

APPLICATION NOTE: 10

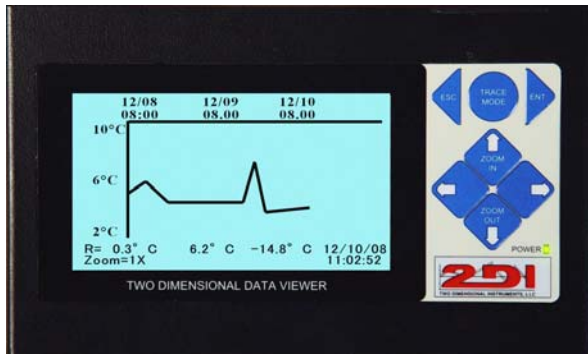
Monitoring tissue stored in refrigerators & freezers.

New JCAHO Standards PC.17.10, effective July 1, 2005

APPLICABLE TO HOSPITALS

Note: The following standards apply to organizations that store or issue tissue, which may include areas outside of the clinical laboratory, for example, surgery and outpatient centers and tissue banks. Examples of tissue specimens that might be found in an organization include bone, cornea, skin, heart valves/conduits, tendons, fascia, dura, bone marrow, veins, arteries, cartilage, sperm, embryos, eggs, stem cells, cord blood, synthetic tissue (artificially prepared, human and non-human based), and other cellular- and tissue-based transplant or implant products.

B 6. Maintain continuous temperature monitoring for storage refrigerators and freezers.



The ThermaViewer is an ideal instrument for monitoring refrigerators and freezers used to store tissue. It is accurate and automatic. It can be equipped with one or two digital sensors that are accurate to $\pm 1.0^{\circ}\text{C}$ for monitoring refrigerators and freezers with temperatures as low as -20°C . For super cold freezers it can be equipped with thermocouples². It provides continuous monitoring and indicates trends so that corrective action can be taken. It's relay can trigger an auto dialer³ to call four numbers if temperature begins to rise or fall.

Using a ThermaViewer is simple, with minimum set-up.. It needs no maintenance, paper or pens.

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

1. Position the sensors in each freezer and/or refrigerator
2. Route and Plug in the two 20 foot sensor wires (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 parameters.

What to Order:

- TDVD-01 two digital sensors \$ 579.00
- OR**
- TDVD-02-1 one digital sensor \$ 529.00

Optional Items:

- ²TDVD-05 thermocouple sensors for -80°C freezers \$ 679.00
- ³Auto-dialer with cable² \$ 189.00
- ⁴100 foot sensor wire \$ 50.00



APPLICATION NOTE: 10

Installation and Setup

Mount the ThermaViewer display near the refrigerator and freezer (in this example) to be monitored. Position one sensor in each unit. The sensors are normally placed about ½ way up from the floor and about ½ way back inside the unit to monitor the average temperature maintained within that appliance. Do not place the probe near the roof of the freezer. This is where the hot air accumulates during the defrost cycle. If the probe is in that area you will get false measurements and could even get a phone call in the middle of the night when the relay trips. (If your standards call for positioning the probes in other locations you should follow those guidelines.)

The following are suggested settings.

Suggested settings for 40°F refrigerator and a --5°F Freezer:

Freezer Probe #1

Sample data every 00:10:00 HHMMSS
Type of averaging: Med

Maximum Display Temperature 50°
Minimum Display Temperature 40°

Freezer Probe #2

Sample data every 00:10:00 HHMMSS
Type of averaging: Med

Maximum Display Temperature 45°
Minimum Display Temperature -10°

Alarm Settings:

Sensor 1 – Temperature F°
Trigger relay for 10:00 MMSS
If temperature > 50° for more than 00:30:00 HHMMSS
If temperature < 40° for more than 00:20:00 HHMMSS

Sensor 2 – Temperature F°
Trigger relay for 10:00 MMSS
If temperature > 10° for more than 00:30:00 HHMMSS
If temperature < -10° for more than 00:20:00 HHMMSS

Averaging temperature: Setting the sensors to use the 'Med' averaging will cause the sensors to sample data every 5 seconds and store data every 10 minutes. This causes the chart to more accurately reflect the internal temperature of the stored materials rather than the air temperature of the refrigerator or freezer. Momentary dips and rises of the air temperature, which occur when the door is opened are not enough to affect the actual stored materials and can safely be averaged over the 10 minute period between readings.

The alarm: In addition to the temperature alarm the power failure alarm will also sound (if enabled) and close the relay if the unit is operating on battery power.

Calibration: The Thermistor, thermocouple and Thermistor/RH sensors can be calibrated and any corrections entered into a three-point calibration table. The sensor carries the calibration corrections so that it can be moved from display to display without losing accuracy. (The digital sensor used by **the TDVD-01model cannot be calibrated.**)

Downloading data:

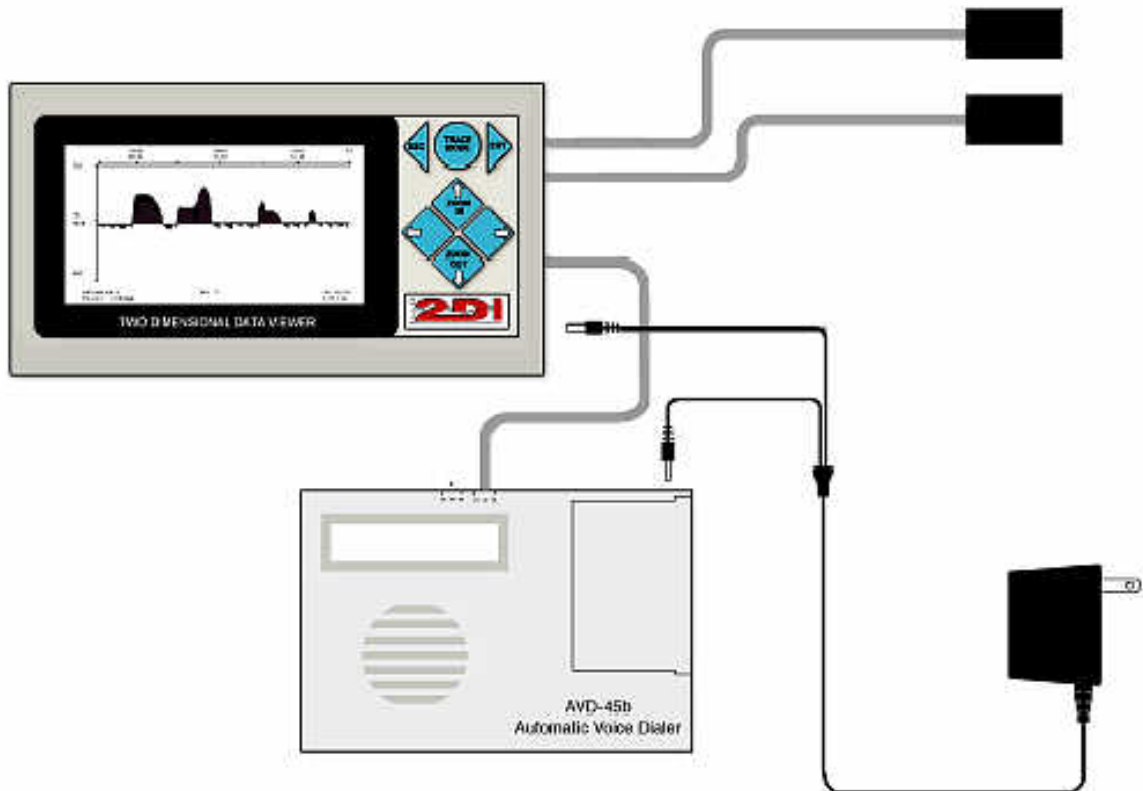
The ThermaViewer will hold and chart approximately 1.5 years of temperature history for each sensor with the above settings. A regular schedule for downloading data from the ThermaViewer should be established so that a back up copy of the data is maintained in your computer. You can also print out a copy of the graph 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 only if you have an alarm or the optional auto-dialer wired to the relay.

APPLICATION NOTE: 102



The optional phone dialer will insure that you are notified if temperatures rise or fall outside of the safe range. This phone dialer meets the new JACHO standard PC.17.10 B8 which requires that storage equipment have functional alarms and emergency back-up.



Installing the ThermoViewer with the Auto Dialer, which will call four different phone numbers (cell, pager, home phone, etc...) if temperature begins to rise into the unsafe zone.