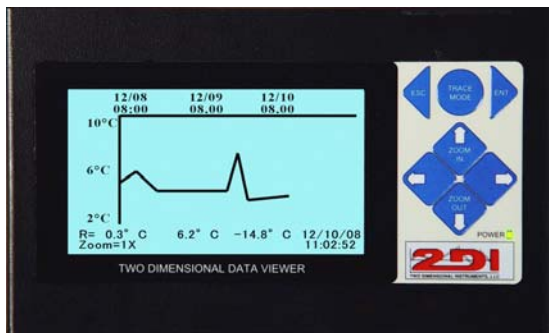


# APPLICATION NOTE: 10

## Easy Freezer Alarm

- **Easy to install** (*installs in minutes*).
- **Easy to use and interpret** (*anyone can read the chart*).
- **Easy to download to a computer** (*cable & software included*).
- **Works with any refrigerators and/or freezers.**
- **Monitors 24/7.**
- **Stores 1.5 years of temperature history.**
- **Optional auto dialer calls up to 4 different numbers.**



A quick look at the large display is all that is needed to insure that the proper temperature has been maintained over the last day, week, month or year. It shows the current temperature and over a year of temperature history for two different freezers. Its relay will trigger the audio/visual alarm and the optional auto dialer if the temperature gets too warm or cold.

It complies with 21 CFR 11 and JCAHO standards storing over a year of temperature history that can be downloaded to a computer for a printed chart.

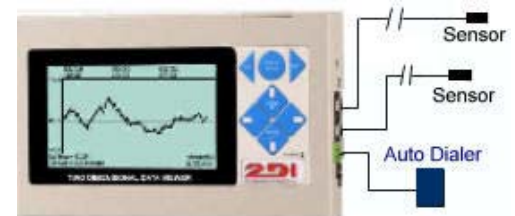
Because the display is easy to read and the chart easy to interpret, each employee becomes part of your quality control effort every time they glance at it. If the temperature was ever unsafe it is immediately obvious.

**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 (2-digital sensors  $\pm 1.0^{\circ}\text{C}$ ) \$ 579.00 **(-20 to 75°C)**  
or
- TDVD-02 (high accuracy sensors) \$ 679.00 **(-20 to 75°C)**  
or
- TDVD-05 (2 thermocouples) \$ 679.00 **(-250 to 1250°C)**



### Optional Items:

- Auto Dialer with cable \$ 189.00
- 100 foot cable \$ 50.00
- Calibration to NIST stds Call
- International switching power supply (100-240vac) \$ 30.00



# APPLICATION NOTE: 10

## Setup

Mount the ThermaViewer display near the two freezers (in this example) to be monitored. Position one sensor in each freezer. 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 –20°C Freezer and a –80°C Freezer:

<b>Freezer Probe #1</b>	
Sample data every 00:10:00 HHMMSS	
Type of averaging: Med	
Maximum Display Temperature	- 5°
Minimum Display Temperature	-25°

<b>Freezer Probe #2</b>	
Sample data every 00:10:00 HHMMSS	
Type of averaging: Med	
Maximum Display Temperature	-35°
Minimum Display Temperature	-90°

### Alarm Settings:

Sensor 1 – Temperature	
Trigger relay for 10:00 MMSS	
If temperature > -5° for more than 00:30:00 HHMMSS	
If temperature < -30° for more than 00:20:00 HHMMSS	

Sensor 2 – Thermistor/RH	
Trigger relay for 10:00 MMSS	
If temperature > -50° for more than 00:30:00 HHMMSS	
If temperature < -90° 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 10 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-01 model 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.

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

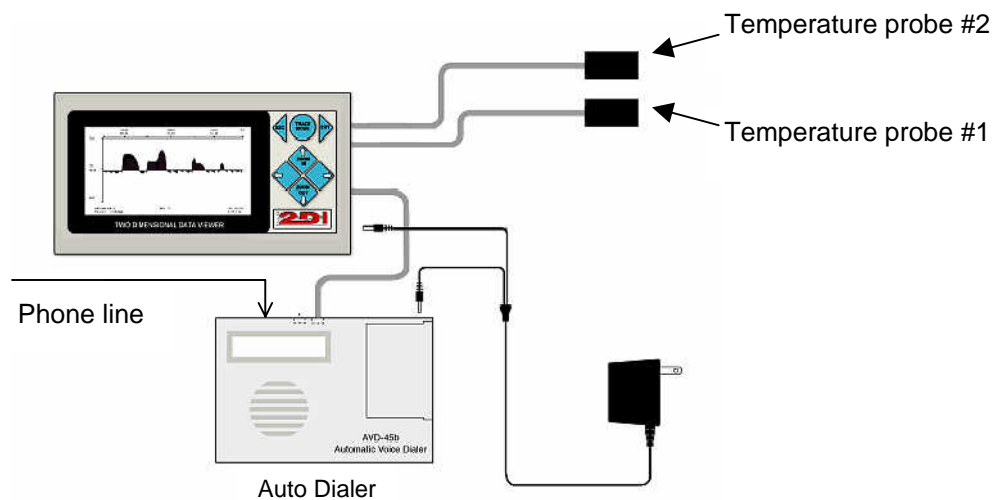
## APPLICATION NOTE: 102

### Optional Auto-Dialer

The ThermaViewer comes equipped with a relay to trigger an external alarm and/or auto dialer. Each sensor has its own high and low set point. The relay will be closed when temperature rises above your set point for a certain amount of time. Once the relay has been triggered, the alert is reset. In the above example, if the temperature rises above the set point (-5°C and -50°C) for either of the two sensors more than 30 minutes the relay will be closed for 10 seconds.

If you need faster response time you can decrease the delay time.

The auto dialer will call up to four phone numbers (i.e. phones, pagers, answering machines, etc...) and leave a 16 second message. It will keep calling the four numbers until someone answers at each one and the message is delivered.



The auto dialer should be set as follows:

- 60 second exit delay
- 20 second entry delay
- N.C. (meaning that the relay is normally closed).
- 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 relay to close for 10 seconds to trigger the auto dialer. Allow at least 61 seconds to elapse between the time you exit the programming mode of the auto dialer and you activate the relay if the exit delay is set to 60 seconds.