WESCHLER INSTRUMENTS
DIVISION OF HUGHES CORP.

Advantage II Enhanced
Software Manual

Manual Part Number SMAMT200

Revision 3, April 19, 2009

Use with Firmware AMTSYS0201 and Software AMTCMF0201-20090407-1217 or Higher Versions

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1.0 Introduction

Monitor and Configuration Software

Weschler monitor, configuration and flash software, referred to in this manual as AMTCMF software, is designed to allow users to fully exploit the measurement capability and programmability of the Enhanced Advantage product line. The software runs on computers which run the Microsoft Windows operating system and have an available serial comm port. It has been run successfully on platforms loaded with Windows 95, 98, 98SE, 2000, XP and Vista. The software is included with the communications feature. The software is composed of three modules, configuration, monitor, and the flash and log file utility.

The configuration module allows users to compose a complete set of configuration parameters at any time and download them immediately, or store them for use at a later date, at their convenience. The files can be uploaded locally from a portable computer or remotely through the utility's intranet. The configuration files which are generated are very compact text files, typically less than 20 KB in size. This makes maintenance and storage of Advantage configuration files, for even the largest inventory of transformers, an easy task.

The text files generated by the configuration module must not be edited and saved by a word processor. They may be viewed and printed from a word processor but not saved. In order to preserve the formatting of the printed file, the font settings for the word processor must be the same as for the AMTCMF software. The software's default font is Courier New, 9 point. In order to protect the file from inadvertent editing, It is suggested that the user set the attributes of the file to read only, once its content is satisfactory.

The monitor module allows users to remotely view thermal conditions which an Advantage is measuring, and reset peak and valley values at any time. The status and configuration settings of alarms and cooling control relays are also tabulated. The user is also able to remotely test or exercise relays and equipment under the Advantage's control.

The Flash and log file module is a pair of utility programs that provide for upgrading of firmware and retrieval of log files that are stored in flash memory.

Applicability

This version of AMTCMF software is identified by the code AMTCMF02XX, where the XX represents the version number. The AMTCMF software is model-independent, which means that it will work with all enhanced models having firmware versions of AMTSYS0200 or higher. To determine if your Advantage meets this requirement, scroll to the firmware display and read the code. If it is AMTXXX02NN, where XXX is any model designator, and NN is any revision code, you have the required firmware. If the firmware code is anything other than this code, you cannot use this version of AMTCMF software. Contact Weschler Marketing for details regarding availability of a firmware upgrade. The install process is identical for all models.

This version of AMTCMF software can coexist on the same computer with any configuration or monitor software from First Generation (FirstGen) or ColdFire (IIR) Advantage models. If running an AMTCMF software for the Enhanced (IIE) model series, the old software must be removed prior to loading the new version.

Firmware Installation (flashing) Method

The flash and log file utility allows the user to upgrade the Advantage's operating firmware from inside the AMTCMF package, without needing to use a third party TFT communications program. This method only requires that the operator remove the terminal cover and plug an interface cable (see section 6 for cable details) into the Advantage and host PC. The firmware is then uploaded in a painless process that takes under three minutes at a bit rate of 115.2 Kb/s, using an RS-232 or RS-422/485 4-wire connection. The firmware can be upgraded using a TFT program such as HyperTerminal, however; this method presents a great deal of risk of damaging the Advantage beyond field recovery. This is because HyperTerminal will transfer any file without first checking if it is a valid and undamaged file. The AMTCMF software contains protective algorithms to ensure that the file being transferred is both valid and uncorrupted.

Peak and Valley Log File Download

The flash and log file utility also allows for download of peak and valley log files that are stored in memory.

2.0 AMTCMF Software Installation

Preparation to Install

All models in the Advantage II Enhanced series in the AMTSYS020X firmware series use the same AMTCMF software. This means the process for installing software to, or removing software from your PC is the same regardless of whether you are doing the process for a CT/LTC or CT or TC or any other model in the Enhanced Advantage II family.

If you already have a version of the AMTCMF01XX or 02XX software loaded and you are upgrading to a higher revision level, you must first remove the currently loaded version, using the procedure of plates 1 to 4 below. The graphics shown depict Windows XP operations. If you do not have one of these versions installed, skip down to plate 5.
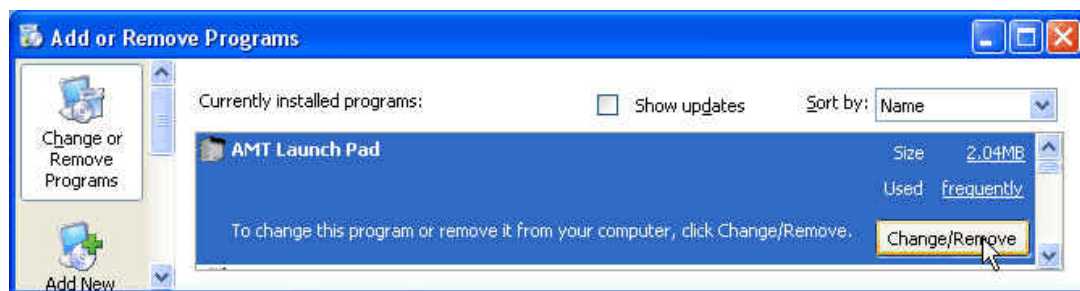
Removal of Older AMTCMF Software Versions
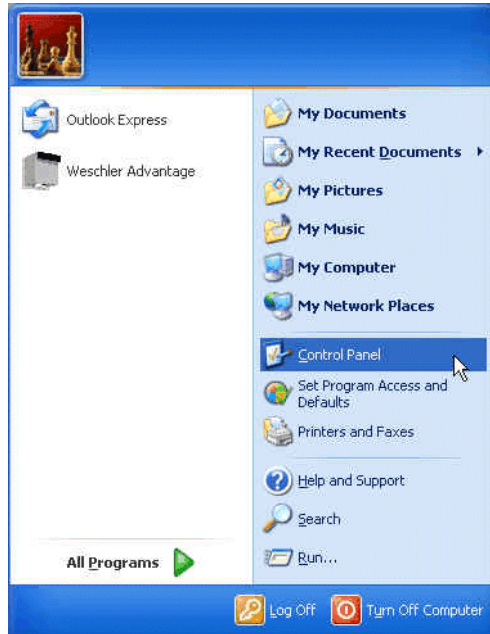
Plate 1. Click Start>Control Panel

Plate 2. Double click on the Add or Remove Programs icon

Plate 3. Click on the software you want to remove, then click "Add/Remove". You cannot remove more than one program at a time. If you want to remove more than one program, you will need to return to this screen again. The software name highlighted here, AMT Launch Pad, is the name that will be displayed for this version of AMTCMF software. Earlier AMTCMF software will be named "Advantage Configuration, Monitor and Flash" or "Transformer Advantage 2.00".
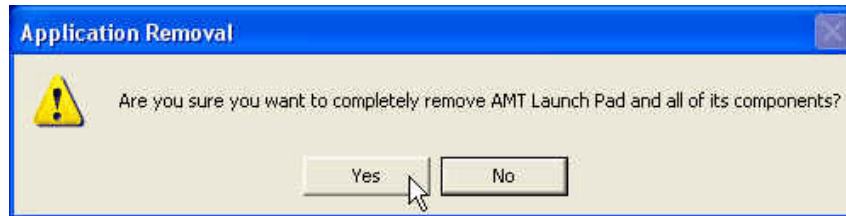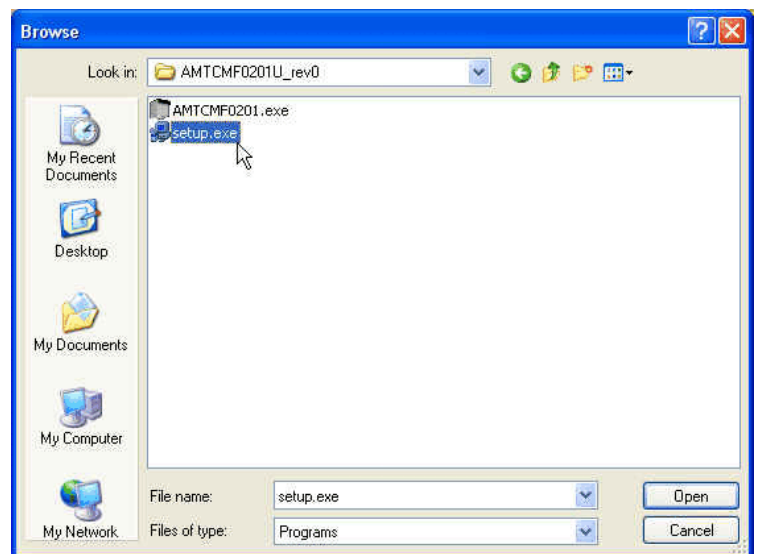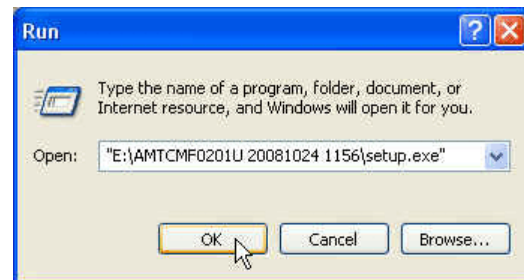
Plate 4. When you click the Yes button the old program will be removed. If you have navigated here in error, click the No button.

## AMTCMF Software Installation

If any Windows programs are running, they should be terminated before running the set up software
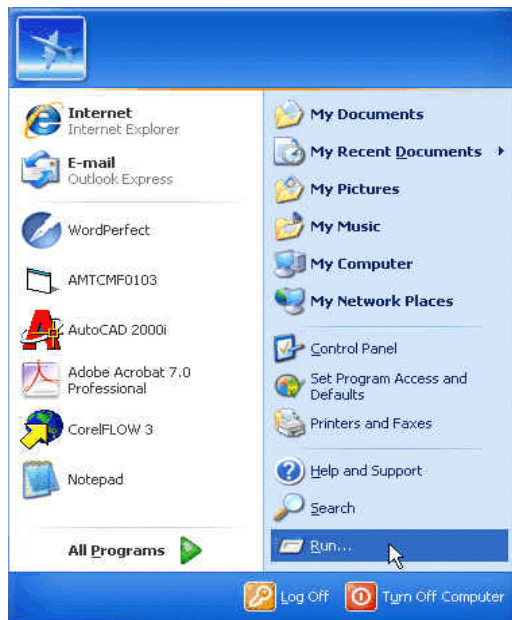
**Plate 5.** Click Start>Run to open the browse dialog box.

Plate 6. Click the Browse button and navigate to the directory which contains the setup.exe file for the Advantage model of interest. Click "Open" to send the file location of the setup.exe file to the Run dialog box..
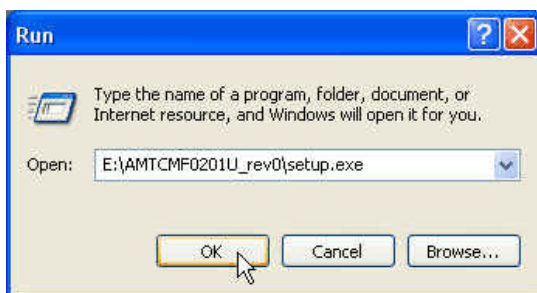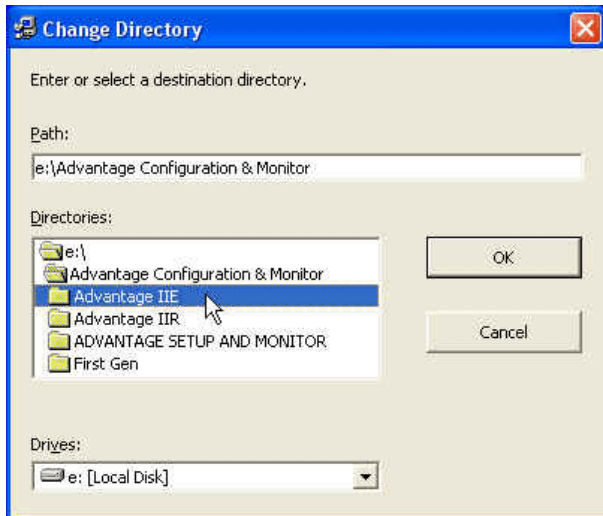

Plate 7. Click the OK Button to initiate the installation program

Plate 8. If no Windows Programs are running, click OK, otherwise click Exit Setup and close any running Programs.
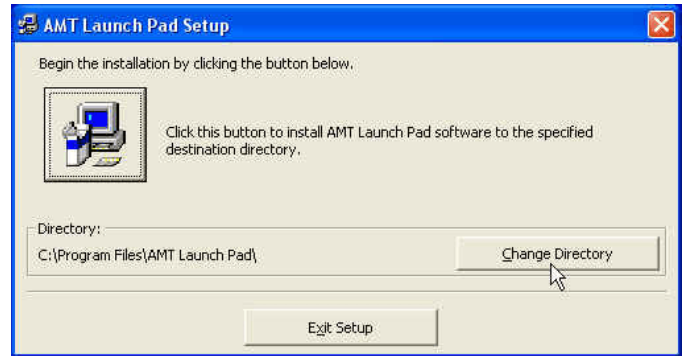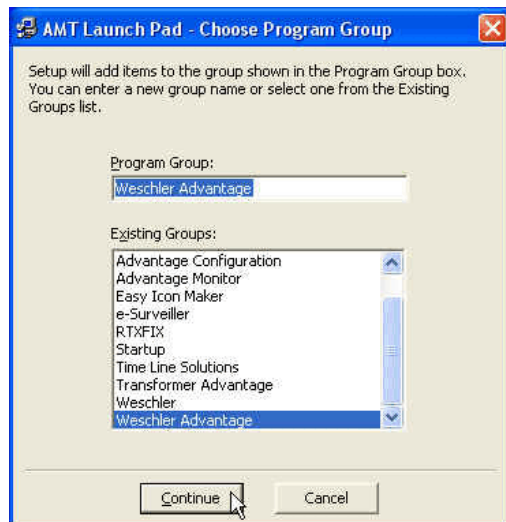

Plate 9. If you are satisfied with the directory the setup program has selected, skip to plate 11. We strongly suggest accepting the default directory. Otherwise, click Change Directory.

Plate 10. Browse to the directory into which you want the software to install and click OK.

Plate 11. Click the computer icon to continue with the installation.

Plate 12. Select the program group that you want the software to appear in. We suggest accepting the default. Click the continue button to close the box.
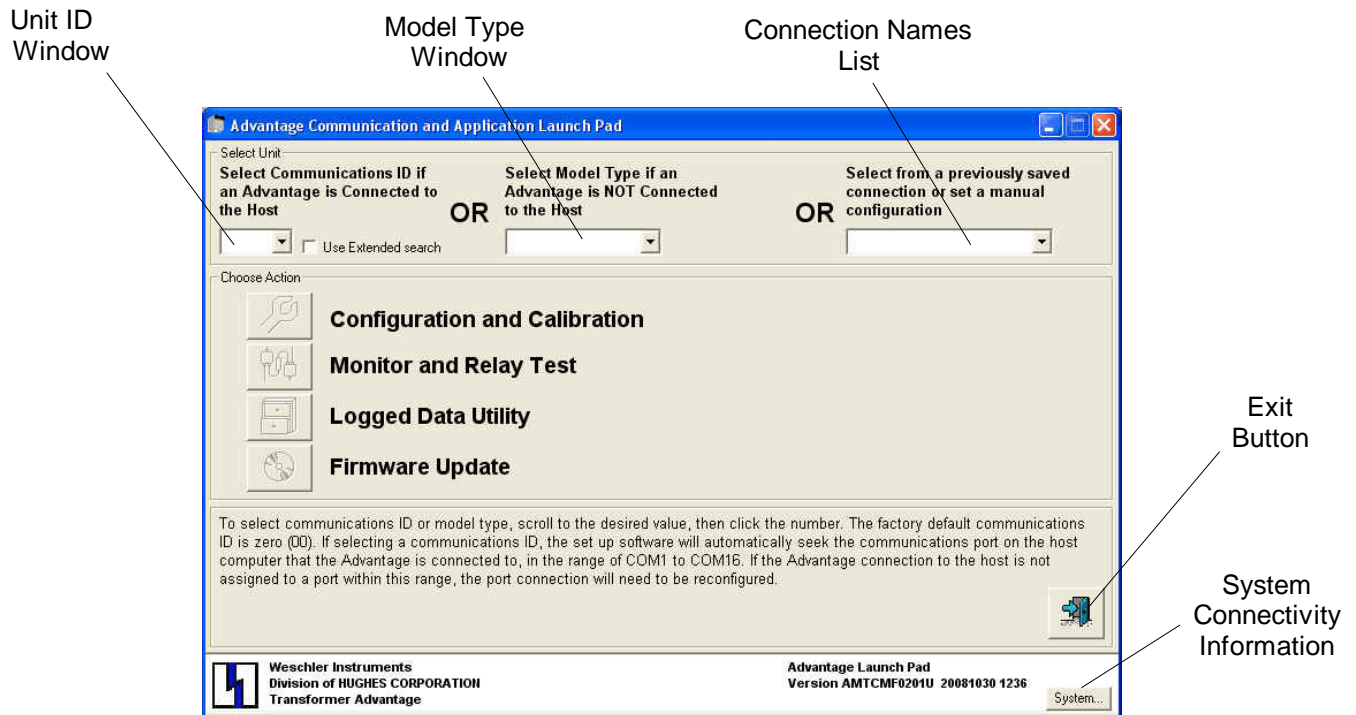

Plate 13. The software installation will be successfully completed when this dialog box appears. Click the OK button to close the box.

3.0 Software Operation

Either double-click the "AMT Launch Pad" desktop icon or navigate to and click on the "AMT Launch Pad" menu item in the Weschler Advantage program group, from the start > all programs menu.

Unit ID
Window

Model Type
Window

Connection Names
List

Exit
Button
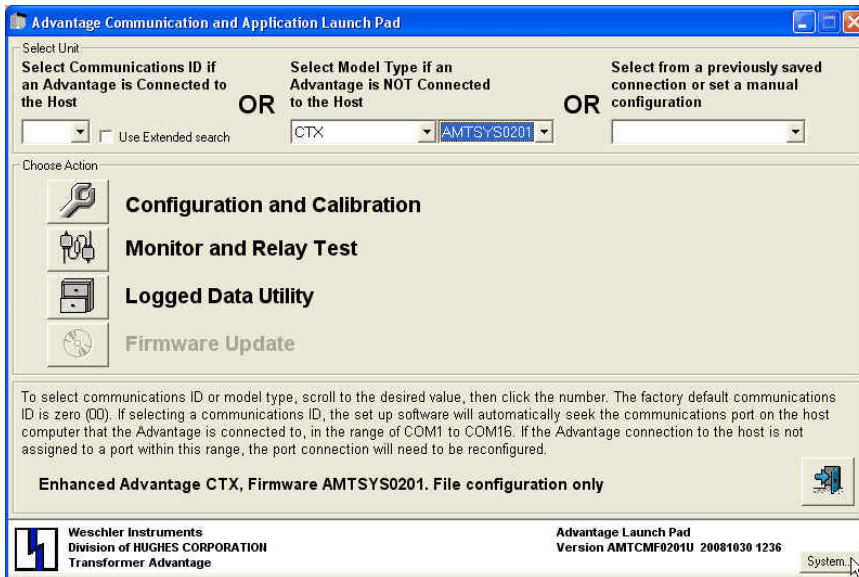
System
Connectivity
Information

Plate 14. The launch pad screen will open. It is not necessary to have a unit connected to create or edit a configuration file or view the monitor module's features. If a unit is not available, simply click the model type drop-down button, then scroll to and click the desired model in the list box.
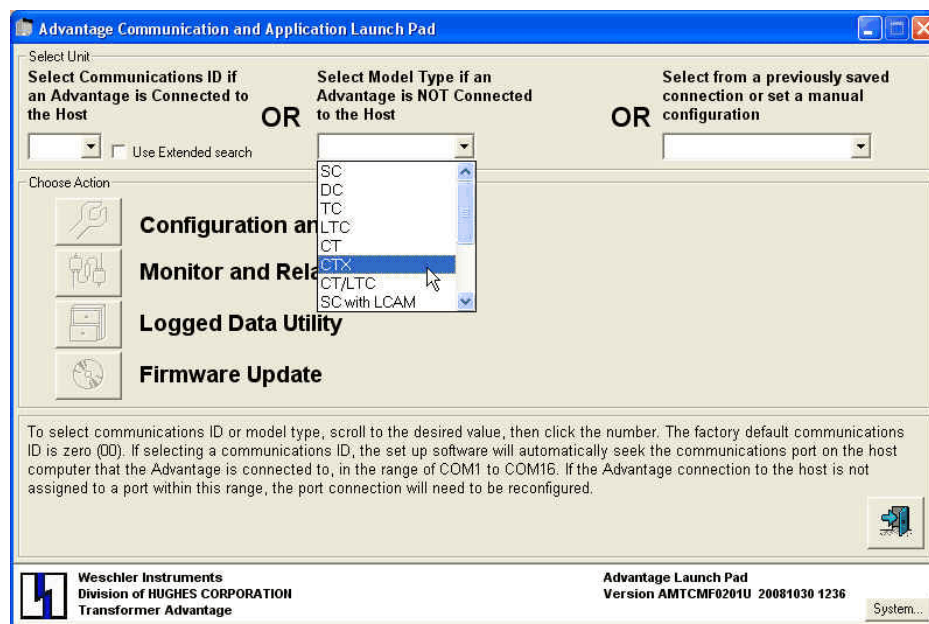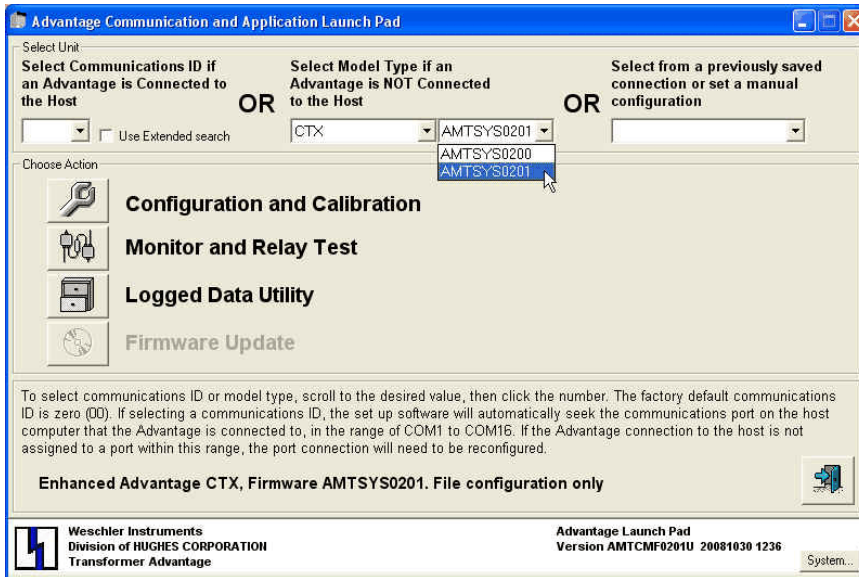
Plate 15. The configuration module(s) are capable of creating or editing files from earlier vintage Advantage models. Once the model has been selected, the firmware version of the earlier model can be selected. This will ensure compatibility of the created file with the earlier model. Consult the "Applicability" paragraph in the introduction for firmware numbering. Once the model and firmware information has been entered, the configuration module's launch button can be clicked to open the configuration screen (see plates 37 & 38). The monitor module can also be opened, however; if a unit is not connected, the monitor screen will not display any values. A unit MUST be connected to open the Firmware & Logged Data Utility.

Plate 16. Clicking the System Connectivity Button opens a screen that provides information on which models the launch pad is capable of communicating with, in its presently loaded state.

Plate 17. The system connectivity screen contains a list of modules that are necessary to be installed in order to communicate with vintage models. In the screen above, The earliest model that this installation will **fully** support has the firmware AMTSYS0200 Rev 0. The installation is only missing the appropriate configuration and calibration module to be able to support models with firmware AMTSYS0111 Rev 2. If it is necessary to configure or calibrate an earlier model with this AMTCMF software version, contact Weschler Sales for availability of the appropriate configuration and

Firmware (from)	Firmware (to)	Configuration and Calibration	Monitor and Relay Test	Logged Data Utility	Firmware Update
G5TSYS0x05 Rev 1	G5TSYS0x05 Rev 2	✓ G5TCFG0204	✓ G5TMON0204	✗	✓ AMTUPL0201
G8TSYS0x01 Rev 1	G8TSYS0x03 Rev 1	✓ G8TCFG0204	✓ G8TMON0204	✗	✓ AMTUPL0201
G8TSYS0x04 Rev 1		✓ G8TCFG0204	✓ G8TMON0204	✗	✓ AMTUPL0201
G8TSYS0x05 Rev 1	G8TSYS0x05 Rev 2	✓ G8TCFG0204	✓ G8TMON0204	✗	✓ AMTUPL0201
GVTSYS0x01 Rev 2	GVTSYS0x01 Rev 3	✓ GVTCFG0202	✓ GVTMON0202	✗	✓ AMTUPL0201
AMTSYS0101 Rev 2	AMTSYS0109 Rev 2	✗	✗	✗	✓ AMTUPL0201
AMTSYS0111 Rev 2	AMTSYS0111 Rev 3	✓ AMTCFG0111	✓ AMTMON0201	✓ AMTLOG0201	✓ AMTUPL0201
AMTSYS0200 Rev 0	AMTSYS0200 Rev 5	✓ AMTCFG0201	✓ AMTMON0201	✓ AMTLOG0201	✓ AMTUPL0201
AMTSYS0201 Rev 0	AMTSYS0201 Rev 3	✓ AMTCFG0201	✓ AMTMON0201	✓ AMTLOG0201	✓ AMTUPL0201

Plate 18. If there is an Advantage IIE model physically connected to the host, and you wish to communicate with it, you must select the unit's communications ID. Click the unit ID's drop-down button, then scroll to and click on the unit ID. The factory default unit ID is 00. If the unit ID has been changed, you will need to read it from the front panel display. To read the unit ID from the front panel, navigate to the COMM SETUP menu item (OMAMT200 figure 16G) and press the ENTER button until the "ID" prompt and the unit ID number is displayed. It is not necessary to select the model type if you are connecting to a unit. The software will automatically detect the model type when the correct unit ID is highlighted and will adjust the model type text box accordingly.
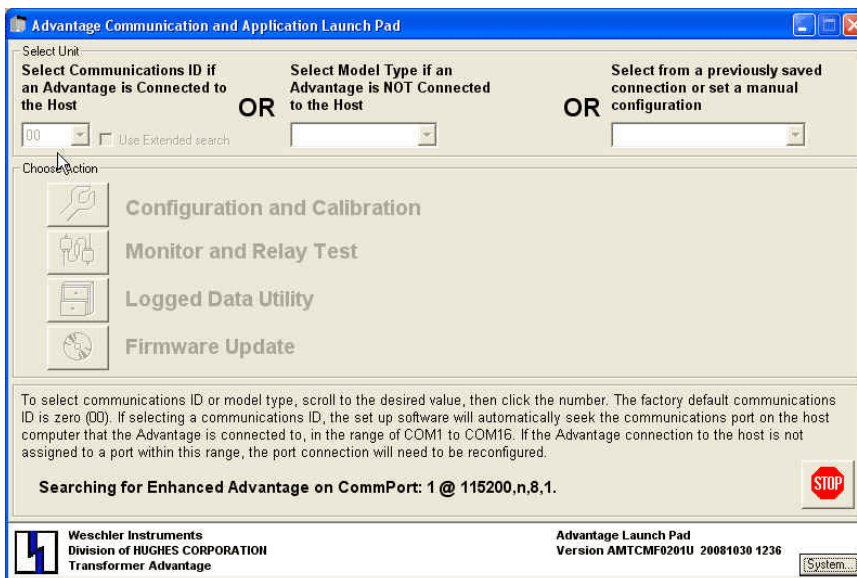
Plate 19. Once a unit ID is selected, a search string will appear near the bottom of the form, showing which ports are being tested. This screen is normally displayed for only a few seconds. If the host's operating system reports that several ports are available, the search process may take longer. If you have inadvertently selected an incorrect unit ID, click the stop-sign button to halt the search process, then re-select the unit ID. When USB-to-serial port adapters are used, there could be many available ports. Note that the CMF software will automatically search for up to 16 available ports. If the host's operating system assigns a com port higher than 16, the port will need to be forced to a number within the 1 to 16 range. See your adapter's or operating system's instructions regarding assignment of COM port
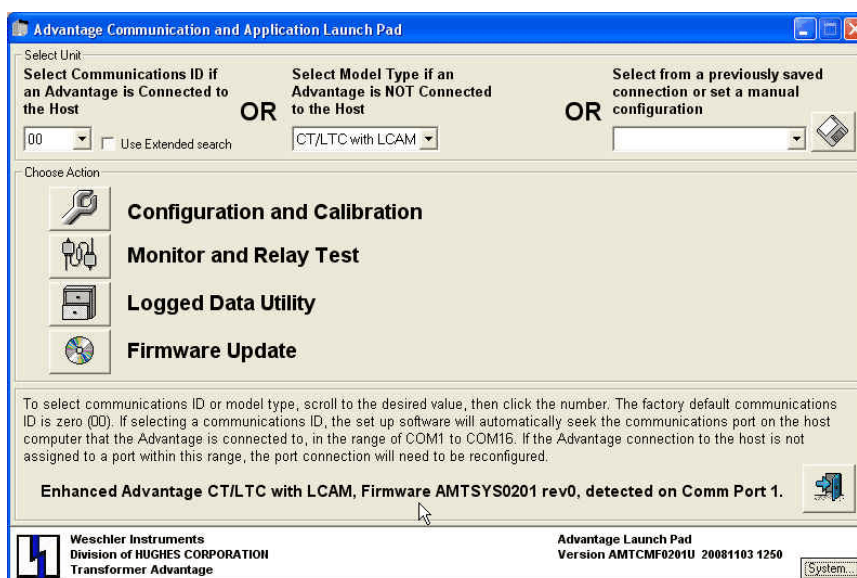
Plate 20. The search will start with the latest IIE models and, if one is not detected, will search for earlier IIE then IIR models. When an Advantage has been detected, the model type will appear in the model type window. Note that the model-type text box (upper center) has been automatically updated. Once again, It is unnecessary to manually select a model type when connecting to a unit. The software will automatically detect which model is connected. The model that was used for this screen is a CT/LTC, equipped with the optional LCAM module.
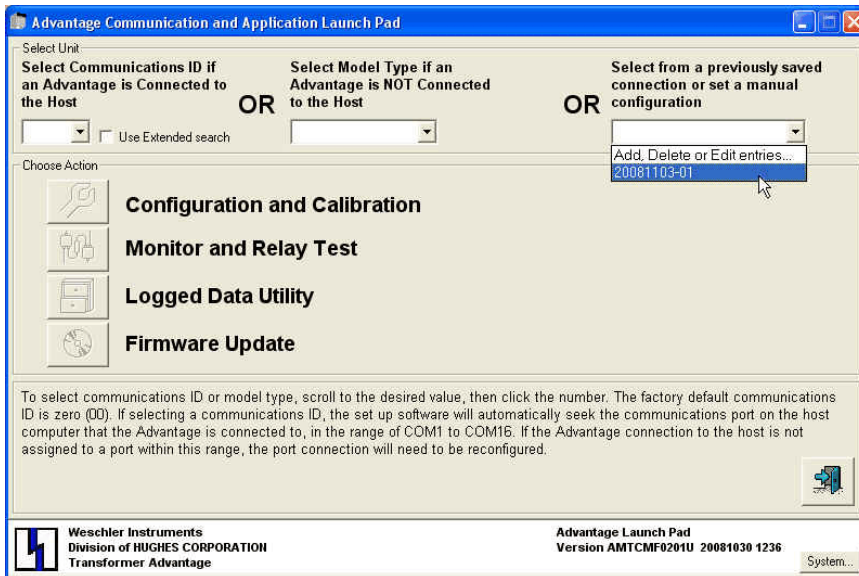
Plate 21. Communication set ups may be recalled from the list of previously established connections, if previous connections have been saved. This time-saving feature has been provided for users who routinely use the same connection. In some instances the host PC may have many com ports and the search for a connected Advantage unit may take several minutes. By saving the parameters from a previously established connection, the connection can be re-established instantly. To specify a previously established connection, click the saved connections drop-down then the appropriate saved connections name.
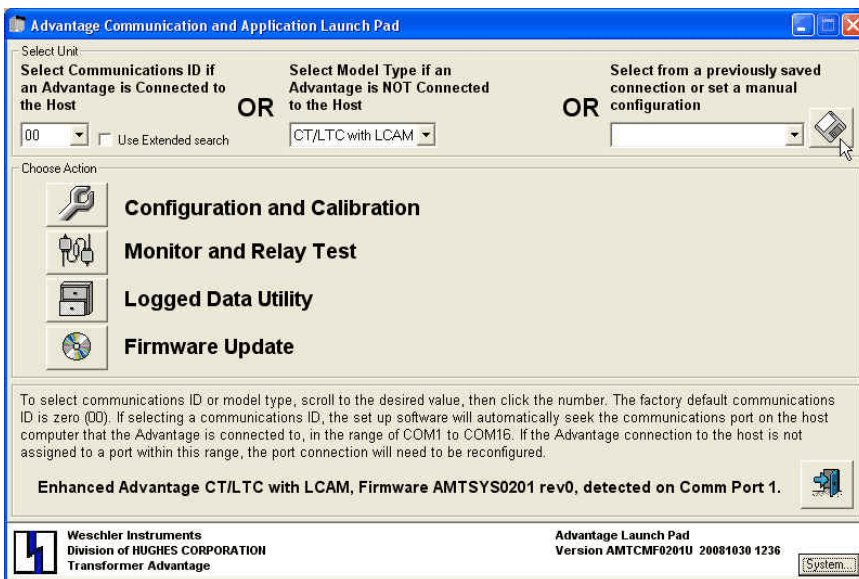
Plate 22. Communications profiles can be saved in two ways. The first method is by using a previously established connection. To save a communications profile using this method, first establish a connection, then click the floppy disk button next to the saved connections text box.
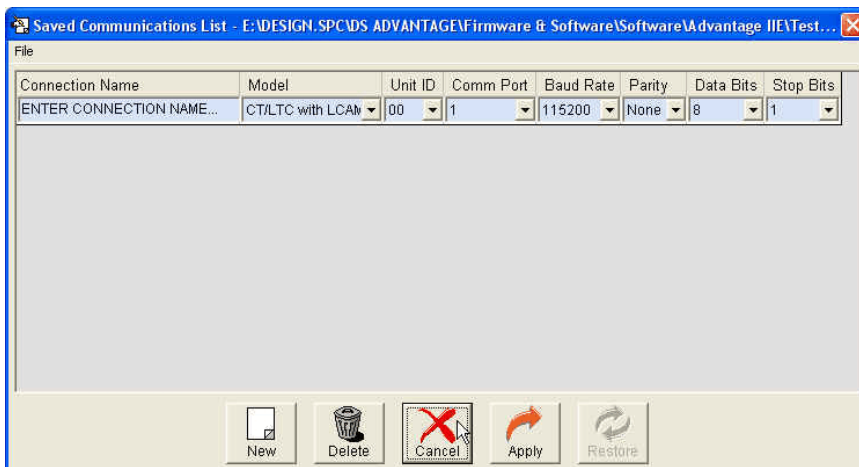
Figure 23. The save connections dialog screen will open when the floppy disk button is clicked. Click the Cancel button if you are just browsing the stored connections, or you do not intend to save a file.
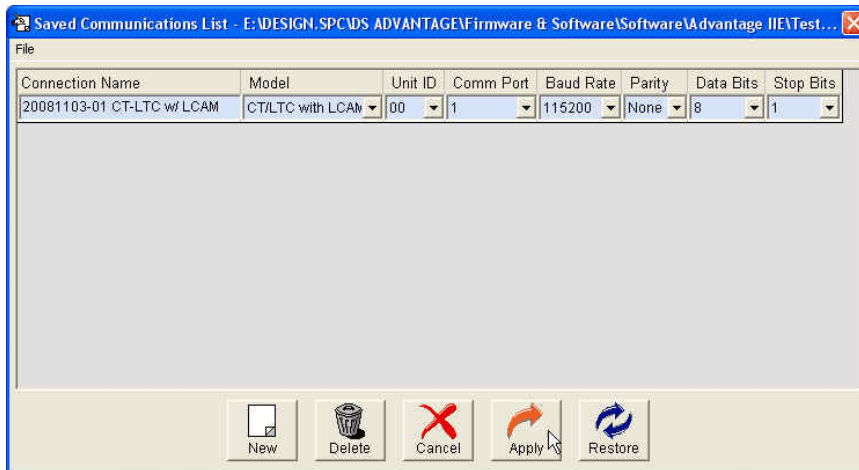
Plate 24. If you want to save the connection, enter a name in the cell with the "Enter Connection Name" text, then click the apply button.
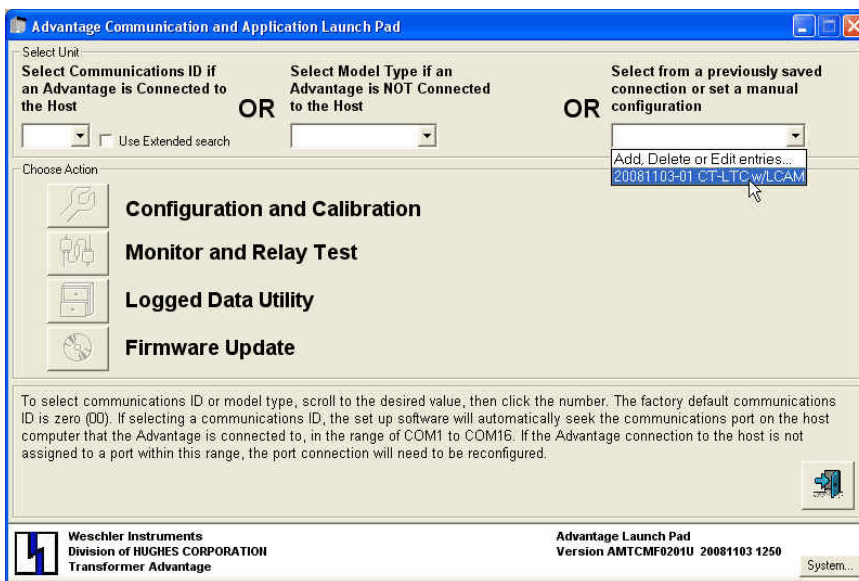
Plate 25. The name of the saved profile will now appear in the saved connections drop down menu.
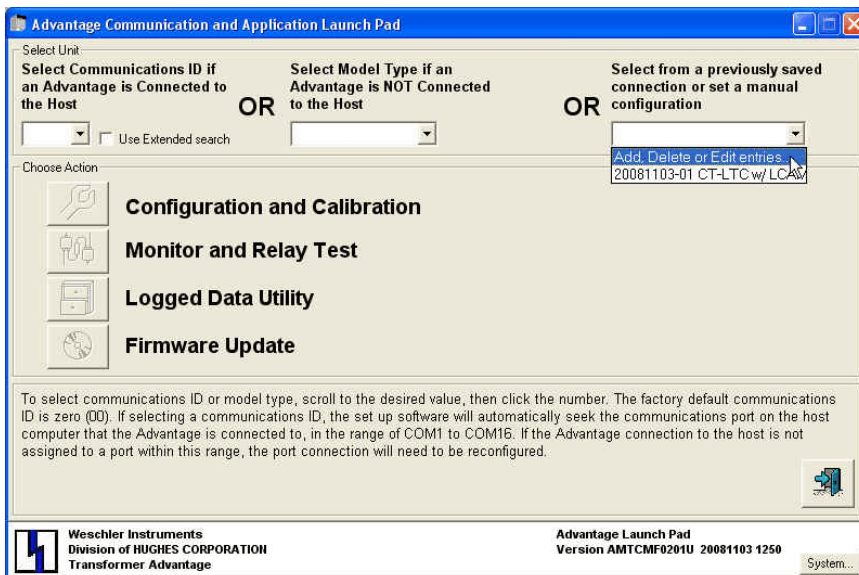
Plate 26. Files may also be created manually and saved. Click the saved connections drop down arrow, then click the "Add, Delete or Edit Entries" menu item.
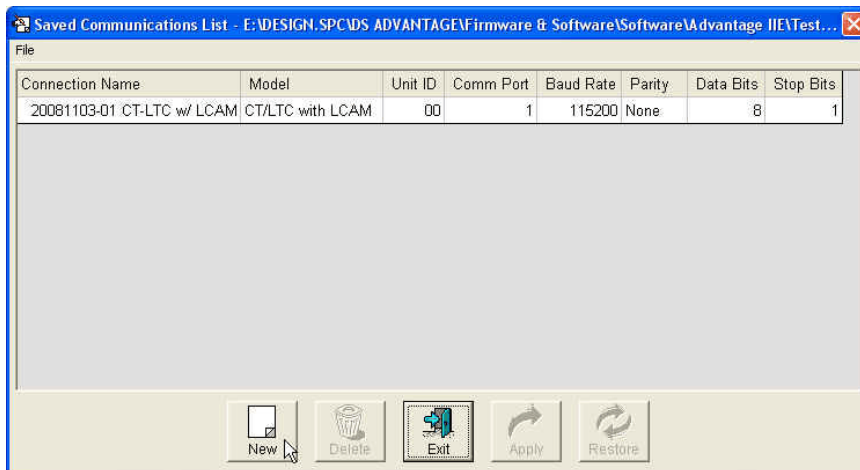
Plate 27. Next click the New button.
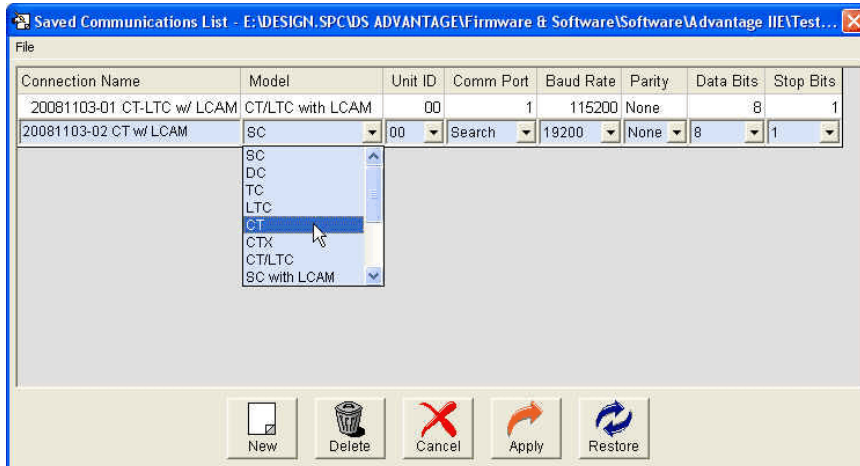
Plate 28. A new line will appear which can be named and edited with the new communications parameters.
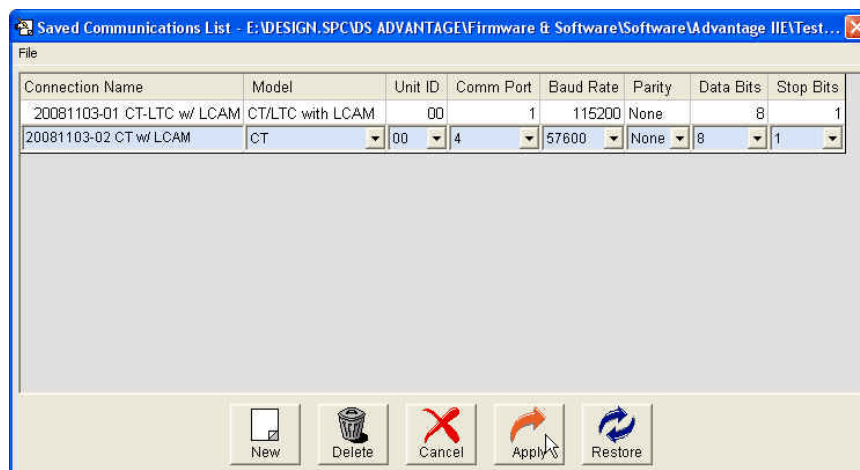
Plate 29. When all of the parameters have been edited, click the Apply button to accept the settings
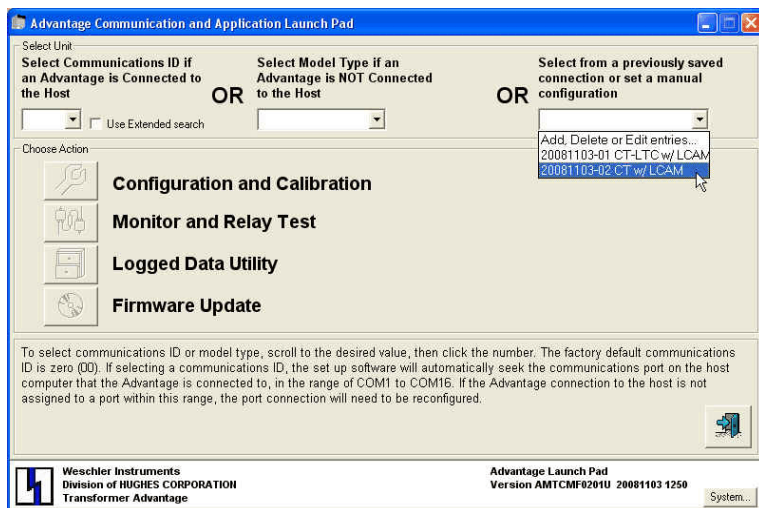
Plate 30. The new connection name will appear in the saved connections drop down menu.
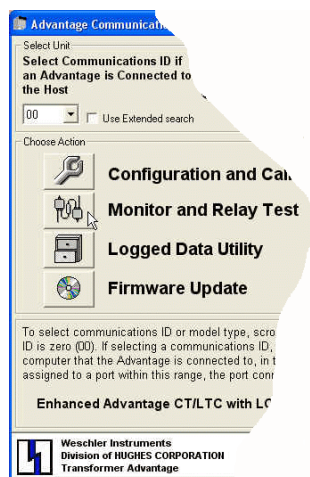
Plate 31. Clicking the Monitor and Relay Test Application's launch button will open the main monitoring screen. If a unit is connected, values will begin to fill the table cells. If a unit is not connected, the table cells will be blank.

Title	Present Value	Set Point(s)	Active Alarm(s)	Assigned Relay(s)	Alarmed Relay(s)	Connected Unit (Mouse over to reset) Peak	Valley	Monitor Session (Mouse over to reset) Peak	Valley	G
TOP OIL TEMP	25.7	60/65/90	1/2/6	1/2/3	3	25.9	25.6	25.7	25.7	Y
WINDING 1 TEMP	25.7	N/A	N/A	N/A	N/A	57.7	25.7	25.7	25.7	
WINDING 2 TEMP	25.7	N/A	N/A	N/A	N/A	25.9	0.0	25.7	25.7	
WINDING 3 TEMP	25.7	N/A	N/A	N/A	N/A	25.8	0.0	25.7	25.7	
HOTTEST WINDING	25.7	N/A	N/A	N/A	N/A	25.9	25.6	25.7	25.7	
CURRENT 1	0	N/A	N/A	N/A	N/A	5022	0	0	0	
CURRENT 2	0	N/A	N/A	N/A	N/A	3	0	0	0	
CURRENT 3	9	N/A	N/A	N/A	N/A	10	0	10	8	
HIGHEST CURRENT	9	N/A	N/A	N/A	N/A	10	0	10	8	
LTC TANK TEMP	0.7	N/A	N/A	N/A	N/A	0.9	0.6	0.8	0.7	
MAIN TANK TEMP	-0.2	N/A	N/A	N/A	N/A	0.0	-0.2	-0.2	-0.2	
DIFFERENTIAL TEMP	-1.0	4	9	3	3	-1.0	N/A	-1.0	N/A	
DEVIATION TEMP	-2.0	N/A	N/A	N/A	N/A	-2.0	N/A	-2.0	N/A	
SENSOR FAILURE	N/A	-80/200	8	8	N/A	N/A	N/A	N/A	N/A	X

Plate 32. The main monitoring screen shows the titles of measured quantities and nine columns of corresponding static and dynamic values. The connected unit depicted is a CT/LTC model equipped with an LCAM module. The "Sense Fail" title is a special case that is not displayed on the front panel, but is included here to show the status of any alarms that are assigned to it. The "Differential Temp" value that is returned here is the filtered differential. The "Deviation" value is the change in differential since the initial differential value was set. Refer to OMAMT200 for more details on these values. The "Set Points" column shows any set point values for the alarm source identified by the title name. The "Active Alarm(s)" column shows which alarms have been assigned to the alarm source. The "Assigned Relays" column shows which relays are driven by the active alarms. The "Alarmed Relays" column shows which (if any) relays are actually in the alarm state. The "Peak" and "Valley" columns are self-explanatory. The value of peak and valley data that is stored in the Advantage (Connected Unit Column) and that is being monitored in real time (Monitor Session column) can be reset individually. To reset the existing peak and/or valley value, place the cursor over the value and when the value changes to a reset button, click it. The button text will then change to "confirm" in order to be sure you want to reset the value. Click again to confirm the desire to reset the value. Resetting a value in the "Connected Unit" column has the same effect as resetting the corresponding value from the front panel. The "Refresh Rate" text box allows for adjustment of data retrieval rate; from 1 sample per second to 1 sample in 10 seconds. The "Pause" button pauses sampling and the wrench button retrieves new configuration settings. The monitor module updates its configuration settings when it is started and if the configuration is changed by the same PC that is running the monitor program. If the configuration has been changed by another host while a monitoring session is running, the configuration will need to be updated manually by clicking the wrench button.   To exit the monitor module, click the exit door button or the red "X".
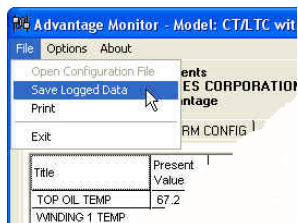
Clicking the File > Save Logged Data menu item (left) pops up a standard file save dialog. The default directory is presented (right), but any directory can be used. All data values that were logged *during the current monitoring session* are saved. Clicking the File > Print menu item (left) will print a matrix similar to the main
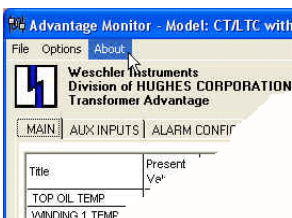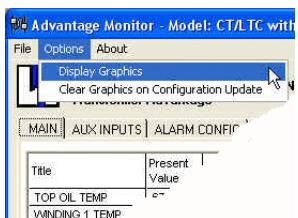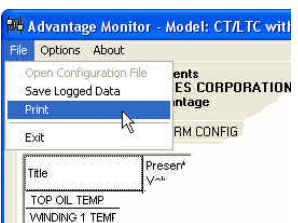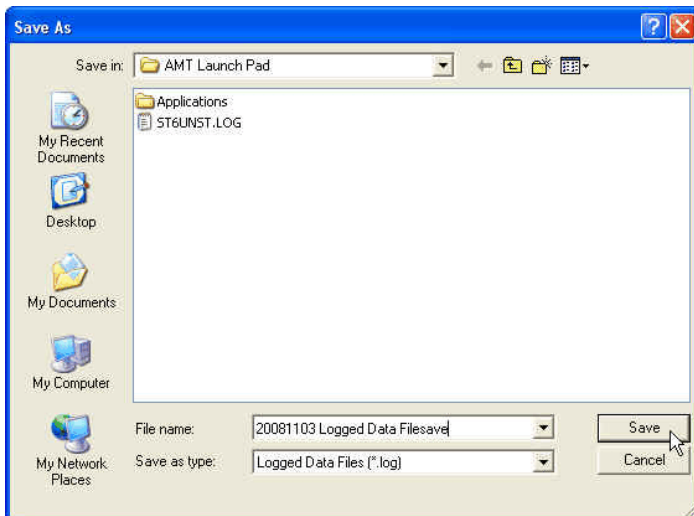
Plate 33. Clicking the Options menu item (upper left)allows for selection of graphics display options. See section 7 for more on graphics display. Clicking the About menu item (upper center) pops up the monitor module descriptive information screen (upper right).
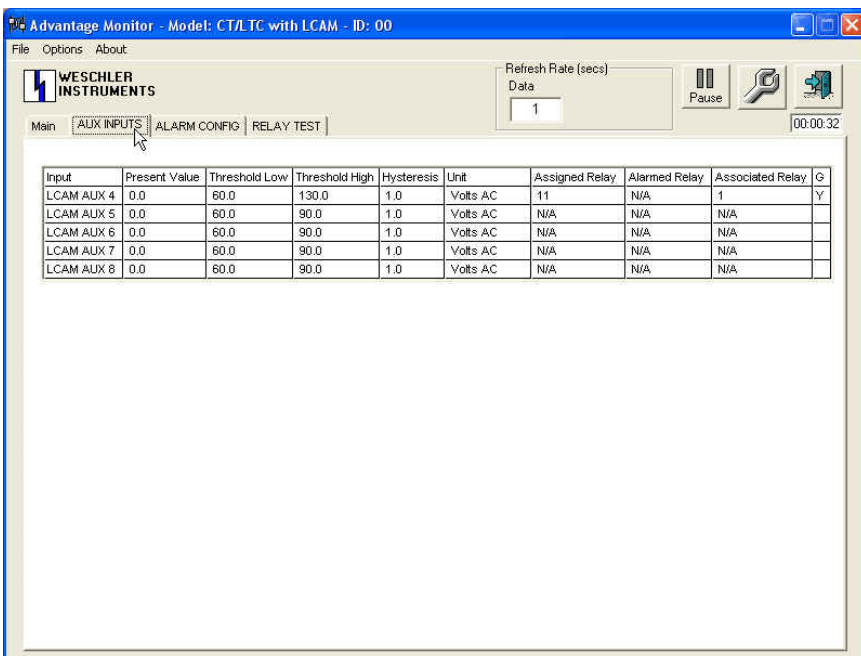
Plate 34. Clicking the "AUX INPUTS" tab shows the values being measured by the optional LCAM module inputs. If the LCAM module is not installed, or its inputs are disabled, only the title bar (no cells) will appear. The LCAM module's measured quantities are not logged, but they are available to operate alarms and alarm relays and the values and alarm status can be transmitted through the Weschler simple ASCII Protocol (SAP), DNP-3 or ModBus.

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Transformer Advantage

Refresh Rate (secs)
Data
1

Pause

00:00:28

MAIN | AUX INPUTS | ALARM CONFIG | RELAY TEST

ALARM NUMBER
7

4
5
6
7
8
9
LCAM 4
LCAM 5

Alarm Parameter	Value	Relay Parameter	Value
Source	Hottest Winding	Connected Equipment	Alarm
Set Point	110.0	Sequencing	Disabled
Hysteresis	1.0	Relay Check	Disabled
Sensor Failure	Disabled	Normal Coil State	De-energized
Seasonal Setback	Disabled	Sensor Fail Effect	De-energized
Trigger	None		
Pick-up Delay	5		
Drop-out Delay	0		
Relay Controlled	4		

ALARM NUMBER
8

Alarm Parameter	Value	Relay Parameter	Value
Source	Sensor Failure	Connected Equipment	Alarm
Set Point	N/A	Sequencing	Disabled
Hysteresis	N/A	Relay Check	Disabled
Sensor Failure	N/A	Normal Coil State	Energized
Seasonal Setback	N/A	Sensor Fail Effect	De-energized
Trigger	N/A		
Pick-up Delay	0		
Drop-out Delay	5		
Relay Controlled	8		

Plate 35. Clicking the "ALARM CONFIG" tab changes to the alarm configuration screen. This screen provides detail of the settings made for each alarm. Two alarms can be viewed at a time. To view an alarm's settings, click the alarm number drop-down button and then click the desired alarm number.

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Transformer Advantage

Refresh Rate (secs)
Data
1

Pause

00:00:55

MAIN | AUX INPUTS | ALARM CONFIG | RELAY TEST

Relay Number	Driven By Alarm(s)	Alarm Source(s)	Connected Equipment	Current State	Test Interval (mm:ss)	Energize	De-energize
1	1/3/5	Top Oil Temp/Hottest Winding Highest Current	ONAF	De-enr	Start 0:30 ○	⊙	Stop
2	2/4 LCAM Aux 5	Top Oil Temp/Hottest Winding LCAM Aux 5	ONAF	Enr	Start 0:30 ○	⊙	Stop
3	6/9	Top Oil Temp/Differential Temp	Alarm	De-enr	Start 0:30 ○	⊙	Stop
4	7	Hottest Winding	Alarm	De-enr			
8	8	Sensor Failure	Alarm	Enr			

Plate 36. Clicking the relay test tab shows the relay configuration, status and test screen. If a relay is not enabled, it will not appear in the list. The buttons at the right side of the form provide for a method of testing relay circuit function. If relay check is not enabled, the relay's test buttons will not appear. The test buttons for relays 4 and 8 do not appear in this example because the relay check option (see plate 35) is disabled. To run a relay test, click the time interval drop-down button, scroll to and click the desired test interval (30 seconds to 10 minutes) then click start. Once the test is running the energize or de-energize radio buttons can be clicked to pick-up or drop out a relay. If a relay is in an alarm state and it is selected for test, it can be dropped out of the alarm state by setting the radio button to the opposite state. The test can be aborted at any time by clicking the stop button, or the test will stop automatically at the expiration of the run period interval. If communications are lost before the test interval expires, the relay will still resume its appropriate state, under local control, when the test interval expires.
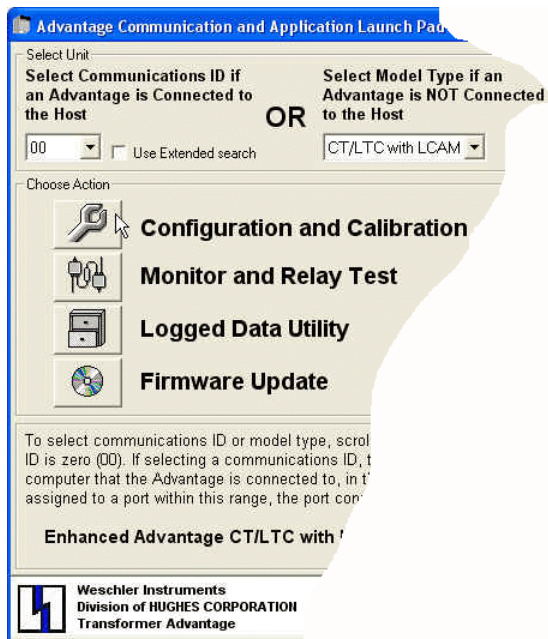
Plate 37. The Configuration and Calibration module is started by clicking its launch button. The wrench depiction on the launch button must be in focus (have a dark outline) in order to launch the module. Either a communications ID **OR** a model must be selected in order to focus the button. If a unit is connected, select the communications ID. If a unit is not connected, select the model type. You do **not** need to select a communications ID **AND** a model type.
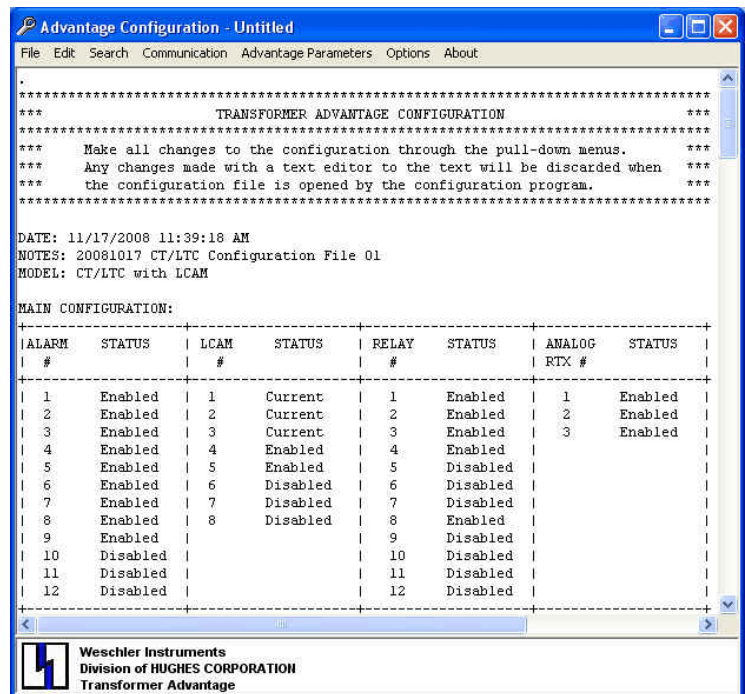
Plate 38. The configuration main-screen opens. If a unit is not connected, a default configuration file, appropriate to the model highlighted in the model type selection box, will load into the configuration list window. If a unit is connected, the configuration file is downloaded and displayed as a text matrix automatically. A message appears momentarily while the file is being downloaded. The file download normally takes less than 5 seconds at a data rate of 57600
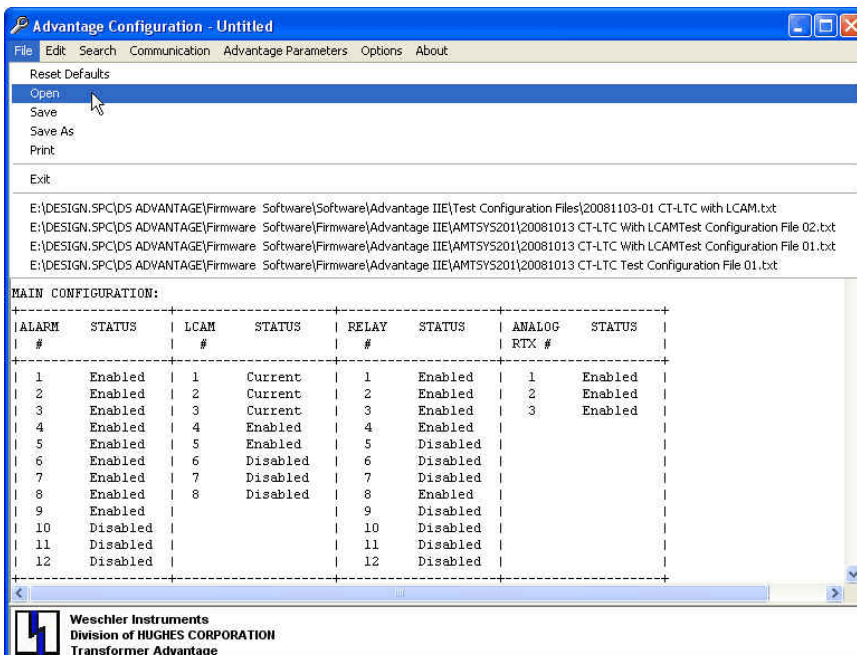
Plate 39. If you have a stored configuration file which is to be opened, click the File menu item to activate the drop-down, then navigate to the desired file using standard Windows file open techniques. If the file you want is listed on the previously opened file list (below the "exit" menu item), click the filename to open it.

Plate 40. The configuration file is downloaded automatically when the configuration module is opened, but at any time if you need to download the file again, you can do so by clicking the Retrieve Data menu item on the Communications drop-down menu.
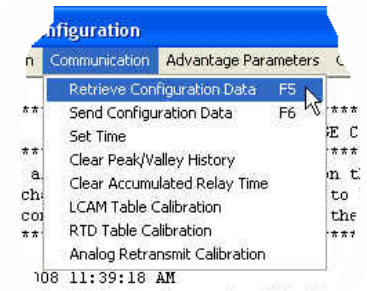
Plate 41. To begin the configuration process, click the Alarm/Retransmit menu item on the Advantage Parameters pull-down menu.
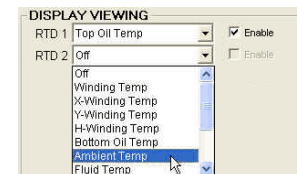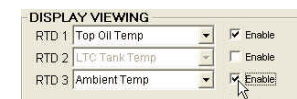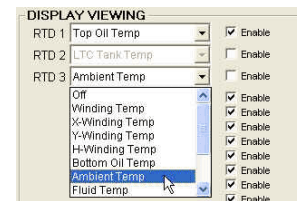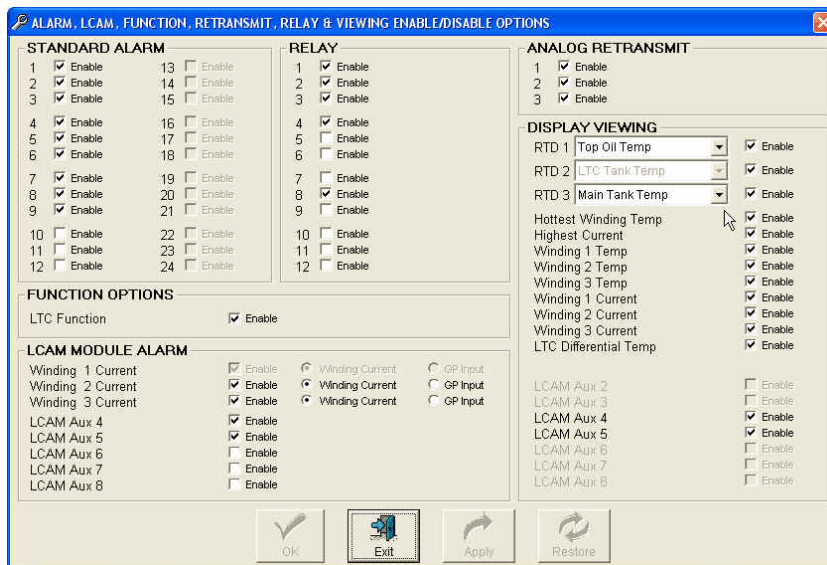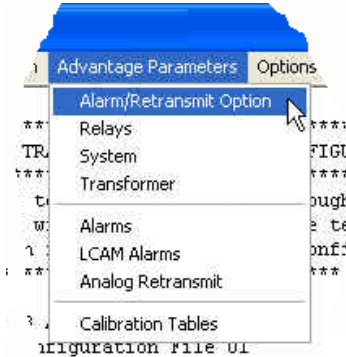
Plate 42. The Options Enable / Disable screen will appear. On this screen the various functions and hardware are enabled or disabled. It is advisable to enable only those functions that are needed immediately or that will be needed in the near future, in order to limit the number of set up items that will be presented in subsequent set up screens and on front panel displays. Items can be easily added later if necessary by simply reconnecting to the unit with the AMTCMF software. If, on the other hand, there is the possibility that a unit will need further configuration in the field, without the benefit of the AMTCMF software, it is advisable to enable whatever items are anticipated to be required, since, with the exception of LTC function, display viewing and title selection, none of the above items can be enabled or disabled without the software. The titles for RTD channels 1, 2 and 3 are selected as well as enabled for viewing, in this screen. If a title is set to "Off", you cannot enable it for display (upper right-hand inset) Once a title is selected, display of the title on the front panel can be enabled (middle right-hand inset). Some models (DC shown in lower right-hand inset) have a quite extensive list of available titles, since the channel function is independent of other functions. See the owners manual for details regarding channel title selection.

Note that the action buttons on the lower part of the screen will not become enabled unless a parameter is changed. The "OK" button writes changes to the configuration file and closes the screen. The "EXIT" button simply closes the window when no changes have been made. The "APPLY" button writes changes to the configuration file, but leaves the screen open. The "RESTORE" button reverses any changes made since the screen was opened *OR* since the APPLY button was clicked. See owner's manual OMAMT200 for details on setting of these parameters.
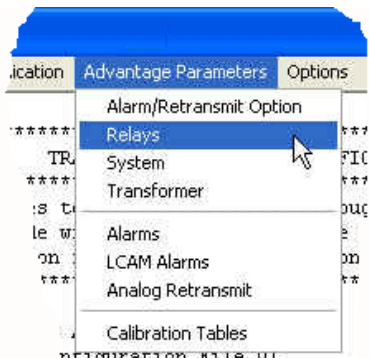
Plate 43. The next step is to set up the relays. The relay set up dialog screens can be opened at any time. Click the Advantage Parameters > Relays menu item and the screen to the right will appear. For CT-series models it is especially important that the connected equipment be selected at this time, in order to reduce the number of options that will be presented in the transformer parameters set up
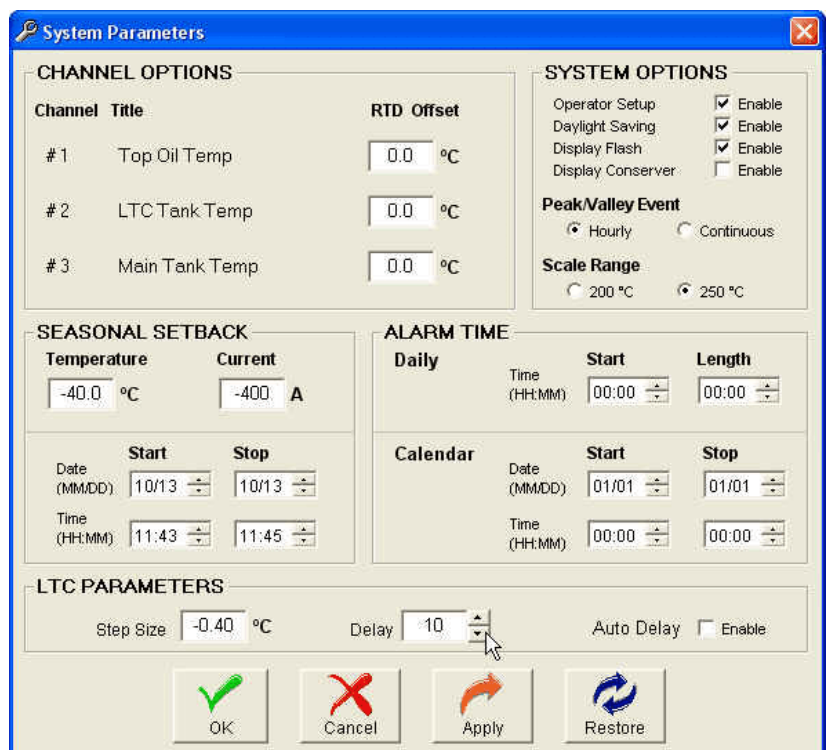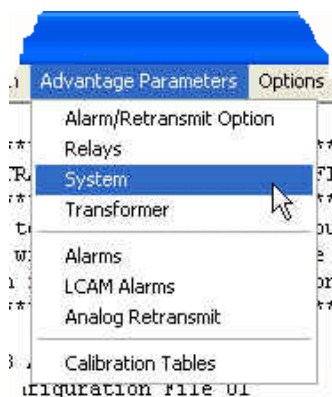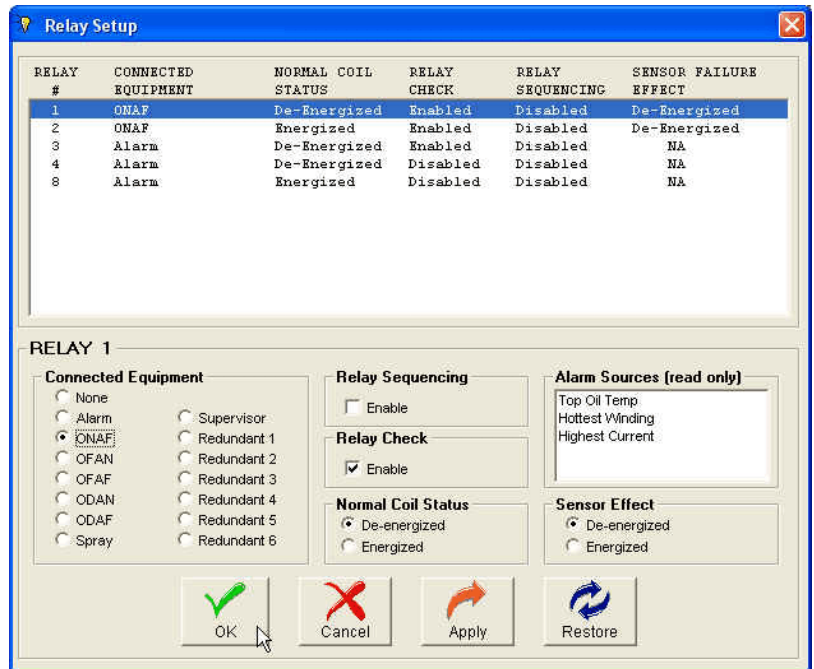
Plate 44. Continue configuration by clicking the "System" menu item on the Advantage Parameters drop-down menu. The parameters on this screen are those used by the Advantage operating system to fit its functions into the user's monitoring preferences scheme. Not all models will show all of the options shown here. Values are changed by clicking in the value text box, then either typing in the new value or scrolling to it. In the right-hand screen-shot, the action buttons became focused (enabled) when the Delay parameter value was changed. Compare the action buttons on this plate to the action buttons on plate 42. Note that the EXIT button on this window has changed context to a Cancel button, once the Delay parameter was changed. This subtle name change will allow for closing the screen without writing any changes to the configuration file.

Plate 45. If the model being configured is a CT-series (CT, CTX or CT/LTC) type, you will want to tailor the Winding Temperature Algorithm (WTA) to the transformer being monitored. Click the Transformer menu item on the Advantage Parameters drop-down menu to open the Transformer Parameters screen. If you do not have a CT-series model, you can skip down to plate 46. The Transformer screen contains parameters that describe various performance characteristics of transformers. The parameters provide values that the WTA uses to dynamically calculate winding temperature. The right-hand example screen above depicts a CT-Series model equipped with an LCAM module that provides three load current signals for calculating the winding temperatures of three distinct windings. The parameters here are covered in detail in the "keystroke-by-keystroke guide to set up" section in the owner's manual OMAMT200. See "Prompt USER" in the keystroke-by-keystroke guide. Prior to any value entry, the required parameters have the word "change" printed in red, as a guide to which values must be entered for proper WTA function. Other values will contribute to the accuracy of the WTA function and should be entered. The Core & Coil Weight and Fluid Capacity entry boxes have automatic units converters. Simply click the appropriate radio knob next to the desired units, then enter the numeric value that corresponds to those units.

Plate 46. The next step in configuration is to set up the alarms. Click the "Alarms" menu item. The alarm set up screen will open. To select an alarm, click anywhere in the line for the desired alarm.

Click in the text window for the desired value and either type in the new value or scroll to it. The Operate Relay selection is made by clicking the arrow to drop down a list, then click the desired relay on the list. If the relay that is selected has not yet been configured, the relay set up screen of plate 47 will open when the "OK" or "Apply" buttons are clicked. If the relay has been previously configured, the relay set up screen will not open automatically. If you want to open the

Plate 47. When the relay set up button on the alarm set up screen is clicked, an individual relay set up screen opens.

Plate 48. If the model being configured is equipped with an LCAM module and its auxiliary channels have been enabled, the LCAM Alarms menu item will be in focus (available) for selection. If the model is equipped with an LCAM module, but its auxiliary channels have not been enabled, the LCAM Alarms menu item will be greyed out. Clicking the menu item when it is in focus will open the LCAM alarms set up screen. Reference the OMAMT200 owner's manual for details regarding individual parameter settings. Select an alarm to set up by clicking anywhere in the line that the alarm appears on. This screen works the same as the standard alarm set up screen, although the ranges are electrical rather than thermal and thresholds replace set points. The Relay Association selection presents a unique feature of the LCAM firmware. When a relay which is driven from another alarm source is associated with an LCAM alarm, the LCAM alarm will not be activated (armed) until the associated relay switches into its alarm state. This powerful feature is discussed in the OMAMT200 operators manual in the keystroke-by-keystroke set up guide
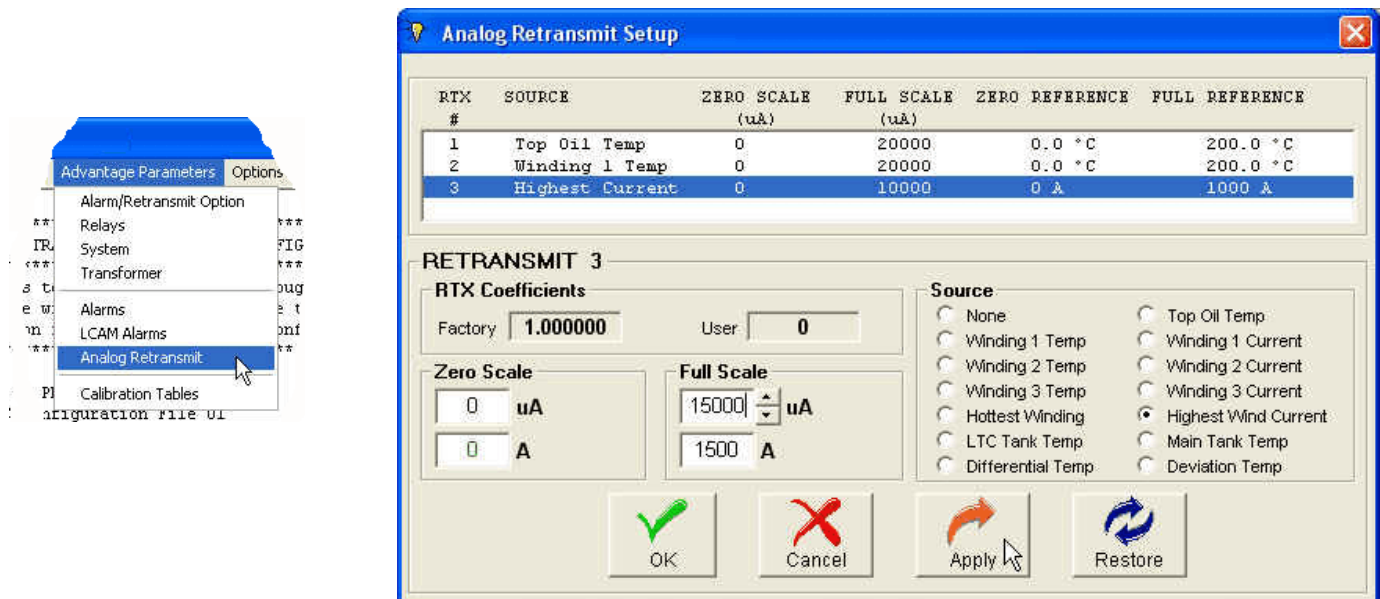
Plate 49. If your model is equipped with the analog retransmit feature, and it is enabled, the Analog Retransmit menu item will be in focus (available) from the Advantage Parameters drop-down menu. If your model is equipped with a single channel retransmit, only channel 1 will appear. If your model is equipped with a multi-channel analog retransmit (MCAR) module, up to 3 channels will appear. The Analog Retransmit Setup screen offers parameters for setting the magnitude of the output signal current which corresponds to the measured quantity (temperature, load current etc.) and for selecting the source to which the output signal will respond. When setting LTC differential full scale temperatures, you must enter the value as a positive number, even though a differential temperature which is increasing in magnitude is typically getting more and more negative.
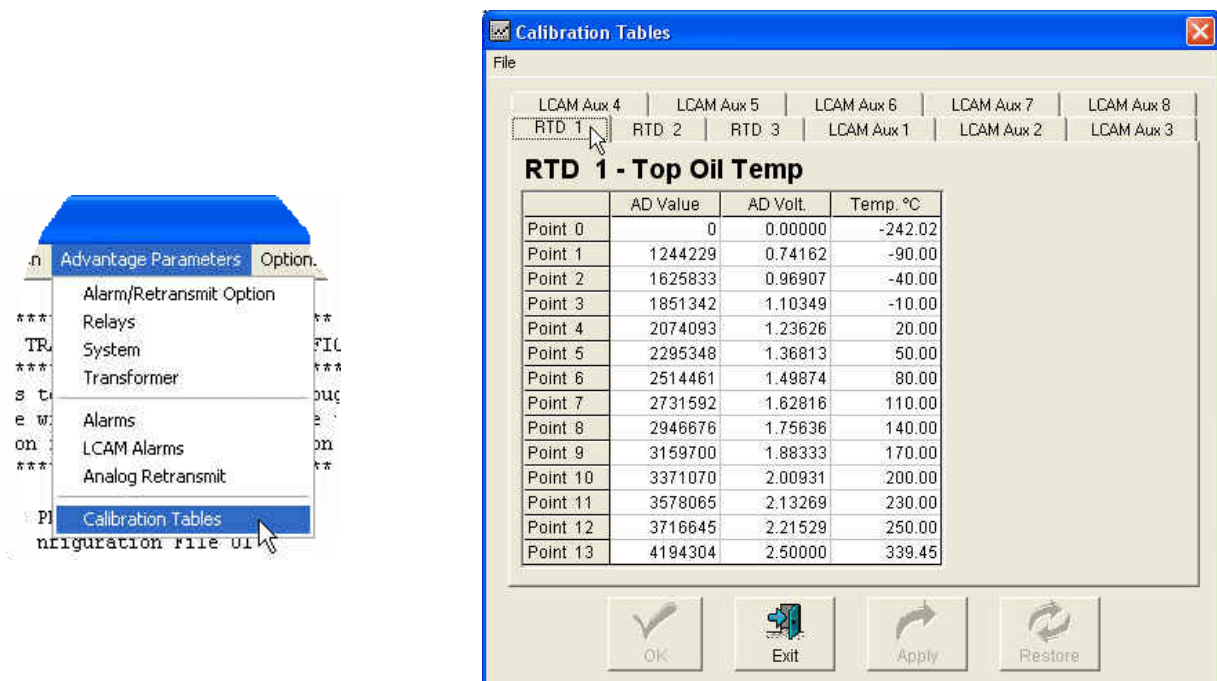
Plate 50. The last item on the Advantage parameters drop-down menu is Calibration Tables. This feature is not a true calibration function, but is rather a method of storing the present state of calibration for all inputs that have tabular calibration data. The screen at the right, showing the inputs with tabular calibration data, will open when the menu item is clicked. This feature allows for safe external storage of the state of calibration in the event that the calibration stored internally is inadvertently compromised.
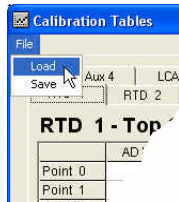
Plate 51. Click the Load menu item under the file drop-down to retrieve a saved calibration. The Open file dialog screen will open to allow for selection of the calibration file. The file is in txt format.
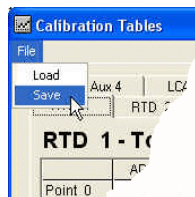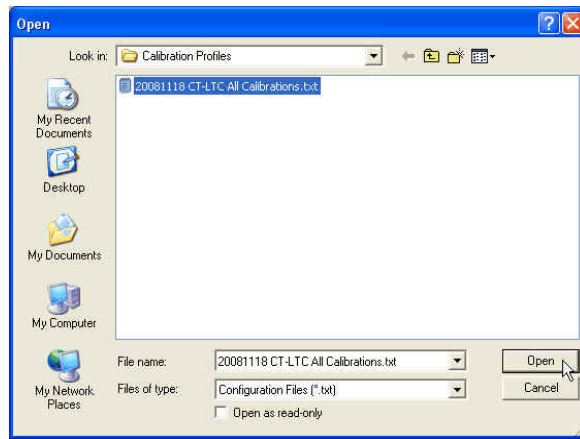
Plate 52. Click the Save menu item under the file drop-down to save the calibration. It is advisable to name the file such that the appropriate calibration file will be restored to the corresponding Advantage if restoration becomes necessary.
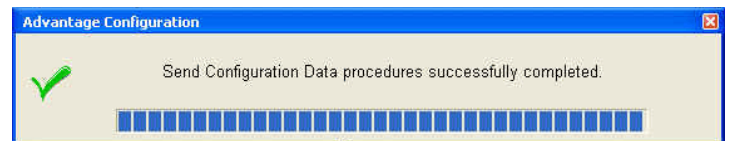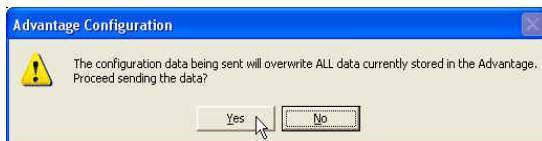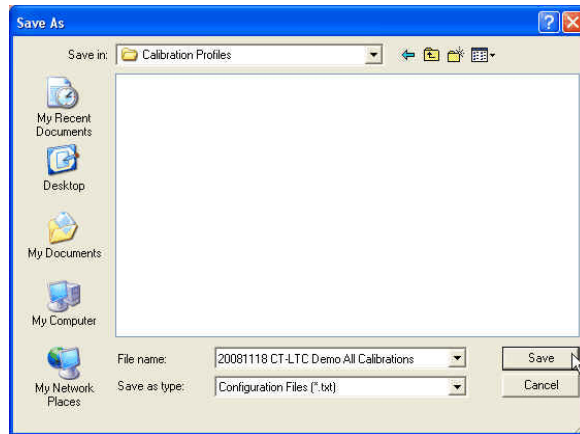
Plate 53. After all parametric edits are completed, the file can be uploaded to the Advantage by clicking the Send Data selection under the Communication menu. Prior to starting the upload process, the software looks to see if the Advantage has a stored password other than 0 (zero). If the password is 0 the file will be immediately uploaded. If the stored password is other than 0, a Login prompt dialog (upper center) will appear requesting the password. If the password is correct the file will be uploaded, but if it is incorrect, an additional Login prompt dialog (upper right) will appear. You must enter the correct password in order to upload the file. Just prior to upload the warning dialog (lower left) will appear to give users the opportunity to cancel the upload. Click Yes to proceed or No to cancel. Once the file has been successfully uploaded, the Command Executed message box (lower right) will momentarily appear.
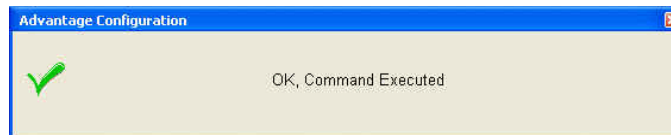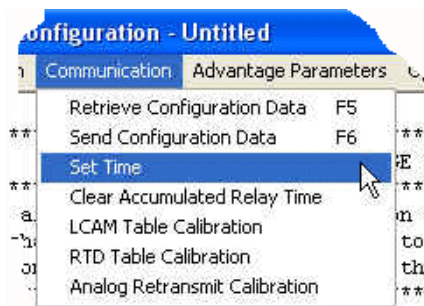
Plate 54. Clicking The "Set Time" menu item on the Communication drop-down transfers the PC clock's time and date to the Advantage. Simply click the menu item and the time and date will be sent. Once the time and date have been sent the confirmation message (above right) will be momentarily displayed.
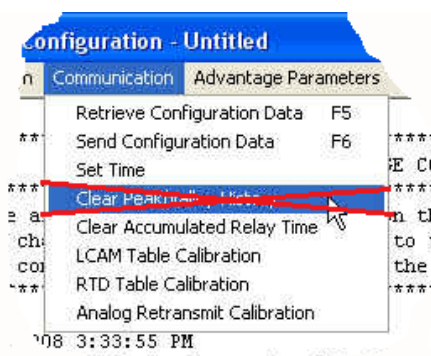
Plate 55. The "Clear Peak/Valley Memory" menu item, on the Communication drop-down, has been moved to a more convenient location on the Logged Data Utility screen. See plate 93 for details.
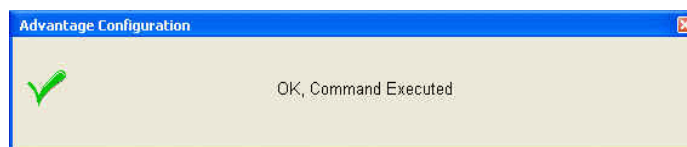
Plate 56. The "Clear Accumulated Relay Time" menu item erases the memory that contains the total time that each relay in a sequencing arrangement has been in the alarm state. The time is used by the sequencing function to even out the on-time of same-type cooling apparatus. Once the time has been cleared the confirming message (above right) will appear.
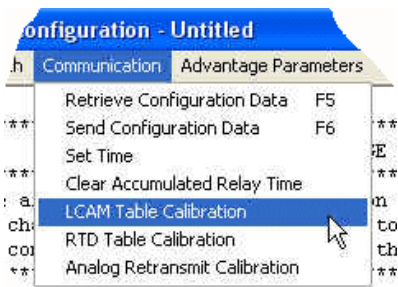
Plate 57. The LCAM module is factory calibrated and should not need re-calibration unless calibration of a non-linear signal is required or, more rarely, a component in the circuit is changed. The LCAM module is calibrated by applying signals to the inputs, and storing error values in calibration tables. Thus when you calibrate a numbered channel you are entering values into a table of the same number. See plate 50 for a visual example of calibration tables. Start by clicking the LCAM Table Calibration menu item below the Communication drop-down. The password Login dialog will appear. Enter the correct password, then click OK to gain table access. If the wrong password is entered, the warning dialog (upper right) will appear. The password can be obtained from Weschler. Call 440-238-2550.
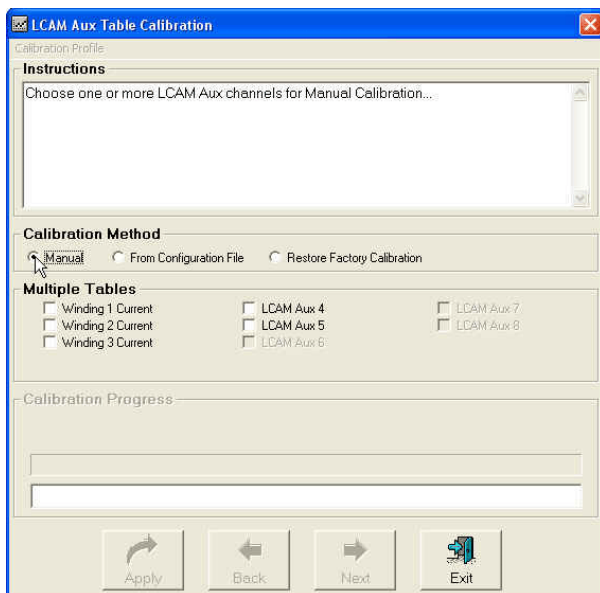
Plate 58. The LCAM calibration screen will open. Start by selecting which calibration method will be used. Selecting "Manual" initiates a standard calibration as described in plate 57. Selecting "From Configuration File" restores a calibration table from a calibration that was previously stored to an external memory device, such as was explained in plates 52 and 53. Selecting "Restore Factory Calibration" restores the calibration that is stored in the Advantage memory from the initial calibration that was performed in the factory. The next step is to select which channel(s) will be calibrated. The choices will correspond to the signal assignments that were made in the Options Enable / Disable screen (plate 42). If more than one channel is being calibrated to the same value, current signals may be applied to the inputs in series and voltage signals may be applied in parallel and the channels can be calibrated simultaneously. For example, in the screen to the left, selecting the check boxes for Winding 1 Current and Winding 2 Current while applying the current signal to both inputs in series, will calibrate both channels
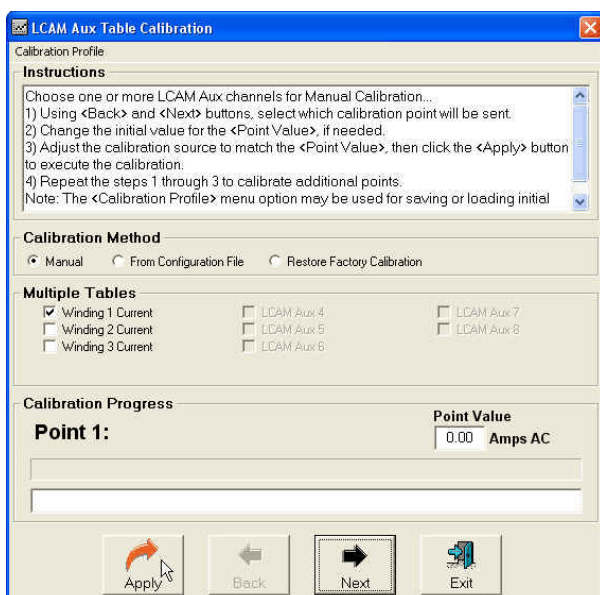
Plate 59. As soon as the channel is selected, brief instructions will fill the window at the top of the LCAM Table Calibration screen. The calibration will always start with point 1, which is the smallest signal in the range. Apply the indicated signal to the channel input(s), then click the Apply button. In the example to the left, the channel being calibrated is on an LCAM module in a CT-series Advantage, with channel 1 as a dedicated winding current input and channels 2 & 3 assigned to winding current. The operator has chosen to calibrate channel 1 independently of the other
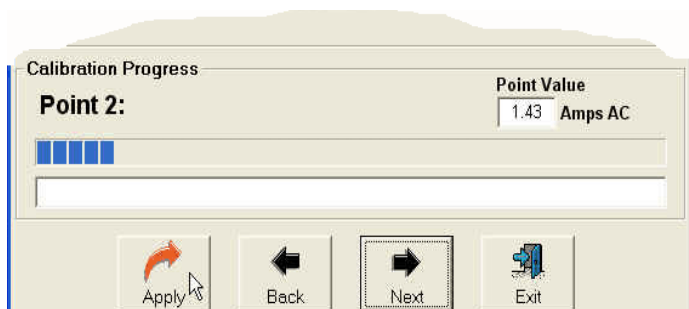
Plate 60. There are 8 calibration points in the table. After applying the Point Value signal, click the Apply button to store the value, then the Next button to move to the next point. The bargraph will advance as subsequent points are calibrated. At any point in the table, not including the first (0.0 amps AC in this case) and last (10.0 amps AC in this case) you can adjust the point value. This capability is used only when calibrating for a non-linear signal. In this and most other cases, the factory point values should be used.
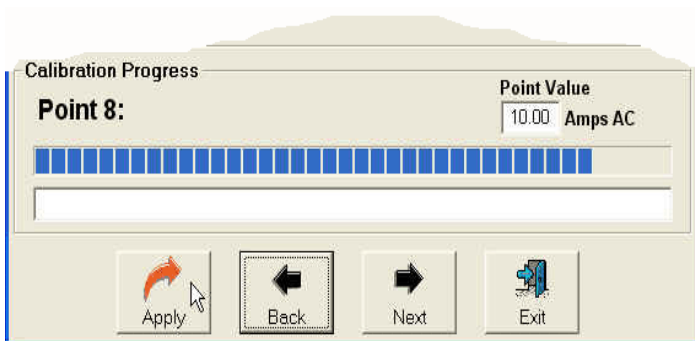
Plate 61. When you click next, after calibrating the eighth point, the calibration will be complete and the dialog box will change to that shown in plate
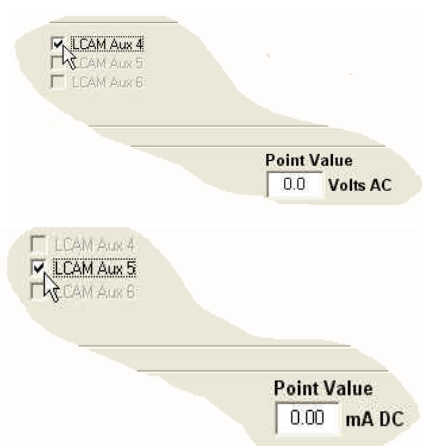
Plate 62. If all of the auxiliary channels have the same input range they may also be calibrated together. In the examples to the left, selecting either of the two LCAM channels locked out the other for simultaneous calibration, because the input signal sources are not the same.
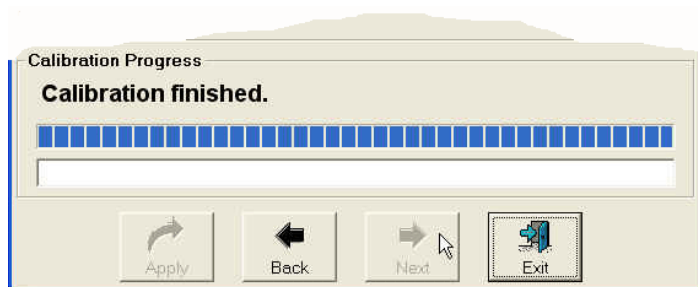
Plate 63. The calibration finishes when the Next button is clicked after the last point is calibrated.
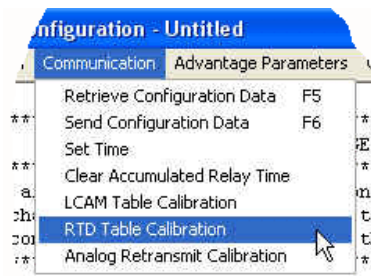
Plate 64. The next calibration item is the thermal (RTD input) channels. Click "RTD Table Calibration" under the Communication drop-down . The Login password dialog will open. Enter the correct password to gain access to the thermal channel calibration screen. If the wrong password is entered, the warning dialog (upper right) will appear. The password can be obtained from Weschler. Call 440-238-2550.
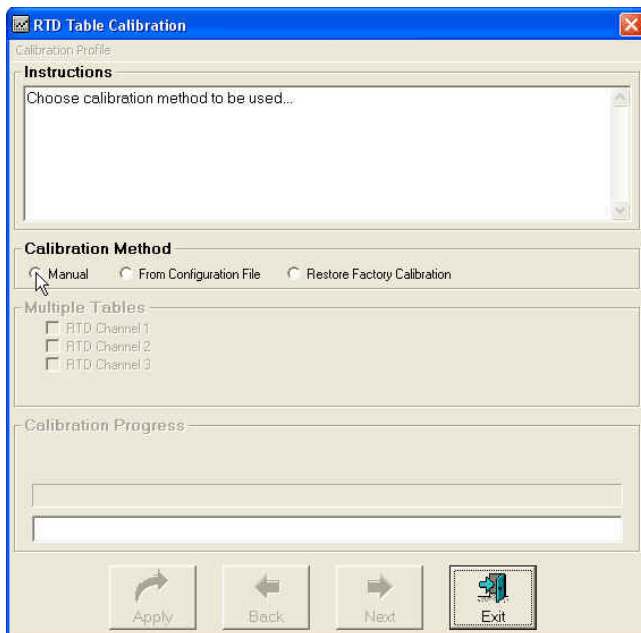
Plate 65. Once the correct password is entered, the RTD Table Calibration screen will appear. The thermal input channels are calibrated very similarly to the LCAM channels. The main difference is that the RTD input signal is a series of standard resistances that correspond to predetermined temperature values. The need to calibrate is rare, and it is recommended that only experienced technicians perform calibration operations. Depending upon which model you have, there may be up to three channels. Begin by clicking on the desired calibration method. Selecting "Manual" initiates a standard calibration as described in plate 57. Selecting "From Configuration File" restores a calibration table from a calibration that was previously stored to an external memory device, such as was explained in plates 52 and 53. Selecting "Restore Factory Calibration" restores the calibration that is stored in the Advantage memory from the initial calibration that was performed in the factory.
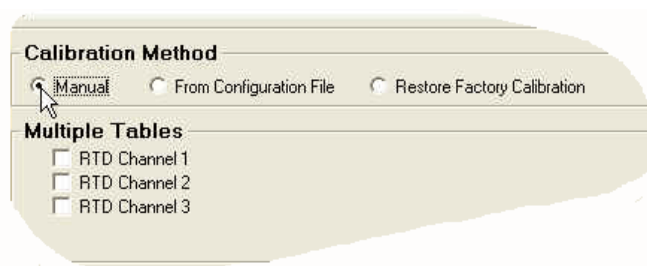
Plate 66. Clicking on one of the calibration method radio knobs enables the channel selection check boxes.
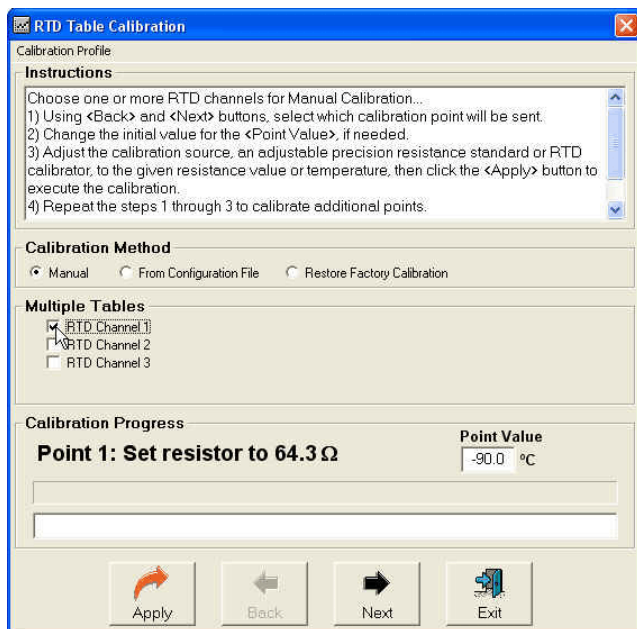
Plate 67. After selecting the calibration method and channel to be calibrated, the input values for the first calibrated point appear. The calibration values can be browsed up and down through the calibration screens without calibrating the points by simply clicking the "Next" and "Back" buttons. If you are just browsing, close the screen when you are done by clicking the "Exit" button. If a calibration is being performed, set your resistance standard to the indicated resistance or set your RTD simulator to the indicated temperature.
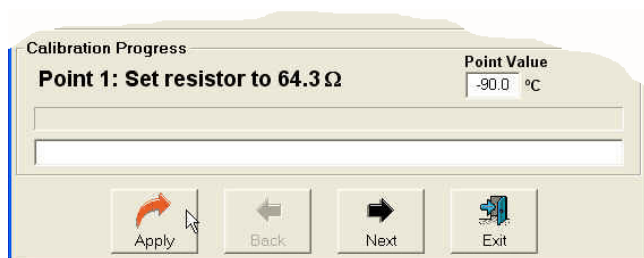
Plate 68. Wait a couple seconds, then click the Apply button. This will cause the Advantage to store the calibration value.

Plate 69. When the calibration point is accepted, the 'OK, Command Executed" message will appear. Click the "Next" button to advance to the next calibration point.
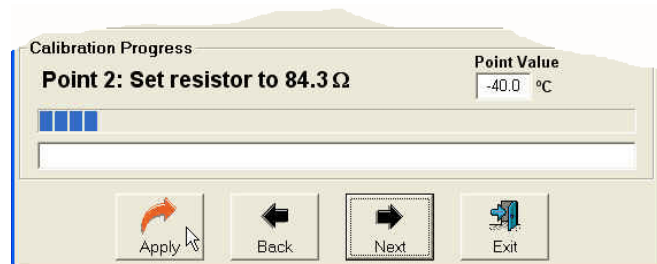
Plate 70. The Point 2 calibration screen appears, with the values for point 2. Adjust the standard resistance decade or RTD simulator for these values. The temperature and/or resistance value can be changed if it is desired to calibrate to an RTD probe with a non-standard resistance curve. CAUTION! The appropriate resistance and its corresponding temperature equivalence must be supplied in order to ensure accurate calibration.
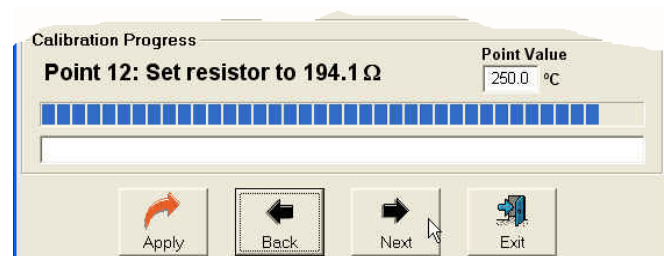
Plate 71. The bargraph will advance as subsequent points are calibrated. There are 12 calibration points in the standard RTD tables. The number of calibration points may be reduced, but it will negatively effect accuracy and is not recommended.
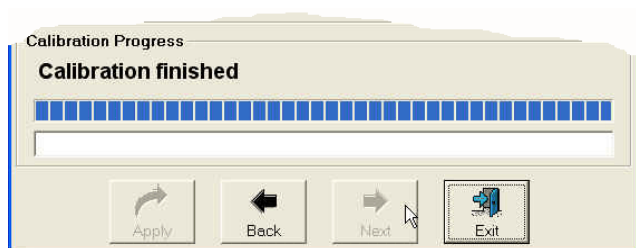
Plate 72. After calibrating the last point, when you click the Next button, the calibration is completed. Click the Exit button to end the RTD table calibration procedure.

Plate 73. Click the Analog Retransmit Calibration menu item under the Communication drop-down to initiate the retransmit output calibration procedure. This procedure offers four methods of setting the output current curve.
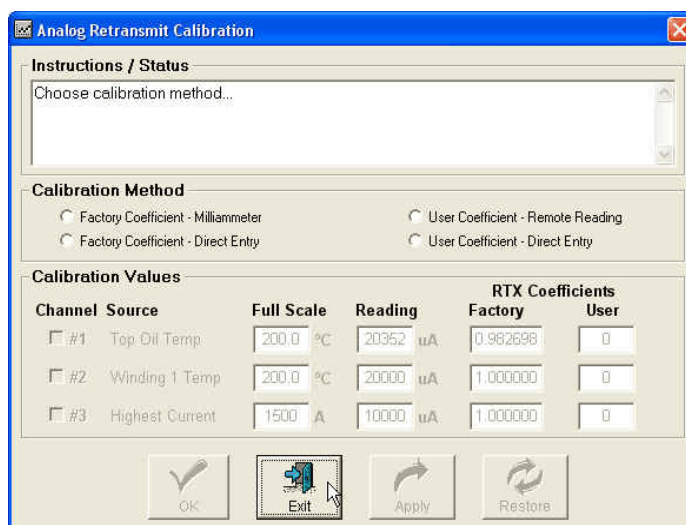
Plate 74. Selecting the "Factory Coefficient - Milliammeter" method initiates the calibration procedure most commonly identified with laboratory calibration
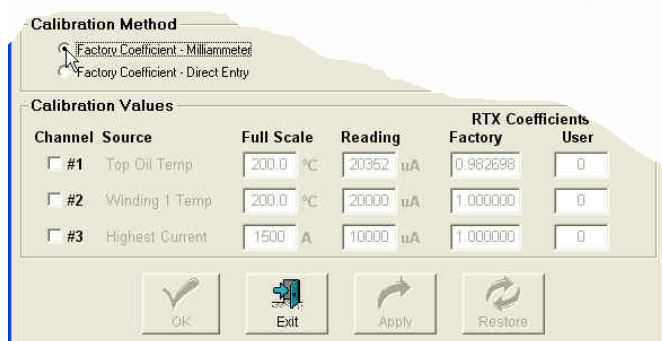
Plate 75. Select a channel to calibrate. Connect a standard DC milliammeter to the channel output that is to be calibrated and set the sensitivity to the next highest range above 25 ma. Connect the appropriate source standard to the source for the analog retransmit. Adjust the source standard signal for the endscale of the retransmit source.
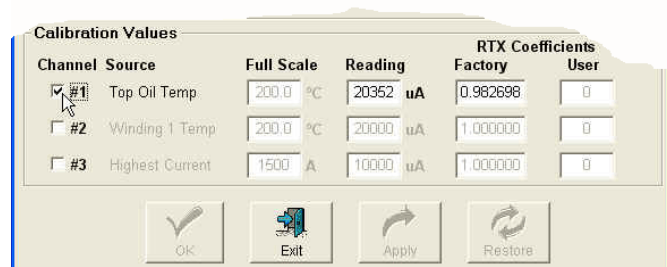
Plate 76. Set the value in the "Readings" text box equal to the indication on the standard milliammeter. Click the Apply or OK button. The Advantage will automatically calculate and store the appropriate factory coefficient.
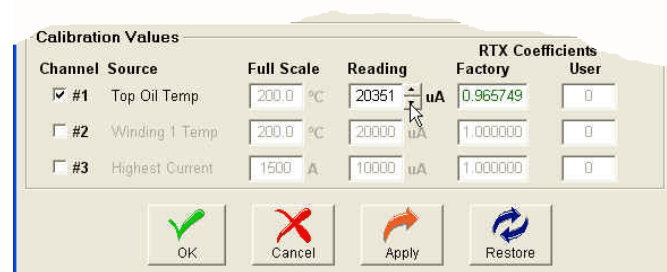
Analog Retransmit Calibration

Instructions / Status

1) Select the RTX channels you wish to calibrate...
2) Enter each Factory RTX Coefficient directly;
3) Click the <Apply> button to send new values to the connected Advantage Unit.

Calibration Method

○ Factory Coefficient - Milliammeter   ○ User Coefficient - Remote Reading
◉ Factory Coefficient - Direct Entry   ○ User Coefficient - Direct Entry

Calibration Values

					RTX Coefficients	
Channel	Source	Full Scale	Reading	Factory	User
☑ #1	Top Oil Temp	200.0 °C	20352 uA	0.982697	0
☐ #2	Winding 1 Temp	200.0 °C	20000 uA	1.000000	0
☐ #3	Highest Current	1500 A	10000 uA	1.000000	0

OK   Cancel   Apply   Restore

Plate 77. "The Factory Coefficient - Direct Entry" method is used when the factory coefficient is known, such as will be the case if an older unit is being upgraded to AMTSYS0201 / AMTCMF0201 firmware / software. The coefficient(s) for older models is printed on a label affixed to the inner side wall of the case in the lower case cavity. All that is required to use this method is to enter the coefficient(s) from the label into the Factory RTX coefficients text boxes as shown in the illustration to the left. Click the Apply or OK buttons when finished.

Analog Retransmit Calibration

Instructions / Status

1) Select the RTX channels you wish to calibrate...
2) Enter Local value from Advantage display.
3) Adjust the User RTX Coefficient so the Remote reading is correct;
4) Click the <Apply> button to send new values to the connected Advantage Unit.

Calibration Method

○ Factory Coefficient - Milliammeter   ◉ User Coefficient - Remote Reading
○ Factory Coefficient - Direct Entry   ○ User Coefficient - Direct Entry

Calibration Values

					RTX Coefficients	
Channel	Source	Local	Remote	Factory	User
☑ #1	Top Oil Temp	50.0 °C	50.0 °C	0.982698	22
☐ #2	Winding 1 Temp	50.0 °C	50.0 °C	1.000000	0
☐ #3	Highest Current	100 A	100 A	1.000000	0

OK   Cancel   Apply   Restore

Plate 78. The "User Coefficients - Remote Reading" method is typically used during commissioning to compensate for data acquisition systems that have loop errors that cannot be easily compensated for elsewhere. Set the source for the retransmit channel to an on-scale value. Contact the remote site and determine what the value is, that is being indicated by the remote instrument. Adjust the value in the User RTX coefficients text box until the remote display indicates the same value as the Advantage display. Click the Apply or OK buttons when finished.

Analog Retransmit Calibration

Instructions / Status

1) Select the RTX channels you wish to calibrate...
2) Enter each User RTX Coefficient directly (-5000 to 5000 representing a correction of -5.000% to 5.000%);
3) Click the <Apply> button to send new values to the connected Advantage Unit.

Calibration Method

○ Factory Coefficient - Milliammeter   ○ User Coefficient - Remote Reading
○ Factory Coefficient - Direct Entry   ◉ User Coefficient - Direct Entry

Calibration Values

					RTX Coefficients	
Channel	Source	Local	Remote	Factory	User
☑ #1	Top Oil Temp	50.0 °C	50.0 °C	0.982698	95
☐ #2	Winding 1 Temp	50.0 °C	50.0 °C	1.000000	0
☐ #3	Highest Current	100 A	100 A	1.000000	0

OK   Cancel   Apply   Restore

Plate 79. The " User Coefficients - Direct Entry" method is similar to the method of plate 78, but it uses a calculation of error as a percent of reading for its entry. This method is useful if a remote site can calculate and record an observed error, but cannot communicate it instantly as in plate 78. The error can be compensated up to ± 5% of the reading.
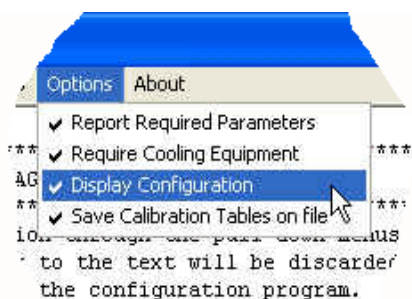
Plate 80. The Options drop-down menu is provided to allow users to define preferences for on-screen warnings and text display. Simply click the option to enable or disable the preference. The "Report Required Parameters" preference either enables or disables pop-up windows that warn of missing or out-of-range required values. The "Require Cooling Equipment" preference either enables or disables pop-up windows that warn of missing cooling equipment specification(s) in the relay's connected equipment parameter. This applies mostly to CT series models. These pop-up windows may be annoying in the early stages of set up when they may appear frequently as settings are applied, however; the warnings provide a valuable aid to completing set ups properly the first time. It is recommended that these options be enabled prior to sending configuration data to the unit. The Display Configurations preference either shows or hides the set-up text matrix in the main display window. The "Save Calibration Tables on File" option includes calibration table values in the configuration file. This is useful when careful control is exercised to make sure configuration files are not used on multiple Advantage models where calibrations can become cross contaminated from unit to unit. It is advised if this option is used that the configuration files have part of their filenames encoded with a password and that the password be used for front panel supervisory access.
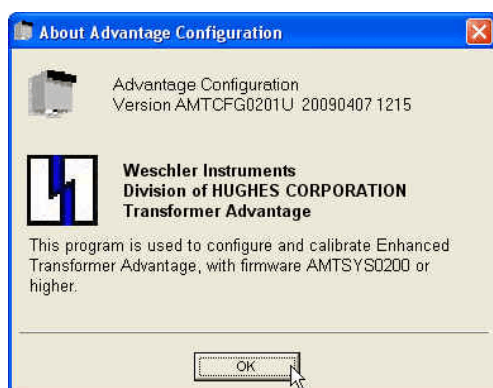
Plate 81. Clicking the "About" menu item pops up the about information box. This box provides software version and usage information.

4.0 Installing New Firmware

Introduction

The Advantage IIE has the capability of having its firmware replaced by rewriting the memory with new program code. The program code is stored in a type of non-volatile memory called flash memory, and the process of rewriting the program code is referred to as flashing the memory. The AMTCMF0201 software has a firmware flashing capability built-in.

The actual program code is a text file which is typically less than 1 MB in size, which makes it possible to easily transport the new code on a floppy disk or by electronic means such as email. Thus it is always fast and easy to keep the latest firmware installed.

Process Description and Preparation to Flash

Memory flashing traditionally has been jokingly referred to as a "plug-and-pray" operation because of the risk of overwriting the firmware with corrupted data and thus requiring a trip to the factory for correction. The Advantage is equipped with redundant memory systems and error checking algorithms which make the file transfer safe and reliable. In order to ensure reliable firmware transfer, the new firmware must be uploaded using the AMTCMF0201 upload utility only.

The new firmware is uploaded by connecting a serial com port of a computer to the Advantage port 1 receptacle using an RJ11 (6P6C) to DB-9 adapter and a six conductor flat telephone cable. The port 1 receptacle is located behind the Advantage's terminal access cover plate. To remove the cover plate, unscrew and remove the two bottom screws, then loosen the top screws four or five turns and slide the plate off. See figure 1 (flush-mount) or 2 (panel-mount) of owner's manual OMAMT200 for an illustration of the actual location of port 1.

The cable and adaptor are supplied as part of the communications option package, and additional cables and adapters can be ordered from Weschler. The cables come in two standard lengths; 10 feet, part number 600000726 and 14 feet, part number 6000000727. The adapter is part number 2100000101. The cable and adapter can be purchased as an assembly; 10 feet, part number 1000001701 and 14 feet, part number 1000001703.

Prior to initiating the flash procedure, the communications parameters will need to be set up, from the front panel keypad. Referring to figure 16G of OMAMT200, enter the COMM SETUP loop and set the unit ID (Prompt "ID") to match the unit ID you will use while running the software. The default unit ID is 0, and if there is no reason to change it, we recommend it be left at 0. No other communications settings are necessary.
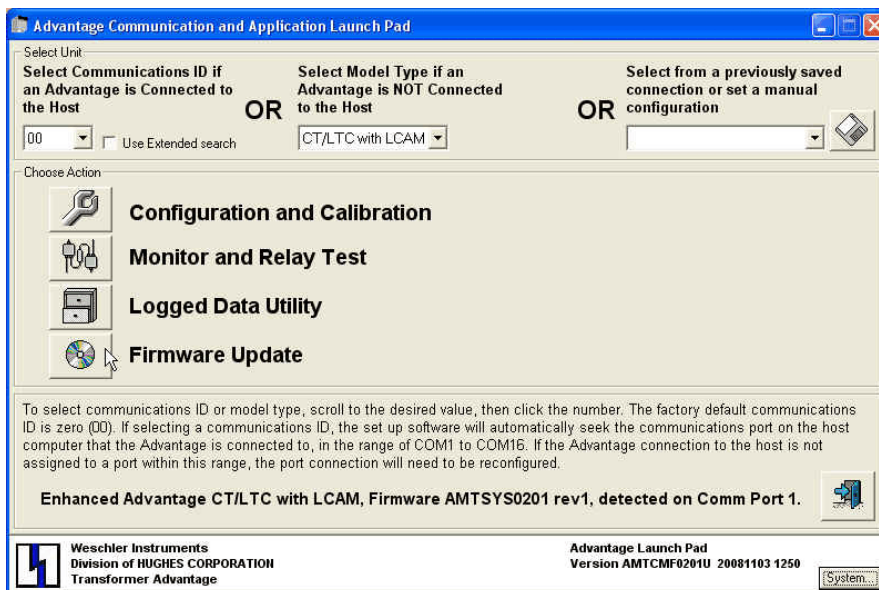
Plate 82. To begin, make sure you are connected to the desired target unit, then click the "Firmware Update" button. See plates 14 and 18 - 20 for instructions on connecting to a target unit.
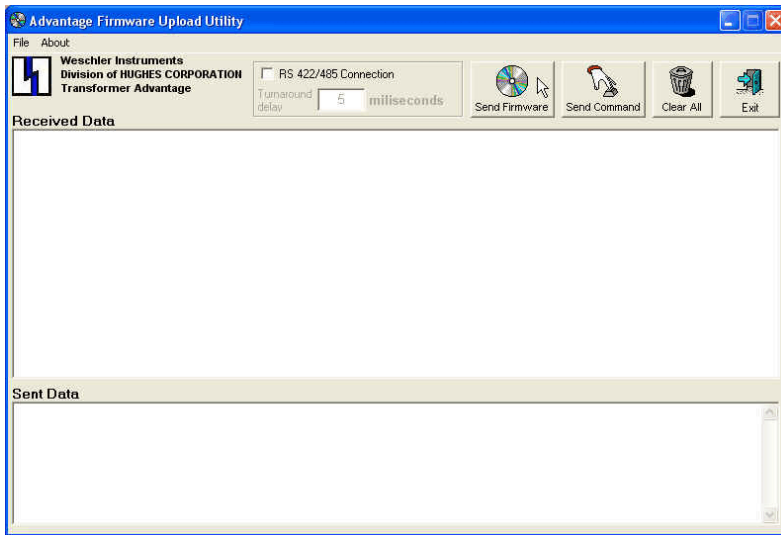
Plate 83. The Firmware Upload utility screen will open. The top window shows details of the download and the bottom window shows progress. To begin the download, click the "Send Firmware" button. As soon as the button is clicked, a File Open dialog (plate 84) will open.
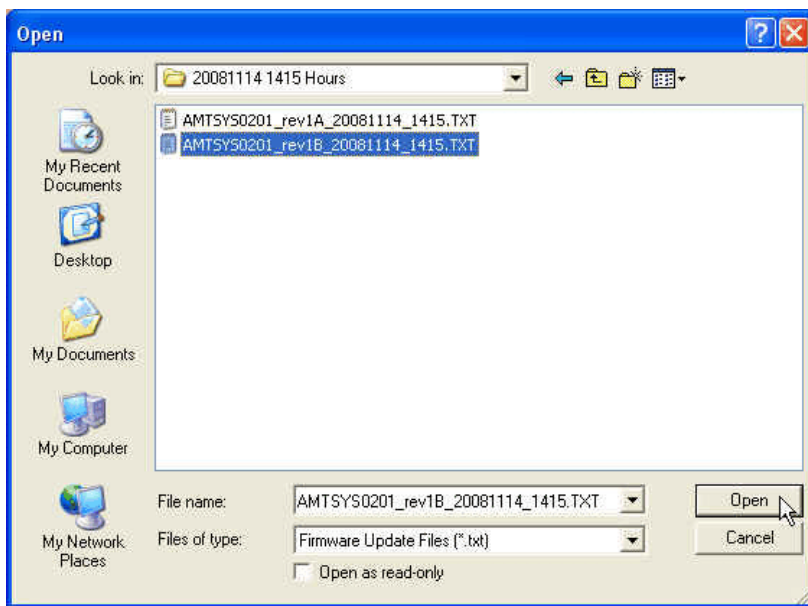
Plate 84. Navigate to the desired firmware and select it by double clicking the filename or single clicking the filename then clicking the Open button. As soon as the file is selected it will begin the loading process (plate 85).
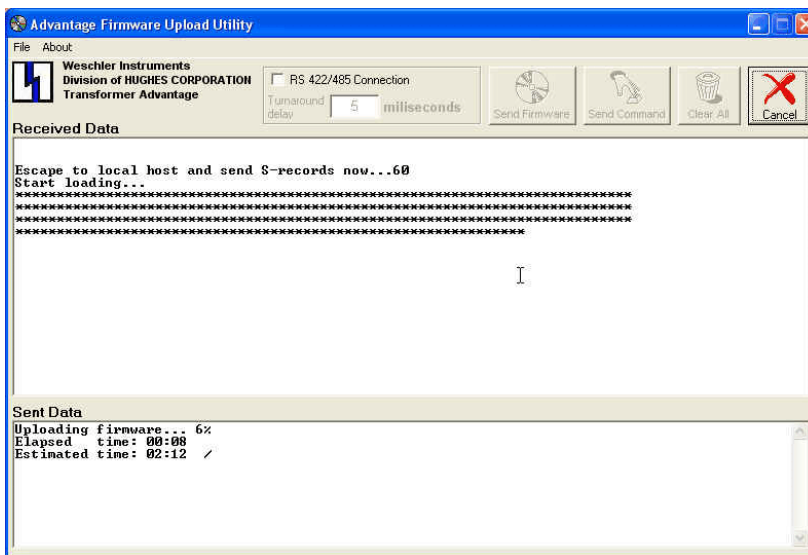
Plate 85. The Advantage will do initial file integrity checks and if the file passes will begin loading the file into its memory. The upper screen reports the operations that are being performed and prints an asterisk (*) after each line of the firmware file is sent. The lower screen reports the estimate of total time to perform the upload and how much time has elapsed since the upload began. The Advantage front panel display will show a series of status words, while the upload is progressing. During the upload process the status word "LOADING **" will
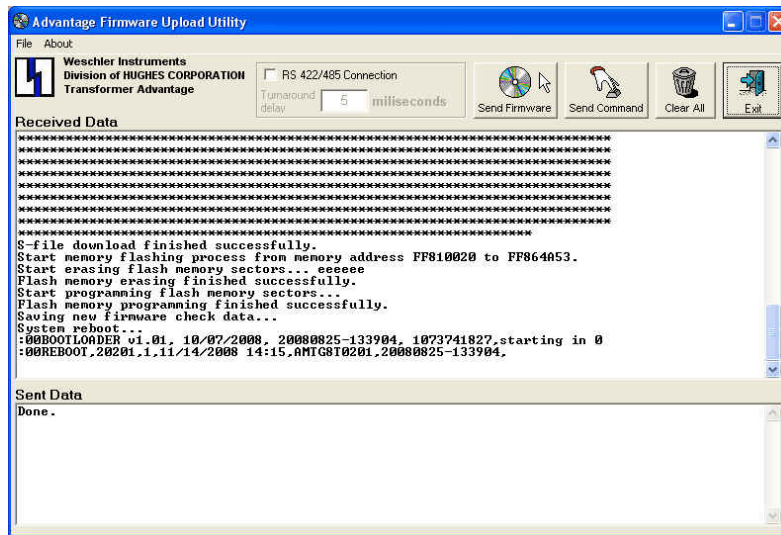
Plate 86. As the loading process finishes, the file is subjected to another integrity check which, if successful initiates flash memory erasure. Following flash memory erasure the new firmware is written to flash in the programming process. After the flash is written, the file is subjected to a third integrity check, and if successful, initiates an initialize and reboot sequence. When the whole process is completed the upper screen reports on the versions of firmware and bootloader that are loaded. The bottom screen simply reports that the process is completed. The Advantage front panel displays status words in the sequence ERASING, PROGRAMING, WAIT-INIT, REBOOTING, AMTGXT0201 and finally the lamp test display.
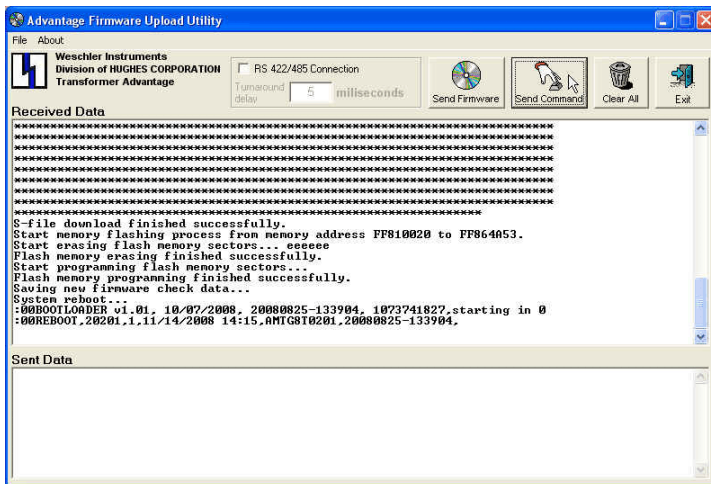
Plate 87. The Firmware Upload utility also includes a facility to send discreet commands to the firmware. Discreet commands typically perform a single action. They are composed in the form of text files, with special formatting. To send a command, click the Send Command button.
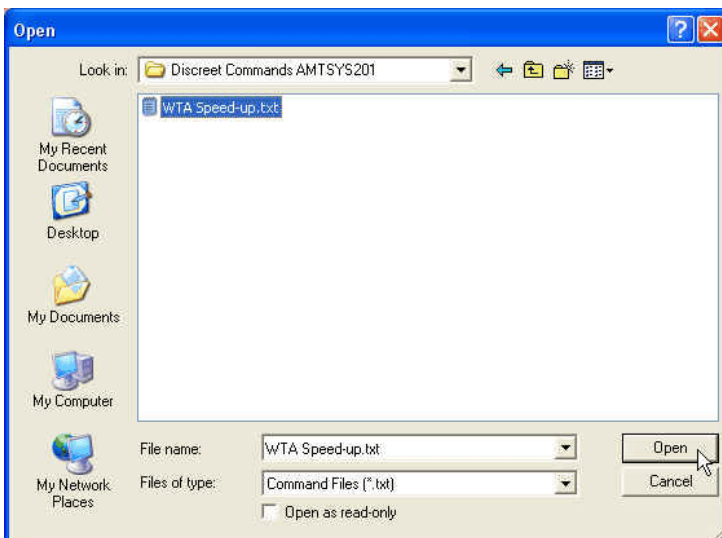
Plate 88. A standard Windows file open dialog will open allowing for navigation to the command file. When the file is located, either double click on it or click to select it then click the Open button to send the command file. After the file is sent, It wil be acknowledged with the message above.

Plate 89. The Upload Firmware utility has two more command buttons. The Clear All button erases all text from the upper and lower windows and the Exit button closes the Firmware Upload screen.

5.0 Downloading Historical Peak and Valley Values
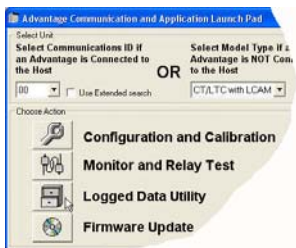
Plate 90. Connect to an Advantage using the procedure of plates 18 - 20. It is advisable to set the data rate (baud) to the highest that the host PC can tolerate since the logged data files may be quite long. Click on the Launch pad's Logged Data Utility button and the Logged Data Utility screen will open. Click the Request P&V button to initiate the download.
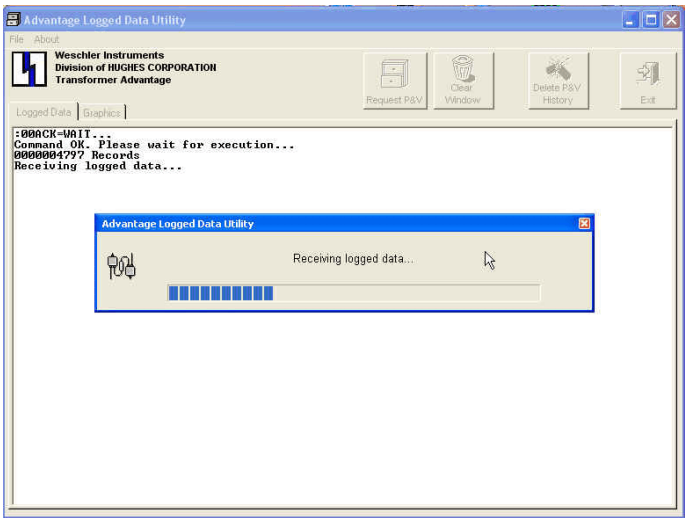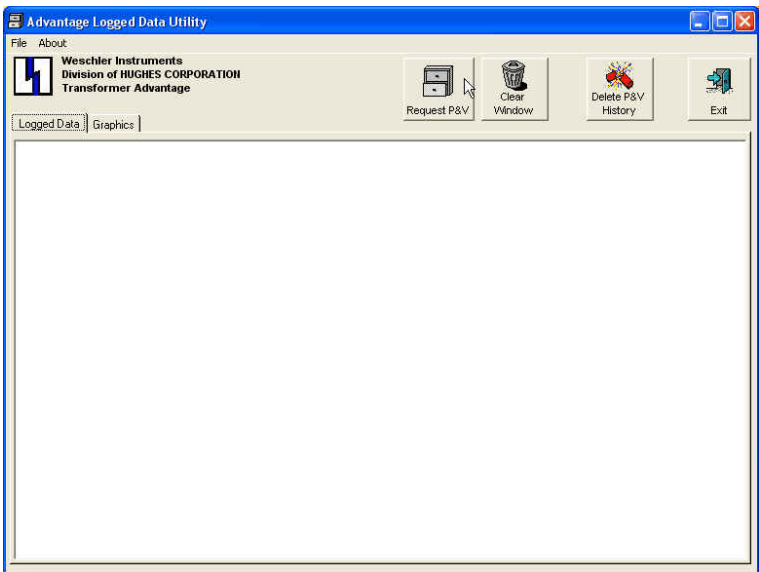
Plate 91. A few message boxes will appear very briefly, followed by the Receiving Logged Data message box, which will show the progress of the download. Files which cover an extended logging period will take a significant period of time to receive and sort.
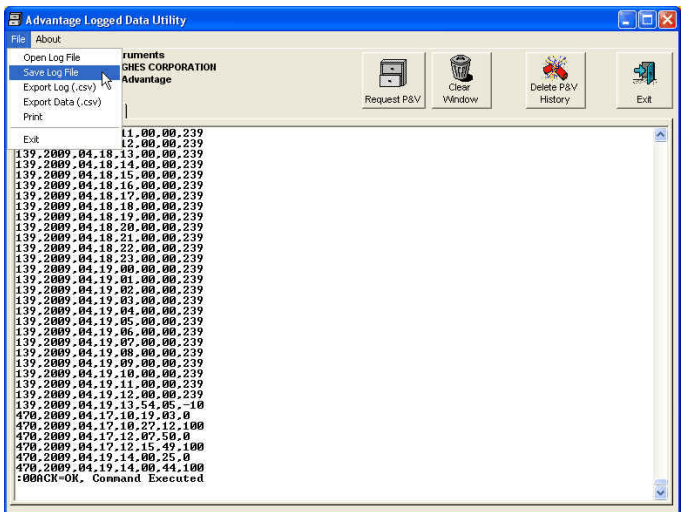
Plate 92. The data will be sorted and presented in the data window. The Clear Window button, as its name implies, clears the data from the window. Be patient, since there may be a large file to sort.
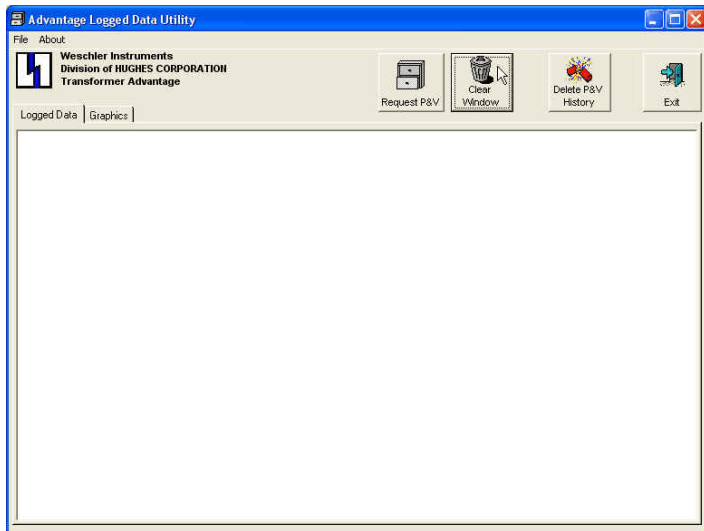
Plate 93. Clicking the Clear Window button removes the log file from the screen and PC memory, but not the Advantage's memory. The Delete P&V History button erases the stored peak and valley logs from the Advantage memory. The peak and valley data is typically cleared prior to entering a long period of new logging activities. Caution! once the peak and valley data has been deleted, there is no way to retrieve it. If it is desired to retain the old logs, they must be saved to a file on the PC prior to deleting them. Once the logs are deleted a confirmation message will appear
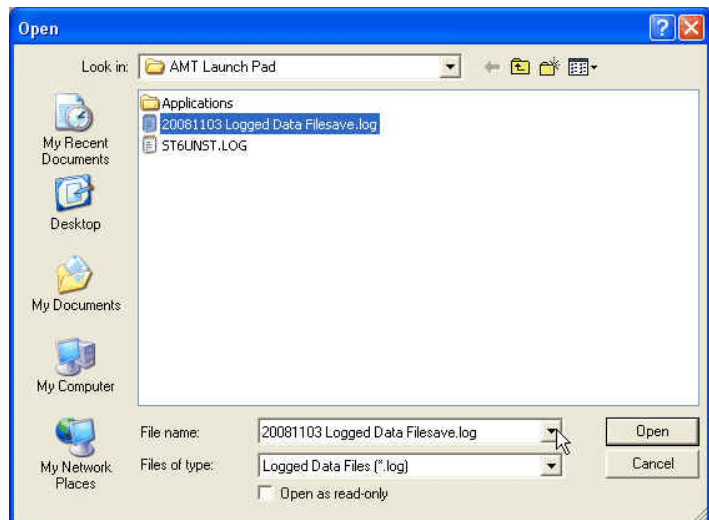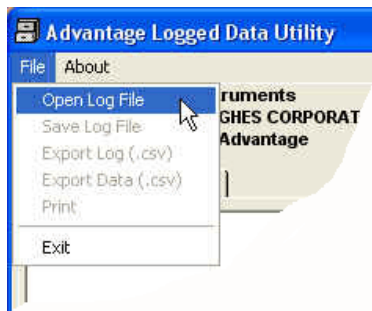
Plate 94. Tables from previous logging periods can be merged to form a larger file, if the earlier file has been saved using this utility. The file save procedure is a standard Windows process, using the "Save Log File" menu item under the "File" drop-down, as shown above left. To begin a file merge, navigate to and open the saved log file.
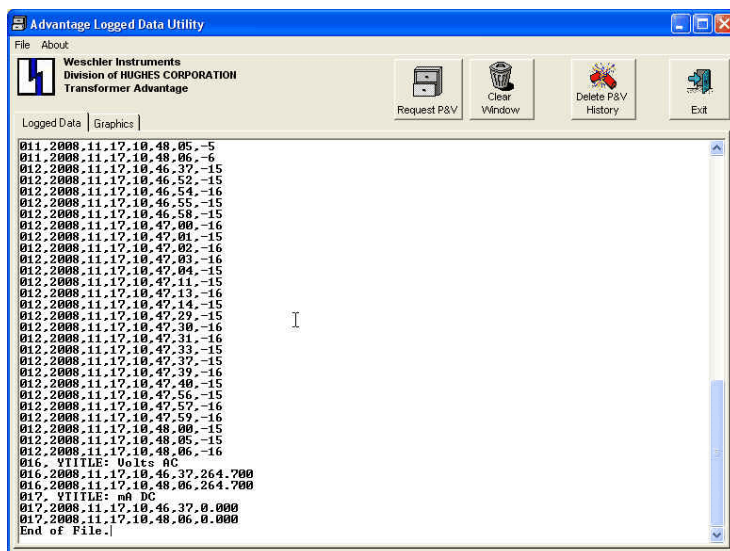
Plate 95. The saved log file will open
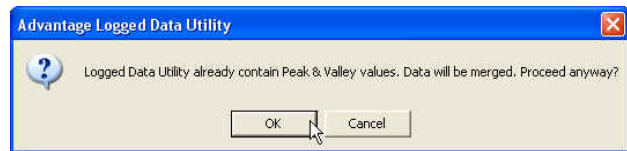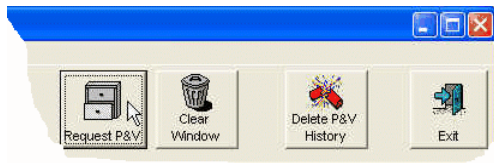
Plate 96. Clicking the Request P&V button will initiate a file download from the logs that are stored in the Advantage memory. The utility will open a message box asking if you want to merge the files. Click yes and the downloaded file will be appended to the end of the file that was opened from PC memory. The dates and times will be adjusted as if the log was from a continuous session.
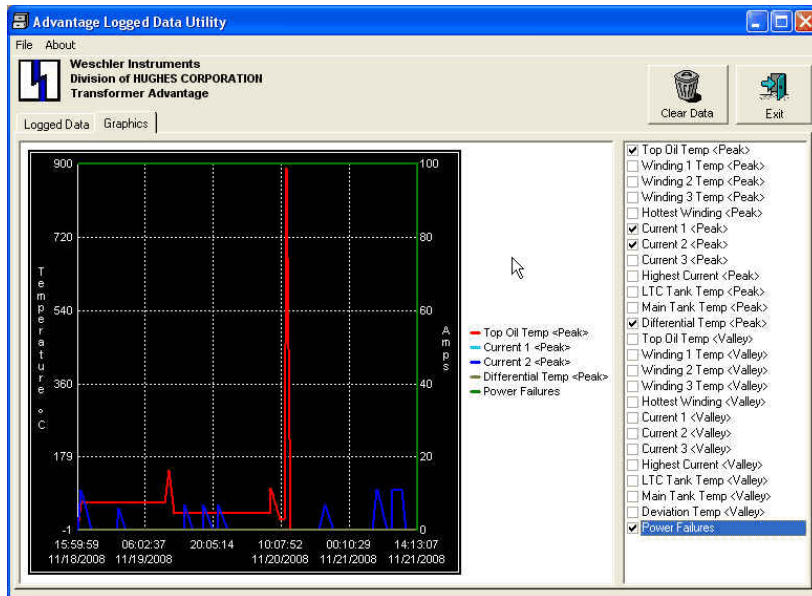
Plate 97. Once a log file has been downloaded or opened, the data can be graphically represented by clicking the Graphics tab above the window. Click in the checkbox next to any quantities that are to be plotted. The Clear button will clear the graphics screen **AND** the data.
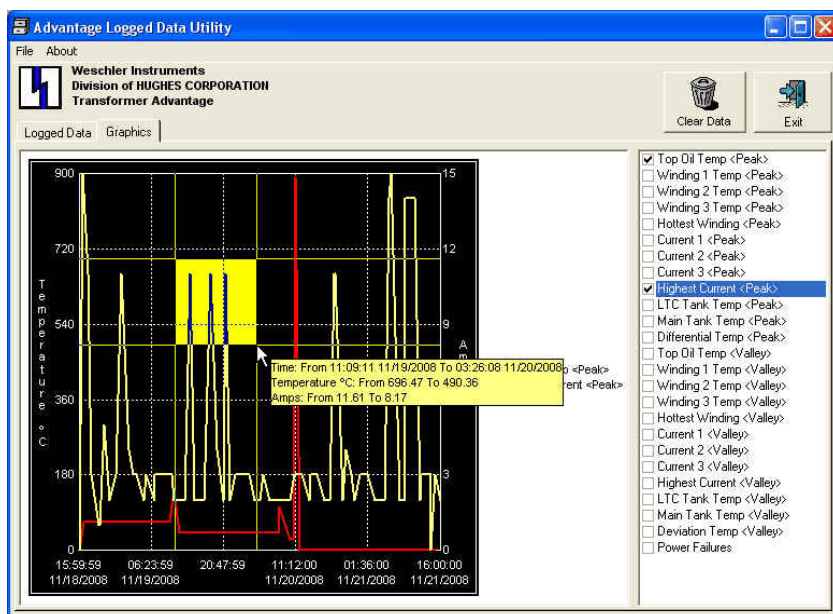
Plate 98. The graph can be zoomed by left-clicking and dragging the cursor across the area of interest to form a window.
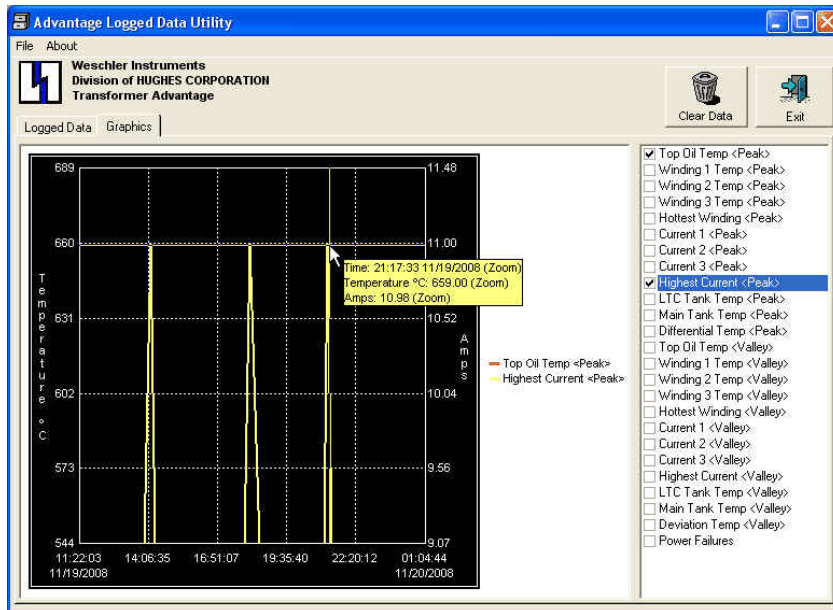
Plate 99. When the mouse button is released, the zoomed portion of the plot will expand to fill the window. The "hover help" data box shows the value of the signal and the time of occurrence when the cursor is held over the point of interest. To un-zoom, deselect, then reselect the signal's check box.

Open your favorite word processor program and browse to the peak and valley text file. You may use almost any word processor which is capable of displaying text files. If the file is fairly short, it may be opened in Notepad. The extension of the saved peak and valley files is "log", so when opening the file you should set your file type to "all files". The file below is an example of the portion of a peak and valley file which contains logging of 4 peak values for winding 1 current and 4 peak values for winding 2.

005,2007,10,12,08,00,00,10
005,2007,10,12,09,00,00,5
005,2007,10,12,10,00,00,4
005,2007,10,12,11,00,00,4
006,2007,10,11,13,25,42,10
006,2007,10,11,14,30,16,72
006,2007,10,11,16,00,00,72
006,2007,10,11,17,00,00,72

The data file is constructed in simple comma delimited ASCII with a carriage return at the end of each event record. Data items are separated by commas. This file configuration can also be loaded by popular spreadsheet programs such as Corel QuattroPro and Microsoft Excel.

The first data item in each event record is coded to indicate the type of event record. The codes are as follows:

0 = Thermal Channel 1 Peak Temperature
1 = Winding 1 Peak Temperature (CT series only)
2 = Winding 2 Peak Temperature (CT series with LCAM, with LCAM channel 2 configured for winding current input)
3 = Winding 3 Peak Temperature (CT series with LCAM, with LCAM channel 3 configured for winding current input)
4 = Highest Winding Peak Temp (CT series with LCAM, with more than 1 channel configured for winding current input)
5 = Current 1 Peak (CT series only)
6 = Current 2 Peak (CT series with LCAM, with LCAM channel 2 configured for winding current input)
7 = Current 3 Peak (CT series with LCAM, with LCAM channel 3 configured for winding current input)
8 = Highest Current Peak (CT series with LCAM, with more than 1 channel configured for winding current input)
9 = Thermal Channel 2 Peak Temperature (in LTC and CT/LTC models, LTC Tank Peak Temperature)
10 = Thermal Channel 3 Peak Temperature
11 = LTC Differential Temperature Peak

128 = Thermal Channel 1 Valley Temperature
129 = Winding 1 Valley Temperature (CT series only)
130 = Winding 2 Valley Temperature (CT series with LCAM, with LCAM channel 2 configured for winding current input)

131 = Winding 3 Valley Temperature (CT series with LCAM, with LCAM channel 3 configured for winding current input)
132 = Highest Winding Valley Temp (CT series with LCAM, with more than 1 channel configured for winding current input)
133 = Current 1 Valley (CT series only)
134 = Current 2 Valley (CT series with LCAM, with LCAM channel 2 configured for winding current input)
135 = Current 3 Valley (CT series with LCAM, with LCAM channel 3 configured for winding current input)
136 = Highest Current Valley (CT series with LCAM, with more than 1 channel configured for winding current input)
137 = Thermal Channel 2 Valley Temperature (in LTC and CT/LTC models, LTC Tank Valley Temperature
138 = Thermal Channel 3 Valley Temperature
139 = LTC Deviation Temperature (also known as LTC Differential Valley Temperature)
470 = State of power to the Advantage. Gives a time and date stamp to when power failed and was restored.

The split in coding between 11 and 128 allows for a future total of 128 peak and 128 valley categories.

The second, third and forth data items are the year, month and day that the event occurred.

The fifth, sixth and seventh data items are the hour (in 24 hour format), minute and second that the event occurred.

The eighth and last data item is the actual reading in decimal representation. Note that all thermal values are assumed to have one decimal place, thus the 950 in the data string below represents an actual measured value of 95.0 degrees C. Current values are transmitted directly, thus a value of 1000 in a code 5 data string would be an actual current peak value of 1000 amps.

004, 2007, 10, 02, 14, 23, 36, 950

As an example, the data string above indicates that a hottest winding temperature peak event occurred on October 2nd 2007at 14:23:36 hours and the peak temperature was 95.0 °C.

The code 470 (power state) data string is filled the same as the other data elements, but the value is fixed at 0 (zero) for a power fail and 100 when power is restored.

The AMTCMF0201 data logging utility performs a special data padding operation when the data is retrieved and sorted. The data logging is not performed at regular intervals, but rather is recorded at the time when a peak and valley occurred during each elapsed hour. If the value being logged remained constant throughout the hour, the value will be recorded at the last second of the hour. Because a peak or valley for any specific value may occur at any time, values for the other quantities being logged must be provided at the same instant of time in order for analysis and charting software to interpret the data properly. The AMTCMF software determines the approximate values of the other quantities by interpolating using the value on the time line that occurred immediately prior to and immediately after the value that achieved a peak or valley.

6.0 Physical Layer (Cabling Connections)

There are two ports available for hard wire connections. Port one uses an RJ-11 connector. Port one is primarily intended for connection of a portable or desk-top computer for on-site configuration of Advantage settings, monitoring of transformer conditions and flashing the firmware. The RJ-11 connectors with an appropriate six conductor extension cable and a RJ-11 to DB-9 (telecom cable to PC port) adaptor is used for this process. The six-pin RJ-12 must be used with a six conductor telecom cable and the adapter to provide 5 vdc DTR and CTS signals for some fiber-optic adaptor devices which are port-powered. The current drawn from this port must not exceed 25 madc, and it must be isolated from EMI / RFI sources.

Port two is connected through the terminal strip on the I/O module. See the terminal assignments diagrams in the owner's manuals for terminal numbers. This port does not provide a 5 vdc source for port-powered devices.

The ports are exclusive; meaning that they cannot communicate simultaneously. Port two is the default port, but if an RJ-11 connector with the adapter attached are plugged into port one, communications will automatically be switched to port one and port two will be disabled. When the RJ connector or the adapter are removed, communications will automatically be switched back to port two. In order for this switching to work properly, the connections diagramed in the Communications Port One Cabling figure 1 must be followed, when adapters are fabricated in the field. The adapter supplied by Weschler (part number 2100000101) is wired this way. The adapter is available as an assembly with a fourteen foot, six-wire telecon cable as part number 1000001701. Shorter cable lengths are available.

It is strongly recommended that only port one, or port two configured for RS-232 operation be used for firmware flashing. While port 2 has been successfully used in RS-485 mode using carefully controlled conditions, signal noise variables associated with long data lines and RS-232 to RS-485 converters can make reliable real-world firmware flashing a challenge.
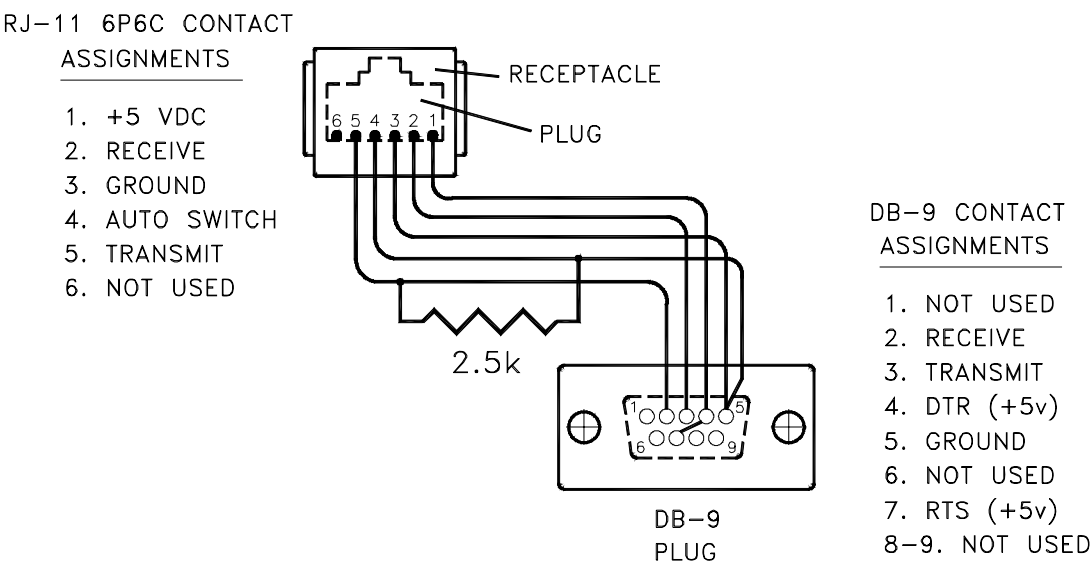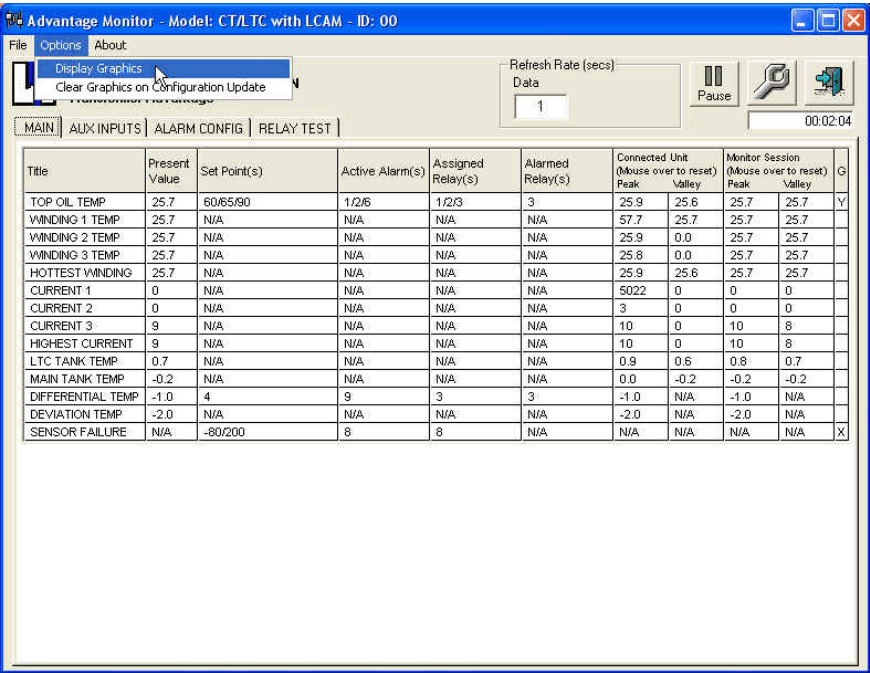

Figure 1 Port 1 Cabling

7.0 Miscellaneous Software Features

Monitor Module:

Viewing Monitor Module Data Graphically

The monitor module provides a graphing option that will present plots of selected measured or calculated values in real time. This is helpful when doing set up operations to visualize what the various signals are trending to.

Plate 100. With the monitor screen opened, click the "Options" drop-down then click the "Display Graphics" menu item to enable the graphics display. Select which signals to display by clicking in column G of the matrix, in the cell that corresponds to the signal that you would like to track. A "Y" will appear in the cell if the signal is being plotted on the graphic. Click the cell a second time to clear the signal
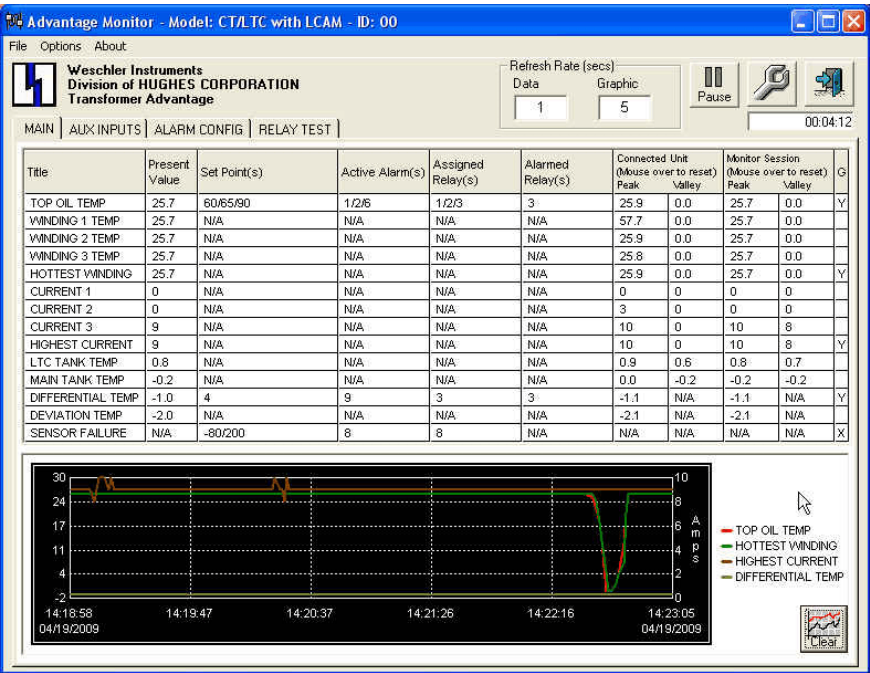
Plate 101. The plot of the graph appears at the bottom of the monitor main-screen. The graphic will only appear on the main window. An additional control box appears in the "Refresh Rate" frame. The "Graphic" value allows you to set the update rate for the graphical data from 5 to 30 seconds. If you place the cursor anywhere on the graphic plot a hover dialog will appear indicating the value of the signal and time of occurrence.
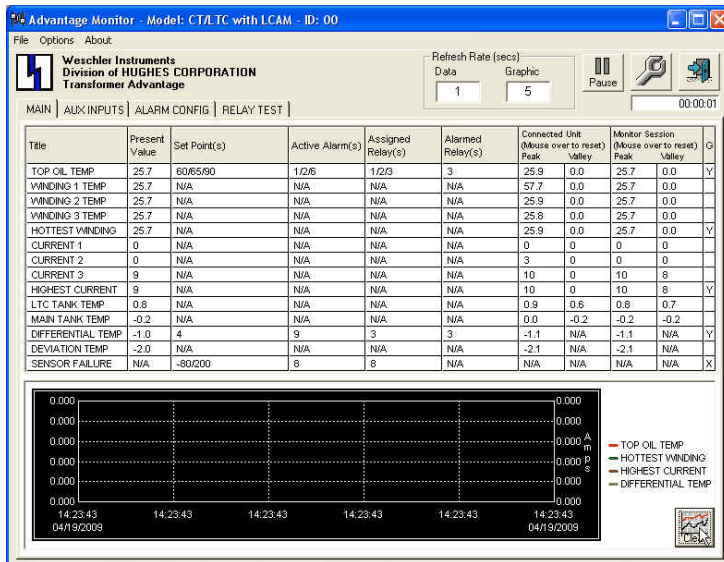
Plate 102. To clear the plot and restart at the present time, click the "clear" button at the lower right-hand corner of the screen.

| Title	Present Value	Set Point(s)	Active Alarm(s)	Assigned Relay(s)	Alarmed Relay(s)	Connected Unit (Mouse over to reset) Peak	Valley	Monitor Session (Mouse over to reset) Peak	Valley	G
TOP OIL TEMP	25.7	60/65/90	1/2/6	1/2/3	3	25.9	0.0	25.7	0.0	Y
WINDING 1 TEMP	25.7	N/A	N/A	N/A	N/A	57.7	0.0	25.7	0.0	
WINDING 2 TEMP	25.7	N/A	N/A	N/A	N/A	25.9	0.0	25.7	0.0	
WINDING 3 TEMP	25.7	N/A	N/A	N/A	N/A	25.8	0.0	25.7	0.0	
HOTTEST WINDING	25.7	N/A	N/A	N/A	N/A	25.9	0.0	25.7	0.0	Y
CURRENT 1	0	N/A	N/A	N/A	N/A	0	0	0	0	
CURRENT 2	0	N/A	N/A	N/A	N/A	3	0	0	0	
CURRENT 3	9	N/A	N/A	N/A	N/A	10	0	10	8	
HIGHEST CURRENT	9	N/A	N/A	N/A	N/A	10	0	10	8	Y
LTC TANK TEMP	0.8	N/A	N/A	N/A	N/A	0.9	0.6	0.8	0.7	
MAIN TANK TEMP	-0.2	N/A	N/A	N/A	N/A	0.0	-0.2	-0.2	-0.2	
DIFFERENTIAL TEMP	-1.0	4	9	3	3	-1.1	-1.1	-1.1	N/A	Y
DEVIATION TEMP	-2.0	N/A	N/A	N/A	N/A	-2.1	N/A	-2.1	N/A	
SENSOR FAILURE	N/A	-80/200	8	8	N/A	N/A	N/A	N/A	N/A	X

Plate 103. If you double-click anywhere on the small graph, the plot will grow to fill the entire main monitor screen. The cursor hover dialog works on this window also.
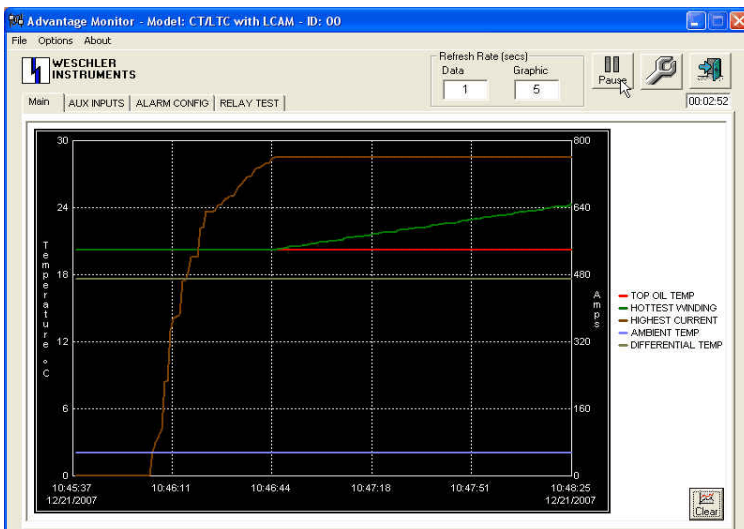

Plate 104. The "Pause" button stops the software from polling the Advantage for data. When you click the Pause button it changes context to a "Poll" button, which restarts polling for data when it is clicked. When polling is restarted, a trace is drawn from the data point that was plotted when the Pause button was clicked, to the present value. Intermediate values are not captured when polling is paused. To restore the normal monitor screen, double click anywhere on the graphic plot.
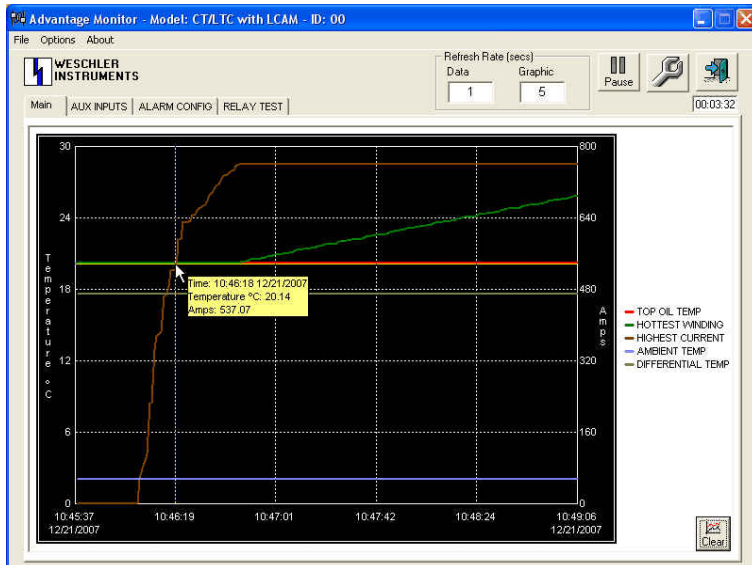
Plate 105. The hover dialog works on the larger graphic, but here are times when signals overlap and it can be hard to pick out an individual signal. There is a plot expansion tool for this situation.
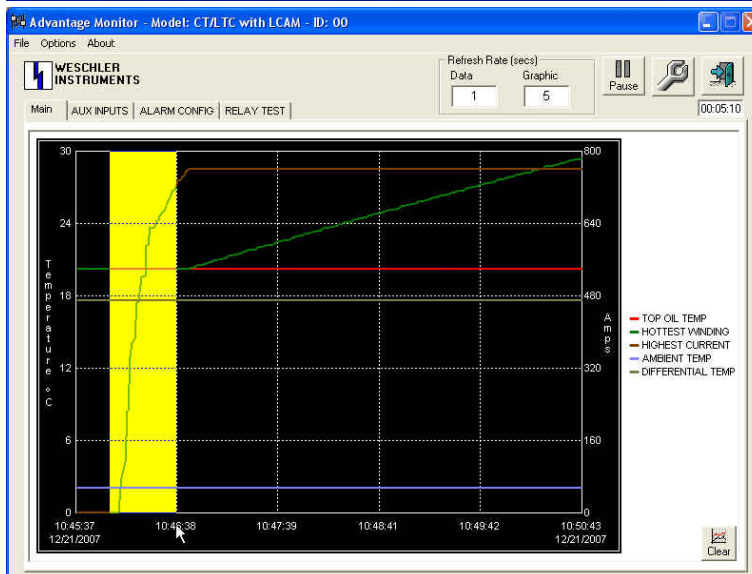

Plate 106. Place the cursor below and to the immediate left of the beginning of the area that you want to expand. The cursor must be in the border area between the X axis scale line and the bottom edge of the graphic. Left click and drag the yellow bar across the area that you want to expand, then release the left button.
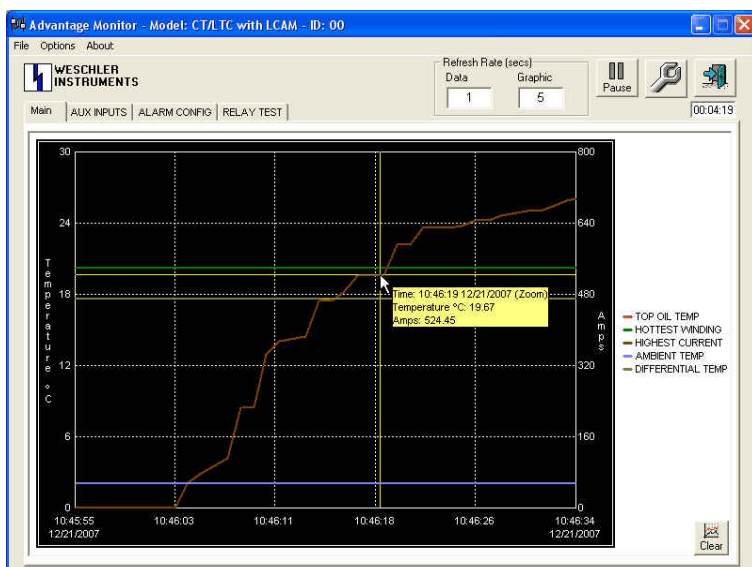

Plate 107. The area that was highlighted will now expand to fill the width of the graphic. It is much easier to pick a trace in this way. Be advised that while you are in this expanded mode, the traces will not continue to be drawn, otherwise the pattern you are looking at would rapidly disappear off of the left side of the graphic, as new traces are drawn from the right. Note that the hover dialog indicates that the time (X) axis is in the expanded (zoomed) mode.
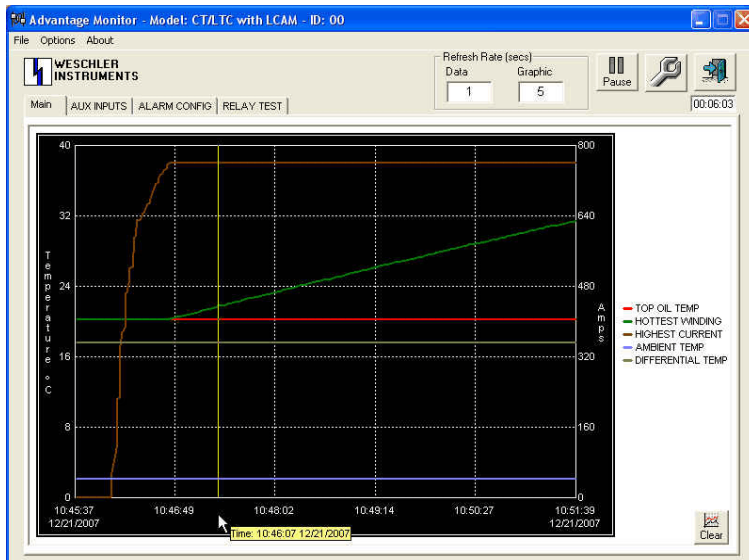
Plate 108. To resume the normal (unexpanded) graphic, right click anywhere in the bottom border area where the cursor is shown. Activity that occurred while you were in expanded mode will be drawn in as if you never left normal mode, assuming you were not in the expanded mode for more time than is represented by the full width of the graphic.
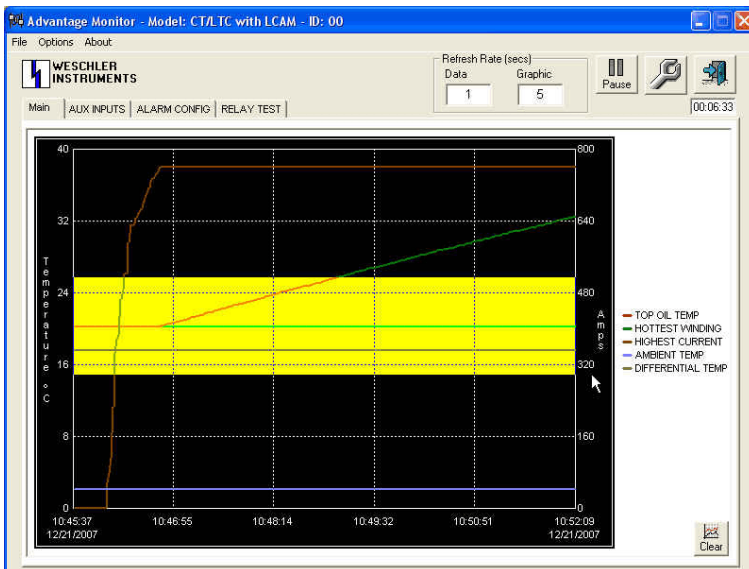
Plate 109. The pattern can be expanded in the vertical direction as well. Place the cursor in the right border area, left click and drag the yellow bar from just above the trace area of interest to just below the trace area of interest, then release the mouse button.
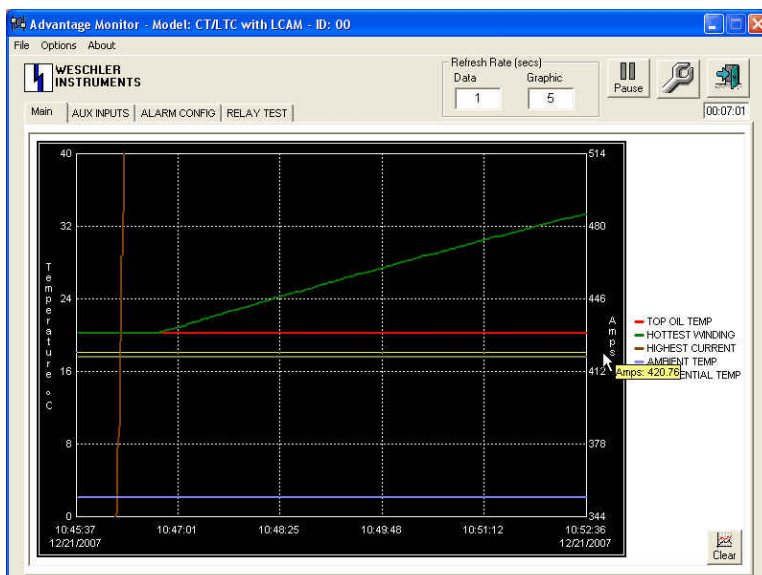
Plate 110. The area that you selected with the yellow bar will be expanded to the full height of the graphic. Unlike the X axis expansion, the traces will continue to be drawn from the right, at the Y axis expansion magnitude you have created. Right click in the right side border area to resume normal, unexpanded mode.

Configuration Module:

Adding Notes to Stored Configuration Files

Notes can be added to configuration files that will appear near the top of the first page in the configuration screen and will print in the same position on hard copy. The notes will be stored along with configuration. In this way users will be able to store applications information such as the transformer to which the configuration belongs or a unique serial number or the person who composed the configuration, etc. The notes are limited to a single line (256 characters) of text.
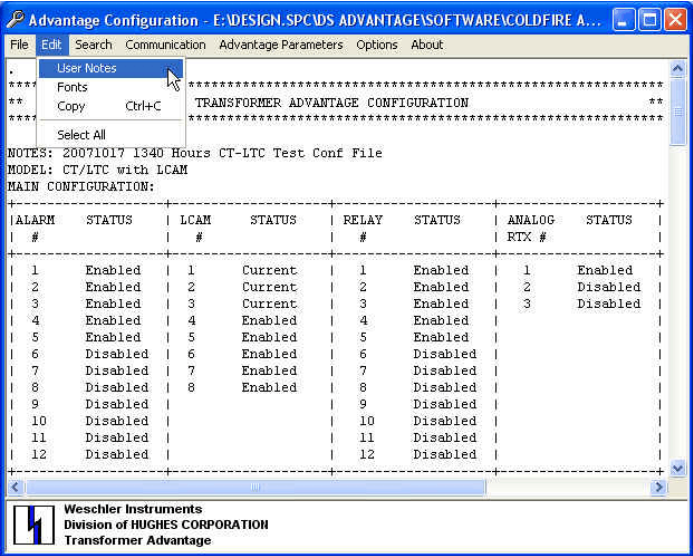

Plate 111. Open the configuration screen and click the "Edit" drop-down then the "User Notes" menu item.
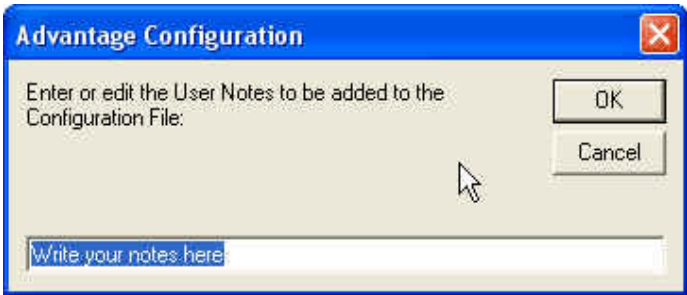

Plate 112. A text box will open which allows you to enter the desired text.
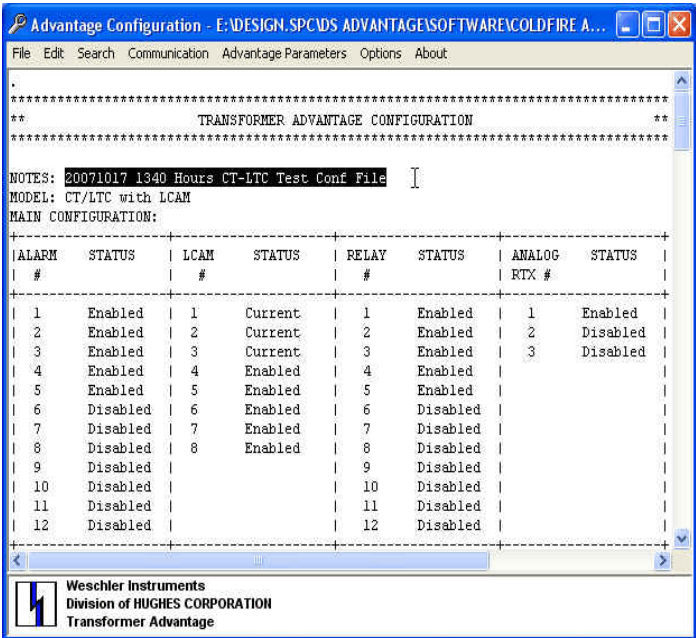

Plate 113. When the text box is closed your note will appear as a line of text as shown in the figure. The text will wrap to the next line for each 64 characters entered. The note is highlighted here for emphasis only.

Logged Data Utility Module:

Viewing Peak and Valley Data Graphically

The utility module can display the peak and valley data graphically in addition to its sorting, storing and retrieval functions. Using this feature it is easy to identify periods when activity is of particular interest and zoom in to get a more detailed look at the trends that the data represents. The graphing feature can use data that has just been downloaded or it can use log files that were previously downloaded and stored for future review.

This feature will only work with log files that were generated by the software and firmware for which this manual was written. See the cover page for the software and firmware versions covered by this manual.
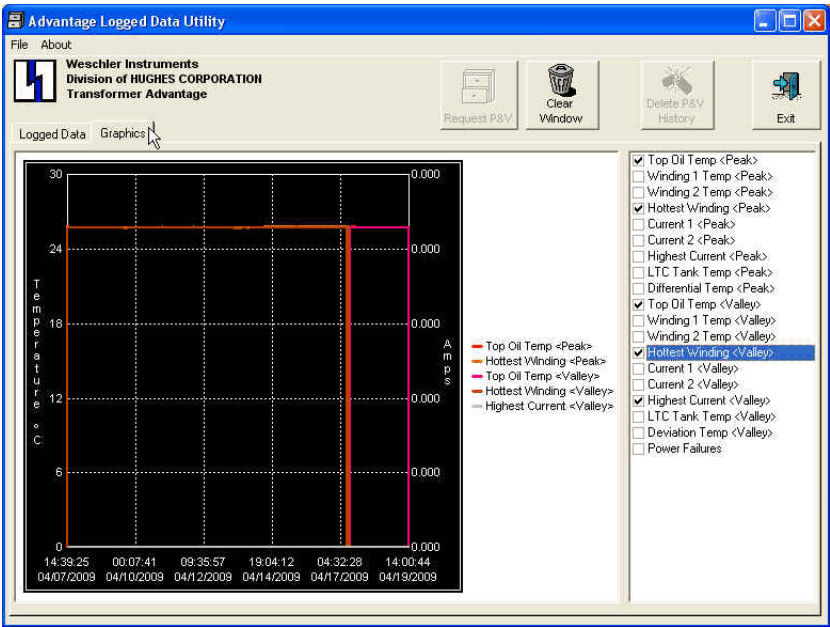

Plate 114. If a data file has just been downloaded, click on the Graphics tab to display a blank graph. Click in the check boxes in the right-hand pane to select which quantities are to be plotted. As each quantity is selected, it is added to the tabulation to the right of the plot area along with the assigned trace color.
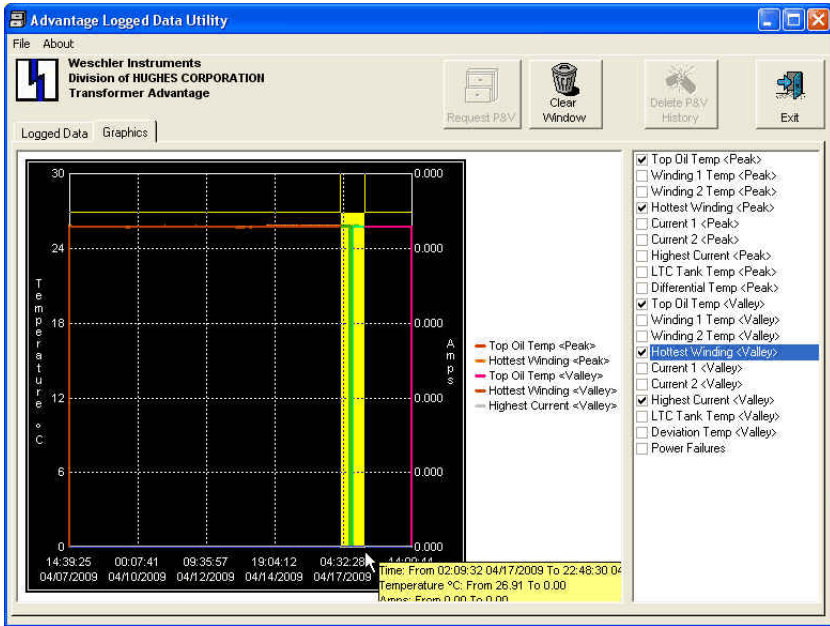
Plate 115. Like the monitor module's graphing feature, the X and Y axes can be expanded (zoomed) to view the signal data in more detail. Simply click and drag the cursor in the area below the X axis or to the right of the Y axis to highlight the area of interest. The highlighted area will expand to fill the whole width of the plot area.
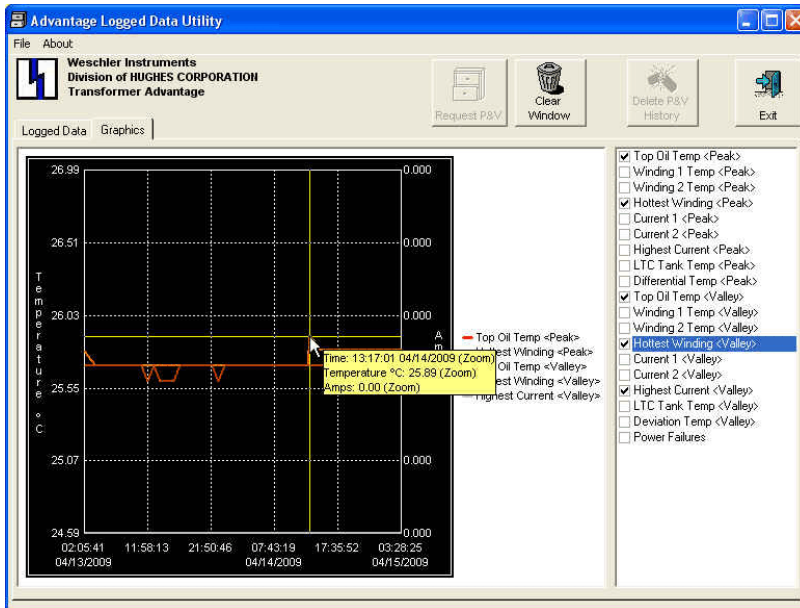
Plate 116. The hover-help can then be used to pick off the values at any point on a trace by simply pointing to the point with the cursor. To un-zoom the plot, right-click in the margin area below the X axis or to the right of the Y axis.
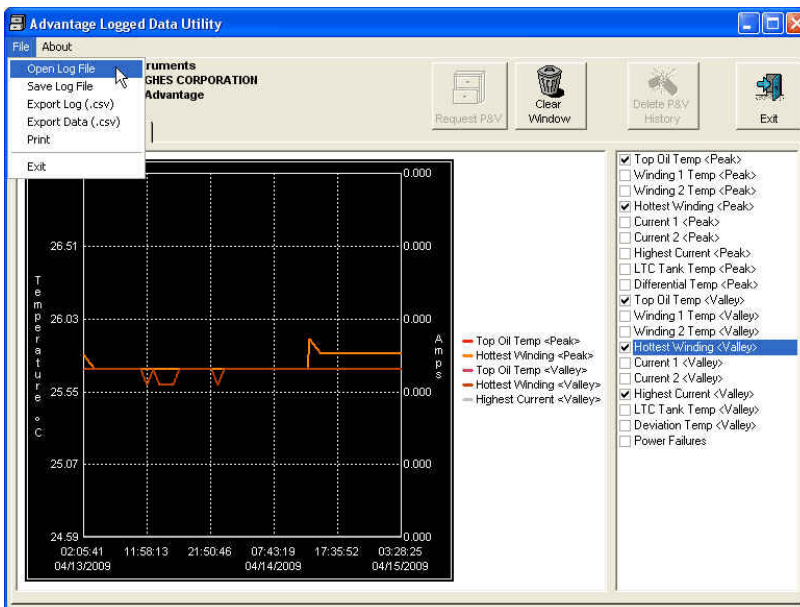
Plate 117. To view a stored log file, click on the File menu then the Open Log File menu item. A standard windows navigation dialog box will open allowing you to find and select the appropriate file. This feature will not work with log files created with earlier versions of software. If an earlier file is opened, a File Format Error warn box will pop up.