



APPLICATION NOTE: 402

Monitoring and documenting the cool down process

To monitor the cool-down process during food manufacturing, a stainless steel probe is placed in the food product and temperature is monitored and documented as it cools down over a period of time, which can range from several minutes to many hours. The ThermaViewer is ideally suited for this purpose.

In a typical installation where the user is monitoring and documenting the cool down process of meat, a sample piece of meat is placed in a 21 °F cooler after the internal temperature has been raised to 145°-160 °F. A stainless steel probe wired to the ThermaViewer is placed in the meat sample and the sample rate is set for every 15 seconds. The ThermaViewer is mounted in a dry room and connected to the probes with a cable and to a computer via the serial port. The ThermaViewer displays a temperature chart during the cool-down process. Once the internal meat temperature has stabilized a printed record of the chart is generated from the computer.

Using a ThermaViewer is simple, with minimum set-up time required. The date and time is set if not already done and any old data is cleared from the system by resetting it to factory defaults. Lastly the sample rate is set for 15 seconds and the chart parameters are set for: Maximum 160 °F, and Minimum 15 °F. The ThermaViewer immediately begins recording and displaying temperature data.



Once the cool-down process is completed the temperature chart is uploaded to the computer with the TView program. Once it is running click on the 'upload' button on the TView program and the data is transferred to the computer screen, from which it can be saved to a file or printed. Header information is included which shows batch number and any other information the manufacture needs to add.

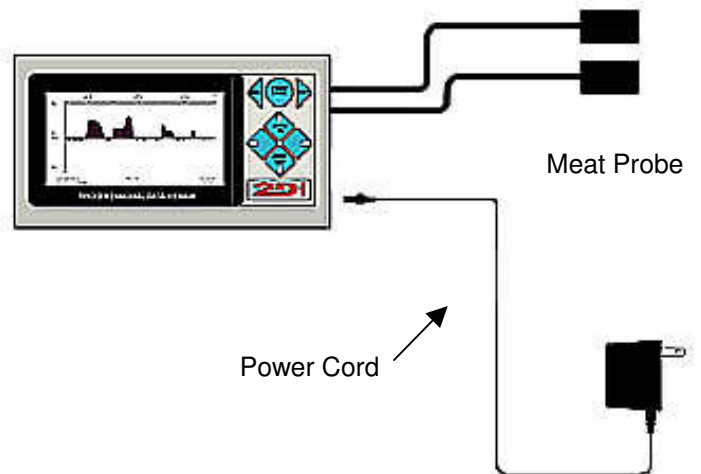
The auto-download function of the TView program can be used to automatically pull data from the ThermaViewer on a timed interval. For example, it can be set to automatically download temperature data every 5 minutes from each of the two probes and save it in a file on the computers hard drive.

What to Order:

- TDVD-02 (2 K-type TC probes) \$ 679.00
- Stainless steel probes (2) 130.00

Optional Items:

- Auto-dialer with cable² \$ 189.00
- 100 foot cable (ea) \$ 50.00





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Installation and Setup

Mount the ThermaViewer display in a dry room. Run the probe cables into the coolers where the meat will be placed after it is cooked. A 20' molded plastic cable is supplied with each probe and it should be used within the cooler itself. If a longer cable is needed the plastic cable can be extended with normal telephone cable (8 conductor silver satin cable). This extension should **not** be placed in coolers as it will, over time, oxidize and cause inaccurate readings.

The following are suggested settings for this example. We will assume that we want to monitor two pieces of meat that have been cooked to 160°F and are being cooled to 21°F over 5–10 hours.

(You should use the settings required by your standards based on your quality assurance plan.)

Suggested settings:

1 Probe		Probe 2	
Sample Data every	15 seconds	Sample Data every	15 seconds
Store Data every	15 seconds	Store Data every	15 seconds
Recorded Temperature	Average	Recorded Temperature	Average
Temperature Scale	F°	Temperature Scale	F°
Maximum Display Temperature	170°	Maximum Display Temperature	170°
Minimum Display Temperature	15°	Minimum Display Temperature	15°
Reference Line	15°	Reference Line	15°
Relay Enabled ¹		Relay Enabled ¹	
Activate Relay for	0:10 (min:sec)	Activate Relay for	0:10 (min:sec)
When Temp > 180° for 30 stored temperatures		When Temp > 310° for 60 stored temperatures	
When Temp < 100° for 40 stored temperatures		When Temp < 280° for 10 stored temperatures	

Setting the probes to average the sample data causes the ThermaViewer to take many 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 of the blood products and can safely be averaged over the 10 minute period.

Downloading data:

The ThermaViewer will hold over 1½ years of temperature data for each sensor with the settings above. A regular schedule for downloading data from the ThermaViewer can 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 temperature history chart with the same program that downloads data to your computer (TView). This 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 application note 102