APPLICATON NOTE: 401

Monitoring temperature, humidity & pressure in a clean room

Monitoring temperature and humidity in your clean room does not have to be complicated.

The TV2 Clean Room monitor is an ideal instrument for monitoring and documenting temperature, humidity and pressure. It monitors, alarms, logs and charts all three environmental variables with two sensors. One sensor is used for temperature and relative humidity and the other measures differential pressure.

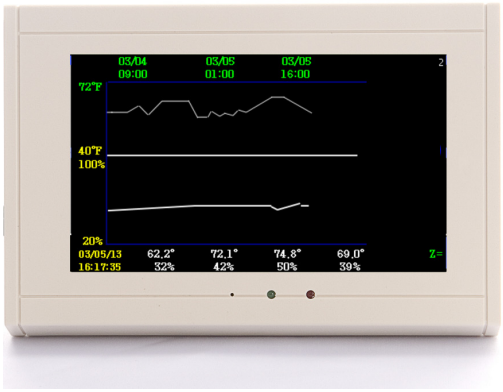
It is accurate and automatic, providing continuous monitoring and indicating trends so that corrective action can be taken. In addition to the display showing the current temperature, RH and pressure, it also show a history chart on the large LCD display.

A trace mode and a zoom feature makes it possible to spot trends as well as see the individual measurements. It requires no special skills to read and interpret and comes equipped with an external N/O relay to trigger an alarm or auto dialer if out-of-spec conditions occur.

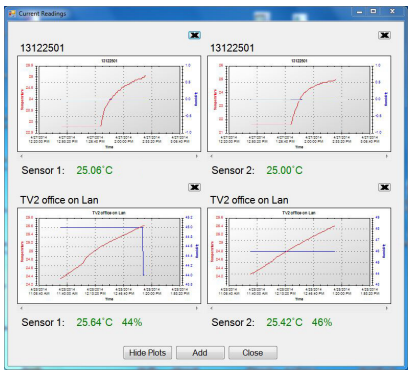
Using a TV2 is simple, with minimum set-up required. It needs no computer programming, maintenance, paper or pens to monitor and document temperature and humidity.

Installation of the TV2 is a simple 5-step process:

1. **Position each sensor modules in the areas to be monitored.**
2. **Plug each sensor into the TV2 monitor.**
3. **Plug the TV2 power adaptor into a wall socket**
4. **Set the time and monitoring frequency (see below for suggested settings).**
5. **Set the alarm as needed.**



Just touch the sensor value to see logged data



View current conditions on your PC

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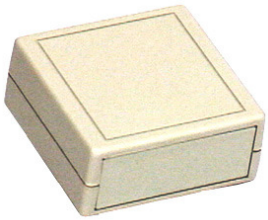
TWO DIMENSIONAL INSTRUMENTS, LLC

Sensors:

Each sensor is wired to the TV2 display with a four conductor wire. The actual temperature and humidity sensor is positioned in a small sensor box. The pressure sensor is also mounted inside a sensor box but has two 1/8" tubes which measure the pressure from two points, compares the readings and shows the differential pressure on the monitor.

Size: 2.4" x 2.2" x 1"



USB or Wired Ethernet:

The TV2 Clean Room Monitor is a stand alone device which never has to be plugged into a computer, however to use the text/email alert feature it must be in communication with a computer running the TView software. To 'talk' to a computer the TV2 monitor can be plugged into a usb port of any PC type computer or attached to your local area network with the Wired Ethernet port on the side of the monitor.

Downloading data:

To download data and send a text or email alert if conditions become unsafe from the TV2 it must to be in communication with a computer. This can be via the USB connection or the wired Ethernet port on the TV2. The TView software installed on a computer or server will establish communication with the TV2 and automatically download data continually so you have a copy of all logged data.

Alarms and Alerts:

The TV2 has an audible and visual alarm if either temperature or humidity strays outside you alarm limits. It will also trigger a text or email if wired to a computer. The TV2 also has a normally open dry contact relay with can be wired to your building alarm system or used to trigger an auto dialer. Additionally the TV2 has a power out alarm which notifies you anytime a power failure occurs.

Battery Backup:

A 100 hour lithium battery not only ensures your data is safe it also continues to power the TV2 if wall power is interrupted. Your logged temperature and humidity readings are stored in SRAM memory so even if the battery fails your data is safe.

Size and Mounting:

The TV2 Clean Room monitor can be installed as a box mount (apx size: 8.5" x 5" x 1") on any wall or as a panel mount which would be embedded in a wall (apx size: 10" x 6").

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Specification:

Number of Sensors	One temperature/RH & one differential pressure
Temp Range	Thermistor sensor -20°C to 80°C (±0.3°C)| RH sensor 0% to 100% (±3.0%) Pressure -1.0" to +1.0"wc (±0.002"wc)
Display screen	Easy touch full color
Display Unit Size	8 3/8" x 5" x 1" (box mount) 10" x 6" (Panel mount)
LCD Display Size	5" diagonal
Alerts	Internal buzzer and flashing screen. Optional auto-dialer or text/email alert
Sample Interval	Variable: Once a minute to once every twenty-four hours
Display Resolution	0.1° on LCD, 0.0001 on PC
Calibration	3 point table for each sensor with optional NIST traceable certificate.
Storage Technique	Non-volatile memory stores more than 60,000 samples for each sensor
Power	Via USB cable from a PC or 5vdc, 50/60hz (120 - 240 volt wall adaptor)
Battery Backup	1100mAh lithium battery will operate the system over 100 hrs
Download to PC	USB cable or optional wired Ethernet connection
Indicators	LCD & LED
User Settings	Onboard password-protected menu system
Alarm conditions	Power failure plus high & low for each sensor
Shipping weight	2 lbs with power adaptor, sensors & cables