



APPLICATION NOTE: 204

Using the ThermaViewer to monitor temp/rh in clean rooms.

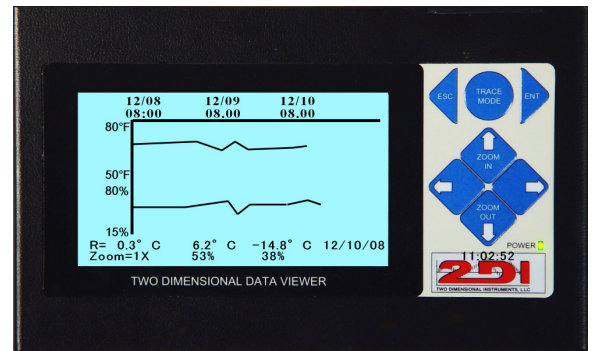
It is critical that the temperature and humidity be monitored and documented in clean rooms.

Clean rooms normally have temperature/RH limits for manufacturing, assembly, and testing. Abnormal temperature and humidity can interfere with these processes, resulting in high reject rates and loss of product. High humidity and/or temperature conditions can cause some instruments to go out of calibration, whereas low humidity facilitates the generation of static electricity, which can destroy not only product but delicate instruments as well. Additionally, ISO 9000 standards may require continuous monitoring and documentation of temperature and humidity.

High humidity conditions brings its own set of problems increasing the wear and tear on the moving parts. Having humidity drop too low **can cause even worse problems**. If it drops low enough, static electricity will build, which when discharged into electronic equipment, can and will blow micro-chunks of material out of the PCB's and chips inside the computers. This creates problems, although not noticeable will compromise stored data and hardware components.

The ThermaViewer is an ideal instrument for monitoring, documenting, and alarming clean rooms. It is equipped with **two temperature/RH sensors ($\pm .3^{\circ}\text{C}$ & $\pm 2\%$)**, to monitor and document temperature and humidity in two different rooms, and a relay to trigger alarms. It is accurate and automatic, providing continuous monitoring and indicating trends so that corrective action can be taken.

Using a ThermaViewer is simple, with minimum set-up required. It needs no programming, maintenance, paper or pens. Simply plug the ThermaViewer into a wall socket and begin collecting temperature/RH data immediately.



ThermaViewer

Installation of the ThermaViewer is a simple 6-step process:

1. Position the two sensor modules in the areas to be monitored.
2. Route and plug in the two 20 foot cables (100 foot cables are available as an option).
3. Plug the power adaptor into a wall socket and into the ThermaViewer.
4. Attach the auto dialer (if purchased).
5. Set the time and monitoring frequency (see below for suggested settings).
6. Set the alarm if needed.

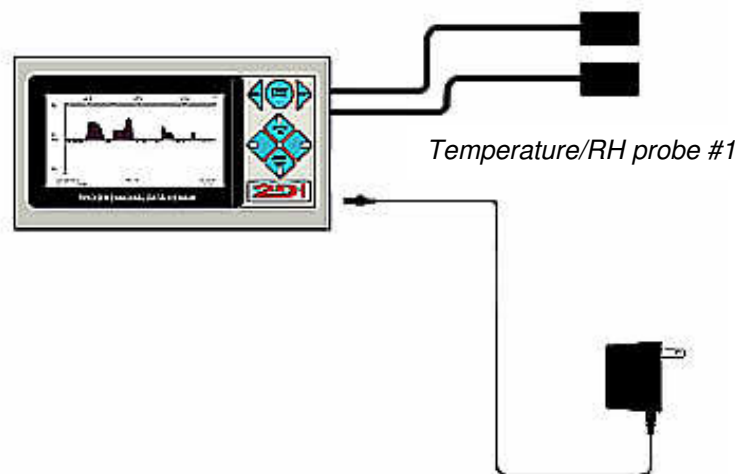
Temperature/RH probe #2

What to Order:

- TDVDR-02 ($\pm .3^{\circ}\text{C}$) \$ 779.00
or
- TDVDR-02-1 (1 sensor) \$ 709.00

Optional Items:

- TDVDR-02A ($\pm 0.2^{\circ}\text{C}$) \$ 829.00
- Auto Dialer \$ 189.00
- 100 foot cable \$ 50.00
- Calibrate temp/RH (2 sensors) \$ 165.00
- Switching power supply (120-240vac) \$ 30.00





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Installation and setup

Mount the ThermaViewer display unit in the room or office area near the area to be monitored. Position each probe 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 sensor settings:

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

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

Suggested Alarm Settings:

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 and triggers the relay if a power failure occurs and 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. Each sensor holds its own calibration table so it can be moved to a different instrument and still be within calibration.

Downloading data: The ThermaViewer will hold and graph almost 1.5 years 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.

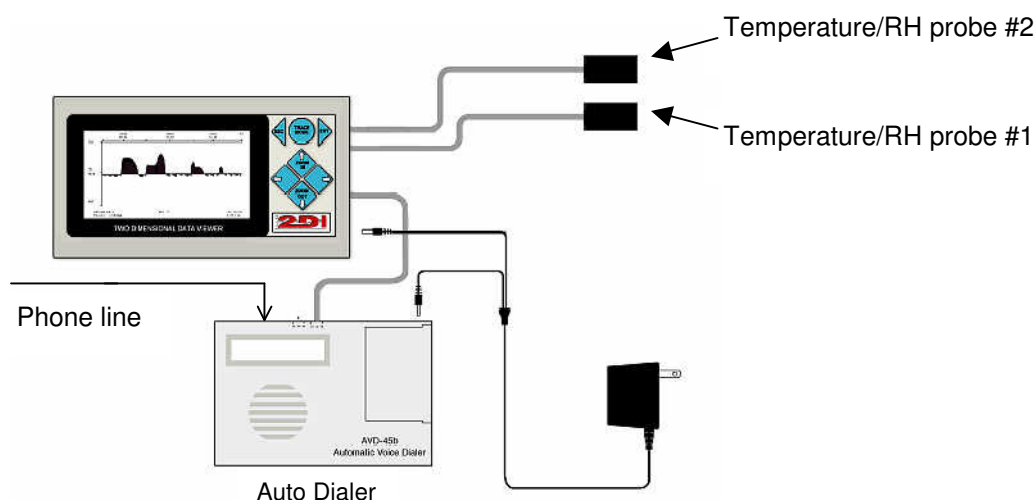
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Optional Auto-Dialer

The ThermaViewer comes equipped with a dry-contact relay that can be used to trigger an alarm or auto dialer. Each probe has its own high and low trigger point. The relay will be closed when temperature rises above 80°F for more than 60 minutes or falls below 60°F for more than 40 minutes, if the suggested settings above are used. Once the relay has been triggered, the alert clock is reset. Therefore in this example, after the relay is triggered, the temperature will have to rise above 80°F for more than 1 hour or falls below 60°F for more than 40 minutes before the relay will be triggered again.

If you need faster response time you can decrease the number of stored temperatures in the probe menus. Setting this value for 1 instead of 6 will result in triggering the relay if one measurement is above or below the set values.

If an auto dialer is ordered with a ThermaViewer, a power supply with two leads is supplied to provide power for both the ThermaViewer and the auto-dialer. 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 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 of the ThermaViewer causes the relay to be immediately triggered. Entering 'yes' in this field causes the ThermaViewer causes the auto dialer to immediately call the four phone numbers stored in its memory. Allow 90 seconds to elapse between the time you exit the programming mode of the auto dialer and you activate the relay.

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