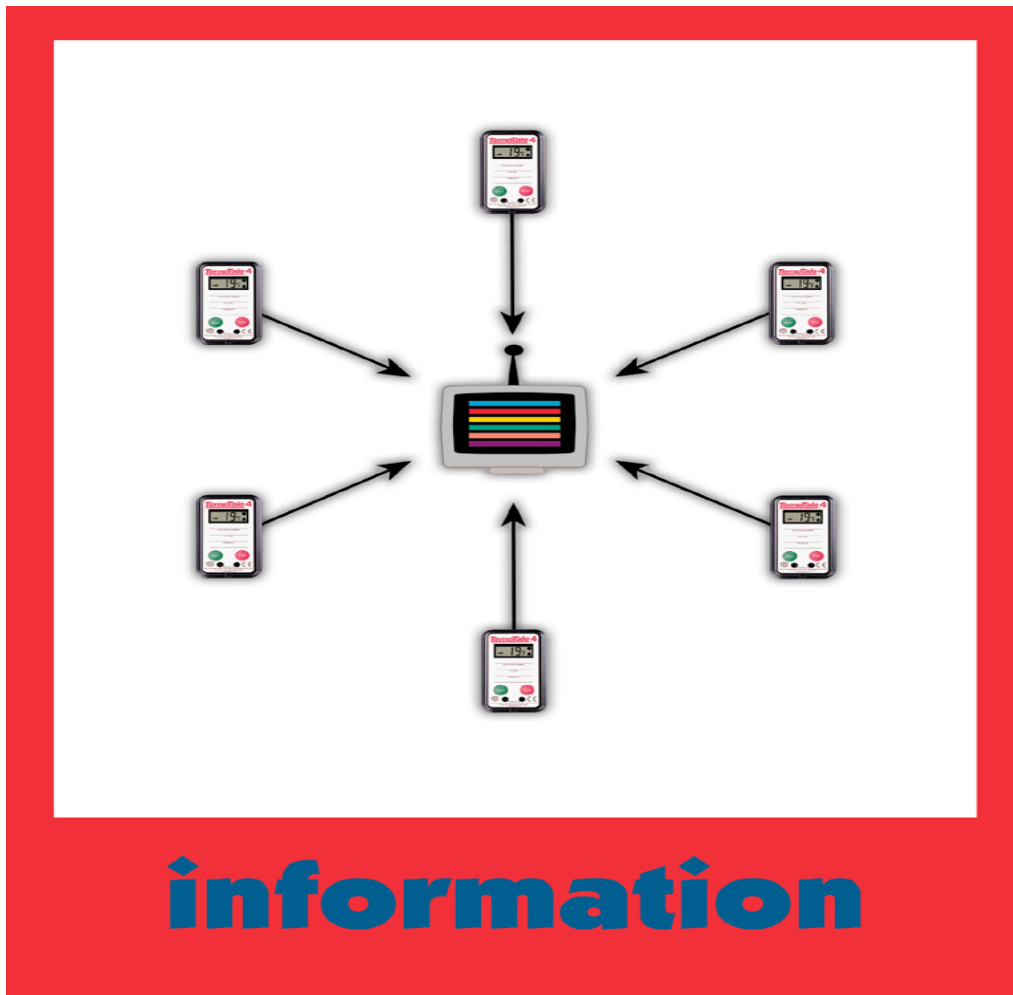


TempTale Technical Training Guide



What is a Temptale?

A Temptale is an instrument used to provide reliable, affordable, and accurate collection of temperature data from many different environments.

It is used by many industries to record conditions during air, marine, and land transportation, as well as to monitor environmental conditions while products are in storage. TT3's & TT4's use thermister technology to measure ambient temperatures, or they measure core temperatures with the optional probes.

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Measurement Intervals & Read Time:

The TT3 (only) Temptale Monitor does not contain a real time clock, but rather an interval counter, which is based on the measurement interval time span. Due to this fact the time is calculated by using the value stored in this internal counter not actual time. The counter is counting data points recorded or measurement intervals. This value is then used to determine the units start time with respect to the PC's clock at the time of the download, which is then used as a reference for both time and date. Also important to note, each time the monitor is jacked it is held in reset, which prevents the monitor from indexing the address counter from which time is calculated. Thus, download times will drift for the time the monitor is jacked. Holding the monitor in reset is done so that the PC can access its memory without the monitor interrupting it.

Consider a monitor configured with a 3-minute measurement interval and a 0-minute start-up delay:

PC Clock Time:	10:00	10:03	10:06	10:07	10:08	10:09
Event:		1 st Interval	2 nd Interval	-----	-----	3 rd Interval
Action:	Start Monitor	-----	-----	Unit Downloaded 2 Intervals Completed	Unit Downloaded 2 Intervals Completed	Unit Downloaded 3 Intervals Completed
Resulting Read Time:	-----	-----	-----	Monitor counts back 2 intervals (6 minutes) Data indicates monitor started at 10:01	Monitor counts back 2 intervals (6 minutes) Data indicates monitor started at 10:02	Monitor counts back 3 intervals (9 minutes) Data indicates monitor started at 10:00

As can be seen by the above example, the time may vary within one measurement interval depending where in the interval the monitor was downloaded. As can also be seen, this corrects itself each time the monitor takes another measurement. The larger the measurement interval, the greater the tolerance will be. Therefore, we recommend selecting the smallest interval suitable for desired trip monitoring time.

Frequently Asked Questions (FAQ) About Temptale Monitors

How often do monitors need to be calibrated?

The Temptale product design uses a self-calibrating circuit. This means that every time a monitor is started, the microprocessor determines the circuit resistance by using a high precision resistor in place of the Thermister. This allows the unit to compensate for any effects the electronic circuit has on accurate temperature readings over the life of the product. A properly assembled unit will hold an accuracy of between +/- 0.5°C and +/- 1°C depending on the temperature range in which it is used. A Temptale monitor, therefore, does not need to be “re-calibrated” over its useful life.

How do I know that my Temptale monitor is still accurate?

All Temptale monitors are guaranteed to operate within their accuracy specifications for a period of one year from original ship date. For customers who require that a Temptale monitor be validated more often than once annually, Sensitech offers a Post Use Validation service.

What is Post Validation?

Post Validation is a procedure, done before an annual refurbishment that confirms that a monitor is still accurate and working within warranted specifications. Our clients who need to validate the results of a monitor that was used in a study or other regulated activity most often uses this service. Placing the monitor into a controlled chamber, which is programmed to cycle the monitor through three predetermined temperatures and/or humidity ranges, validates the temperature accuracy of the monitor. The chamber temperature is allowed to stabilize at each range while the monitor records data throughout the cycle. Also recording data during the Temperature cycle is an Ertco -Hart Thermometer, Model EH850C and Ertco-Hart PRT, Model 12001 -B-6-6-2-A temperature monitor and/or for Humidity, a Edgetech Model 2002C1 Dew Point Hygrometer. The data recorded by the Temptale monitor are compared to the data recorded by the Ertco Hart or Edgetech monitor to determine the compliance of the monitor. When the test is complete, the customer is provided with a Certificate of Validation indicating the test results.

How does Sensitech test their Temptale monitors?

Each Temptale monitor is put through an accuracy test before it is shipped to the customer. The testing is performed using a N.I.S.T traceable temperature and/or humidity chamber. Depending on the type of monitor, the test involves either a two-point or a three-point accuracy check.

What if I want to perform my own tests for temperature accuracy?

Sensitech Inc. recommends that customers use the Ice Bath Test procedures listed on page 7 of the Validation Package. The ice bath test is the most precise way to test for temperature accuracy. Remember to seal the monitor in a watertight plastic bag.

How long does the Temptale monitor last?

A multi-use Temptale monitor has a one-year warranty. This means that we guarantee the battery life and accuracy for a one-year period. While the life of the battery in a Temptale monitor may extend beyond a year, Sensitech will only guarantee the monitor's accuracy for one year from the original ship date.

What do I do at the end of the year?

We recommend that the multi-use monitors be sent to Sensitech each year for trade-in. Due to lapse of one year warranty.

What type of documentation does Sensitech provide with their Temptale monitors?

A Certificate of Validation is included when a monitor is shipped. This certificate is sent with both single-use and multi-use monitors, indicating that they are accurate for one year. When a Post Validation is performed, a new Post Validation Certificate is included indicating the test results (three point temp or humidity test levels).

What is the response time of the Temptale monitor?

Response time of the Temptale monitor depends on several factors including airflow, temperature change and pressure. Since all situations are not constant, Sensitech cannot claim a specification for response time.

How does the Temptale (TT3) monitor record dates and times?

The Temptale (TT3) monitor does not contain an internal clock; all times and dates are based on the PC that is used to read the Temptale. It is important that the PC clock be accurate in order for times and dates to be properly displayed.

How do I know that the Temptale Manager software is reading the accurate data from a Temptale monitor?

All Sensitech software products are thoroughly tested before they are shipped to customers. For a copy of our Software Validation package, contact your Client Services Representative.

Can I put the (TTD) Dry Ice monitor directly in the dry ice environment?

No. Only the probe is designed for this environment. The actual monitor will not provide optimal performance if the battery and monitor housing reach temperatures below -30°C .

Are TempTale3 monitors waterproof?

No, TempTale3 monitors are not waterproof and should not be subjected to wet environments. However, if a probe monitor is used, the probe and connecting cable (not the monitor case) can be safely submerged in water or other moist environment and the monitor will function properly.

Do I have to wait until prompted to plug the interface into the TT3 monitor or place the TT4 in the interface cradle when I'm downloading or configuring?

Yes, only plug in the interface, or "jack" the monitor when prompted to do so. Jacking the monitor Or placing it into the interface cradle too soon can result in invalid or corrupt data results.

Is it OK to leave the (TT3/TT4) Temptale monitor plugged into the interface or cradle when not downloading?

No, be sure to unplug monitor when prompted. Leaving the TT3 monitor plugged into the interface when not downloading or configuring will unnecessarily drain the monitor's battery.

Leaving a TT4 in the interface would not have the same effect as a TT3, however after 90 seconds the TT4 would go into a time out feature and the monitor would have to be lifted off and replaced into the cradle for a download or configuring to occur.

Is it OK to leave my TripStrip plugged in all the time?

Yes if it is an AC unit.

DC units can be charged and then unplugged.

Frequently Asked Questions (FAQ) about TTM Software.

TTM won't install and I'm running on a Novell Network?

Reboot the computer, but this time doesn't log onto the network. Install TTM and reboot the computer when prompted – this time log onto the network.

Upon downloading TTM doesn't recognize that the Temptale monitor is connected?

Click on Administration at the menu bar and select Hardware Setup. By default TTM selects the Interface plus as monitor reader type.

If you are using a switch box to connect the PC Interface cable to your computer and TTM does not recognize the interface – try connecting the interface directly to the computer.

When upgrading to a new version of TTM do I need to uninstall my previous version?

Yes, always be sure to uninstall any previous versions of TTM software prior to installing your TTM upgrade. Use the uninstall Shield in the Temptale Manager program group.

(Note: The uninstaller will NOT remove the TTM data files you have saved using TTM. When uninstalling, the uninstaller may ask you if you wish to delete a file that is being shared by another program possibly. We strongly recommend selecting NO to this prompt.)

If I configured my Temptale monitor with TTW or an earlier version of TTM, will I still be able to download the monitor with my new upgrade version?

Yes, all versions of TTM are backward compatible (i.e. a Temptale monitor configured in TTM 2.3.8

and can be downloaded and/or reconfigured in higher versions.

When I try to open TTM, I receive an error message that OLEAUT32.DLL is 122754out of date and failed to load.

At the end of installation you will be asked if you wish to restart your PC now or later, unless you need to change a setting in the Hardware Setup in TTM (i.e. Interface type or com port setting; you will be forced to restart the PC for these new changes to be applied) ALWAYS RESTART THE PC AFTER INSTALLATION IS COMPLETE.

While using TTM I receive an error message similar to: DDEMON16 error; General communications error (#####).

DDEMON16 errors can be resolved by simply closing TTM and checking task manager to insure the DDEMON16 program is a secondary program, which runs from within TTM has also quit. Or simply close TTM and restart the PC – this will force DDEMON16 to quit.

Upon opening a TTD file the Graph is completely black and contains no data.

The software is set with the Graph to open as default. To refresh the Graph view, simply click on the Summary, Tabular or Configuration tabs; then click back on Graph tab.

All the dates run together on the Graph printout. How can I make the font smaller?

Change font size on Graph by clicking on View from the Menu Bar. Select Graph Options from the drop down menu (must be viewing Graph to execute Graph Options). In dialog box, enter a smaller number in the box next to “User Font Scale”.

Can I change the font in the tabular view?

Yes, you must first be in Tabular View. Click on File from the Menu Bar. Select print and in the print dialog box there is the option to change both the Data and Header fonts.

How do I remove the Unit Symbol (F°/C°) from the Tabular Data so I can export the data into a spreadsheet and create charts and graphs.

Before exporting tabular data into a database or spreadsheet it is recommended that the unit symbol (F°/C°) in the tabular columns is turned off.

To turn off the unit symbol in the tabular data:

From the Menu Bar select Administration

Select User Preferences

In the dialog box check the “Don’t show unit symbol in tabular columns option”

Press OK

(Note: Since Microsoft Excel uses commas to distinguish between the different cells, when using commas in the Temperature readings in the foreign languages, the report will not be correct if you do a Tabular Export on the data using Comma Delimited (.csv). To avoid this reporting problem in Excel, please use Tab Delimited (.txt) when Exporting Tabular Data in TTM.)

Can having anti-virus protection software running in the background upon installation of TTM cause Temptale Manager not to install correctly?

Yes, for a clean installation always close any open programs and temporarily disable any anti-virus protection you may be running. You may need to restart your PC for the change to apply.

Will TTM run with Palm Pilot Desktop installed?

The Palm Pilot Desktop application includes a feature called “HotSync” which locks the COM port open for its exclusive use, even when the Desktop application is closed. To free up the COM port for TTM, follow the steps below:

- Run Palm Pilot Desktop application.
- Within Palm Pilot Desktop, select Setup from the HotSync menu.
- On the “General” tab, select the option entitled
- “Available only when Palm Pilot Desktop is running”.
- Click OK.
- Close the Palm Pilot Desktop application and run TTM normally.

When I try to configure or download a Temptale monitor I get an error message stating that the monitor cannot be found or connection to the interface has failed.

When TTM can’t recognize the monitor, there are a couple of possibilities that may be causing this to happen:

Certain functions of Norton Utilities can hang-up the serial port. Temporarily disabling Norton Utilities may resolve this conflict.

Using a Data Switch box can also interfere with the connection. Plugging interface directly into the PC may resolve this conflict.

What are the minimum requirements for installing TTM?

- Pentium 75Mhz with 32 MB of RAM
- A hard drive with 20-MB available disk space.

- Windows 95/98/2000 or NT4.0 with Service Pack 4
- A mouse or other pointing device
- A VGA monitor (recommended but not required, with 800 x 600 setting).

How do I compare humidity data in a multi-record graph view?

This answer applies to any secondary sensor data. While viewing the Multi-Graph, select "Secondary" in the Sensor panel located at the bottom right of the Graph View.

How do I make the dates smaller on the TTM graph?

Change the font size on the graph by clicking on the View from the Menu Bar. Select Graph options from the drop down (you must be viewing the graph to execute the graph options) In the dialog box enter a smaller number.

How do I print Monitor Label Numbers on the graph legend?

Within the User Preferences dialog box, change the option entitled "For Tab Labels Use..." to your desired setting.

LED Explanation: TT3 (only)

When the start button is pressed or a reading interval occurs, the LED's (light emitting diode) located on the front of the monitor will flash. The number of flashes indicates the state of the monitor as well as the whether or not the monitor has experienced a temperature outside the programmed temperature range.

Green Light – The Temptale has experienced a temperature outside
Of its programmed range.

Red Light – The Temptale has experienced a temperature outside
Of its programmed range

Eight (8) Green Flashes- indicates the monitor has been activated.

(Do not use the monitor if the LED's flash other than eight times.
Contact Technical Services at 1-800-843-8367

Four (4) Flashes, Indicate the monitor has been configured and is in a suspended state.

Two (2) Flashes (Red or Green) Indicates the graph has been marked and the monitor is in recording mode.

One (1) Flash (Red or Green) Indicates the monitor has been halted or a reading interval has occurred.

No Flashes. Do not use the monitor; Contact the Technical Service Department at 1-800-843-8367

TT4 Real time Clock

A TT4 keeps time by recording elapsed seconds from some fixed reference point such as 12:00AM, January 1, 1970. Storing the number of elapsed seconds from that date (or any other) to the present sets the time/date. The Times are based on the programming PC 's system time when the monitor is configured. During the download the monitor examines the downloading PC's Greenwich Mean Time (GMT) and adjusts to the current and present time.

Hardware Troubleshooting

<u>Symptom</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
Unable to re-configure the Monitor	<p>Single use Monitor or Monitor has already been used or activated.</p> <p>Interface malfunction.</p> <p>Incorrect Software Configuration.</p> <p>No LED Function.</p>	<ul style="list-style-type: none"> • Is the monitor single or multiple use (check front label Identification)? If single use, the monitor cannot be re-configured a second time if it has already been activated. • If multiple use, do other unit successfully re-configure? If yes the problem is with the monitor. • If you are not able to download other monitors, then the problem is with the Interface or software settings. Verify the proper settings for the COM Port and Tempale by using the toggle TT4/TT3 toggle button. If all settings are correct, then replace the interface. • Check the LED for number of blinks. The monitor may have already been activated and is in its startup delay period. • Malfunctioning battery or loss of power due to a damaged battery connection.
Unable to download the monitor on a TripStrip	<p>Incorrect Interface Being Used</p> <p>Set Up Switch</p> <p>Dead Battery</p> <p>Monitor Malfunction</p>	<ul style="list-style-type: none"> • Make sure that the TripStrip is compatible with the downloading monitor. • Make sure the Setup switch on the back of the TripStrip is in the OFF position. (Switch should be “On” only when using the programming menu option). • A fully charged TripStrip rechargeable battery should last for about 72 downloads. Once unit is fully drained it should be plugged into the charger and charged for 12 hours. • Can other units be download? If they can, the problem may be with the monitor being downloaded. Have monitor sent to Technical Support for evaluation. If no monitors will download, the problem is most likely with the TripStrip itself and should be sent in for evaluation by Technical Services.
Continual Flashing Of LED (TT3 family)	Corrupted Configuration	<ul style="list-style-type: none"> • Monitor is flashing due to an invalid number, which is being read from the configuration data, this indicates a communication breakdown between the micro and EPROM.
LED’s Flashed Eight Times When Trying To Download the Monitor (TT3 family)	Incorrect Startup Reset	<ul style="list-style-type: none"> • This may be the result of the start button pushed with the Stop Key or PC interface/Interface Plus still in the jack of the monitor. Educate the operator, re-configure the monitor (if multiple use). • Eight blinks means the monitor has been activated and was not previously started. • A reset has occurred due to a malfunctioning interface, improper jacking procedure or software issues.
Monitor Is Dead (Won’t Download Or Re-configure.) No LED Function)	<p>Physical Damage</p> <p>Left In Dry Ice (TTD)</p> <p>Past One-Year Warranty</p> <p>Loose/Broken Battery Holder</p>	<ul style="list-style-type: none"> • If physical damage is evident the monitor should be returned to the Client Services representative. For dry ice shipments, the probe is the only part that should be in direct contact with that environment. The monitor should not be placed directly in contact with dry ice. Doing so causes inaccurate readings due to battery and component damage. Instruct the customer on proper placement of the monitor during shipping. • The battery has a one-year warranty. Refer to the Client Service representative for verification or refer to the

<u>Symptom</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
		Certification of Calibration.
Monitor Stopped Without Any Outside Intervention	Multiple	<ul style="list-style-type: none"> • Confirm that the operator used either the Stop Button on the unit (TT4) or selected “Stop Recording” when prompted while reading/reconfiguring the monitor. • What TTM software version and type of interface is being used? How long has the interface been in use. If more than one year, refer to Client Services. • Check the interface for signs of wear. An improper jack connection can stop the monitor and/or corrupt the monitors’ configuration. The same for moisture in the jack or if the unit was connected before being prompted by the software. • With the SS (stainless steel) probe version, static electricity may cause the unit to activate prematurely. Thus when the customer thought they were starting the unit they in fact only Date Stamping it. Explain the importance of checking for 8 LED flashes when activating monitor and keeping protective sleeve on the SS probe when not in use. If this may have been the cause, have the user reconfigure the monitor and reuse (multi-use). • A loss of power may have occurred due to shock to the monitor or an object (paper clip) may have been placed into the jack. If none of these work the monitor is most likely either damaged or a component malfunction. Have unit sent into Technical Support for evaluation.
Units Set For The Same Start Time, But Show Different Start Times When Downloaded.	Different download Times (TT3) Different System Time When Configured (TT4)	<ul style="list-style-type: none"> • This phenomenon is NOT an error. Rather it reflects the way the Temptale monitors calculate time and trip length. TT3 – TT3’s do not have an internal clock. Instead they use the time setting of the CPU to gauge their start times. (Check Interval settings) • The problem occurs when multiple units are set to start at the same time. In reality the units do indeed all start at the same time. But since it takes a few minutes to download a monitor, by the time the last monitor is downloaded, another increment will have passed. Instead of all units displaying the same start times there will be a “drift” equivalent to the number of additional increments the later downloaded units were able to record. For TT4’s, this issue is less common. TT4 monitors do have an internal clock. The times on those clocks are based on the system time when they were configured. If the monitors were configured on different computers, or if the system time was changed between configurations, the units will show slightly different times reflecting the differences in the system times.
Downloaded Data Shows Past/Future Or Incorrect Dates	Multiple	<p>These failures (corrupted date/time counters) can be caused by shock to the monitor. Poor or intermittent interface connection, low battery, intermittent jack or memory defects. Confirm that the customer connected the monitor when prompted to by TTM.</p> <p>Confirm that TTM being used is most recent.</p>
“Reset Count Expired” When Attempting To Configure A Monitor. (TT3 Family)	Single Use Monitor Invalid Configuration	<ul style="list-style-type: none"> • Confirm that the unit is a multiple use monitor. A single use monitor cannot be reconfigured. • If it is a multiple use monitor (and less than a year old), have the customer send it in for evaluation.
After Downloading A	Monitor was not Reconfigured	<ul style="list-style-type: none"> • Confirm that the monitor was reconfigured. If it was, either a

<u>Symptom</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
Monitor The Data Received Is From The Previous Trip.	Monitor was not Started Bad Interface Or “Sloppy Jacking”	bad interface or sloppy jacking may have corrupted the unit. Determine if the problem is localized to just one monitor. If it is, have it sent in for evaluation.
Monitor Cannot Be Found” Or “Connection To The Interface Has Failed.”	Interference From Norton Utilities Data Switch Box Monitor malfunction Interface malfunction Hardware Setup Palm Pilot Conflict Low Serial Card Power	<ul style="list-style-type: none"> • Certain functions of Norton Utilities can hang-up the serial port. Temporarily disabling Norton Utilities may resolve this conflict. • Palm Pilot software can also hang-up the serial ports.. • Using a Data Switch box can also interfere with the connection. Plugging interface directly into the PC may resolve this conflict. • If the failure only occurs with one specific monitor, the problem is most likely with that monitor. Check warranty status. If the failure occurs with several monitors, the problem is may be with either the interface or the Hardware settings in TTM. • If the problem occurs with multiple monitors, click on Administration at the menu bar and select Hardware Setup. Make sure that proper interface and monitor types are selected. If not, select proper settings and restart computer when prompted. • If the settings are correct, make sure they have the most recent interface. If necessary, send a replacement interface sent to see if that resolves issue and have customer return the old interface.
AutoMark Error Is Displayed When Attempting To Download The Monitor.	Low Battery Attempted Download During The Recording Process	<ul style="list-style-type: none"> • Instruct the customer to wait for one full measurement interval and then try to download again. • A low battery may also cause this problem. Check the warranty status to determine the battery’s age. (Temptales have a one-year battery life). If the unit is more than a year, refer the user to the appropriate Client Services rep for trade-in information.
No LED Function, Data Transmission Error. When The Start Button Was Pressed When Attempting To Download The Monitor. (TT3 Family)	Switch malfunction Dead Or Loose Battery Holder	<ul style="list-style-type: none"> • Unplug the interface; depress the start button on the monitor. Identify the Interface type and the monitor serial number. Have the monitor sent to Technical Services for evaluation.
Cannot Find PC Interface.	Win 2000 network	<ul style="list-style-type: none"> • If the network platform is Win 2000 and their operating system is either Win95 or Win98, TTM will not be able to connect to the PC Interface. • Customer must be upgraded to an Interface Plus. <i>Only</i> an Interface Plus can function on a Win 2000 network. Refer customer to Client Services for upgrade.
Monitor Stopped Prematurely	“Sloppy Jacking” Foreign Object Has Been Inserted Into The Jack.	<ul style="list-style-type: none"> • A stop key has been used to stop the recording that is worn. If a paper clip or similar object is stuck into the jack it can cause the unit to corrupt and stop before it has used all of its data points. The same can occur if the unit is not properly plugged/unplugged during the configuring or downloading sequences. Have the customer send it in for evaluation.
When Trying To Download: Error Message “Invalid Chip Size or Invalid Thermistor type” or	Multiple	<ul style="list-style-type: none"> • Determine how the monitor was used. The “Floating Point Error” or “UNDER” values can be a result of exposing the monitor to extreme temperatures. If multi-use try to reconfigure the monitor and test the monitor. If OK, re-use as

<u>Symptom</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
“Floating point” error.		<p>usual. A Bad Chip Count may be due to communication interference between the monitor and the interface, check the connection and try again. Have the unit sent in for evaluation.</p> <ul style="list-style-type: none"> Corrupted configuration of the internal counters, due to an interface malfunction or poor interface connection during re-configuring or downloading, a low or loose battery. Unit must be sent in for evaluation.
Start Up Delay Not Finished” (TT3 Family)	Corrupted Configuration Started Monitor	<ul style="list-style-type: none"> This error is most often the result of ‘sloppy jacking,’ when the end user does not properly plug or unplug the monitor from the interface. The resulting short corrupts the monitor’s configuration, placing it in a permanent startup delay. On some rare occasions, the unit may not have been properly activated in the first place. As such, when the receiver pushes the button to ‘mark’ the unit, they are actually starting it for the first time. To see if this is indeed the case, have the customer push the button again. If it blinks anything but 2 times, the unit is indeed corrupted and needs to be sent in for evaluation/repairs. The monitor has now been started and is its startup delay period. Have the customer wait at least as long as the intended delay plus one recording interval then retry. If multi-use, have the customer re-configure the monitor and try again. If this does not work, the unit must be sent in for evaluation.
TTM Reports Of Various Error Messages Relating To The Value It Sees As Corrupted. For Example: “Invalid ” Error	Corrupted Configuration Malfunctioning Interface	<ul style="list-style-type: none"> If the error occurs regardless of what monitor is downloaded, the problem is most likely with the interface. If the errors occur only when a particular monitor is downloaded or configured, it is most likely corrupted. Have the customer send it in for evaluation.
TTM Reports “Lost Connection” Error Message.	“Sloppy Jacking” Malfunctioning Interface Malfunctioning EEPROM	<ul style="list-style-type: none"> If the customer is getting this error with all monitors, the problem is most likely with the interface. Try a different interface. <p>If the error only occurs with one monitor then most likely the monitor is corrupted. Have customer send it in for evaluation.</p>
“Data Read From The Current Monitor Has Several Anomalies.”	TT4’s PC clock out of sync	<ul style="list-style-type: none"> TT4’s have an internal clock, which synchronizes with the configuring PC’s system clock when the TT4 is configured. If the configuring PC’s clock is not in sync with the downloading PC’s clock you may get such an error. This error does not occur in our more recent software. Confirm that the customer has the latest version of the software. If they don’t, refer to Client Services for upgrade to at least version 2.3.8. <p><i>NOTE:</i> This error does NOT affect in anyway the accuracy of the temperature data recorded.</p>
“Monitor Contains Less Memory Than Configuration”	Old Software Corrupted Monitor	<ul style="list-style-type: none"> The customer must have at least version 2.8 or higher to configure/download these monitors correctly. If they have the most recent software and other units are able to configure OK, the unit is most likely corrupted. Have monitor sent in for evaluation.
“Data Transmission Error”	Bad/Missing Interface Improper COM Port Settings Malfunctioning Battery	<ul style="list-style-type: none"> If these errors are occurring with multiple monitors, it is most likely a problem with the interface. Confirm that the interface is indeed plugged into the computer. If it is, check the Setup/Hardware menu to be sure that the appropriate COM

<u>Symptom</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
		<p>port has been selected.</p> <ul style="list-style-type: none"> If these are all in order the interface has malfunctioned. Have the interface returned for evaluation. <p>If the error is only occurring with one monitor, it may have a malfunctioning battery. Have the customer send in the unit for evaluation.</p>
After Downloading Multiple Monitors, The Screen Locks Up Or A “Data Transmission Error” Is Received.	Not enough RAM	<ul style="list-style-type: none"> When multiple files are left open while downloading many monitors, the Microsoft Windows RAM memory will be consumed causing the computer system to lock up. Save and close all open files, exit and restart TTM, and try again.
After Downloading A Monitor A “Floating Point Error ÷ 0” Was Received Or The Data Is Reflecting Past Dates. (TTD only)	Dead Battery	<ul style="list-style-type: none"> Putting the entire monitor into a dry ice environment can cause either one of these failures. If the customer denies that this has occurred, have unit sent in for evaluation.
“DDEMON16 Error; General Communications Error (#####)”		<ul style="list-style-type: none"> Close TTM, restart the PC, and then try again. DDEMON16 is a secondary program, which runs from within TTM. You must ensure that this file is closed when TTM is closed.
“Flatlined” Readings “Spikes” In Graph	Shorted Or Open Thermistor Download Error	<ul style="list-style-type: none"> When a downloaded, graph shows intermittent unexplainable spikes or flatlines for an extended period, the temperature reading will be above or below the monitor’s specifications. This problem is most likely an open Thermistor or the result of an intermittent contact during the download. If the problem only occurs with one unit, have it sent in for evaluation. If the unit is a Temptale dry ice monitor, determine the placement in application. Flat lines will occur if entire monitor is exposed to dry ice (it restricts the battery’s voltage). Will show a flatline of -80C. If it is not a dry ice monitor, it most likely has an open thermistor (probe) (will show flatline of -40C). Check serial number for warranty status on unit and have customer send it in for evaluation.
Marks Not Appearing On Graph	Incorrect Graph Settings	<ul style="list-style-type: none"> Click on “View” from the title bar, then Graph Options. Click in the box to the left of the “Show Monitor Marks” text.
Blank Graph	Software Setup	<ul style="list-style-type: none"> The software is set with the Graph to open as default. To refresh the Graph view, simply click on the Summary, Tabular or Configuration tabs and then click back on the Graph tab.
The Printer Only Prints Half The Graph.	Page Setup	<ul style="list-style-type: none"> Check the Print Menu in TTM. Go to Setup and have the customer check the paper orientation. If in a Portrait view, go to the Control Panel, select Printers, highlight the printer to be used, click File, then Properties. Have the customer change the paper orientation to Landscape. If the customer is unable to select Landscape, ask what printer type/model is being used.
Graph Won’t Print	Network Printer	<p>There is a known 32-character printer name and path limitation on the graphic server. Have customer’s IT dept. check the printer’s path name and if longer than 32 characters, rename it so that it is less. If this is not an option, the user can take a</p>

<u>Symptom</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
		<p>screen shot (Alt+PrtSc) of the Graph view, open a word document, and then paste it (Ctrl + V). This Word document can then be saved and printed. Or else, print to a local printer (should have shorter name and path).</p>
Numbers On The Graph Are All Running Together		<ul style="list-style-type: none"> Font size too large.
When Saving A File To The Hard Drive, The System Froze And Did Not Execute The Command.	Not Enough 'Temporary' Memory	<ul style="list-style-type: none"> There may be too many files stored in the temporary memory (TTM requires at least 20 MEG of physical hard drive space to install and run). Save and close any Temptale files, exit the program. Close all other applications and restart TTM. IT dept. to clear the .Tmp files that may have accumulated. <p>Close the TTM program and restart the computer.</p>
When downloading a TT3 after Daylight savings ended or began, it read the incorrect start time (either an hour earlier or later)	None	<ul style="list-style-type: none"> This is consistent with how a TT3 operates. Since a TT3 calculates time by multiplying the interval times the number of points and totally depends on the downloading PC's set time, there is no work around.
When downloading a TT4 after Daylight savings ended or began, it read the incorrect start time (either an hour earlier or later)	PC settings	<ul style="list-style-type: none"> If the configuring PC was not set for automatic daylight savings adjustment. The monitors were activated during Daylight savings and downloaded after and the downloading PC was not set for automatic Daylight Savings adjustment. The Daylight saving time was adjusted before the download, then the incorrect date will be displayed.

Dry Ice Issues (TTD)

<u>Symptom(s)</u>	<u>Probable Cause(s)</u>	<u>Possible Solution(s)</u>
Reset monitor	Thermal or Electrical shock	If the electronics (main housing) of the monitor is placed in a environment below -30°C or had suffered from electrostatic discharge, the monitor may return to a state of reset. When in a state of reset the monitor would not record any temperatures. Also due to a momentary power lost, the date and time counter would reset causing default values to be placed in the counter.
80.6°C Reading -41.0°C Reading	Damaged Probe Inoperative Probe	If all three wires in the probe are broken or detached from the circuit board, the monitor would record -80.6°C . If one or both of the wires for the thermistor are broken with the ground wire still attached, the monitor would record -41.0°C . This is due to an open thermistor within the probe. Because of the open thermistor, the monitor records a constant resistance which corresponds to -41.0°C . A damage or inoperative probe can result in an open thermistor reading.
Crack Probe	Dry Ice effect	The probe for the dry ice become very brittle when placed in -80°C environment for long periods time (+2 days). After removing the probe from dry ice, if immediately twisted the insulation will break. A severe break can cause a wire short, disabling the thermistor and effect the recording.
Incorrect Time	Low/ High monitor temperature	The crystal on the monitor, which is used to generate the frequency, would be affected if placed in extreme temperatures (-40C). The monitor would either lose or gain time depending on the shift of the frequency. The microprocessor can also be damaged from extreme temperatures. If the monitor (main housing) experience temperature higher than $+55^{\circ}\text{C}$ it may caused the monitor to record incorrect temperatures from the probe. The reason for this error is because high temperature on the electronics would cause increasing leakage current from the electronic components (battery). Leakage current from the components would decrease current values through expected circuit paths causing the monitor to record temperature lower then expected.
No LED Function	Dead Battery	If the monitor is exposed to temperatures beyond specification, the rate of discharge on the battery would increase. The rate of discharged voltage depends on the temperature surrounding the battery. If the temperature is outside the specification, it may cause the battery to drain out of voltage before the one year warranty causing the monitor to stop recording and stop any LED indication. To determine the rate of discharge for this battery please refer to reference battery spec .
TTD Monitors (Main Housing) Exposed to Dry Ice conditions		If left in a dry ice environment with temperatures below -40 degrees for an extended period, the battery will be drained of it voltage. Below -30 degrees will lower the battery's voltage and cause the monitor to stop recording. The monitor, when warmed could either reset and activate, erasing any pre-existing recorded data, stop recording completely or resume recording

		<p>at its present warm up temperature. In the latter case only part of the recorded data would be valid.</p> <p>Error messages could be "Monitor has not been started" which would indicate a reset. In this case the data could be retrievable. The monitor could also download successfully but with room temperature data, an incorrect start date indicating a reset and activation.</p> <p>At Temperatures below -40 degrees, the crystal will be effected. This slows the frequency and the results are incorrect start times. In some cases the battery is not effected and the graph with the exception of the start dates and times could possibly be valid.</p> <p>Internal components can also be damaged and cause the monitor not to perform, providing inaccurate data points. In this case the displayed error message would be " Invalid chip size or calibration value." Corruption configuration of multiple counters and damage to the Microprocessor is the result.</p> <p>Damage to the probe will also occur if twisted after its immediate removal from dry ice. The damage insulation and wiring could lead to a shorted thermister and invalid reading. The integrity of the data prior to the damage would not be compromised.</p> <p>The main housing should always be completely separated and completely sealed off from the dry ice environment in order to prevent these failures.</p>
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Exporting Data to Other Programs

Temptale Manager can export tabular data in two formats in order to provide greater flexibility in reporting. Data may be exported in either Tab Delimited (.txt) or Comma Delimited (.csv) formats, both of which may be imported into many database, spreadsheet, and word-processing applications.

Note: Before exporting tabular data into a database or spreadsheet it is recommended that the unit symbol (F°/C°) in the tabular columns is turned off.

To turn off the unit symbol in the tabular data:

- 1. From the Menu Bar select Administration**
- 2. Select User Preferences**
- 3. In the dialog box check the don't show unit symbol in tabular columns option**
- 4. Press OK**

Note:

Since Microsoft Excel uses commas to distinguish between the different cells, when using commas in the Temperature readings in the foreign languages, the report will not be correct if you do a Tabular Export on the data using Comma Delimited (.csv). To avoid this reporting problem in Excel, please use Tab Delimited (.txt) when Exporting Tabular Data in TTM.

Exporting in Comma Delimited (.csv) Format

Follow the steps below to export tabular data in Comma Delimited format.

1. Open either a single-monitor tabular display or a multi-tabular report in Temptale Manager. Use the mouse to highlight the rows you wish to export. To export the entire report, do not highlight any rows.
2. Select File; Export; Tabular Data. The Export Tabular Data dialog box will open.
3. Select Comma Delimited (*.csv) from the Save as type drop-list. Type a file name (up to eight characters) in the File name field. You may optionally add the “.csv” extension; if you do not, the software will add it automatically when saving the file.
4. Select Save. The selected tabular data records will be exported and saved in the file you specified. You may open the file using a text editor or word processor, or in any application capable of opening or importing comma delimited ASCII text files. (Comma delimited files are most commonly used by spreadsheet applications.)

Exporting in Tab Delimited (.txt) Format

Follow the steps below to export tabular data in Tab Delimited format.

Open either a single-monitor tabular display or a multi-tabular report in Temptale Manager. Use the mouse to highlight the rows you wish to export. To Export the entire report, do not highlight any rows.

- Select File; Export; Tabular Data. The Export Tabular Data dialog box will open.
- Select Tab Delimited (*.txt) from the Save as type drop-list.
- Type a file name (up to eight characters) in the File name field. You may optionally add the “.txt” extension; if you do not, the software will add it automatically when saving the file.
- Select Save. The selected tabular data records will be exported and saved in the file you specified. You may open the file using a text editor or word processor, or in any application capable of opening or importing tab delimited ASCII text files. (Tab delimited files are most commonly used by database applications.)

TTM Software Compatibility

Software	Release Date	Interface	Platforms	Comments	Monitor
TTM 2.4.2	August 2003	IP+	XP/2000/98/NT/ME	Only release to support units down to -30c	TT3 & TT4,
TTM 2.3.10	Sept. 2002	IP+	XP/2000/NT/98 (Japanese)	Localized Japanese version only	TT3 & TT4
TTM 2.3.9	June 2002	IP+	XP (English), XP/2000/NT/98 (Spanish)	Localized Spanish version. Also English XP Only version	TT3 & TT4
TTM 2.3.8	August 2000	IP+	95/98/NT/2000/ME	Many Enhancements, for use w/TT4's	TT3 & TT4

*TTM Pro Software Compatibility***

Software	Release Date	Interface	Platforms	Comments	Monitor
TTM 2.3.5	August 2000	IP	95/98	Enhanced for use w/TT4's	TT3 & TT4
TTM Pro 2.1.19	May 2000	IP	95/NT		TT3
TTM Pro 2.1.12	Sept. 1999	IP	95/NT	First Y2K version	TT3
TTM Pro 1.9	1999	IP	95/NT	Not Y2K	TT3

****TTM Pro No Longer Available for Sale**

Product Comparisons

TT3

TT4

<i>Temperature Range</i>	-22F to 185F	-22F to 158F
<i>Display</i>	LED	LCD
<i>Time-out-of-range</i>	NO	YES
<i>Communication Interface</i>	Jack	Infrared
<i>Water resistant</i>	NO	YES
<i>Programmability</i>	<ul style="list-style-type: none"> •<u>Start-up Delay</u> •Measurement interval •Manual/automatic launch •<u>Alarm Red/Green on/off</u> 	<ul style="list-style-type: none"> •<u>Start-up Delay</u> •Measurement interval •<u>LCD data on/off</u> •<u>Fahrenheit/Celsius</u> •<u>Alarm bell on/off</u> •<u>Flashing on/off</u> •<u>Start key delay on/off</u> •<u>Stop key delay on/off</u> •Manual/automatic launch •Alarms (H/L/Cum.)

NOTE: Underline denotes factory setting for single-use only

Timekeeping in the TempTale

10/3/2003 Rupert Schmidtberg

TempTale 3

Inside the TT3, there is an oscillator circuit which records elapsed time. This means that the TT3 doesn't know the current time. It has no internal clock that can be asked "what is the current time?". The TT3 simply keeps track of the number of measurement intervals that have elapsed since the TT3 was started.

Since the TT3 tracks elapsed time by counting measurement intervals, the measurement interval programmed into the TT3 (at the time the unit is configured) determines the resolution with which one can determine when a specific reading was taken.

The figure below shows how the time associated with each reading is determined when a TT3 is downloaded by a TripStrip or PC (TTM or CCM software). In this illustration, the TT3 was started and the first reading $R(1)$ is taken at time t_1 . Subsequent readings are taken at regular measurement intervals. A total of n readings were taken. The most recent reading $R(n)$ was taken at time t_n . The TT3 is downloaded some time after t_n but before the next reading has been taken.

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At download, all the times, {start time, t_1 , t_2 , ..., t_n }, are calculated from the local time in the PC/TripStrip. Since the TT3 has no internal clock, there is no way for the PC/TripStrip to know when the most recent reading was taken. The PC/TripStrip simply assumes that the most recent reading was taken just prior to the download and assigns t_n to the current local time (obtained from the real time clock inside the PC/TripStrip). Times for all the other readings, { $R(n-1)$, $R(n-2)$, ... $R(1)$ }, are calculated by subtracting the measurement interval from the previous reading.

Notice that there are two sources of error in determining the time of each measurement. The first error is inaccuracy of the local clock in the PC/TripStrip. If the PC/TripStrip time is incorrect, all the reading times and the TT3 start time will also be incorrect.

The second source of error is caused by the delay between the most recent reading, $R(n)$, and the actual download time. This error can be as large as the measurement interval of the TT3. In TT3's configured with large measurement intervals, e.g. 1 hour, this error may be significant.

The overall accuracy of the time associated with each reading is therefore dependent on the measurement interval and the accuracy of the PC/TripStrip's clock. Reading times recorded using TT3's could be reported as being taken later than they actually occurred (by the as much as the TT3's measurement interval).

TempTale 4

The TempTale 4 has improved timekeeping accuracy. It solves the issues of the TT3 by incorporating its own internal clock.

The figure below shows how the time associated with each reading is determined when a TT4 is downloaded.

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The TT4's internal clock is set when the TT4 is configured. This typically happens at the Sensitech factory where computers used to configure TT4's are synchronized with the Internet atomic clock at least once per day. The TT4's internal clock operates in Greenwich Mean Time (GMT).

When an operator starts the TT4, the TT4 interrogates its internal clock and records the start time, t_{start} . The TT4 then waits for the start-up delay to pass before taking its first reading. Reading are then taken at regular measurement intervals.

When the TT4 is download by the PC/TripStrip, times for all the readings, $\{t_1, t_2, \dots, t_n\}$, are calculated from the start time, t_{start} , stored in the TT4. The PC/TripStrip is interrogated for its local time zone in order to convert all reading times into the local time zone.

Notice that neither the accuracy of the PC/TripStrip's clock nor the exact time of download have any impact on the time accuracy of the TT4 readings. This is because the frame of reference for time is the TT4's internal clock.

The TT4's internal clock is accurate to within 2.5 minutes per month. If a TT4 has "sat on a shelf" for 8 months, then there may be up to a 20 minute discrepancy in the start time recorded by the TT4. However, this time accuracy tolerance is well defined and independent of the measurement interval.

TT4's are typically started within 1-2 months of when they were delivered to a customer. They are usually configured shortly before shipment to the customer. In this situation, the accuracy of the reading times is within 5 minutes. This accuracy is normally well within the thresholds necessary to determine where a shipment was when an out of range temperature event occurred.