

eTemperature

Temperature Tracking Software



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1 About the manual

The manual consists of the following parts:

1. **What is eTemperature** discusses what the software and Thermocron are able to do
2. **Thermocron Tutorial** Recommended reading to understand how to quickly and easily use the Thermocrons with eTemperature
3. **System requirements and installation**
4. **Buttons:** Explanation of the Start, Read, End, Load and Save buttons.
5. **Screen reference.** Provides information on all the fields within the screens as well as suggestions on their usage. The screen reference section is available from within the software by pressing F1.
6. **TC-Spy Reference.** Provide information on the TC-Spy interface.

For new users it is strongly recommended that you read the sections on using the Thermocron and the tutorial.

2 What is eTemperature?

eTemperature provides the viewing and programming of various temperature logging devices. It is designed for easy and quick use of temperature loggers.

eTemperature can be used to:

- Program (setup) a temperature logger
- Download the readings from a temperature logger
- Display the readings as a table and graph
- Save the readings to files for later recall
- Reload the readings from file
- Export the results to the clipboard and other programs

eTemperature focuses on a single usage of a temperature logger. That is, it will display the results of one run at a time. eTemperature DB provides the ability to join data from multiple runs as well as analyze data across a number of readers. It also supports a number of powerful database features.

For the majority of customers the extra features of eTemperature are not required and the ease and speed of eTemperature makes it the ideal software for their needs.

3 Thermocron Tutorial

Setup

1. Install eTemperature
2. Restart the PC if Windows 95
3. Connect the reader to a spare communication port
4. Start the software

Testing for communication

1. In the status box of eTemperature (at the top of the window) will be a message that indicates that the software is searching for a port, reader and then disappears.
2. If the message remains at "No reader found" then ensure that the correct com port is specified under the "Setup Options" tab.
3. If you still can not get the system to communicate then contact your local distributor.
4. The first time the software runs you will be asked to enter an unlock code. This should be written on the reader bag. Once it has been successfully entered you will not be asked for it again.
5. If a new reader is used on the PC a new unlock code is required.

Adding your first Thermocron

1. Plug the Thermocron into the reader. It should click in place.
2. A "start" button will appear if it has not been programmed. Otherwise an "Stop" button will appear. If the "Stop" button is present, press it. It should disappear and the start button will appear.
3. Click on the Settings tab.
4. Set the high limit to 25°C, the low limit to 21°C, the sample rate to 3 minutes, start delay to 0 minutes and allow rollovers. These are all the settings that are downloaded to the Thermocron.
5. Press the start button.
6. After the programming complete message appears remove the Thermocron.

Reading a Thermocron

1. Wait at least 10 minutes for some data to be collected by the Thermocron.
2. Plug the Thermocron back into the reader.
3. The Read button will be visible. Press it and wait for the readings to finish. A box at the top of the screen will indicate the download status.
4. Once the item has been read a number of extra tabs will be available.
5. View the log, histogram and alarms tabs. All of this information has been permanently stored on the hard disk and can be read later on.
6. Press the actions tab. It is possible to save the information to a text file, Microsoft Excel and to eTemperature's own format.
7. Press the Print button. A summary report is available and can be printed by pressing the button with the printer on it.
8. Close the report

4 Specifications

Software

Parameter	Value
Operating system	Windows 98, NT 3.5, NT 4, 2000, XP
Minimum PC requirements	
Processor	Pentium 366
RAM	64M
Video	800x600
HDD Drive	30M spare
Accessories	CD-ROM for installation and Mouse
Supported readers	DS9097U

5 Buttons

Start

The Start button will:

- clear the results and settings from the connected unit
- download the new settings
- start the unit.

The Start button will NOT be available if the unit is currently running. You must first press the End button to stop the unit.

Computer (Settings Tab) -> Temperature Logger + Started

Read

The Read button will download the results from the unit to the PC and display them. The log and action tab will then be available for use.

Temperature Logger -> Computer (Log Tab)

Stop

The Stop button will stop the currently running mission in the connected unit. A unit should be stopped if it is to be reprogrammed or will not be used for some time. Stopping a unit will extend the battery's life.

Temperature Logger Stopped

Reload File

The Reload File button will display an open file dialog box. Selecting a file will then open and display the results. Note that this is displaying a previously saved set of results and not the current results. To avoid confusion, the reload file button is only available when no units are connected to the reader,

Hard Disk -> Computer (Log Tab)

Save

The Save button will save the current results to the harddisk. The results can be saved onto a local harddisk (on the same computer) or on a networked drive (on a server or another computer). Saved files can then be reopened at a later date. They can also be opened by association the extension ".sav" with the eTemperature software and double clicking on the file in Windows Explorer.

6 Tabs

Tabs are basically the standard operations you would use with a temperature logger.

Details: View the status of the current device.

Settings: Program (setup) the current device.

Log: View the results.

Actions: Save or export the results.

The other tabs include:

Histogram: View the results as a temperature versus count graph.

Alarms: View the time stamps of the high and low alarms.

Display options: Change how the results are formatted and the actions when a unit is connected or disconnected.

Setup options: Change the configuration of the software including the communication port.

7 Detail Screen Sample



8 The Details Tab

The details tab displays information from within the connected logger. This is the information that was last programmed into the unit.

Identification

The unique number that has been permanently written into the logger.

Status

If running, the logger will periodically sample the temperature. If off, the logger will not sample the Temperature. In both cases the logger will communicate with the PC. When a logger is off it will consume virtually no power and the battery will have its maximum life. To turn the logger off, press the End button.

Sample rate

The sample rate is how often the logger will take a measurement of the temperature. It is measured in minutes and can be set from once a minute to once every 255 minutes (4 hours, 15 minutes).

The Thermocron has capacity for 2048 readings in the log. A sampling rate of once per minute will fill the log in less than 2 days. A sampling rate of 255 will fill the log in just under one year. The histogram, however, will store all the readings even after the log has been filled.

A long sampling rate may result in short changes in temperature being missed. It can also mean that short changes can not be accurately measured because the preceding and succeeding readings were so far away.

Ideally if the log is required then the sampling rate should be set to ensure that the 2048th reading would occur shortly before the mission is completed.

Rollover enabled

Once the log is filled the logger will either stop recording the temperature in the log or will start overwriting the oldest readings. This results in either the earliest or latest readings being available. Rollover enabled should be off if it is the initial readings that are important and on if it is the latest readings that are important.

Start delay

The start delay is how long the logger will wait until it starts recording the temperature. This feature makes it possible to preprogram the logger without impacting on the results. For example, the logger could be setup in the office and then taken to site during the day. In this case a 12 hour delay would provide sufficient time for the logger to be installed. After 12 hours they would then start sampling.

On the details screen the sampling rate is the time remaining before sampling starts. It is a dynamic field and will count down to zero.

High limit

The high limit determines when the Thermocron will time stamp an alarm. The date and time is recorded when the Thermocron first measures this temperature (or greater) and when it next measures a temperature less than the limit.

Up to 12 high alarms can be recorded in the Thermocron.

For other loggers the limits are used to trigger a relay or turn an alarm LED on.

Low limit

The low limit determines when the Thermocron will time stamp an alarm. The date and time is recorded when the Thermocron first measures this temperature (or lower) and when it next measures a temperature greater than the limit.

Up to 12 low alarms can be recorded in the Thermocron.

For other loggers the limits are used to trigger a relay or turn an alarm LED on.

Mission samples

The number of samples that have been recorded since the mission was started.

Total samples

The total number of conversions that the Thermocron has made. This value provides an estimate on the battery life remaining. The battery will last for either 10 years or 1,000,000 readings. Once the Thermocron has reached 1,000,000 readings then the battery may not last for much longer. The Thermocron should either be discarded or not used for critical applications.

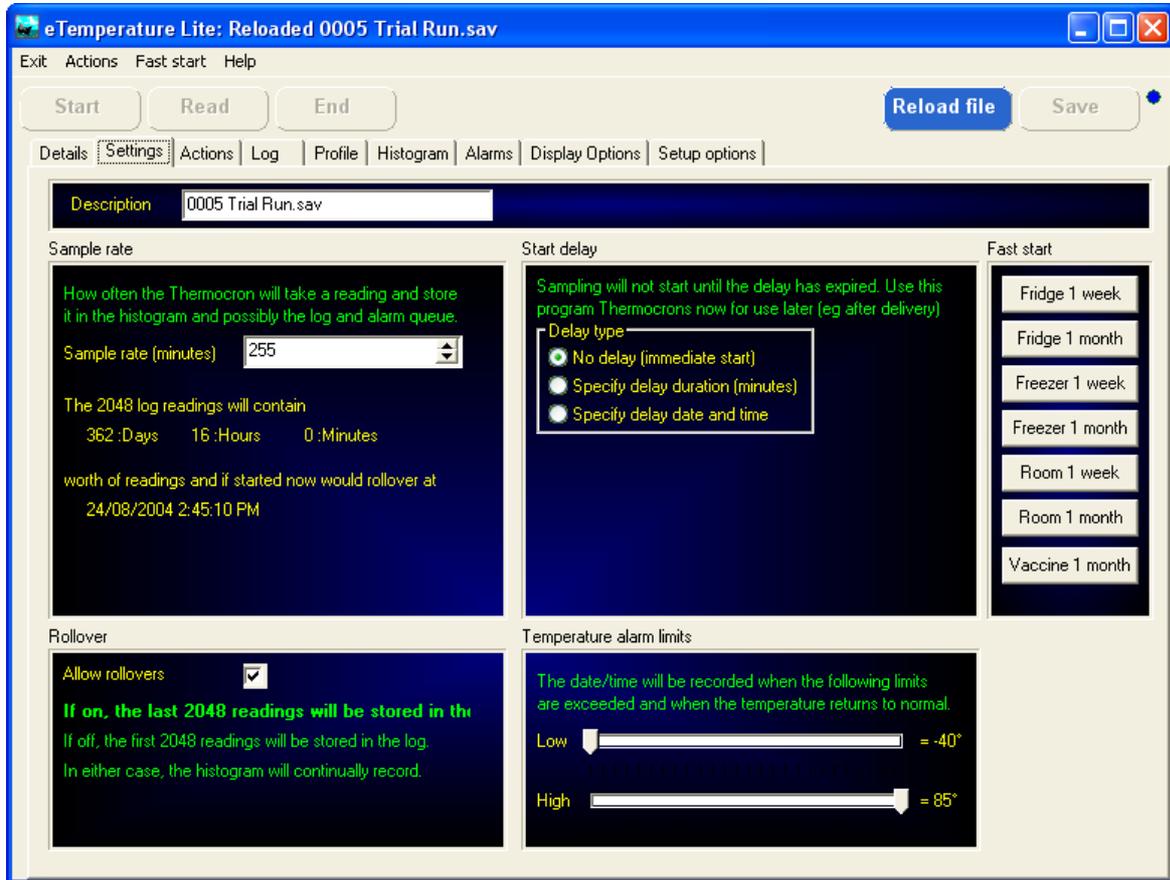
Had rollovers

If the logger has made more than its log capacity then the log will have lost some readings. The Had Rollovers flag indicates the loss of data.

Time

The time displays the current time within the logger. It is not the PC time. The logger time is set to the PC time each time a mission is started.

9 Settings Tab Sample



10 Settings tab

See also Fast Start

The settings tab provides the ability to program the Thermocron or logger.

When a logger is attached its settings will optionally be automatically copied to this tab. They can then be reused or modified. To enable or disable this feature see Display Options.

When the Start button is pressed the settings will be downloaded to the Thermocron.

The following definitions apply to the Thermocron.

Identification

The unique number that has been permanently written into the Thermocron.

Sample rate

The sample rate is how often the Thermocron will take a measurement of the temperature. It is measured in minutes and can be set from once a minute to once every 255 minutes (4 hours, 15 minutes).

The Thermocron has capacity for 2048 readings in the log. A sampling rate of once per minute will fill the log in less than 2 days. A sampling rate of 255 will fill the log in just under one year. The histogram, however, will store all the readings even after the log has been filled.

A long sampling rate may result in short changes in temperature being missed. It can also mean that short changes can not be accurately measured because the preceding and succeeding readings were so far away.

Ideally if the log is required then the sampling rate should be set to ensure that the 2048th reading will occur shortly after the mission is completed. The displayed duration and final date and time indicate how long the log will last before rollover.

For long term applications, the log may not be required. If the histogram and alarms are only to be used, do not consider the rollover date but instead set the sample rate based upon the required time resolution.

Rollover enabled

Once the log is filled the Thermocron will either stop recording the temperature in the log or will start overwriting the oldest readings. This results in either the earliest or latest readings being available. Rollover enabled should be off if it is the initial readings that are important and on if it is the latest readings that are important.

Start delay

The start delay is how long the Thermocron will wait until it starts recording the temperature. This feature makes it possible to preprogram the Thermocron without impacting on the results.

For example, the Thermocrons could be setup in the office and then taken to site during the day. In this case a 12 hour delay would provide sufficient time for the Thermocrons to be installed. After 12 hours they would then start sampling.

It is possible to set the sample rate either by a fixed offset (in minutes) or at a specific date and time.

The start date/time indicates when the start delay would expire and the Thermocron would start sampling if the Start button were to be pressed.

High limit

The high limit determines when the Thermocron will time stamp an alarm. The date and time is recorded when the Thermocron first measures this temperature (or greater) and when it next measures a temperature less than the limit.

Up to 12 high alarms can be recorded for a Thermocron.

Low limit

The low limit determines when the Thermocron will time stamp an alarm. The date and time is recorded when the Thermocron first measures this temperature (or lower) and when it next measures a temperature greater than the limit.

Up to 12 low alarms can be recorded for a Thermocron.

Quick setup buttons

On the right hand side are a series of buttons for quick setup. Each button can have its own values associated with it. When the button is pressed the associated limits, sample rate and allow rollover settings are used.

To define the buttons:

- Set the settings to the required values
- Select "Fast Start" from the menu
- Select "Save defaults" and select the required button
- Enter the name that is required on the button

The new values will be available after restarting the software.

Note that the start button must still be pressed for the temperature logger to be programmed.

On insert option

When inserting a Thermocron, eTemperature will either:

- copy the current settings in the Thermocron to the details tab only, or
- copy the current settings in the Thermocron to the details tab as well as the settings tab

The first option is beneficial when the Thermocron's next usage has no similarities to its previous usage or if Thermocrons are being bulk programmed.

The second option is beneficial when the Thermocron is going to be used for exactly the same type of application.

This behaviour is determined by the On Insert option at the bottom of the Settings tab and on the Display Options tab.

11 Fast Start

Fast Start provides a very quick and convenient method to preconfigure the settings. The Fast Start buttons are located along the right hand side of the settings tab.

Note: Using the Fast Start buttons will only change the settings in the PC. You must still use the Start button to download them to the unit.

Using the Fast Start Buttons

Either:

1. Press the appropriate Fast Start button, or
2. Use the hotkey (Alt-1 to Alt-8)

Changing the Fast Start defaults

1. Change the settings to be as required
2. Select Fast Start in the menu, then Save Defaults, and then the required button number
3. Enter the new description

Distributing Fast Start settings

It is possible to save the Fast Start settings to a file which can then be sent to another person for them to use. This also makes it possible to distribute Fast Start settings onto a number of computers.

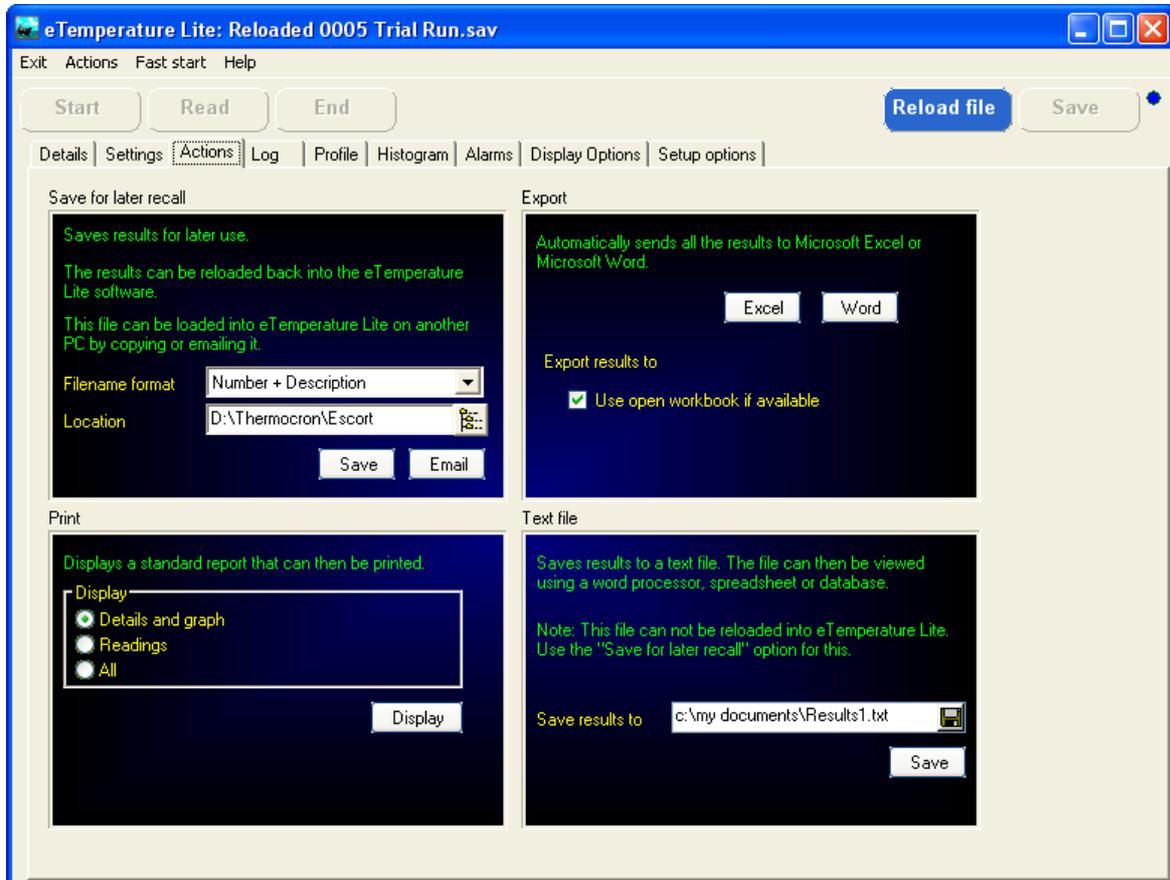
To save the Fast Start settings to a file

1. Set up the Fast Start buttons as explained above.
2. Select Fast Start in the menu, then File and Save
3. Enter the required file name and press Save.

To load Fast Start settings from a file

1. Select Fast Start in the menu, then File and Load.
2. Locate the required file and press Load.

12 Actions Tab Sample



13 Actions

The actions tab provides the ability to permanently store the results.

Save for later recall

If the Save button is pressed the settings and results will be stored to a file for later recall into eTemperature.

This is the recommended method for saving results. It allows the results to be reloaded, viewed, printed and exported at a later date.

The filename format provides the ability to change the order of the text, description and unique number. For example, by having the description first it is possible to order the open file list by filename to quickly locate a set of results.

Save to file

If the File button is pressed the settings, log, histogram and alarms will be saved to a file as a comma separated value file. The results can be imported into a spreadsheet or word processor but can not be reloaded into eTemperature.

The file name and directory can be entered in the edit box or by clicking on the button with the disk symbol.

Export to Excel

Clicking on the Excel button will export the settings, log, histogram and alarms to an Excel spreadsheet.

If Excel is not running it will be started. If it is running it will use the currently selected worksheet.

Print

A simple built-in report allows the graphs and settings to be printed. The report is first previewed before printing.

The report preview has a Save button. It is strongly recommended that reports are not saved because only the displayed page is saved. The data is not saved. Use the Save for Later Recall option above to save the results.

A dialog box will appear asking for the title. This is displayed at the top of the report.

14 Log Tab Sample



15 The log

The graph

The log displays a list of date and times and the reading. They will either be the first or last readings depending upon the allow rollover setting. The log is useful for watching the trends in the temperature as well as pinpointing specific information.

The graph displays the temperature versus time. By moving the cursor over the graph, the time and reading can be viewed on the display tab.

It is possible to **zoom** in on data by selecting the top left corner of the desired area and *with the left mouse button held down* dragging the mouse to the bottom right hand corner. To zoom out simply drag the mouse in any other direction.

The zoom buttons can also be used to manually zoom in and out.

The display can be **scrolled** left, right, up or down by holding the *right* mouse button and moving in the required direction. The scroll buttons at the bottom of the graph can also be used.

Save to clipboard will save the graph to the clipboard. The graph is stored in a standard graphical format which means it can be easily pasted into most applications that support graphics including Microsoft Word and Microsoft Excel. To paste the graph, in the other application select Edit from the menu and Paste or try Ctrl-V.

Colours

The colours tab provides the ability to customise the displayed colours.

Low line: All readings less than the low limit.

High line: All readings above the high limit.

Normal line: All readings between the high and low limit.

Low shade: The area below the low limit.

High shade: The are above the low limit.

The low and high limit can be changed by moving the limit bars between the graph and the readings.

Options

The **Show 3D** check box will display the graph as either a single line or in 3-D. The scroll box then determines the depth of the line. The default of 15 makes line very obvious but can hide small details. A setting of 4 makes the line thick enough to show the colour and is easily seen but shows more detail. Turning 3-D off displays the fine details clearly.

The **grid** check box turns the grid lines on or off.

Tests

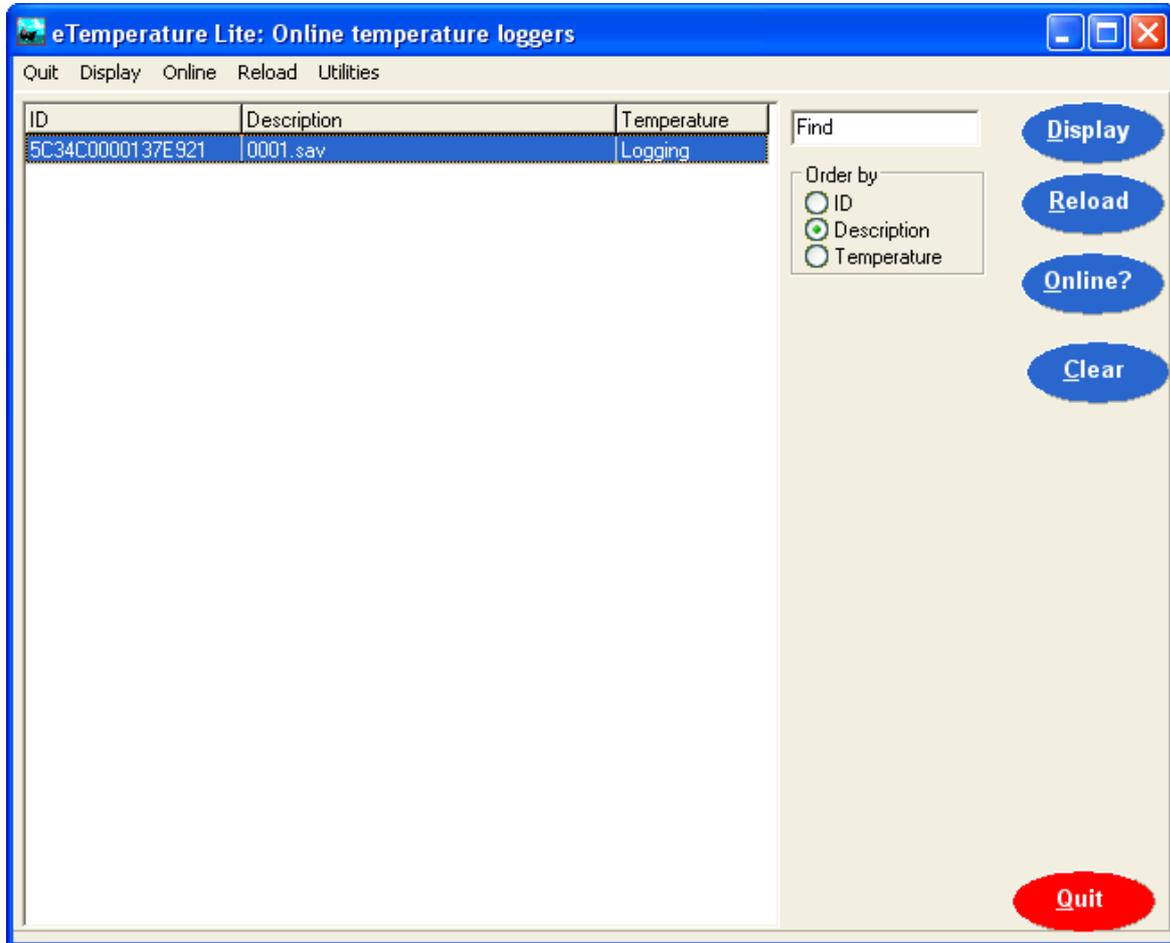
The **HACCP Tests** provide two tests for checking compliance to the HACCP regulations. **Storage** will display all readings between -5°C and 60°C in red. These temperatures are considered as high risk for potentially hazardous foods. The **Cooling** test will determine if the sample started above 60°, reached 20° within two hours and then reached 5° within an additional 4 hours. If it fails the entire cycle will be in red.

The table

It is possible to **select** a range or readings in the table. All readings can be selected by pressing Ctrl-A. The selected readings can then be copied to the clipboard by pressing Ctrl-C. From the clipboard they can then be pasted into other applications by pressing Ctrl-V or selecting Edit/Paste from the menu.

If the mouse is clicked on the graph then the nearest point in the log table will be selected. This provides a very quick method of locating a point.

16 Online Polling Form Sample



17 Online Polling Form

The Online Polling form will appear if the mode is set to online. See Online Polling for further information.

The list displays all units currently connected.

Displaying a unit

To display a unit either:

- Select it in the list and press the Display button
- Double click on it in the list.

Note that displaying a unit will not automatically download the log but will download the settings page.

Reloading saved results

The reload button will display the Open dialog box. Select the required file and press open. This is the same as pressing the reload button on the main form.

Updating the list

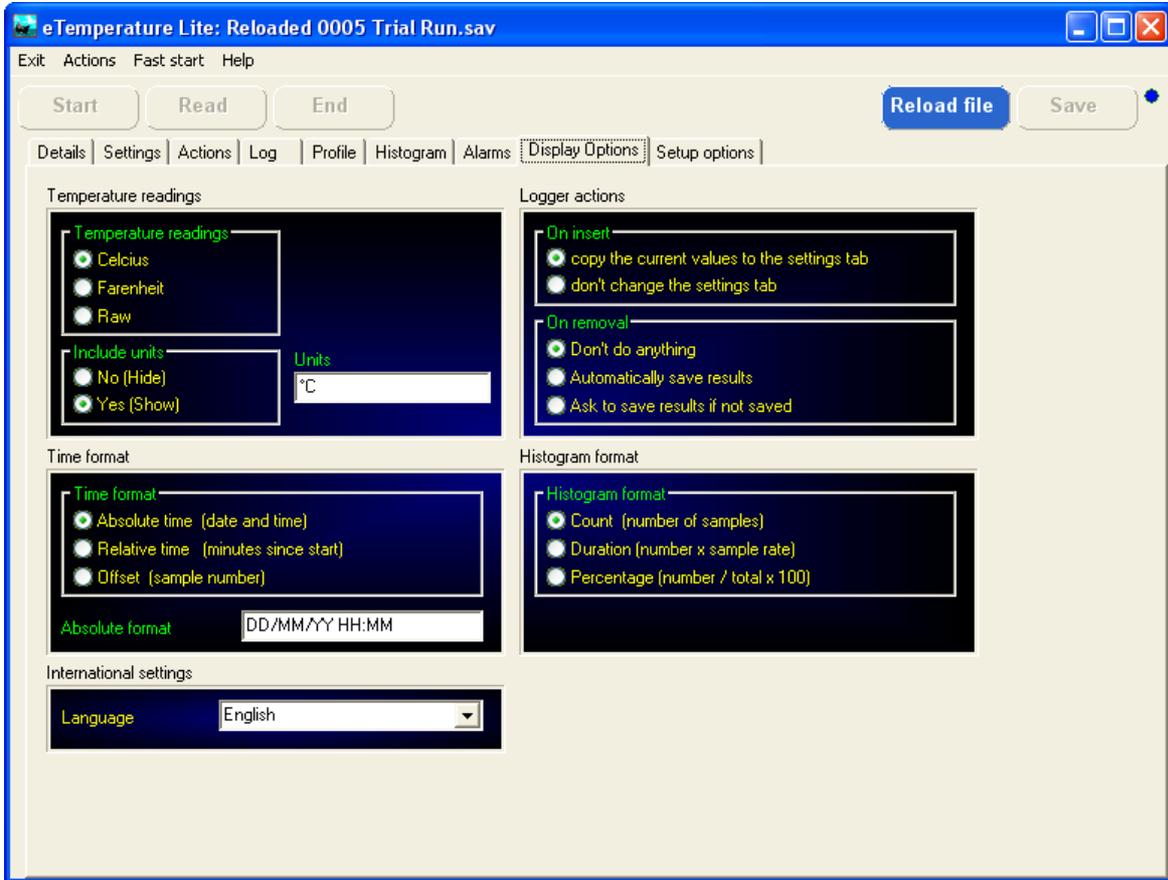
The list of devices can be updated by either:

- Pressing the Online? button, or
- Automatically by turning on the automatic update feature on the Setup tab (see Online Polling for further information).

Clear

The clear button is used to remove all devices from the list. For some device types, the list will remember all units that have been connected and will not automatically clear each time it is refreshed.

18 Display Options Sample



19 Display Options

The options tab changes the way the software will operate. These options are typically set only once when the software is first installed. They can be changed at any time and will take effect immediately. Some changes will hide the results tabs because they change the way the data is displayed. The results must then be read in again.

Display Format

Temperature readings

Determines what temperature format the results will be in.

Raw is the value that is read from the device with no processing. For the Thermocron 0 is -40°C and 255 is 85°C.

Include units

Determines if the units will be displayed in the tables. When exporting data to Excel it is recommended to turn units off so that the exported data is treated as a number and not as text.

Units

The text in the units box will appear on the graph axis and optionally in the tables (if include units is on). The degree symbol (°) can be entered by holding the ALT key and typing 248 on the numeric keypad.

Time format

The time format determines how the log will be displayed in the table and graph.

Absolute time is the actual time and date that the reading was taken. For example 12/03/2003 is in absolute time. Absolute time is useful for determining exactly when something occurred.

Relative time is how long the reading was taken after the start of the mission. For example 3 hours and 22 minutes is in relative time. It is useful for comparing results that may have started at different times but have gone through the same process. Relative time is the sample number multiplied by the sample rate.

Offset is the actual sample number.

Histogram format

The histogram format determines how the values for each temperature range are displayed. The count is the raw value and is simply the number of samples that occurred in the temperature range. The duration is the count multiplied by the sample rate. The percentage is the count divided by the total number of samples times 100.

Logger actions

On insert

When a logger is connected it is possible to automatically copy its settings to the settings tab. This then allows the same settings to be automatically downloaded back into the device when the start button is pressed.

If the option is turned off then the settings will not change. This is useful for when a large

number of Thermocrons need to be programmed with the same settings.

On removal

It is possible to have the software automatically save the results to a file when the logger is removed. This ensures that the results are permanently stored on the PC.

The results will also be automatically saved if the operator presses the start button before saving the results.

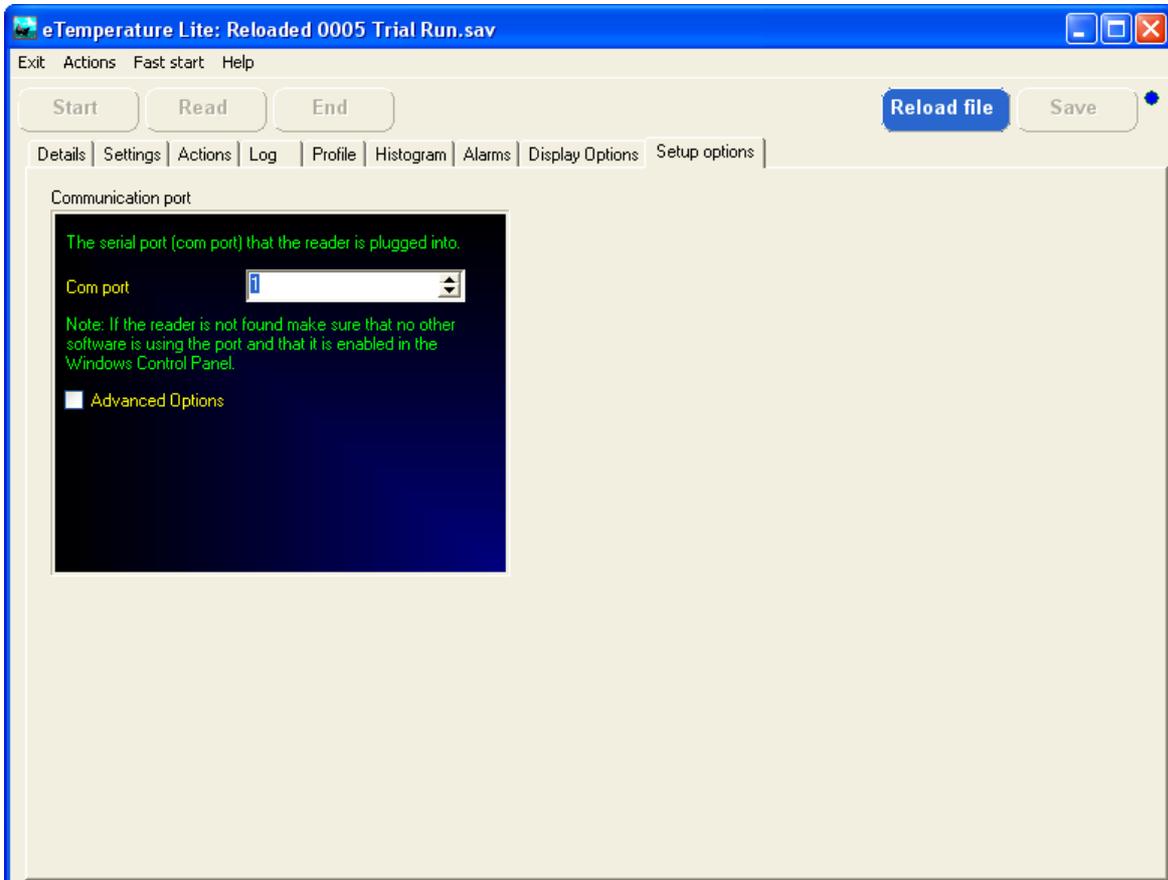
International settings

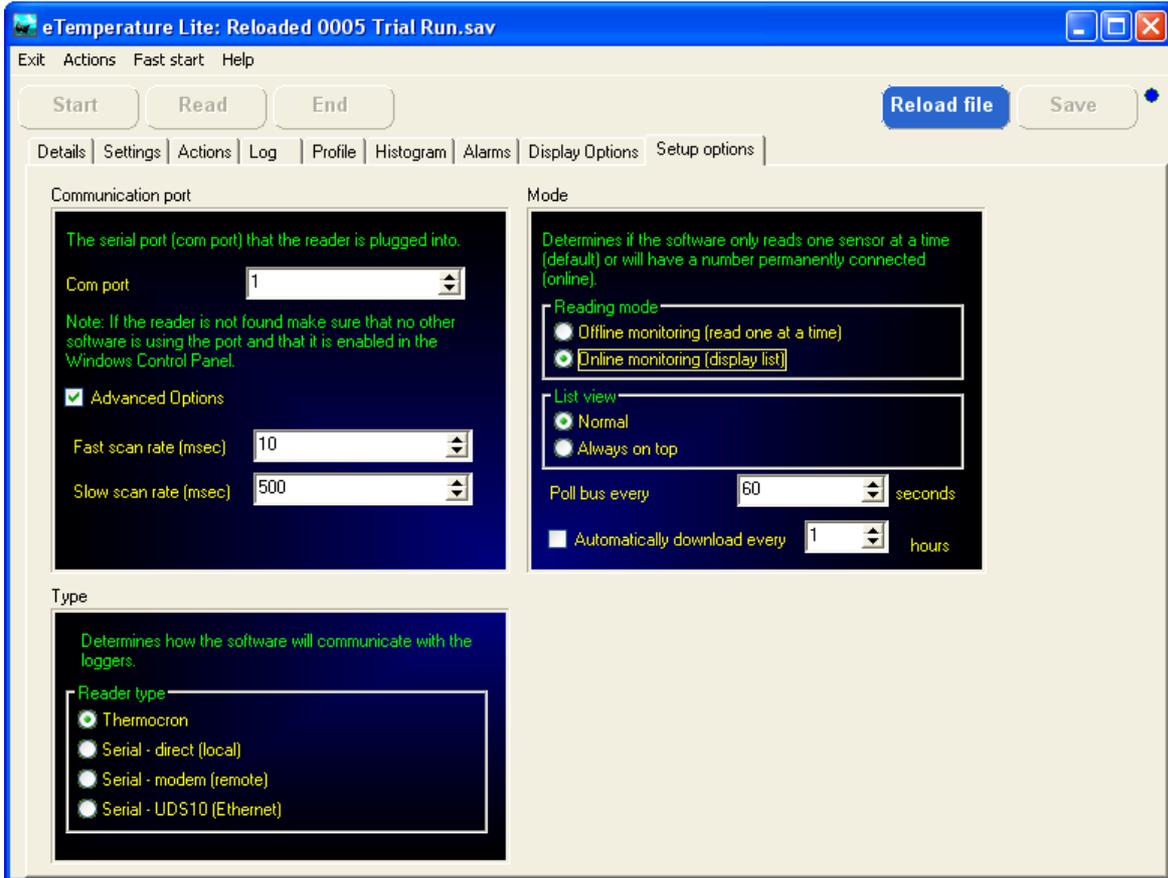
Language

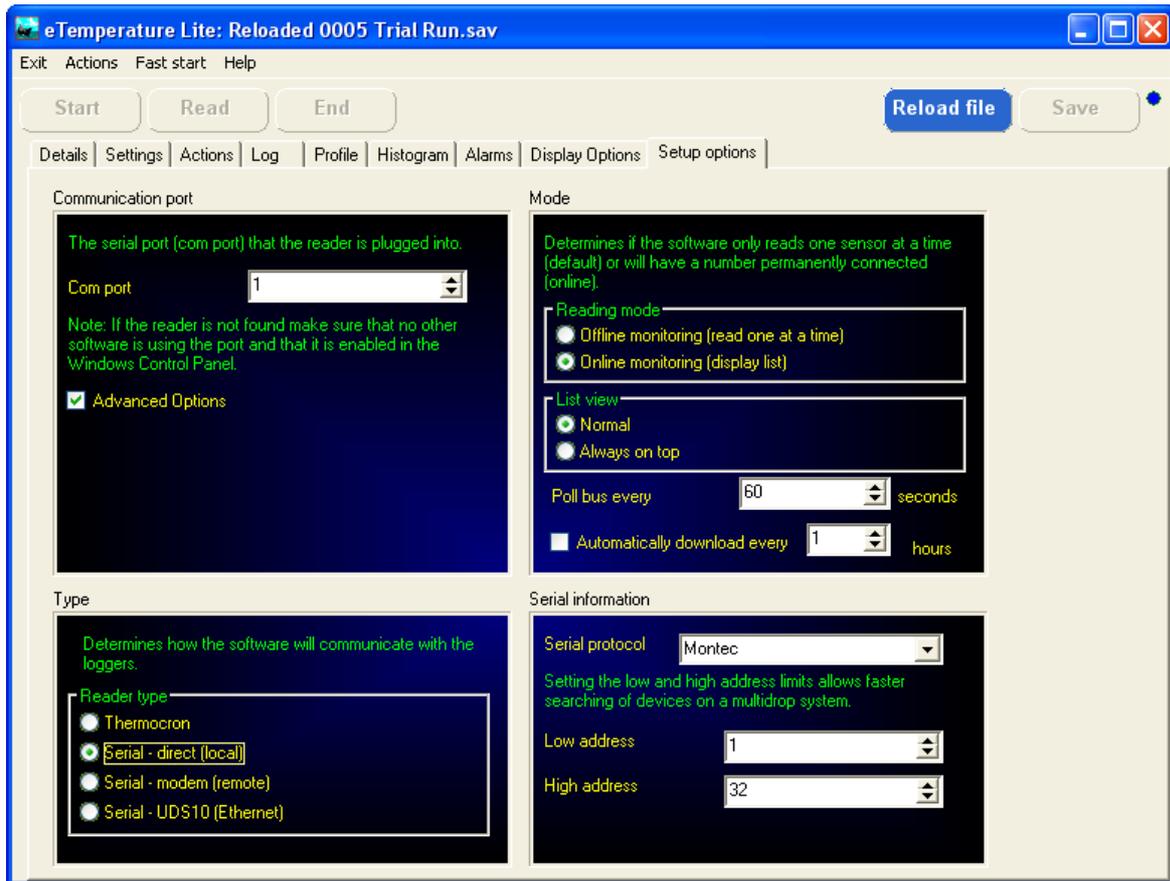
eTemperature supports multiple languages. Each language has its own definition file. English is always available and additional languages are available upon request.

If the required language has not been translated than the source files can be provided for you to translate or a translation can be developed. Contact your supplier for more information.

20 Setup Options Samples







21 Setup Options

The options tab changes the way the software will operate. These options are typically set only once when the software is first installed. They can be changed at any time and will take effect immediately. Some changes will hide the results tabs because they change the way the data is displayed. The results must then be read in again.

To simplify the setup of the system for the majority of users, only the communication port is shown. To display the other settings, turn the Advanced Options check box on.

The software will immediately look for a reader when changing the communication port. This makes it possible to quickly find the required port. The "Reader Not Found" message will remain at the top of the screen until a valid reader is found.

Communication port

Comm Port

This is the serial port that the reader is connected to. For most PCs it will either be 1 or 2.

If the reader does not work, try selecting the other comm port. Also ensure that the comm ports have been enabled within Windows and within the BIOS. On older PCs the mouse would typically use COM 1. Laptops usually have only one comm port.

Advanced

The advanced check box will show or hide the additional settings.

to automatically refresh the list periodically. Setting the refresh rate to 0 will disable the feature. If enabled, the PC will automatically check for any new and existing Thermocrons on the bus.

USB port

If using the USB to 1-wire adaptor with the Thermocrons, then select port 0.

Note: The recommended setup order is:

1. Install the software
2. Run eTemperature
3. Select Port 0
4. Plug in the USB reader.

22 Serial Protocols

eTemperature supports a number of other loggers. For further information contact your local distributor.

Type

Determines what method the software uses to communicate with the serial port.

Thermocron: A DS9097U serial port reader is connected to the com port.

Serial - direct (local): The serial port is used to communicate directly with a logger.

Serial - modem (remote): A modem is used in the PC to communicate with a remote site. Another modem is installed on site and is connected to the equipment.

Serial - UDS10 (ethernet): The network or Internet is used to communicate to a remote UDS10. The UDS10 is connected the network and to the equipment.

Serial Information

Only required if a serial protocol is selected under the Type.

Serial protocol

Determines what type of logging device is connected. This correct type must be specified or else the device will not respond to the software.

Low address and high address

For addressable devices this determines the start and end addresses that will be used in the search for the equipment. It is recommended that one less than the first device be used as the low address.

23 Online Polling

Mode

Reading mode

It is possible to have multiple loggers connected to the PC at the same time. For most installations there will only be one logger connected at a time. This is offline monitoring. Setting the reading mode to offline ensures the quickest and easiest use of the software.

For sites with multiple loggers connected simultaneously, a list of devices is available. Turning on the online monitoring option will display the list automatically when the software is started. It can then be used to select and view a specific logger.

The other purpose of the Online Monitoring is for the automatic download of results. In this mode, it is possible for the system to automatically detect if a Thermocron is connected and when it was last downloaded. If it hasn't been downloaded for a given time then it will automatically be downloaded and saved.

List view

For the online system, this option determines if the list of devices will always be the top window. This option is normally off.

Poll Bus Every

If the list is displayed, it is possible to automatically refresh the list periodically. Setting the refresh rate to 0 will disable the feature. If enabled, the PC will automatically check for any new and existing Thermocrons on the bus. If off, use the OnLine button to update the list.

Automatically download

If on the the bus is being automatically polled then the PC will automatically download the Thermocron's results and save them to file at the specified rate. The location and name of the file is determined by the Actions tab.

Communication port

Comm Port

This is the serial port that the reader is connected to. For most PCs it will either be 1 or 2.

If the reader does not work, try selecting the other comm port. Also ensure that the comm ports have been enabled within Windows and within the BIOS. On older PCs the mouse would typically use COM 1. Laptops usually have only one comm port.

Fast scan rate

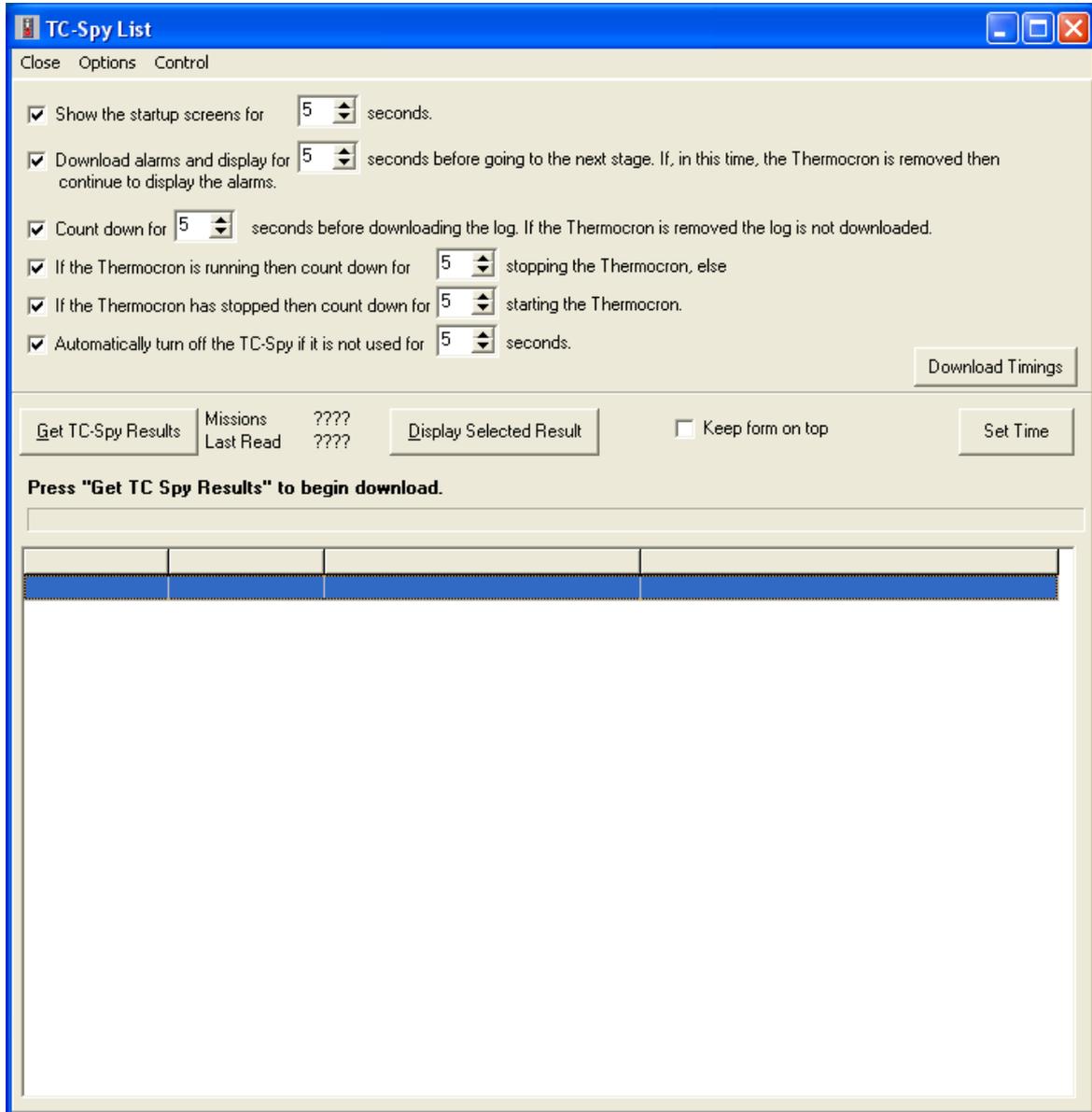
The fast scan rate determines how long the PC will wait before trying to read the next page of memory from a device. This should typically be 5. The only time this value should be increased is if other background tasks must be run at the same time and require a reasonable amount of processor time.

Slow scan rate

Determines how long the PC will wait between checks to see if the device is still connected or if another device has been connected. On older machines the search will occupy a significant amount of time and the machine may become sluggish. If this is the

case then increase the time to 1000.

24 TC-Spy Sample



25 TC-Spy

TC-Spy is a hand held device used for downloading results from the Thermocron to be transferred back to a PC.

Downloading Results

Select "Get TC-Spy Results" to download all results from the TC-Spy.

The status bar will indicate how the download is going.

If no Missions are displayed immediately then ensure the TC-Spy is correctly connected and the correct comm port is selected.

Displaying Results

Once the results are downloaded they are automatically saved to the hard disk.

To display any downloaded results simply double click on the entry in the list.

Options

"Don't clear after download": Will leave the results in the TC-Spy's memory so that they will be downloaded again next time.

"Download previously downloaded results": Will download all missions in the TC-Spy if they have not been cleared before.

"Keep form on top": Will keep the TC-Spy form as the top form above the eTemperature main form. This is useful for navigating between saved files.

Timing options

"Show the startup screen": How long the initial 2 screens will be displayed for when the unit is turned on. Default = 5.

"Download alarms and display": If 0, the alarms are not downloaded. If greater than 0, the alarms are downloaded and displayed. If the unit is disconnected then all alarms are displayed. If the unit is not disconnected then the alarms will be displayed for this amount of time before moving onto the next step. Default = 5.

"Log countdown": A message will appear displaying "Download log in x seconds". Use 0 to bypass the message. Default = 5. Turn off the tick box to disable the downloading of the log.

Note: If no memory card is present in the TC-Spy then it will not download the log.

"Stop countdown": If turned on, the TC-Spy will stop a unit that is running. It will display a message saying "Stop logging in x seconds". Use 0 to bypass the message. Default = 5.

"Start countdown": If turned on, the TC-Spy will start a unit that has stopped. It will display a message saying "Start logging in x seconds". Use 0 to bypass the message. Default = 5.

"Automatically turnoff": If on, the unit will automatically turn off if a new Thermocron is not connected within the timeout period.

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