

APPLICATION NOTE: 303

Monitoring and Documenting Vaccine/Medicine Storage

Hospitals, laboratories, doctor's offices, and even National Guard Units store vaccines and medicines in home type refrigerators and freezers because they are inexpensive and readily available. These units are not built to maintain the same close temperature tolerances that scientific units do. Because fluctuations in temperature can be so critical to the viability and effectiveness of biomedical products it is best to monitor the temperatures of these units. In addition some regulatory bodies require the constant monitoring of medicines and vaccines during the storage process.

The time-honored method of manually monitoring the refrigerator with a piece of paper stuck to the side of the unit is not adequate. It is necessary to continuously monitor and keep a permanent record of the temperature twenty-four hours a day, seven days a week. It is all too easy for a unit to malfunction, warm up and then cool down while no one is around. Were this to happen, it wouldn't be noticed with the manual system where temperature is recorded only once a day. And, of course, with the manual system there is no way to tell what happened over the weekend.

The ThermaViewer is an ideal instrument for monitoring the temperature of vaccine and medicine storage coolers and freezers. It is accurate and automatic, providing continuous monitoring, even indicating trends so that corrective action can be taken. Its two probes create a temperature history chart for two different coolers, which is displayed on the large LCD display. No special training is required to read or interpret the chart and a trace mode lets you highlight any unusual temperatures and zoom in for a closer look. Data can be downloaded to your computer for printing or archiving on the hard disk if required by a regulatory body.



ThermaViewer

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

Installation of the ThermaViewer is a simple five step process:

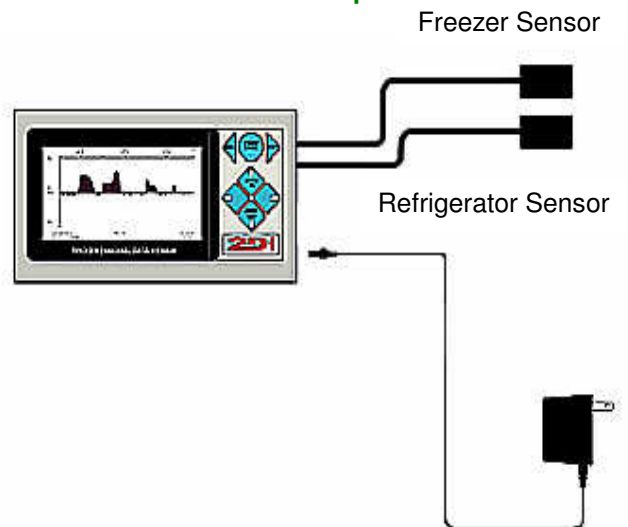
1. **Position each of the two sensor modules in each refrigerator to be monitored.**
2. **Route and Plug in the two 20 foot cables (longer cables are available as an option).**
3. **Plug the power adaptor into a wall.**
4. **Attach the auto dialer (if purchased).**
5. **Set the time and monitoring frequency (see below for suggested settings).**

What to Order:

- TDVD-01 (2 digital sensors) \$ 579.00
or
- TDVD-01-1 (1 digital sensor) \$ 529.00

Optional Items:

- Auto-dialer with cable \$ 189.00
- Backlit display \$ 30.00
- Local alarm (strobe & siren) \$ 50.00
- 100 foot cable \$ 50.00





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- International power supply \$ 30.00

Power Cord



Installation and Setup

Mount the ThermaViewer display unit near the refrigerators or freezers to be monitored. Position one probe in the each unit. The probes are normally placed about 1/2 way up from the floor and about 1/2 way back inside the unit to monitor the average temperature. Do not place a freezer probe near the top of the freezer, as this is where warm air can accumulate during a defrost cycle. This will produce inaccurate readings and could trigger the alarm. (If your standards call for positioning the probes in other locations you should follow those guidelines.)

The following are suggested settings for using one sensor for a refrigerator and one sensor for a freezer.

Suggested settings:

Refrigerator Probe	
Store Data every	10 minutes
Maximum Display Temperature	55°
Minimum Display Temperature	30°

Freezer Probe	
Store Data every	10 minutes
Maximum Display Temperature	10°
Minimum Display Temperature	-20°

Alarm Settings for Refrigerator	
Relay: Enabled	
Activate alarm for 10:00 min.sec	
If temperature > 7° for > 20:00 mm:ss	
If temperature < 3° for > 30:00 mm:ss	

Alarm Settings for Freezer	
Relay: Enabled	
Activate alarm for 10:00 min.sec	
If temperature > -10° for > 20:00 mm:ss	
If temperature < -40° for > 30:00 mm:ss	

Setting both a temperature and an elapsed time insures that you will not get false alarms if some one opens the door or a defrost cycle should start. Momentary dips and rises of the air temperature, which occur when the door is opened are not enough to affect the actual medicine or vaccine temperature and can safely be tolerated for brief periods of time.

Downloading data:

The ThermaViewer will hold more than a year of temperature data for each probe with the settings listed above. A regular schedule for downloading data from the ThermaViewer should be established if a back up copy of the data is needed or a printed chart is desired. You can easily print out a copy of the chart with the TView program available on our web site. Download data is a simple as plugging the PC cable into the ThermaViewer and a serial port on your computer and clicking on the 'Upload' button.

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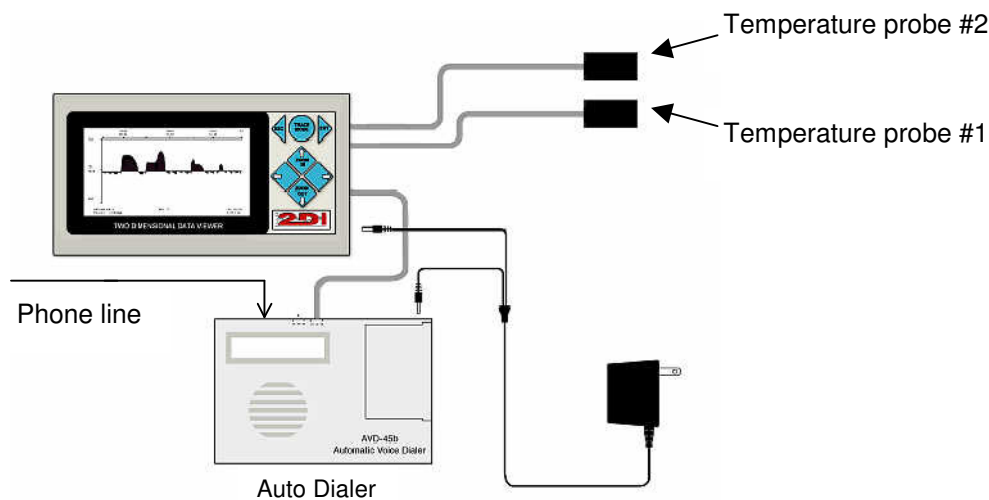
¹ Enable the relay only if you have an alarm or the optional auto-dialer wired to the relay.

Optional Auto-Dialer

The ThermaViewer comes equipped with a dry-contact relay that can 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 to close the relay which 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