



APPLICATION NOTE: 403

Monitoring & documenting temperatures with thermocouples

Many manufacturing and research processes use external heat sources. It is important to monitor and document the temperature of this process over time for quality assurance. The ThermaViewer with its flexibility in sample rates and displaying data makes it ideally suited for this purpose.

It can be set to sample and store temperatures at different rates. This allows for electronically buffering the temperature. For example, the ThermaViewer can be set to sample temperature every 15 seconds and store a value every 30 minutes. In this example, it will take 120 samples and then store some value. It can store the average of these 120 samples, or the maximum of the samples. It could also store the minimum value or the exact middle of the range.

In most cases a thermocouple probe because of the range of temperatures. Two K-type thermocouples are supplied with the unit and can monitor temperatures between -200°C and 1250°C.

Using a ThermaViewer is simple, with minimum set-up time required. It stores and display weeks, months, and even years of temperature history for each of its two probes. Because it doesn't need paper charts or pens to draw the graph, there is no ongoing labor or expense of replacing charts or pens. The graph, unlike the old paper charts, is very easy to understand, which means that every employee will become part of your quality assurance. Each time they glance at the ThermaViewer they see a exact history of the temperatures.



It needs no programming or maintenance. Simply plug the ThermaViewer into a wall socket and begin collecting and documenting temperature immediately.

Installation of the ThermaViewer is a simple 5 step process:

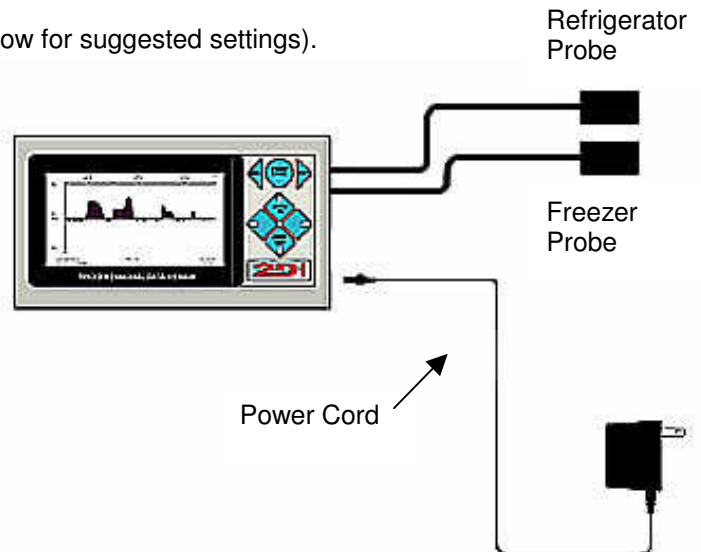
1. Position the two thermocouples in area you want to monitor and document.
2. Route and Plug in the two sensors on the 20 foot cables (100 foot cables are available as an option).
3. Plug the power adaptor into a wall socket and into the ThermaViewer.
4. Attach the auto dialer (if purchased).
5. Set the time and monitoring frequency (see below for suggested settings).

What to Order:

- TDVD-05 (2 K-type TC probes) \$ 649.00

Optional Items:

- Auto-dialer with cable² \$ 165.00
- 100 foot cable \$ 45.00





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Installation and Setup

Mount the ThermaViewer display in an area that can easily be seen by everyone. The probe cable plugs into the display unit and into a small TC module. The thermocouple itself plugs into the small TC module and comes with a six foot TC wire. Position each thermocouple in the area to be measured.

The following are suggested settings for a hypothetical example. We will assume that we want to monitor an oven and a heated liquid: One that is normally maintained at 55°C and the liquid at 300°F. We also want to be alerted if the oven rises to over 65°C for more than 25 minutes or falls below 35°C for more than 3 minutes. We want the heated liquid to maintain 300°F and want to be alerted if the temperature rises above 310°F for more than 10 minutes or falls below 280° for more than 2 minutes.

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

Suggested settings:

1 Probe (oven)		Probe 2 (heated liquid)	
Sample Data every	15 seconds	Sample Data every	15 seconds
Store Data every	5 minutes	Store Data every	1 minutes
Recorded Temperature	Average	Recorded Temperature	Average
Temperature Scale	C°	Temperature Scale	F°
Maximum Display Temperature	70°	Maximum Display Temperature	315°
Minimum Display Temperature	15°	Minimum Display Temperature	260°
Reference Line	55°	Reference Line	300°
Relay Enabled ¹		Relay Enabled ¹	
Activate Relay for	0:10 (min:sec)	Activate Relay for	0:10 (min:sec)
When Temp > 60° for 5 stored temperatures		When Temp > 310° for 5 stored temperatures	
When Temp < 35° for 2 stored temperatures		When Temp < 280° for 2 stored temperatures	

Setting the probes to sample data every 15 seconds and store data on a longer interval causes the ThermaViewer to take several samples then plot and store the average of the readings.

Downloading data:

The ThermaViewer will hold five months of temperature data for the oven probe and one month of history for the heated liquid with the settings listed above. If the stored interval is longer, a longer period of time will be covered. For example, if temperature is stored once every 10 minutes the ThermaViewer will store ten months of data for each probe.

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).

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