

APPLICATION NOTE: 308

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 thermistor probes that are accurate to $\pm .2^{\circ}\text{C}$ or $\pm .1^{\circ}\text{C}$ ¹ for monitoring refrigerators and freezers with temperatures as low as -40°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.



ThermaViewer

Using a ThermaViewer is simple, with minimum set-up time required. It needs no maintenance, paper or pens. Simply plug the ThermaViewer into a wall socket, insert the 9 volt battery backup, set the date and time and begin collecting and documenting temperature immediately.

Installation of the ThermaViewer is a simple 5 step process:

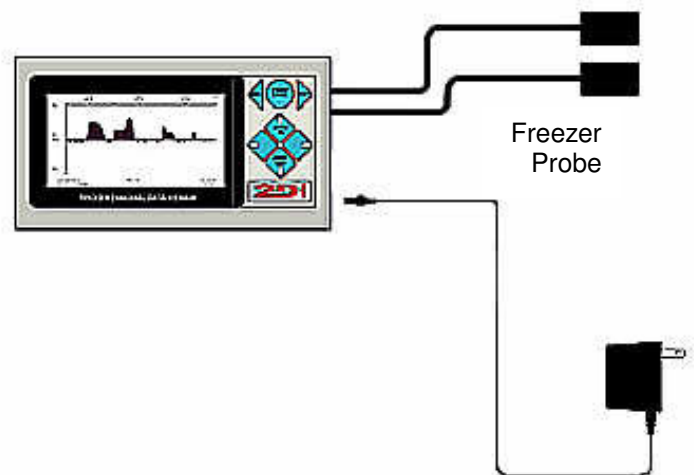
1. Position the two sensor modules in the tissue storage refrigerator/freezer to be monitored.
2. Route and Plug in the two 20 foot cables (100 foot cables are available as an option⁴).
3. Plug the power adaptor into a wall socket and insert the battery backup.
4. Attach the auto dialer (if purchased).
5. Set the time and monitoring frequency (see below for suggested settings).

What to Order:

- TDVD-02 ($\pm 0.2^{\circ}\text{C}$) 2 thermistors \$ 649.00

Optional Items:

- ¹Optional thermistor ($\pm 0.1^{\circ}\text{C}$) \$ 50.00ea
- ²TDVD-05 thermocouple probes \$ 649.00
- ³Auto-dialer with cable² \$ 165.00
- ⁴100 foot cable \$ 50.00





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Installation and Setup

Mount the ThermaViewer display near the tissue storage refrigerator and freezer. Position each probe in the refrigerator or freezer to be monitored. The probes are normally placed in the unit to be monitored. You should avoid mounting the probe near the ceiling of a freezer because during the defrost cycle; the air temperature in this area could be as high as 55°. This will trigger a false alarm and cause a very high temperature reading to appear on the display unit.

The following are suggested settings. You should use the settings required by your standards based on your quality assurance plan.

Suggested settings:

Tissue Storage Freezer at -30°C Probe	
Sample Data every	15 seconds
Store Data every	10 minutes
Recorded Temperature	Average
Temperature Scale	C°
Maximum Display Temperature	-10°
Minimum Display Temperature	-35°
Reference Line	-30°
Relay Enabled ¹	
Activate Relay for	0:10 (min:sec)
When Temp > -10° for 4 stored temperatures	
When Temp < -35° for 5 stored temperatures	

Super Cold Freezer at -80°C Probe	
Sample Data every	15 seconds
Store Data every	10 minutes
Recorded Temperature	Average
Temperature Scale	F°
Maximum Display Temperature	-10°
Minimum Display Temperature	-90°
Reference Line	-80°
Relay Enabled ¹	
Activate Relay for	0:10 (min:sec)
When Temp > -10° for 4 stored temperatures	
When Temp < -90° for 5 stored temperatures	

Setting the probes to sample data every 15 seconds and store data every 10 minutes causes the ThermaViewer to take forty samples and plot the average. This buffers the readings so that a more accurate temperature is displayed on the graph and captured in memory. Momentary dips and rises of the air temperature, which occur when the door is opened or the defrost cycle kicks in are not enough to affect the actual temperature stored material and can safely be averaged over the 10 minute period.

Downloading data:

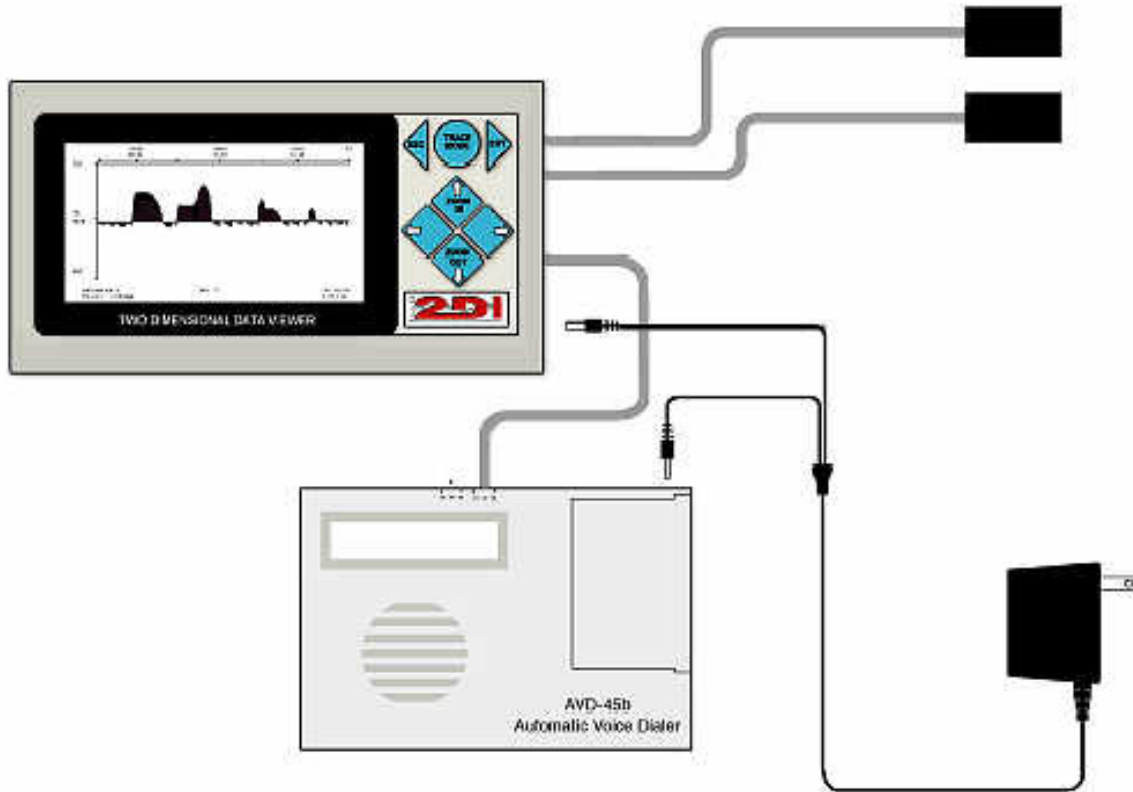
The ThermaViewer will hold ten months of temperature data for each probe with the settings above. A regular schedule for downloading data from the ThermaViewer should be established so that a back up copy of the data is maintained in your computer. You can also print out a copy of the graph with the same program that downloads data to your computer (TView). This download program can be downloaded from our Internet web site. There is no license, so the software can be installed on multiple computers if needed. Downloading the temperature data is as simple as plugging the PC cable into the ThermaViewer and a serial port on your computer and clicking the 'Upload' button.

¹ Enable the relay only if you have an alarm or the optional auto-dialer wired to the relay. See note 102

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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.