



HOW TO USE THE TEMPACHEK™-DL



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for the latest version of this manual go to:
www.healthmark.info/proformance/How-To-Use-TempaChekDL.pdf

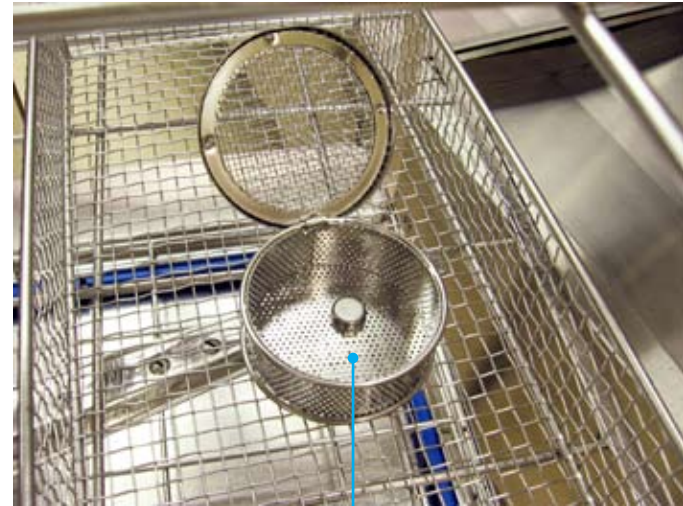
TEMPACHEK™-DL USER MANUAL

Congratulations are your purchase of the TempaChek-DL temperature datalogger. The TempaChek-DL is the first device to bring affordable datalogging capabilities to the reprocessing equipment used by Central Sterile Processing Departments. This includes the cart washer, the ultrasonic and the automated instrument washer. With the later, it is now possible to verify thermal disinfection temperature and time, because the DL can record temperature data as frequently as every second.

The TempaChek-DL is accurate to within 1 degree Fahrenheit. It is made of stainless steel, just like most surgical instruments and its resistivity temperature sensor reacts nearly instantaneously to temperature changes. The TempaChek-DL starter kit which you purchased includes 5 separate pieces:

1. The round data logger
2. The USB adapter
3. The datalogger docking pad
4. The PC compatible software load disc
5. The datalogger remover (for popping out the datalogger from the reader)

Optionally, you may have purchased the NIC-001 washer basket to contain the datalogger in the washing equipment.



TempaChek-DL
Thermologger



USB Adapter/Reader

INSTALLING SOFTWARE ON YOUR COMPUTER

1. Log on to machine using an account that is a member of the administrator group
2. Insert the Healthmark TempaCheckDL installation CD into the CD drive. The TempaCheckDL setup/install wizard should automatically start. If it does not, then run the “startup.exe” program in the root directory of the CD.
3. During the TempaCheckDL installation, you may be prompted about installation of prerequisite software, such as SQLEXPRESS, the .NET framework, etc. The installation of these products is necessary in order for TempaCheckDL to run properly.
4. During the install of the OneWire Drivers:
 - i. When asked, be sure that the OneWire.NET API is selected to install (uncheck the OWCOM checkbox as this component is not necessary).
 - ii. When/if the install prompts you to plug in the iButton adapter (i.e. button “cradle”), DO NOT PRESS THE “OK” BUTTON AT THIS POINT, but instead, go ahead and plug in the adapter (while the other install dialog is still waiting).
 - iii. You will then see the typical Windows “New Hardware” wizard window pop up (possibly behind the OneWire install wizard window(s), so look for it!).
 - iv. While the OneWire install wizard window(s) are still open (the one prompting you to plug the adapter into the USB port), follow the Windows “New Hardware” installation wizard. This will ask if it should search for drivers automatically. Respond with “OK” and the new hardware install should find the drivers which the OneWire install has placed in the directory “C:\Program Files\Dallas Semiconductor\1-Wire Drivers Version 4.00”.

- v. Once the Windows New Hardware install wizard has completed, go back to the OneWire install wizard and continue with that installation.
 - vi. During that installation, accept all defaults along the way, EXCEPT, be sure to uncheck the “OWCOM API” checkbox on the Custom Installation Choices page of this installation wizard.
5. Create a shortcut to the TempaCheckDL executable by pointing the shortcut to C:\Program Files\Healthmark\TempaCheckDL\TempaCheckDL.exe

USING THE SOFTWARE FOR THE FIRST TIME

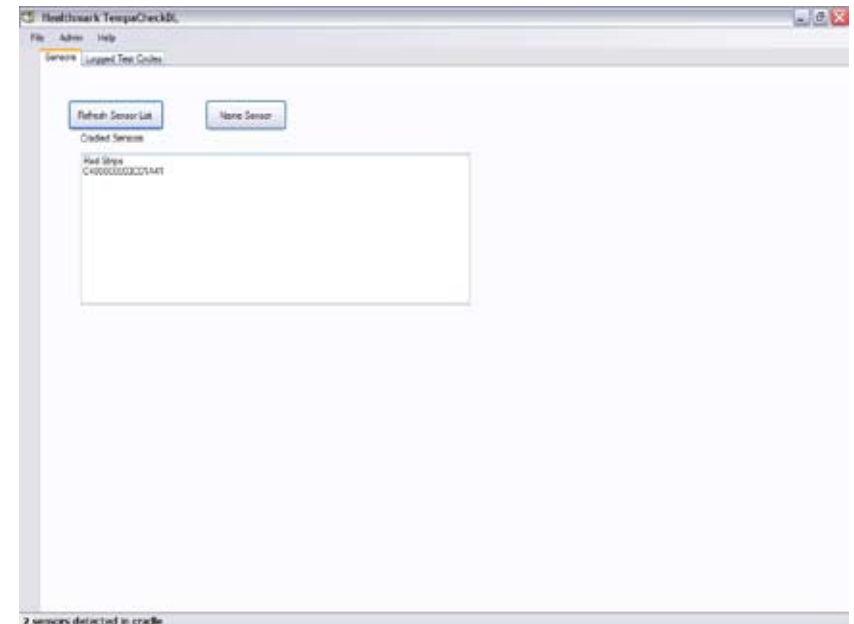
It is recommended that if you have not done so already, plug the USB adapter and reader into an open USB port on your computer. Then double-click the TempaChek-DL icon found on the desktop of your computer. The software will fire-up and then will indicate in the lower left-hand corner that the USB adapter is found. It should then indicate that it has found a sensor (or two, if two are in the adapter). If this is the first time you are using this particular sensor, the software will ask you to give the sensor a name. This gives you a chance to identify the sensor by a name you recognize. A good idea is to adhere a piece of instrument marking tape to the top of the sensor, so that you can easily identify it in the future (if you have more than one sensor).



USB Adapter/Reader



You will then be taken to the “sensor list” screen. From here, you can select the sensor you wish to program (if the sensor has data on it, you will automatically be taken to the “Test Cycle Data” screen). On this page, you can also rename a sensor by clicking the “Name Sensor” button.



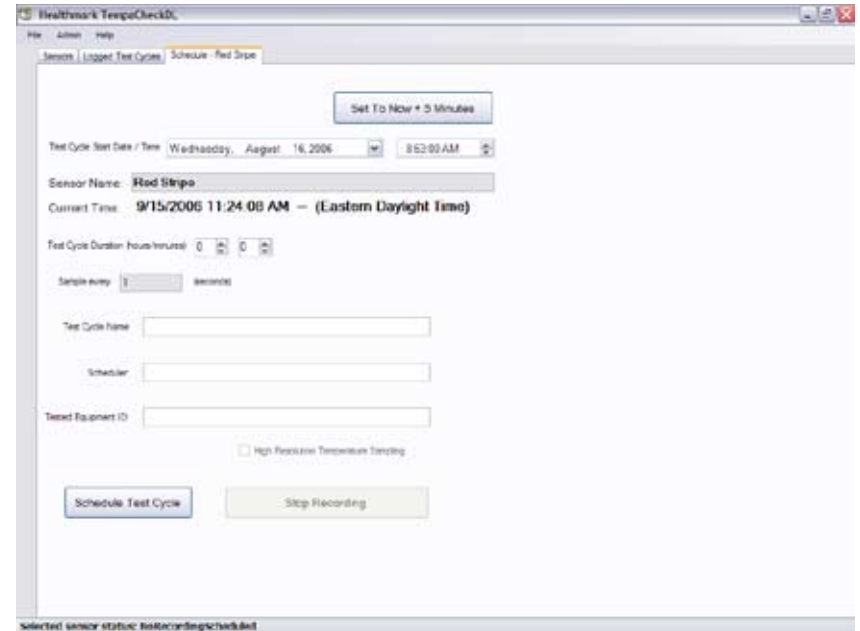
On the schedule screen, you have several bits of information to enter, in order to schedule your datalogger for a recording mission:

- Set to the Date and Time for the Recording Mission to Begin: There is “set to now +5 minutes button.” Click this button and the datalogger schedule will automatically be set to the current system (computer) time plus 5 minutes. You can adjust this time with the up and down arrow keys, or directly enter the data and time you wish to have the logger begin recording.
- Sensor Name: This will be the name you gave the sensor at initial use.
- Test Cycle Duration: Here is where you set the total time you wish the TempaChek-DL to record temperature data. This can be any amount of time you want, but will be effect the sampling rate of the temperature (next step).
- Samples Every (in seconds): The TempaChek-DL is capable of storing up to 8192 data points. The software will automatically set the sampling frequency based upon the duration of time you wish to have the datalogger record.
- Test Cycle Name: Recorded data is sortable by name, sensor name, date/ time, equipment and scheduler id. Give the Cycle a name that you will recognize. A good alternative is the name of the equipment (e.g., Washer #2). Or you could use the name of the Cycle (i.e., instrument normal)
- Scheduler: The name or initials of whomever programs the sensor.
- Test Equipment ID: Likely your various decontam equipment has a ID number assigned and labeled by your Biomed department. You can enter this information here. Or use another ID that you will recognize.

The screenshot shows the 'Healthmark TempaCheckDL' application window. The 'Schedule' tab is active. At the top right, there is a 'Set To Now + 5 Minutes' button. Below it, the 'Test Cycle Start Date / Time' is set to 'Wednesday, August 16, 2006' at '8:52:00 AM'. The 'Sensor Name' is 'Red Stripe'. The 'Current Time' is '9/15/2006 11:24:08 AM - (Eastern Daylight Time)'. The 'Test Cycle Duration (hours/minutes)' is '0:00'. The 'Sample every' is '1 seconds'. There are input fields for 'Test Cycle Name', 'Scheduler', and 'Test Equipment ID'. A checkbox for 'High Precision Temperature Sampling' is present and unchecked. At the bottom, there are 'Schedule Test Cycle' and 'Stop Recording' buttons. The status bar at the very bottom reads 'Selected sensor status: NotRecordingScheduled'.

This screenshot is identical to the one above, showing the 'Healthmark TempaCheckDL' application window with the 'Schedule' tab. It displays the same configuration: 'Set To Now + 5 Minutes' button, start date/time of Wednesday, August 16, 2006 at 8:52:00 AM, sensor name 'Red Stripe', current time 9/15/2006 11:24:08 AM, test cycle duration of 0:00, sample every 1 seconds, and empty fields for Test Cycle Name, Scheduler, and Test Equipment ID. The 'High Precision Temperature Sampling' checkbox is unchecked. The 'Schedule Test Cycle' and 'Stop Recording' buttons are visible at the bottom. The status bar at the bottom indicates 'Selected sensor status: NotRecordingScheduled'.

Once you have entered all of this information click the “Schedule Cycle” button. At the lower left corner of the screen the software will report the status of the programming step. First it will say “Scheduling” then it will report that the datalogger has been successfully scheduled.



PLACING THE TEMPACHEK IN THE DECONTAM EQUIPMENT

The data logger is water proof, but it is small, so in order to use in a washer, it is a good idea to contain it in a small covered container. Healthmark offers an excellent product for this purpose, if you do not have your own. Placement in the washer is an important consideration. It really depends on the objective of your testing. If you want to test the absolute capabilities of your washer, you might place the device out toward the very furthest point from the center of the spinner arms.

If you are using a small basket, may need to place the small basket in a larger, uncovered basket. That is ok. Load the rack, and run the washer on your normal instrument cycle. For this first trial, I would suggest running in an empty washer, but that is up to you.

The TempaCheck-DL can also be used in other decontam equipment, including the cart washer and the ultrasonic cleaning. Follow similar procedures as with testing the instrument washer.



DOWNLOADING DATA FROM TEMPACHEK-DL

Take the datalogger and place it back in the reader. **WARNING!** While the Datalogger is waterproof, the reader is not. Be sure to dry off the datalogger prior to placing in the reader!

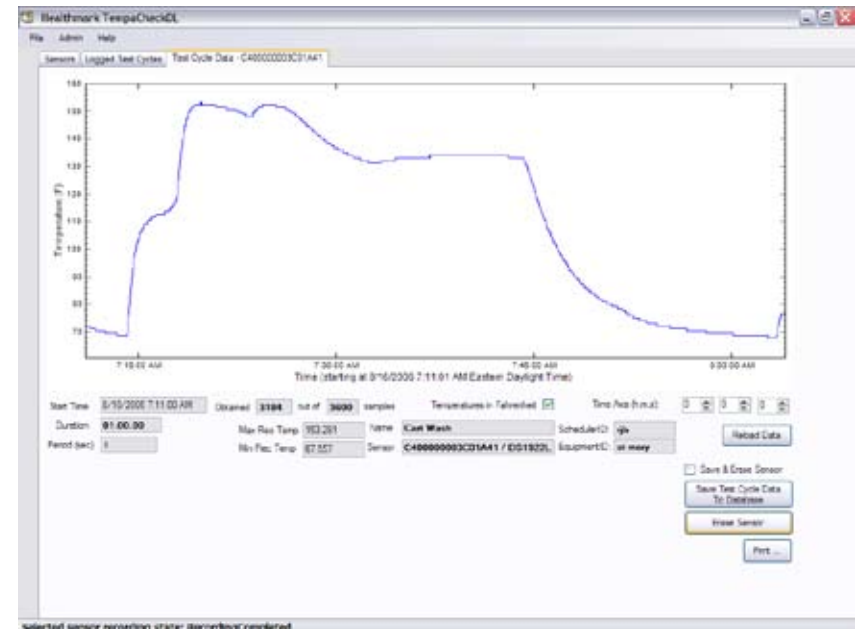


Once you do, go to the sensor window, click on the sensor you just replaced.



The sensor “Test Cycle Data” tab will pop up. The purpose of this window is to display and confirm statistically that the desired cycle temperature profile was captured. From this screen, you can then save the data for analysis. You can return to this page also, to be erase data from the sensor. This needs to be done prior to the next use. Or you can select the “Save and Erase” radio button, and the data will automatically be erased after you save data to the database. Depending upon your use, this may be the most convenient option.

If the datalogger is still recording (i.e., the duration for recording was set to an hour, but only 45 minutes have gone by), return to the “Scheduling” window and click the “stop recording” button. Data cannot be saved while the datalogger is in the recording mode.

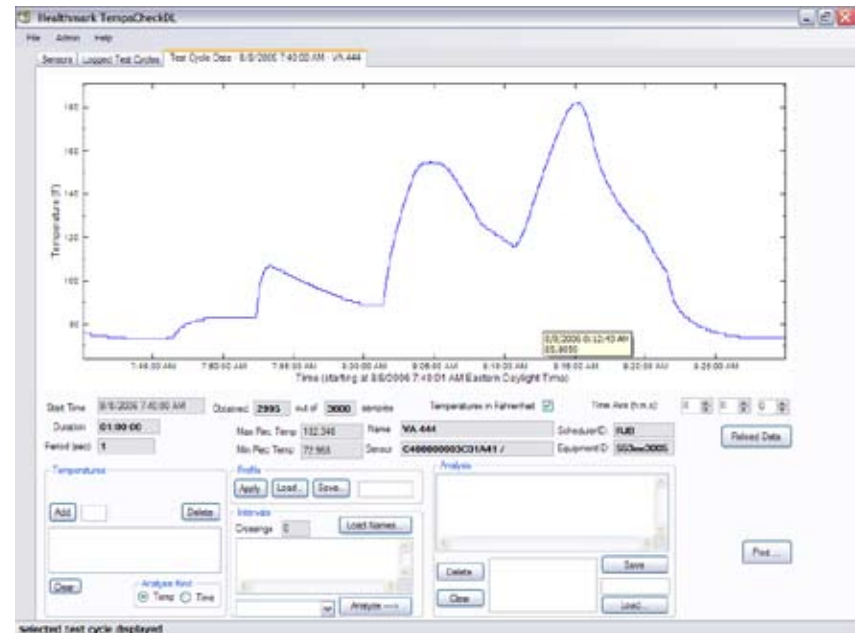


ANALYZING THE DATA

Once you save your sensor's data, it becomes part of the "Logged Test Cycles" database. Click on this tab. There you will find your most recent saved cycle data. By default, this database is sorted by date and time. The database can also be sorted by any of the other key fields, including Sensor ID, Sensor Name, Cycle Name, Scheduler and Equipment ID. Just click on the heading for the column and the database will be resorted by that field.

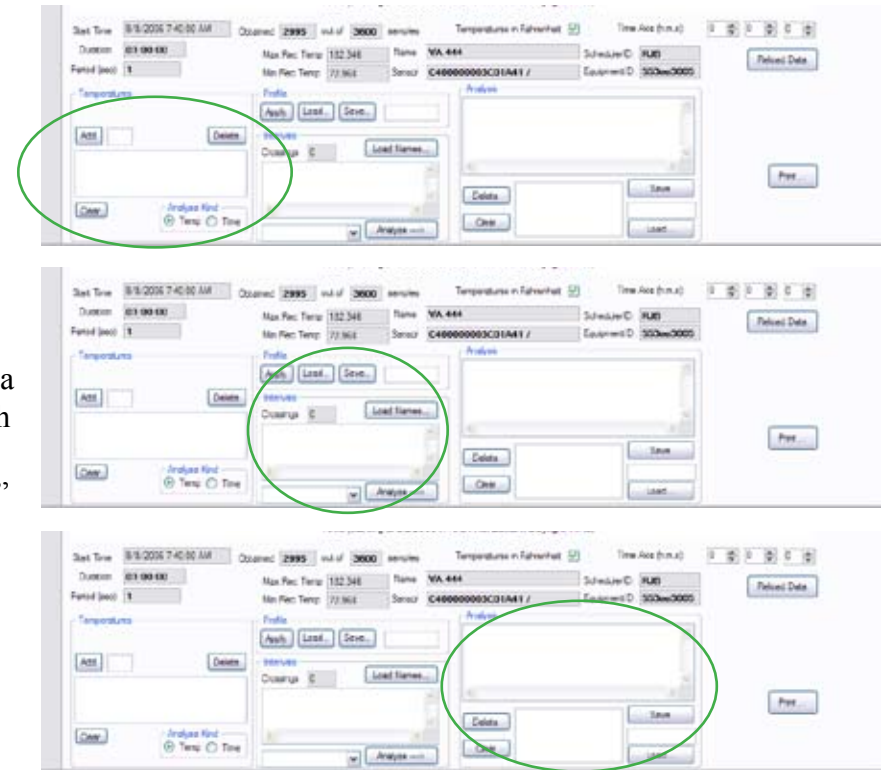
Sensor ID	Sensor Name	Start Time (local)	Name	Duration (sec)	Sampling Frequency	Scheduler ID	Equipment ID
6000000017	Fed Stripe	8/16/2006 8:53 AM	Washer 1	3600	1	RUB	schd01
C400000001	VA 444	8/16/2006 7:11 AM	Get Wash	3600	1	RUB	st may
6000000017	Fed Stripe	8/16/2006 7:01 AM	St. May H.	7200	1	RUB	WD 260
C400000001	C400000001M1	8/15/2006 1:58 PM	test	300	1	RUB	test
C400000001	C400000001M1	8/15/2006 1:46 PM	test warmer	300	1	RUB	test2
C400000001	C400000001M1	8/15/2006 1:35 PM	test other	300	1	RUB	test2
C400000001	C400000001M1	8/15/2006 1:25 PM	test test	300	1	RUB	coffee warmer
C400000001	C400000001M1	8/9/2006 7:40 AM	VA 444	3600	1	RUB	000000005
6000000017	Fed Stripe	8/9/2006 7:25 AM	VA 444	3678	1	RUB	1231
800000004E	red sensor	8/7/2006 2:40 PM	test coffee	300	1	RUB	arbiters time
C400000001	C400000001M1	7/28/2006 3:08 PM	1st floor	3600	1	RUB	equator
C400000001	C400000001M1	7/28/2006 8:54 PM	Packery 1	3600	1	RUB	same
6000000017	Fed Stripe	7/28/2006 8:26 PM	Packery OR	3600	1	RUB	444
6000000017	Fed Stripe	7/28/2006 7:27 PM	Packery B	3600	1	RUB	4002
3800000018	blue sensor	7/28/2006 12:16 PM	e	60	1	RUB	ent
800000004E	red sensor	7/28/2006 12:31 PM	test test	180	1	RUB	conference room

To select a cycle for analysis, just double-click in that row. The cycle analysis screen should appear. Test Cycle Data screen has several components. First is the graphical presentation of the captured data. Below the graph is statistical information about the cycle, including the cycle name, sensor name and ID, maximum and minimum temperature, Scheduler and Equipment ID. There also a couple of tools for adjusting the graphical display. Temperature can be expressed in either Fahrenheit of Celsius. Simply check the "Display in Fahrenheit" box for Fahrenheit, or uncheck for Celsius. The other selectable display is the "time scale" for the time axis. You can adjust the granularity of the time labels at the time axis. You can adjust this yourself, or allow the software to automatically display.



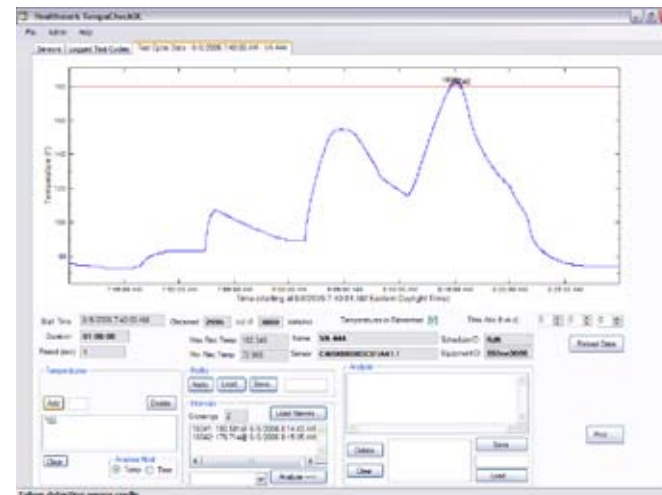
Next are the analysis tools. These include from right to left:

1. Temperature or Time Based Data Points. This is where you begin your analysis of the captured data. Analysis can be Temperature Based, that is enter temperatures you wish to identify in the data you wish to analyze for time; or Time Based, where you identify a time interval you wish to analyze for temperature data.
2. Apply Profile: In the Profile section, you apply the Temperature or Time values entered in the previous section to the graph. It is possible to apply multiple temperatures or multiply time points, but you can not look at temperature and time values in the same analysis. In addition to applying a profile, it is possible to save a profile for future recall. For instance, if with your washer, you always want to recall the temperatures of 100F, 120F, 150F and 180F, enter these once and save the profile. Then you can “load” that profile the next time you wish to apply it to cycle data.
3. Next is the Analysis section. This is where the statistics from the Profile section is reported back. If analyzing by Temperature, the relevant time will be reported. Conversely, if analyzing by Time, the maximum and minimum temperatures will be reported.
4. Finally, you can print out the current screen for hard copy storage.

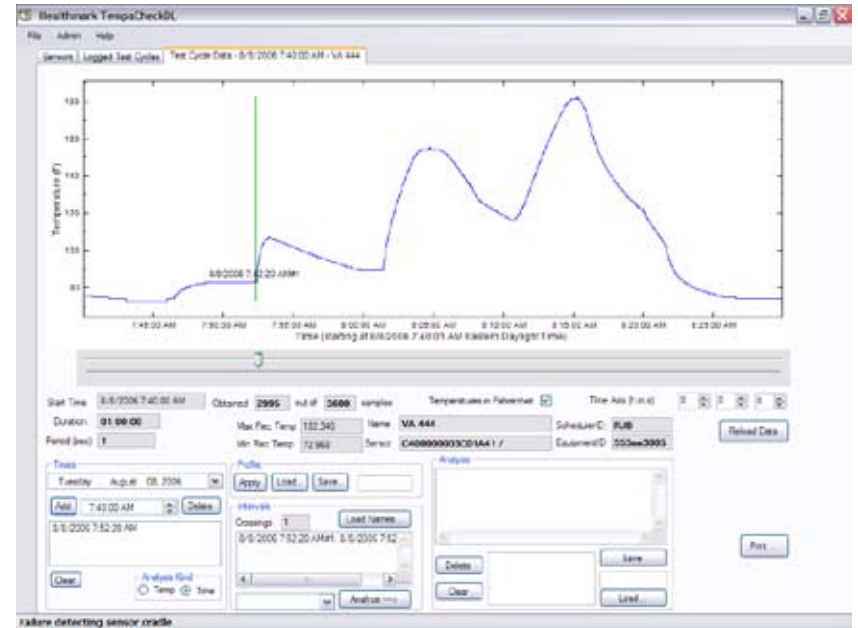


TEMPERATURE OR TIME BASED DATA POINTS

Let's go into detail. Under the heading of “Analysis Kind” in the lower right corner of this section, you have the option of either Temperature or Time by selecting the relevant radio button. Let's first do a Temperature analysis. In the box next to the “Add” button, enter a temperature. For our example, I will enter 180F, which is the target temperature for thermal disinfection of the Steris 444. Click the “Add” button. A red line will be drawn across the graph at that temperature and should any points on the graph cross 180F, a hash mark will be drawn at those points.

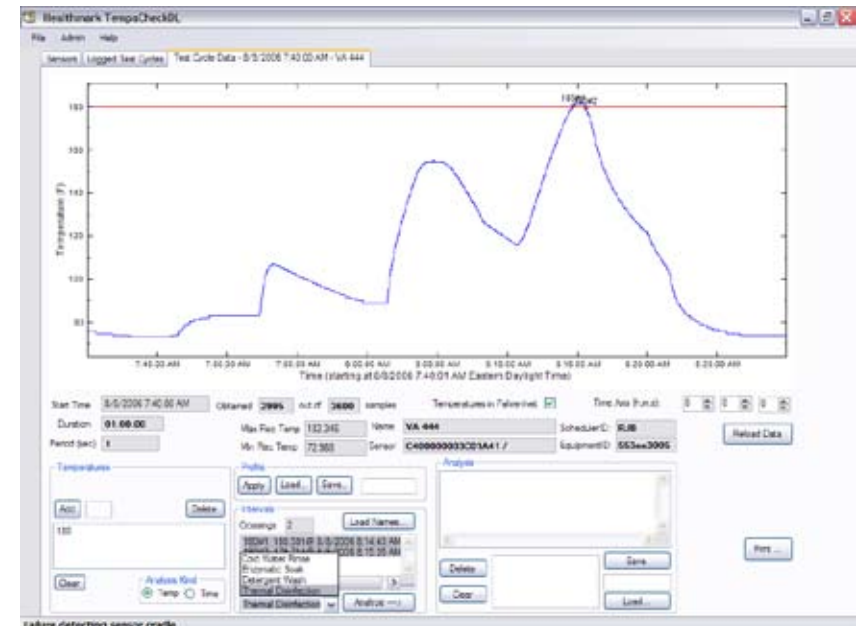


Now let's do a Time based analysis. Click the "Time" radio button in the "Analysis Kind" section. You will see the screen change. What is added is a sliding bar at the bottom of the graph. This is a very useful tool for selecting the points in time you wish over which you want analysis done. Grab the slider bar with your mouse and move it to the left. You will see a vertical line move across the graph aligned with the slider bar. Drag the line to a point in time you wish to mark as the beginning of your analysis. In this case, I am going to analyze the Enzymatic Stage. I draw the first line across to the point where it appears the soaking stage begins. Now look down in the "Time" section. The point in time you dragged the line to is indicated in the box next to the "Add" button. Click the Add button and that time will be added to the list. Now I will drag a second line across to the point where it appears the Enzymatic soak stage appears to end. Once again, hit the "Add" button and the next time point is added to the list.

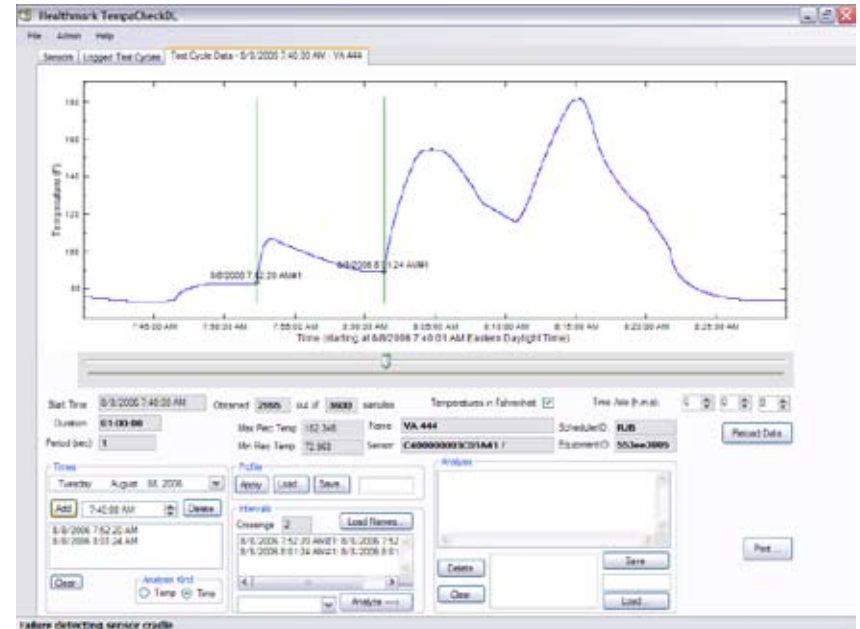


APPLY PROFILE SECTION

First let's return to our Temperature based analysis. You will note that the points in time where the Temperature crosses our threshold temperature, 180F, are listed in the "Crossings" section. We wish to analyze the amount of time that the water temperature remained above 180F. To do so, select with your Mouse one data point. Then hold down the "Ctrl" key and select a second data point. You must give this interval a name. You can directly type in a name in the names section (next to the "Analyze" button). Or you can Load names that have been previously saved (for more information, see the Advanced Use section). The final step in this section is to click the "Analyze" button to apply the selected intervals to the data.



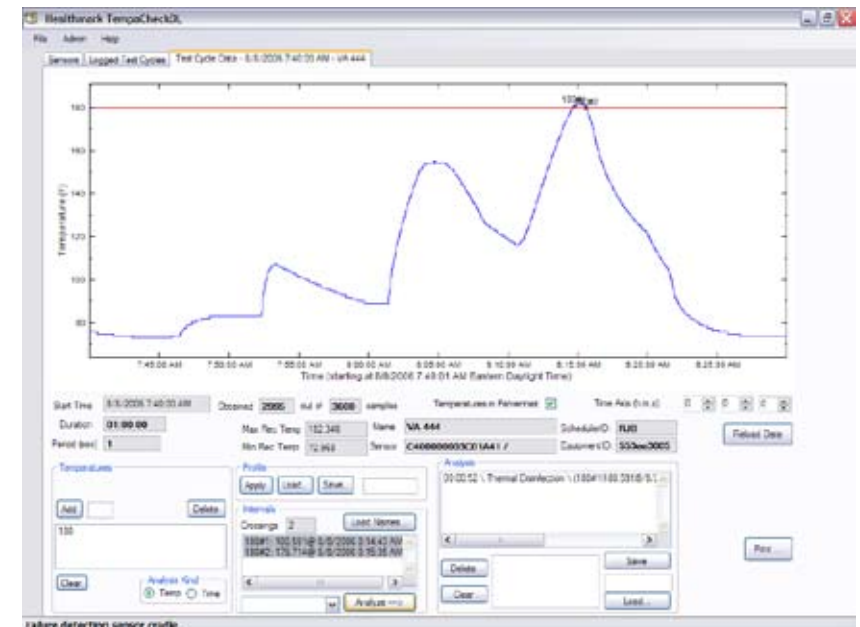
Now let's continue with our Time based analysis. With your Mouse, select one data point. Then hold down the "Ctrl" key and select a second data point. Now enter (or select) a name for the interval. In this example, I will enter "Enzymatic Soak."



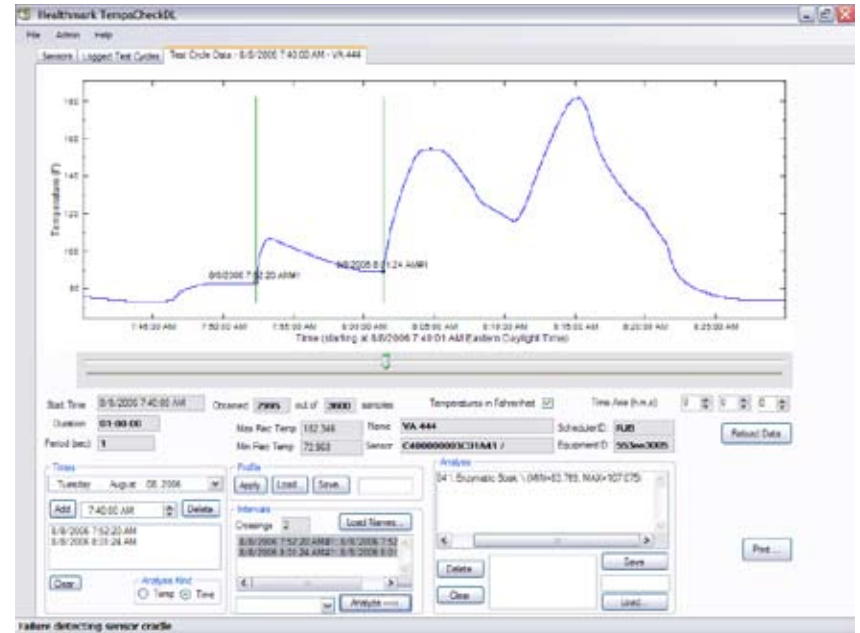
ANALYSIS SECTION

This is where our efforts get paid-off. Let's look at the Temperature Analysis. The first thing you will note is a time value. In our example, the value is 00:00:52. This is 52 seconds, the duration of time that the temperature remained at or above 180F. In the case of Thermal Disinfection for a Steris 444, this is below the target amount of time. The target is at least 1 minute. Some adjustment to the machine needs to be made. It should be noted that the TempaChek-DL measures the surface temperature. Just like most surgical instruments, the TempaChek-DL is made of stainless steel. The critical value for disinfection is in fact the temperature the surface of an instrument reaches. Thus, while the water in the sump of a washer may be heated to 180F, by the time it reaches the surface of an instrument, the water will have cooled slightly and will be further cooled when it strikes the instrument, until the surface of the instrument is heated above 180F. The easiest solution to this problem is to raise the target temperature to above 180F. Work with your washer manufacturer to address.

Finally, your analysis can be saved for future reference. The analysis can include multiple temperature points and multiple intervals. Give the analysis a name like "temperature" indicating the kind of analysis which was done.



Back to our Time Analysis. Click the “Analyze” button and instantly values will be returned. In our example, we are concerned with the Temperature during the enzymatic soak. Typically, protease enzymes work best between 100F – 120F. Above and below this range, enzymes are decline in effectiveness. Our analysis returns a maximum and minimum temperature value. The maximum value is 107F. This is within our effective range. As you can see from the graph, the temperature declines over time. Slightly higher temperature would be better, but this is within the target range. Once again, the analysis can be saved for future recall. As with Temperature based profile, multiple time points and intervals can be saved at the same time. Give the analysis a name and click the “Save” button.



ERASING THE DATALOGGER

Prior to scheduling another recording session, the existing data must be erased from the datalogger. To do so, simply select the “Sensors” tab. Then select the



logger you wish to use. If there is data still on the DL, a test data cycle screen will appear for that data logger. In the lower right hand corner of the screen there is the “Erase Sensor Data” button. Click that button and all data will be erased.

