the relay to trigger the dialer).

A relay test function on the System Parameter Menu of the ThermaViewer causes the relay and internal buzzer to be immediately triggered for 10 seconds. Entering 'yes' in this field causes the ThermaViewer to trigger the auto dialer (if attached) which will call the four phone numbers after 20 seconds. Allow 61 seconds to elapse between the time you exit the programming mode of the auto dialer and when you activate the relay.

Technical support for Auto Dialer only (858) 413-0149