



Thermal Advantage™



Getting Started Guide

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Using This Guide

This guide provides detailed information on installing the TA Instruments *Thermal Advantage* software and basic operational instructions.

The following information is presented:

- system requirements
- about *Thermal Advantage*
- loading instrument software
- using programs on Windows® NT
- basic information on using *Thermal Advantage* Instrument Control
- general information on how to use *Thermal Advantage* Universal Analysis.

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Notes, Cautions, and Warnings

The following conventions are used throughout this guide to point out items of importance to you as you read through the instructions.

A **NOTE** highlights important information about equipment or procedures.



A **CAUTION** emphasizes a procedure that may damage equipment or cause loss of data if not followed correctly.



A **WARNING** indicates a procedure that may be hazardous to the operator or to the environment if not followed correctly.

Chapter 1

Installing Thermal Advantage

Welcome

Thank you for purchasing TA Instruments *Thermal Advantage*. *Thermal Advantage* makes it easy for you to set up and control the various thermal analysis instruments that are available from TA Instruments through the use of familiar tool bars, menus, and windows.

A unique and comprehensive data analysis program enables analysis of data from any TA thermal instrument.

If you need help or information while using your *Thermal Advantage* software, context-sensitive help is available, as well as a comprehensive online manual.

System Requirements

Installation and use of TA Instruments *Thermal Advantage* depends on the appropriate hardware, configurations, and software. If you need to obtain any of the items listed below, contact your TA Instruments representative.

Hardware and Other Software

You will need to have the following:

- A personal computer that runs Windows® NT Version 4.0 or higher. (Service Pak 4 or higher for Windows NT® V4.0 is required.)
- 90 to 100 MB of fixed disk space above that required by NT. An additional 640 MB of fixed space is needed to install the optional instructional videos.
- A two-button mouse or other pointing device.
- A National Instruments GPIB board (PCI, PCMCIA, or AT-GPIB, or ISA card) and driver software, if you will be running the instrument controller component of *Thermal Advantage*.
- *Thermal Advantage* system and /or remote key.

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Starting Windows NT®

Logging on is the process used to identify yourself to the computer by entering your name and password. This will identify you as an authorized user and helps maintain security.

To log on to Windows NT, press CTRL + ALT + DELETE when you see the **Begin Logon** dialog box.

When you receive your controller from TA Instruments, the user name on the **Logon Information** window will be “Administrator” with no password. You can establish or change the user accounts by accessing **Programs\Admin Tools\User Manager** menu from the **Start** menu.

Loading the Instrument Software

To properly configure the instruments with the controller, you will need to load new instrument software now and periodically thereafter, as new updates are received. Use the SCROLL key on the instrument keypad, if available, to access and view the software version currently loaded in your instrument. Check this against the latest version. If you need to update the software, follow these directions:

NOTE: Instruments that do not have the proper version of the software will not configure with the controller.



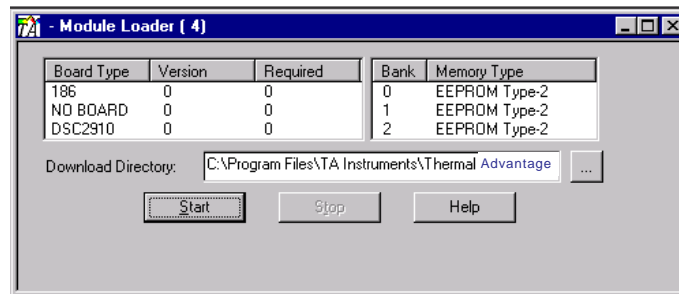
CAUTION: This procedure will return the instruments to their default settings (for Experimental and Instrument Parameters). The method(s) stored in the instrument will be lost, along with the following calibration parameters:

- Temperature Calibration Table* (exception: DSC 2920)
- Cell Calibration* for DSC 2910/2010 and TMA 2940
- Tare for TGA 2950/2050 and SDT 2960
- DTA Baseline Calibration* for SDT 2960
- Probe Calibration for TMA 2940
- Clamp Calibration for DMA 2970
- Sensor Calibration* for DEA 2970

* You can preserve these calibrations by writing them down before downloading the new instrument software, then reentering the values.

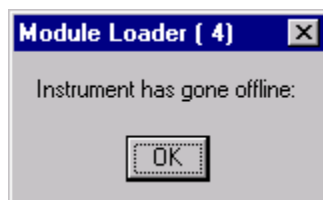
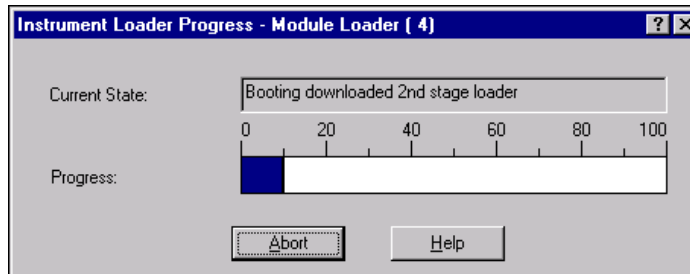
1. Check that the instruments are connected to the controller properly, and that their POWER switches are turned on.
2. Press and hold the STOP key on the instrument keypad while you press the instrument Reset button or turn the instrument on. (See the instrument operator's manual for their location.)

3. Continue holding the STOP key until the instrument display reads “Module loader Vx.x” or the Ready light comes on. The instrument will go offline with the controller, if it was previously online.
4. Start the Instrument Control program. (If the Instrument Control window is already open, select **Instruments/Reconfigure**.) The system will automatically display a window such as the one shown here (it may differ depending upon the instrument).



NOTE: The default directory is Program Files\TA Instruments\Thermal Advantage\ldr. If you are installing Modulated TGA software, access the MTGA subdirectory located in the ldr directory.

5. Select **Start**. Downloading of the instrument software will begin as a window is displayed tracking the progress (shown here).



When the downloading has been completed, the instrument will go offline and a message will appear as seen in the figure here.

6. Select **OK** to clear the message.
7. Repeat steps 1 through 6 for each instrument and then reconfigure the instruments online with the controller. (See Chapter 3 or the online documentation to reconfigure the instruments with the controller.)

NOTE: It is normal to see an Error 15 on the instrument after new instrument software has been loaded. Press the STOP key on the instrument keypad to clear the error.

Chapter 2

Thermal Advantage and Windows NT®

Basic Windows NT Program Operation

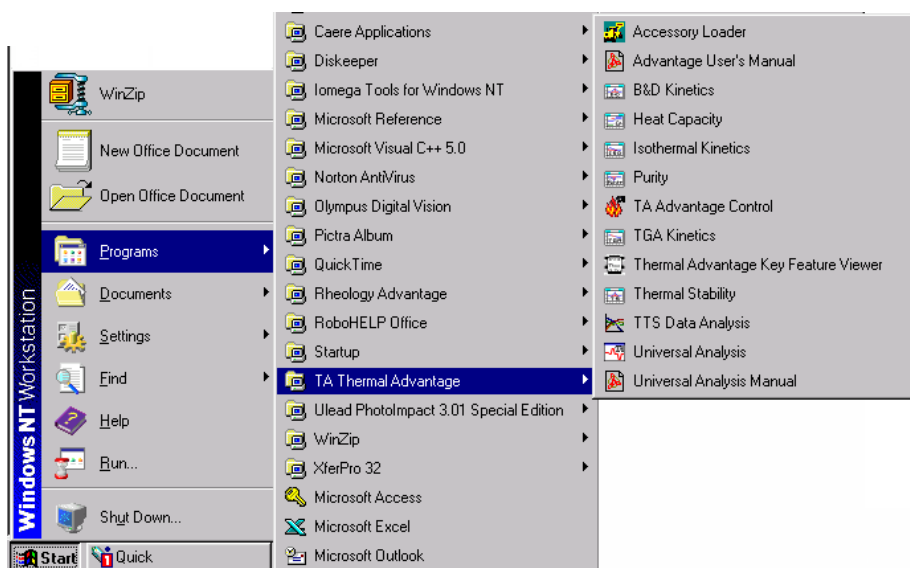
The TA Instruments *Thermal Advantage* software operates on a Windows NT operating system. For this reason we will briefly discuss some of the more common operations that you will be using during program operation. For more details refer to the literature and online information accompanying the operating system.

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Opening the Thermal Advantage Programs

The *Thermal Advantage* programs are opened and closed the same way any other NT program is handled.

To open a program, use the **Start/Programs/TA Thermal Advantage** menu or establish a program shortcut as instructed in the Windows NT® literature.

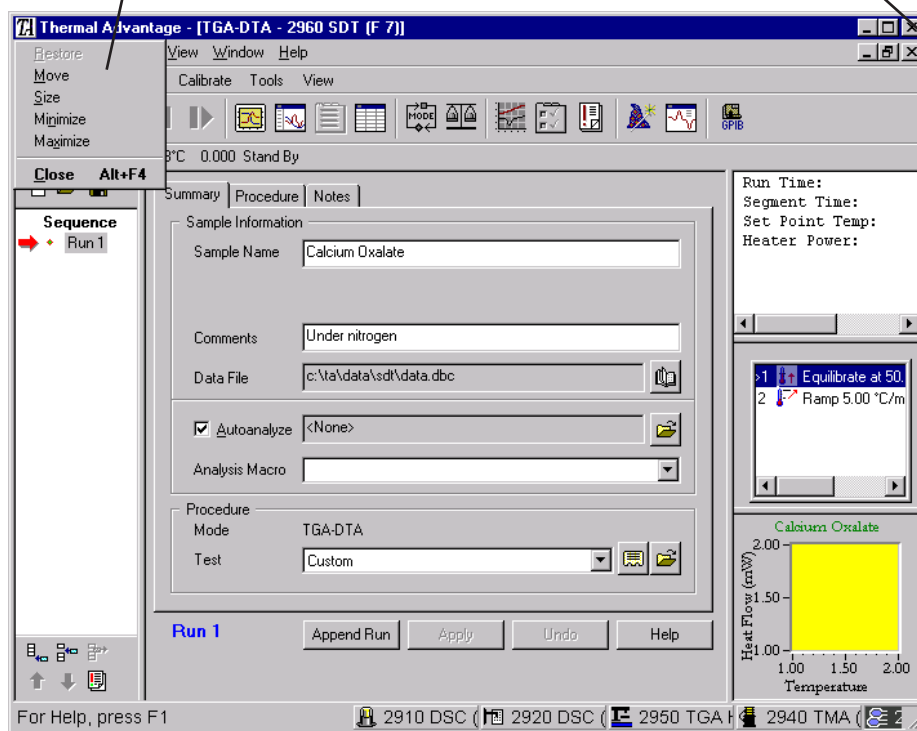


Closing a Thermal Advantage Program

To close a *Thermal Advantage* program, click on the close (X) button in the upper-right corner of the main window or select **Close** from the drop-down menu (displayed when you click on the program icon button in the upper-left corner of the main window). See the figure below.

Drop-down Menu

Close Button



Switching Between Thermal Advantage Programs

To switch between Instrument Control and Universal Analysis, click on the taskbar button representing the program that you want to use.

If you are running one of the DOS data analysis programs, use Ctrl-Esc to return to the desktop or Ctrl-Tab to switch programs.

NOTE: To get more detailed information regarding these procedures, see the Windows NT® literature.

Locating Advantage Files

When you start to use the *Thermal Advantage* programs, you will need to use specific directories or folders to store and retrieve your procedure, data, sequence and method files. To locate these files, follow the instructions found in the Windows NT literature. You can locate files using the My Computer icon on the desktop. The TA Instruments data files are stored in the TA\DATA\[Instrument] directory, unless you have changed this setting using the **Tools/User Preferences** properties.

Using Pop-up Menus

Throughout the *Thermal Advantage* program there are several pop-up menus that can be used to edit fields and perform various functions. To display pop-up menus:

1. Position the pointer on the field or in an empty area of the window.
2. Click the right mouse button.

NOTE: The contents of a pop-up menu can change depending on the window, location of the pointer in the window, or the current state of the window.

Arrows to the right of a menu choice (as shown here) indicate that there are additional menu choices available. A series of dots after the menu name indicates that selecting this menu item opens a window.



Chapter 3

Getting Started with Instrument Control

Overview

Before you begin this section, we recommend that you familiarize yourself with the basic operation of the Windows NT® system. Refer to Chapter 2 of this guide for a few general tips to get you started.

This chapter provides you with a brief explanation of Instrument Control and general guidelines for setting up an experiment. For further details refer to the online manual that accompanies the *Thermal Advantage* software (accessed by selecting **Help/Manual**).

Instrument Control Basics

Instrument Control allows you to control and set up the instruments that you have connected online to the controller.

Before starting Instrument Control, check that the instruments are connected to the controller and their POWER and HEATER switches are turned on. For further details regarding the connection and operation of the instrument refer to the appropriate instrument operator's manual.

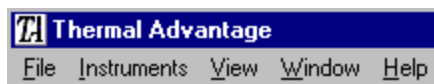
To start Instrument Control, select **Start/Programs/TA Thermal Advantage/TA Advantage Control** or double click on the program shortcut (if available). The following steps occur:

- The program first checks to see that you have properly installed the *Thermal Advantage* key (see Chapter 1 for details).
- The Controller window appears and automatically configures any instruments that are online with the controller. When instrument windows are displayed, the Controller window appears as a background window with a menu across the top. See page 3-5 for an illustration.
- The Instrument Control window(s) for any instruments online with the controller are displayed within the main Controller window. Each instrument window title bar identifies that instrument type as well as the GPIB address. If no Instrument Control windows appear, follow the directions on page 3-3 to reconfigure your instruments.

This chapter gives you basic information on each of these windows.

Main Controller Window

The **Controller** menu, displayed at the top of the Controller window, is used for overall control of the instruments online. You can configure instruments online, see an overview of the instrument status, switch between the instrument windows, and close the program.



If your instrument windows are not automatically opened with the Controller window, follow the instructions below to bring them online.

Bringing Instruments Online

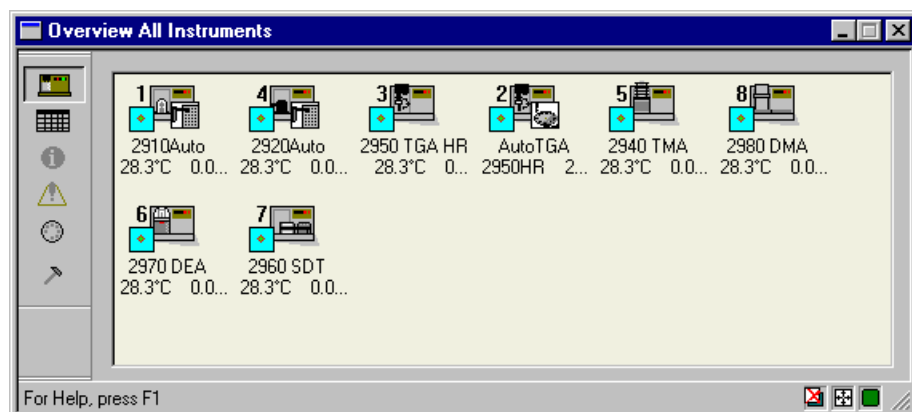
Select **Instruments/Reconfigure** from the **Controller** menu. All of the instruments that are powered up and connected to the controller will be reconfigured and brought online. (Each instrument online must have a unique GPIB address between 1 and 9.) The **Reconfigure** function is also used to bring an instrument online in the Loader Mode to install new instrument software.

NOTE: Instruments that do not have the proper level of instrument software may not come online. You need to install new software for those instruments. Refer to Chapter 1 for software installation instructions.

NOTE: DSC Autosampler Configuration Only: If you are configuring a DSC Autosampler, a GPIB buffer cable is required. Contact your service representative to obtain this buffer cable (only one cable is required per applicable controller).

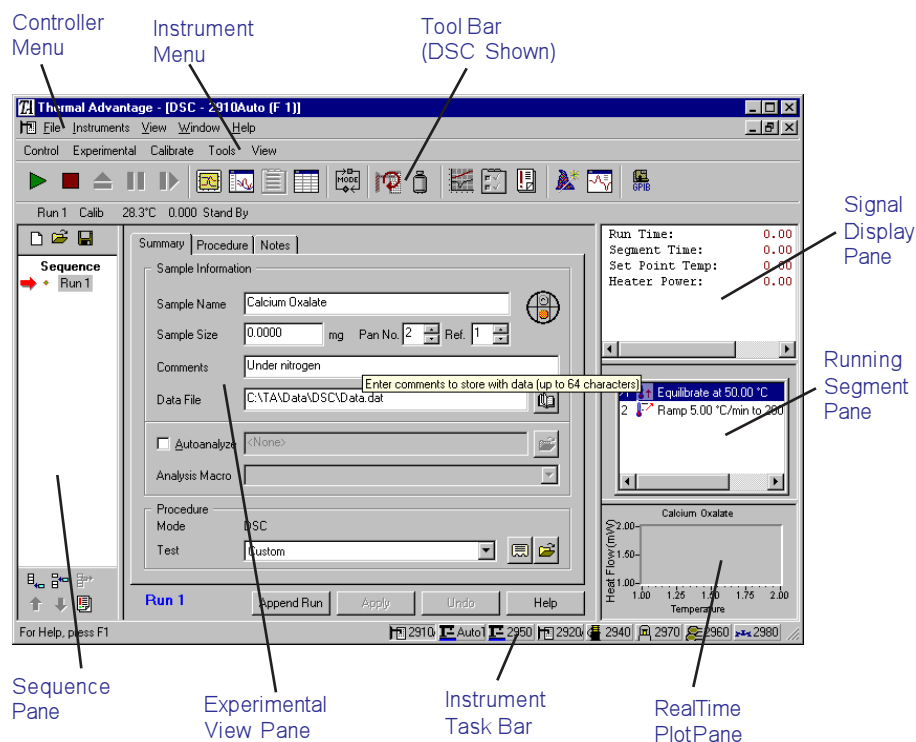
Observing Instrument Information

You can configure from one to eight instruments online with the controller at one time. To view the status of all instruments that are online, select **Instruments/Overview All Instruments** from the **Controller** menu to display the **Overview All Instruments** window. This window provides several viewing options. See the online documentation for further details.



Instrument Window

Once you have configured your instruments online with the controller, you should see a display that is similar to the one shown here. This figure shows the parts of the window (DSC is the example shown), which will be explained briefly in this section.



Instrument windows are basically divided into 3 sections:

- The left pane displays the sequence (or run) list.
- The middle pane is used to display either the Experimental, Table, or RealTime Plot views.
- The right side panes contain the signal display information and the running method information. The lower right pane shows a thumbnail view of the realtime plot information when either Experimental or Table View is displayed.

Switching Between Instrument Windows

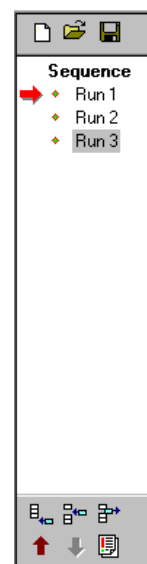
There may be one or more Instrument windows displayed within the Controller window at one time. The window title bar identifies the instrument type. To switch between windows you can just click on the desired window, if visible, or use the **Windows** menu. In addition, an instrument task bar is displayed at the bottom of controller window to facilitate quick switching between the instrument windows. Positioning the mouse pointer over one of the instrument icon displayed in the task bar will show the complete instrument identification (mode, instrument model, and GPIB address). Clicking on the current instrument window (*e.g.*, indented icon) will minimize that instrument window.

Functions of the Panes

Each window pane allows you to perform certain functions while keeping other operations in view. The basic function of each pane is described as follows:

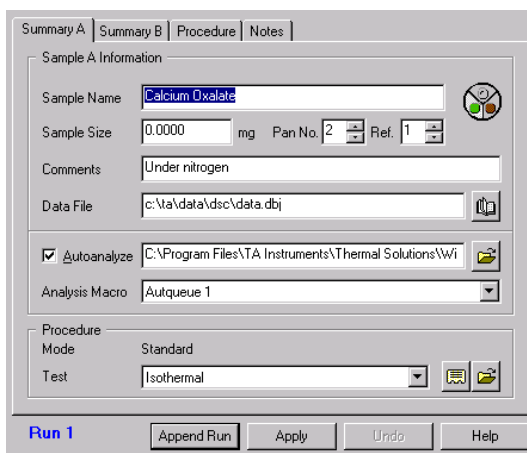
Sequence Pane

The **Sequence Pane** (available in multi-run mode only) displays the list of runs that are contained in the current sequence. Up to ten runs may be preprogrammed (up to 65 for autosampler instruments). The run with the arrow next to it is the scheduled run, the run that will execute when Start is selected. Buttons are available in this pane to add and delete runs in the sequence.



Experimental View Pane

The **Experimental View Pane** contains the complete sample and procedure information for each run contained in the



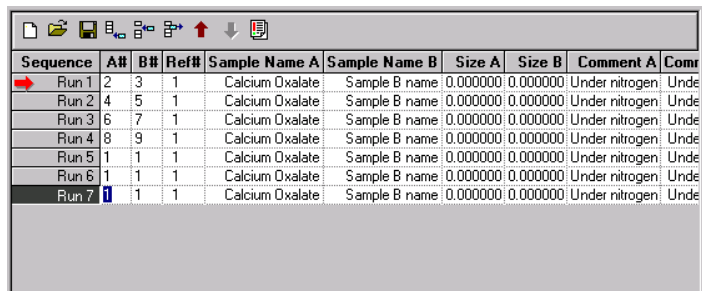
sequence. The information that is currently displayed is applicable to the selected (*i.e.*, highlighted) run number on the **Sequence Pane**. Use this view as the primary view to set up experiments (**Experimental View—Summary Page** shown here). See “Programming the Experiment” on page 3-14 for information on setting up each page of the **Experimental View Pane**.

Table View Pane

The **Table View** provides an alternative to the **Experimental View** for setting up and editing sample information for a sequence of runs. Use this view to change key sample information for each run in a spreadsheet format, except for the instrument mode.

The best way to use this view is to completely set up one run using the **Experimental View**. Then

you can use the same procedure on other samples by simply changing the sample information. The specifics of the selected procedure cannot be changed in this view (switch to **Experimental View** to change the procedure).



Sequence	Att	B#	Ref#	Sample Name A	Sample Name B	Size A	Size B	Comment A	Comr
Run 1	2	3	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde
Run 2	4	5	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde
Run 3	6	7	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde
Run 4	8	9	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde
Run 5	1	1	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde
Run 6	1	1	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde
Run 7	1	1	1	Calcium Oxalate	Sample B name	0.000000	0.000000	Under nitrogen	Unde

Signal Display Pane

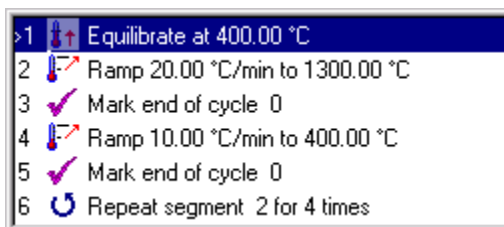
Run Time:	0.00	min
Segment Time:	0.00	min
Set Point Temp:	0.00	°C
Heater Power:	0.00	watts

If you want to view the instrument's output signals, use the **Signal Display Pane**. See the help system for an explanation of these signals.

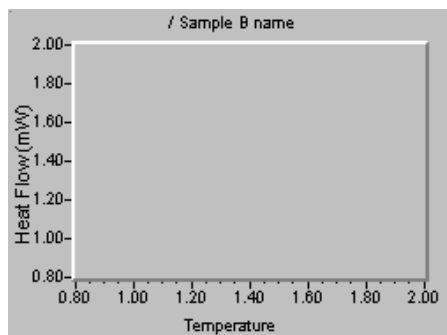
Running Segment Pane

When a run is in progress, you can see which method segment the instrument is processing in the procedure by viewing the **Running Segment Pane**. To modify the running procedure, right click inside this pane to open a pop-up menu and click on

Modify Running Method or **Go To Next Segment**. For more information on this function, consult the online documentation.



RealTime Plot Pane











To watch the data points as they are collected from the instrument during a run, look at the **RealTime Plot Pane**. You can customize the way the plot is displayed by changing the axis signals, colors and fonts used. Right-click inside the **RealTime Plot Pane** to display the menu available for these functions.










NOTE: You can resize all of these panes just like you resize windows, by pulling the sides or corners using the double-headed arrows. When you close the *Advantage* program, the views and pane sizes are automatically saved for future recall.

Tool Bar & Instrument Menu






The tool bar provides access to all of the basic controls and windows necessary to run an experiment. Each instrument contains an instrument-specific menu and tool bar to control and set up experiments. The table below summarizes each of the items contained on the tool bar. You can also access these items and others through the instrument menu.

Button	Function
	Start: Use Start to begin an experiment. Start executes the first step in the scheduled run.
	Stop: Use Stop to halt an experiment and save the data. Selected Post Test functions will activate after this action.
	Reject: Use Reject on the Control menu to halt an experiment and discard the data.
	Hold: Use Hold to suspend an experiment, maintaining the current temperature conditions, until you resume or stop the method.
	Resume: Use Resume to continue the method that was put on hold, continuing with the suspended segment.
	RealTime Plot Full Screen View: Use this button to display the RealTime Plot window in full screen view.
	RealTime Plot Pane View: Use this button to display the RealTime Plot window in the middle pane along with the Sequence Pane, Signal Display Pane, and Running Segment Pane.
	Experimental Pane View: Use this button to display the Experimental Pane along with the Sequence Pane, Signal Display Pane, Running Segment Pane, and a small (thumbnail) view of RealTime Plot.

(table continued)




Button	Function
	Table Pane View: Use this button to display the Table View Pane along the Signal Display Pane, Running Segment Pane, and a small (thumbnail) view of RealTime Plot.
	Mode Parameters: Use this button to open the Mode Parameters window.
	DSC Autosampler Reset: Use this button to reset the DSC Autosampler.
	LNCA/GCA Fill (DSC, DMA, and DEA only): Use this button to have the appropriate cooling accessory automatically refilled from a low-pressure bulk storage tank while an experiment is not active.
	Calibration Analysis (DSC, SDT, TMA only): Use this button to access the analysis functions used to analyze calibration files.
	TGA/SDT Tare: Use this button to automatically tare the instrument.
	TGA Weight Calibration: Use this button to begin the weight calibration procedure.
	TMA Probe Calibration: Use this button to begin calibrating a TMA probe.
	DMA Clamp Calibration: Use this button to begin calibrating a DMA clamp.

(table continued)

Button	Function
	DEA Electronic Calibration: Use this button to calibrate the DEA electronics.
	User Preferences: Use this button to open the User Preferences window.
	Error Log: Use this button to open the Error Log window.
	Wizard: Use this button to start the Wizard.
	Universal Analysis: Use this button to open or recall the Universal Analysis program.

Basic Experimental Steps

The following steps are a guide for conducting a typical thermal analysis experiment. Once you are comfortable with the basic experimental setup, consult the *Thermal Advantage* online help for details on the full utilization of the program. This guide only presents basic information to get you started.

1. Select the desired instrument for your experiment (if you are running a multi-instrument system). To do this, use the **Window** menu found on the **Controller** menu or the click on the desired button on the instrument task bar.
2. Select the instrument mode using the **Experimental/Mode** menu or click the  button on the tool bar.
3. Select the desired technique to set up your experiment—click the  button to access the **Experimental View** or click the  button to start the **Wizard** functions.
4. Set up all the sample and procedure information through the **Experimental View**. See “Programming the Experiment” on the next page for more detailed information.
5. Prepare the instrument (*i.e.*, load pans or cups, tare the instrument, etc.)
6. Schedule the run.
7. Start the experiment by selecting **Control/Start** or click the Start button on the tool bar.
8. Monitor the real-time signals, plot, and method progress.

Programming the Experiment

To set up your experiment, access the **Experimental View** by selecting



from the tool bar or by selecting **View/Experimental** from the appropriate instrument menu. The **Summary Page** (Dual Sample DSC shown here) is displayed.

The screenshot shows a software window titled "Summary A | Summary B | Procedure | Notes". The "Summary A" tab is active. It contains the following fields and controls:

- Sample A Information**
 - Sample Name:
 - Sample Size: mg
 - Pan No.: Ref.:
 - Comments:
 - Data File:
- ☒ **Autoanalyze**:
- Analysis Macro:
- Procedure**
 - Mode:
 - Test:

At the bottom, there are four buttons: **Run 1**, **Append Run**, **Apply**, **Undo**, and **Help**.

You need to check and update the **Summary**, **Procedure**, and **Notes** pages with the correct information prior to starting each experiment. Once this information is correct, click on either the **Apply** button to save these changes or the **Append Run** button to save these changes and add another run to the end of the sequence.

For more details on how to use the three **Experimental View** pages, turn to the next three sections.

Using the Summary Page

The **Summary Page** (shown on the previous page) is used to enter the basic information needed to create a run. You can set up the sample name, size (if applicable), pan number (if applicable), and data file; enter comments about the run; turn on the Autoanalyze feature; and choose the test to be used.

To use the **Summary Page**, follow these directions:



1. Before setting up your experiment verify that the mode displayed is the one you want the instrument to use. If the mode is not correct, select

Experimental/Mode from the instrument menu or click the



button on the tool bar. Then you can select the mode you want to use.

2. Enter the Sample Name.
3. Enter the Sample Size, if applicable to your instrument.
4. *Autosampler instruments only:* Specify the Pan No.(s).
5. Enter any Comments.
6. Enter a data filename by clicking on the Browse button to the right of Data File, then select the desired storage location and enter in a filename. Click OK when finished.
7. If you want to automatically analyze the resulting data file using a macro (created with the Universal Analysis Autoanalysis software option), check the Autoanalyze box. Then locate the desired macro filename using the Browse button. Click on the Analysis Macro list and select a macro from those displayed. For more information on Autoanalysis, see the Universal Analysis online help or manual.
8. *DMA instruments only:* Select the clamp to be used from the drop-down list of available clamps. (If you change clamps you will be prompted to perform clamp calibration.)
9. *DMA instruments only:* Select the sample shape from the list and enter the sample's dimensions in the specified units.

10. Select the type of test you want to use from the drop-down Test list available. The list contains both preprogrammed tests (test templates) and a custom test. The option you choose will depend on the specific method you wish to perform.
11. Check the available template options to see if any of those meet your needs. You can view a summary of the chosen procedure by selecting the  button. If you want to use your own procedure, rather than a preprogrammed test, select the Custom test. This allows you to create a customized method or to load an existing method file (*.mth). (To change any of the information, except for the mode, select the **Procedure Page**.) To open a saved procedure file, click the  button. The procedure file will be added to the test list once you have selected it.
12. When you have finished setting up this run summary, you should verify the information contained on the **Procedure Page** and the **Notes Page**.
13. Click the **Apply** button to apply the information on this page to the current run.

NOTE: In the case of a Dual Sample DSC, there are two **Summary Pages**, one for each sample.

Using the Procedure Page

After you choose a test on the **Summary Page**, the **Procedure Page** (shown to the right with a test selected) reflects the information contained in that test and will vary accordingly.

- If you choose one of the common test templates on the **Summary Page**, which are specific to each instrument, the **Procedure Page** reflects the information that you will need to enter to set up your run using that test.

The screenshot shows the 'Procedure' tab of a software interface. At the top are four tabs: 'Summary A', 'Summary B', 'Procedure' (selected), and 'Notes'. Below the tabs is a 'Procedure Information' section with a 'Test' dropdown set to 'Isothermal' and a 'Notes' text area containing 'Material is heated rapidly to an elevated temperature and held.' Below this is a 'Method' section with several controls: 'Start temperature' set to '200.00 °C' with an 'Advanced...' button; 'Switch to Gas 2' with radio buttons for 'Yes' and 'No' (selected), and a 'Post Test...' button; 'Isothermal time' set to '100.00 min'; and a checkbox 'End experiment when' followed by a dropdown set to 'mW' and a value of '0.50'. At the bottom of the window are five buttons: 'Run 1' (highlighted in blue), 'Append Run', 'Apply', 'Undo', and 'Help'.


The screenshot shows the 'Procedure' tab of a software interface. At the top are four tabs: 'Summary A', 'Summary B', 'Procedure' (selected), and 'Notes'. Below the tabs is a 'Procedure Information' section with a 'Test' dropdown set to 'Custom' and an empty 'Notes' text area. Below this is a 'Method' section with a 'Name' field set to 'Current Instrument Data' and buttons for 'Editor...', 'Advanced...', and 'Post Test...'. A list box contains two steps: '1 Equilibrate at 50.00 °C' and '2 Ramp 5.00 °C/min to 200.00 °C'. At the bottom of the window are five buttons: 'Run 1' (highlighted in blue), 'Append Run', 'Apply', 'Undo', and 'Help'.

- If you choose a Custom test on the **Summary Page**, you can switch to the **Procedure Page** (shown to the left with Custom test selected) and then use the **Editor** button to make changes to the method listed. See "Creating Custom Methods" on page 3-22 for more information.

To use the **Procedure Page**, follow these directions:

1. View the current test displayed (you can select a new test on the **Summary Page**).
2. Type any notes that you want to write about the test you will be running, if Custom test was selected. A preprogrammed test template will display notes specific to the test chosen.
3. Enter the requested method parameters, if you choose one of the test templates. However, if you chose a Custom test, click the **Editor** button to display the **Method Editor** window. This allows you to create a customized method or load an existing method file (*.mth). See “Creating a Custom Method” on page 3-22 for more details.
4. Click the **Advanced** button to display the **Advanced Parameters** window applicable to the current instrument. If desired, you can change the parameters that the instrument will use to perform the experimental run.
5. Click the **Post Test** button to display the current **Post Test** window. If desired, you can change the conditions that will apply at the end of the run (method-end conditions).
6. When you have finished setting up this procedure you should verify the information contained on the **Summary** and the **Notes Pages**.
7. Click the **Apply** button when finished to save these changes or click the **Append Run** button to add another run to the end of the sequence.

Saving or Viewing a Procedure

To save a test template to a procedure file, click on the  button on the **Procedure Page**. To view a summary of the saved procedure file, open the **Procedure File Utility** window using **Tools/Procedure File Utility** selected from the instrument menu.

NOTE: You can use any test template as the basis for a Custom test by selecting the desired test template from the list of tests, then click the **Apply** button and change the test to Custom on the **Summary Page**. Then you can click on the **Procedure Page** and then the **Editor** button to make the changes desired.

Using the Notes Page

Most instruments have a very similar **Notes Page**. This page is used to enter or select additional information to be stored with the data file.

To enter or select the additional information for your experiment, follow these steps:

1. Enter the name of the Operator conducting the thermal analysis experiment. Up to 25 characters may be entered.
2. *DSC, TGA, and SDT only*: Specify the Pan Type used for this experiment from the list of available pans.
3. *TMA only*: Specify the Probe Type used for this experiment from the list of available options.
4. Enter any Extended Text to include additional information about the sample or experiment, such as sample treatment or data sampling parameters. Up to 500 alphanumeric characters may be entered (approximately 12 lines).
5. Select the primary purge environment (Gas #1) and flow (including units) used in the experiment from the list of available choices. If no purge gas is used, select None from the list. You may also enter in your own purge gas name (up to 9 characters). In DMA, specify the Air Bearing Gas.

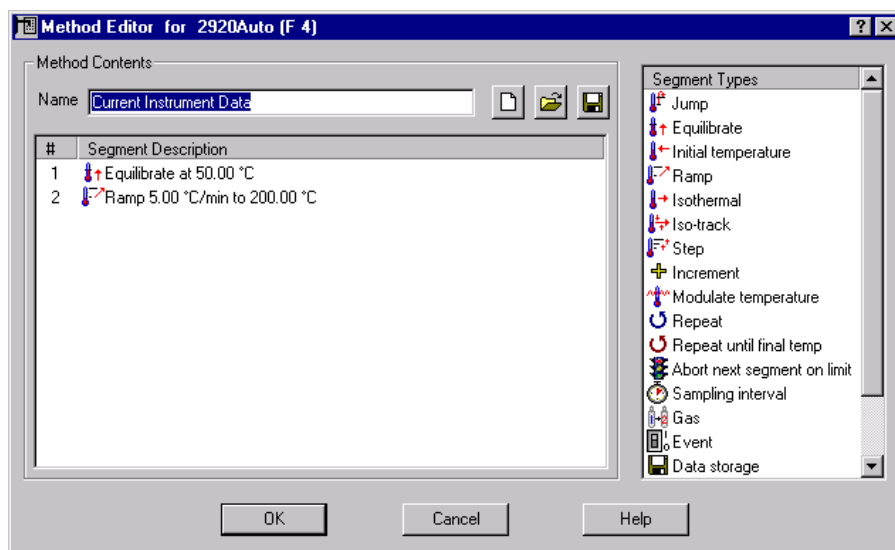
The screenshot shows a software window titled 'Notes' with tabs for 'Summary A', 'Summary B', 'Procedure', and 'Notes'. The 'Notes' tab is active. Inside the window, there are several input fields: 'Operator' with the text 'John Smith', 'Pan Type' with a dropdown menu showing 'Aluminum', and 'Extended Text' with a text area containing 'Extend text'. Below these is a section titled 'Purge Gas Settings' with two rows: 'Gas #1' with a dropdown showing 'Nitrogen' and a 'Flow Rate' field with '10mL/min', and 'Gas #2' with a dropdown showing 'None' and an empty 'Flow Rate' field. At the bottom of the window, there is a 'Run 1' label and four buttons: 'Append Run', 'Apply', 'Undo', and 'Help'.

6. *DSC, TGA, and SDT only*: Select the secondary purge environment (Gas #1) and flow (including units) used in the experiment from the list of available choices. If no purge gas is used, select None from the list.
7. Click the **Apply** button to apply the information on this page to the current run.

NOTE: These gas entries do not actually control which gas is currently flowing through the instrument, but merely indicate which gases are plumbed to the instrument. For example, oxidative stability experiments use nitrogen for the primary gas and oxygen for the secondary gas.

Creating Custom Methods



When you select a Custom test, which lets you set up your own experimental parameters, you can click the **Editor** button on the **Procedure Page** to display the **Method Editor** window (shown here). This window is used to create a custom method by building or modifying a preprogrammed series of instructions, called segments, to be executed by the instrument. The



segments are added, moved, or deleted from the method using the drag-and-drop technique. Collectively this group of segments makes up a method. Up to 60 segments can be contained in a method.



The next several pages provide you with brief instructions on how you can handle and manipulate methods.

Importing/Exporting Methods

You may use the **Method Editor** window to import (using the  button) an existing method file to use, or export (using the  button) just the method portion of the procedure to file. These last two options provide compatibility with the previous generation TA Instruments Windows® NT and OS/2 software. (When you use the *Advantage* software, procedure files replace method files.)

Creating and Editing Files

You can create or open a method file for editing using the **Method Editor** window as follows:

1. Click the  button to create a new method, this will clear the existing name and segment description list to create a new method.
or
Import an existing method, as directed above, to edit a method.
2. Give your method a name, then select and edit chosen segments. See the instructions beginning on the next page to manipulate segments.
3. After you finish editing or creating a method, you can save the method as part of your Custom test using the **Save Procedure**  button on the **Procedure Page**.

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Adding Segments

To add a segment to any method:

1. Click on the desired segment to be added from the Segment Types list to highlight it.
2. Use the drag-and-drop method to move the segment: Hold down the mouse button while you move the cursor to the desired position in the list of numbered segments (Segment Description List). Then release the button.
3. Edit the entry field(s) as desired, using the Tab key to move between fields.

Appending a Segment

To append a segment to the end of a method, do one of the following:

- Double click on the desired segment to be added from the Segment Types list.
- Click on the desired segment to be added, then press Ctrl + E to append it to the method.
- Follow these steps:
 1. Click on the desired segment to be added from the Segment Types list to highlight it.
 2. Use the drag-and-drop method to move the segment: Hold down the mouse button while you move the cursor to the empty area under the list of numbered segments (Segment Description List). Then release the button.
 3. Edit the entry field(s) as desired, using the Tab key to move between fields.

Removing a Segment

To remove a segment, just highlight the segment in the list and press the Delete button (or use Ctrl + X).

Editing a Segment

To edit a segment, double click on the segment and edit its parameters (or select the segment and press Ctrl+E). Use the TAB key to move between the parameters.

Reordering Segments

To reorder the segments, just drag-and-drop a segment in a new position within the segment description list.

Selecting Multiple Segments

Within the segment description list you can select multiple segments for deletion or copying by holding down the Ctrl key while clicking on the desired segments.

Preparing the Instruments

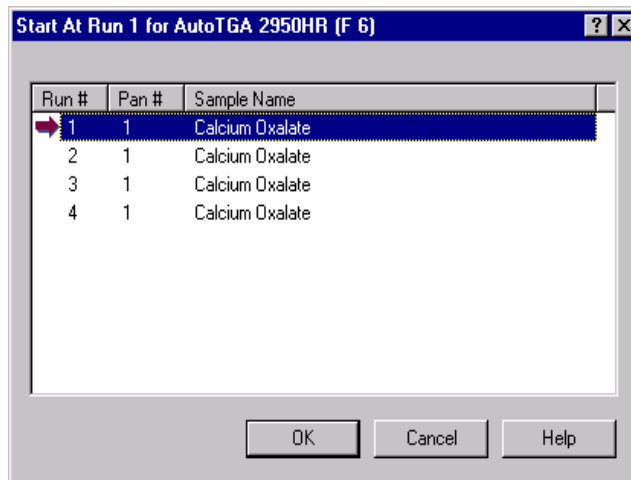
The experimental preparation steps vary for each instrument. A list of general guidelines are below, however, you should consult the specific instrument operator's manual or online help for detailed instructions.


1. Check that the purge gas is adjusted to the recommended flow rate.
2. *SDT and TGA only:* The SDT and TGA instruments both require taring procedures, using the empty sample pan(s), before loading the sample. Consult online help for further details.
3. *DEA only:* Perform a sensor calibration prior to loading the sample.
4. Prepare and load the sample.
5. *DMA and TMA only:* A measure step is usually performed for TMA and DMA experiments after you load the sample.

Starting An Experiment

Once the sample has been loaded and the experimental parameters set up, you can start your experiment in one of four ways:





- Select **Control/Start** from the instrument menu. When you select **Start** and there is more than one run in the sequence list, the **Start At** window (shown here) is displayed to allow you to choose the run to begin. Click on the desired run to move the run arrow to that run number, then select OK.



- Click on the  button on the tool bar. If more than one run is contained in the run sequence, the scheduled run (run with the arrow pointing to it) will be executed. To schedule a run, prior to starting the experiment, move the pointer (cursor) along the left of the run numbers, you should see the pointer change to an arrow. When it becomes an arrow, you can then click the mouse to position the arrow next to the selected run number. This run becomes the scheduled run, which is the experiment that will be run when **Start** is selected.
- The scheduled run can also be executed by double clicking on the red run arrow (➡) in the **Sequence Pane**.
- Schedule the desired run using the controller software (as outlined above), then press the START key on the instrument itself.

Monitoring Running Experiments

Once your experiment has been started, you can monitor its progress easily with the *Advantage* software. Any one of the four views provide information regarding the running experiment:

- Click the  to select the Real Time Plot view. This displays the **Sequence Pane, RealTime Plot, Signal Display Pane, Running Segment Pane**, and the status line. This view allows you to monitor a lot of information at once.
- Double click on the real time plot to switch to the RealTime Plot Full Screen view or click on the  button. This view allows you to monitor the data as it is plotted.
- Click the  button to select the **Experimental View** or click the  button to select the **Table View**. These views allow you to monitor the running experiment while setting up the next run.

Chapter 4

Universal Analysis

Overview

TA Instruments' Universal Analysis program allows you to analyze data from various thermal analysis instruments. There are options available in the program that allow you to customize the way the data is graphed and to place limits on the range of data used for analysis.

The logical order to analyze a data file is as follows:

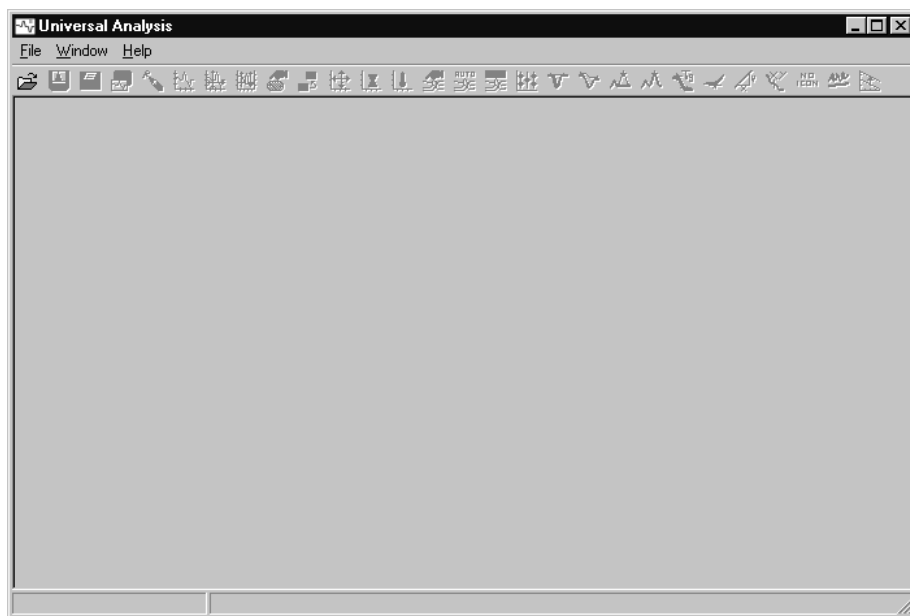
- Choose a data file
- Verify your sample information
- Draw the graph
- Rescale and customize the graph
- Analyze the data
- View and/or print the results reports.

As you read through this guide, remember that we are presenting basic information to allow you to get up and running with this program. This guide gives you a brief set of instructions to allow you to perform analysis on a data file. For further details regarding the use of Universal Analysis refer to the Universal Analysis online manual or the context-sensitive help associated with the program.

Thermal Advantage Universal Analysis

To start the Universal Analysis program:


Select **Start/Programs/TA Thermal Advantage/TA Universal Analysis** or double click on the shortcut icon, if available. The starting window is displayed

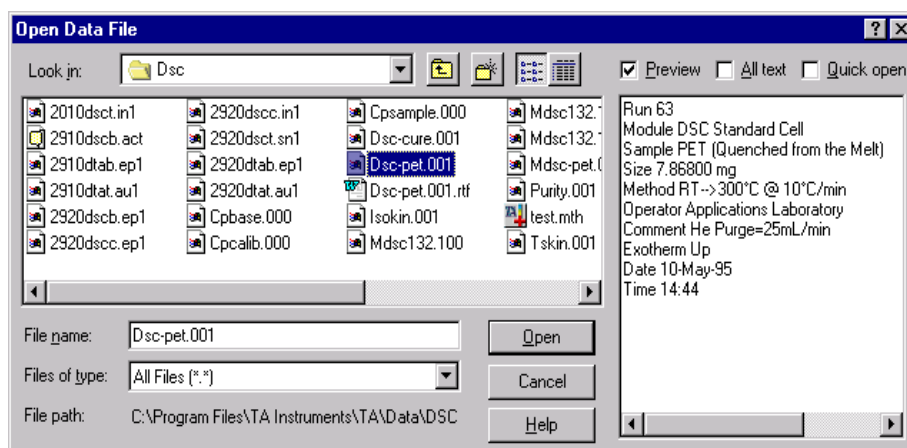


Choosing a Data File

The *Thermal Advantage* program is shipped with several demonstration data files that you can use when learning how to operate the software. We will be using a demo file called DSC-PET.001 throughout this chapter.

To locate and open a data file on disk follow these steps:

1. Click on  or select **File/Open** from the main menu, the window shown here is displayed.



2. Locate the TA\Data\DSC folder to locate the DSC demonstration files. Select the DSC-PET.001 demonstration file. Click on this file and a preview of the sample information is displayed, if you have the **Preview** box checked.
3. Click **Open**. The **Data File Information** window, shown on the next page, is displayed. (To bypass the next window, you can check the **Quick Open** box on the window shown above.)

Data File Information [X]

File:
 Name: E:\TA\Data\DSC\Dsc-pet.001
 Date: 10-May-95 14:44

Module type:
 DSC Standard Cell

Parameters:
 Sample: PET (Quenched from the Melt)
 Size: 7.8680 mg
 Operator: Applications Laboratory
 Method: RT-->300°C @ 10°C/min
 Comment: He Purge=25mL/min
 Exotherm: Up Cell Constant: 1.6214

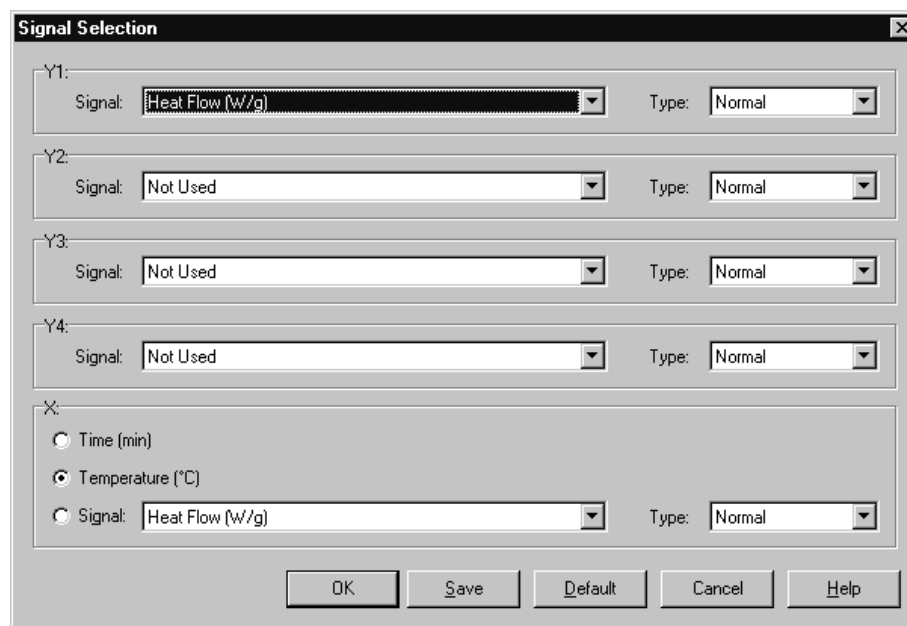
Signals...
 Units...
 Instr Params...
 Data Limits...

<< Previous OK Restore Same As Cancel Help

4. Make any corrections needed to the information displayed on the screen.
5. Click on the **Signals** button. The window shown on the next page appears.

Selecting Signals

The **Signal Selection** window (shown here) is used to choose signals that are used to plot the analysis data.

The image shows a 'Signal Selection' dialog box with a title bar and a close button. It contains four Y-axis signal selection sections (Y1, Y2, Y3, Y4) and one X-axis signal selection section. Each Y-axis section has a 'Signal' dropdown menu and a 'Type' dropdown menu. The X-axis section has three radio buttons for 'Time (min)', 'Temperature (°C)', and 'Signal', followed by a 'Signal' dropdown menu and a 'Type' dropdown menu. At the bottom are five buttons: 'OK', 'Save', 'Default', 'Cancel', and 'Help'.

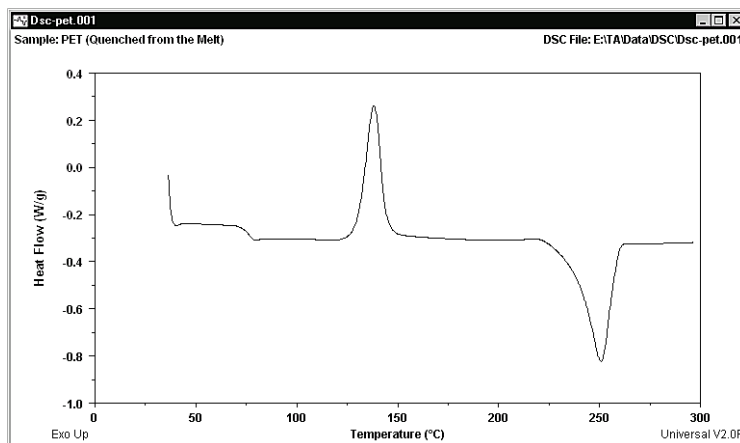
Axis	Signal	Type
Y1	Heat Flow (W/g)	Normal
Y2	Not Used	Normal
Y3	Not Used	Normal
Y4	Not Used	Normal
X	Temperature (°C)	

1. Select the desired y-axis signals to plot and their Type from the drop-down lists. In this example, select Heat flow, Normal type for the Y1 signal.
2. Select the desired x-axis signal to plot from the radio buttons displayed at the bottom of the window. In this example, select Temperature.
3. Click the OK button when you have selected the signals to be plotted. The window shown on the next page is displayed.

NOTE: Click the **Save** button to save the program parameters listed on this window to the program .ini file.

When the data file graph is displayed, you can choose to perform any of the following actions:

- Rescale the graph.
- Limit the data available for analysis.
- Customize the graph.
- Analyze the data.
- etc.



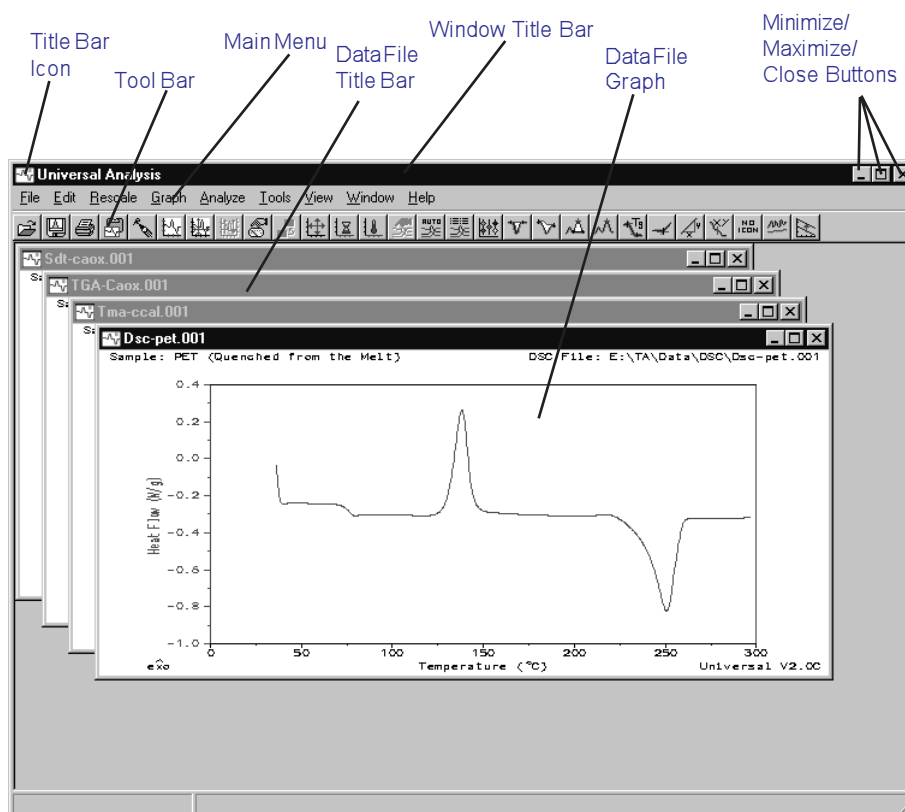
The capabilities of the Universal Analysis program can be accessed through the menus or the tool bar. For more detailed information consult the *Thermal Advantage* Universal Analysis online manual.

Parts of the Window

The Universal Analysis main window provides access to all of the functions needed to customize and analyze your data file graph.

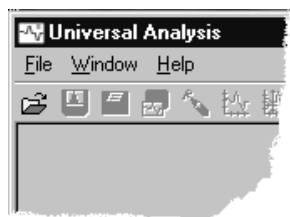
There may be multiple **Data File** windows and one curve overlay plot open in Universal Analysis at one time. The window title bar identifies the data file. This section gives you basic information on the main window.

You will see references to the window parts shown in the figure below, throughout the literature and online help associated with Universal Analysis.

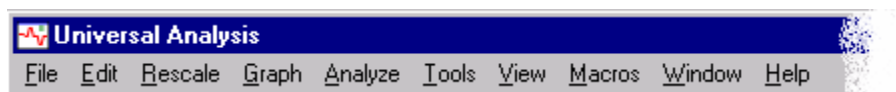


Main Menu

The main menu is used to access the various functions that can be performed on the data file. When you first open Universal Analysis, a limited menu is available as seen here.



After you have opened a data file (see page 4-3) the rest of the menu options are available as seen in the figure below.



The table that follows provides a brief description of the main menu items.

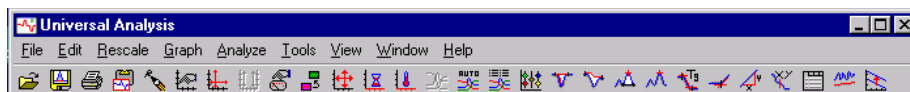
Menu	Description
File	Use the File menu to open a data file and perform various functions such as closing any open windows, saving analyses, exporting data, printing, etc.
Edit	Use the Edit menu to perform various editing functions on the current graph such as deleting and adjusting results, and annotating graphs.
Rescale	Use the Rescale menu options to change the limit points and analysis range. You can change the axis scaling and zoom in on the portion of the graph that will be analyzed using these options.


(table continued)

Menu	Description
Graph	Use the Graph menu to select options that allow you to set up your graphs by changing signals, units, parameters, data limits, overlaying curves, etc.
Analyze	Use the Analyze menu to choose the type of analysis that you want to perform on the current data file. This menu reflects the type of analyses available for the particular type of data file that is currently active.
Tools	Use the Tools menu to select from a list of different types of functions that can be performed on the current graph. You can smooth, shift, and/or rotate the curve and perform a linear transformation on either axis. If you change your mind, you can remove the curve shifts.
View	Use the View menu to view and edit reports.
Window	Use the Windows menu to arrange the currently open windows in different configurations.
Help	Use the Help menu to access help topics, an online manual, and product information.

Tool Bar

At the top of the Universal Analysis main window is a tool bar that allows you to perform the same operations found in the menus with the click of a button. You can customize the tool bar to reflect those options that you use most



frequently by selecting **File/Options** from the menu (or click the  button) to display the **Main Options** window. Click on the **Tool Bar** page and set up the desired tool bar items. The figure above shows the general tool bar setup. If you have trouble remembering what the icons represent, just position the cursor over the button and a small rectangle with the name of the button is displayed. This is called "flyover help," and is also set up on the **Main Options** window.

Performing Basic Program Operations

Three basic operations are explained in this manual: rescaling, integrate peak analysis, and obtaining reports. For further details refer to the Universal Analysis online manual or context-sensitive help.

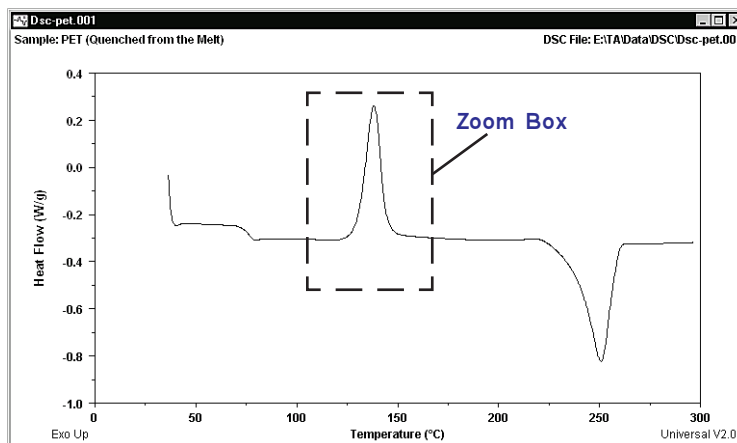
Rescaling the Graph

When analyzing data on a curve, it is often easier to zoom in on the portion that will be analyzed. To do this you can use zoom box or one of the other **Rescale** options.

Using the Zoom Box

The **Zoom Box** provides the fastest way to rescale. You can easily expand a portion of the curve for analysis using the mouse. To zoom in on a particular portion of the curve for analysis, follow these steps:

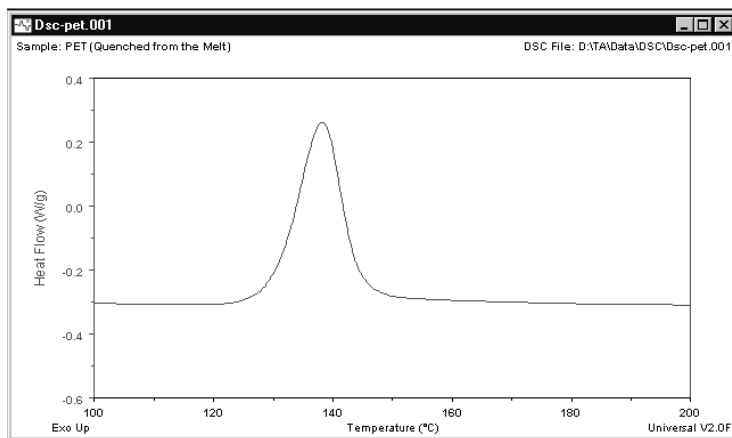
1. Position the pointer in the general area you wish to enlarge and hold down the left mouse button. As you move the mouse, a zoom box will be drawn from the original point position (shown above).



Move the mouse to draw a box encompassing the area of the curve to be enlarged.

2. Release the mouse. If the area selected is acceptable, move the pointer inside the box and click the left mouse button.

The area is enlarged as seen in the figure here.



This process can be used repeatedly to expand a smaller portion of the curve. To return back to the most recent scale changes, press **Ctrl-U (Previous Limits)**.

Rescaling Using the Menu

You can also perform more specific types of rescaling operations. Select **Rescale** from the main menu, the submenu shown here is displayed.

Select one of the rescaling options shown in the menu and described in the table below.

<u>M</u> anual...	
<u>Z</u> oom Out	Ctrl+Z
<u>P</u> revious Limits	Ctrl+U
<u>F</u> ull Scale Axis	
<u>F</u> ull Scale <u>A</u> ll	
<u>C</u> ommon Scale	
<u>S</u> tack Axes	
<u>E</u> xact Scaling <u>X</u>	
<u>E</u> xact Scaling <u>Y</u>	

Menu Item	Description
Manual	Used to enter numerical values for start, stop, label interval, tick interval, and label offset.
Cursor	Uses graphical cursor entry to rescale the graph.
Zoom Out	When you select the Zoom Out option, you will reduce the image size and make it appear smaller. Click on this option once to move out one level. Shortcut Key: Ctrl-Z
Previous Limits	The Previous Limits option redraws the graph as it appeared before the most recent scale changes. Only the scaling options selected from the Rescale menu are affected by this menu option, any changes made in color or annotation are not affected. Selecting Previous Limits a second time will return the graph back to the most recent changes. Shortcut Key: Ctrl-U

(table continued)

Menu Item	Description
Full Scale	The Full Scale option redraws the graph as it first appeared when you generated it from the data file. The graph is autoscaled to the minimum and maximum data values for the selected axis only.
Common Scale	<i>(Available with 2 or more axes graphed.)</i> Adjusts all common axes (those with the same units), to the same scaling magnitude as the selected axis.
Stack Axes	<i>(Available with 2 or more axes graphed.)</i> When you select Stack Axes, the y-axes are adjusted so that the curves on the axes are stacked, one above the other, with no curves from one axes overlapping the curves of another axes.
Exact Scaling X	Check this option to have the axis plotted using the exact range of the x-coordinates found in the data file or rescale zoom box. Leave this menu item unchecked and the data will be autoscaled when applicable. When exact scaling is not selected, the plot axis is drawn with evenly spaced axis labels that fall on the corners of the plot. This is the default setting.
Exact Scaling Y	Check this option to have the axis plotted using the exact range of the y-coordinates found in the data file or rescale zoom box. Leave this menu item unchecked and the data will be autoscaled when applicable. When exact scaling is not selected, the plot axis is drawn with evenly spaced axis labels that fall on the corners of the plot. This is the default setting.

Analyzing the Curve

To access the **Analyze** menu, you can:

- Select **Analyze** from the main menu. (DSC **Analyze** menu shown here.)
- or
- Position the pointer in the graph area and right click to display the pop-up menu.



NOTE: The pop-up menu may be customized by selecting **File/Options/ Pop-Up Menu** page from the main menu.

The general analyze options are described briefly in the table beginning below. For information on all of the **Analyze** options, refer to the context-sensitive help or the manual (**Help/Manual**) found in the Universal Analysis program.

Option	Description
Integrate Peak	Calculates the heat of transition, onset temperature of melting peak, peak maximum temperature, and peak area.
Peak Max	Determines the height of a peak relative to a linear baseline.
Glass Transition	Determines the glass transition of a polymer or transition temperature by calculating the onset, end, and inflection of a step transition.


(table continued)

Option	Description
Onset Point	Determines the onset of any thermal transition that changes the baseline slope.
Oxidation Temp/Time (DSC Only)	Measures the oxidation onset temperature or time for a sample held in an oxidizing atmosphere.
Slope	Calculates the average slope of a selected region of the curve.
Running Integral	Plots the integral of data from another curve. (Available when the Y-4 axis curve is vacant.)
Curve Value at X/Y	Determines the x and y coordinates for any point on the curve.
Label at X,Y	Determines the x and y coordinates for any point within the graph limits.
Analysis Range	Use the Analysis Range option to set the analysis range from portions of the original x-axis range, thus confining your data for analysis purposes to the chosen range. Data outside this range becomes invisible to the analysis functions, but analyses already performed on these curves are retained.
<p>NOTE: Additional options may appear in the analysis menu based on signal type (e.g., DSC, TGA, TMA, DMA, and DEA).</p>	

Integrate Peak

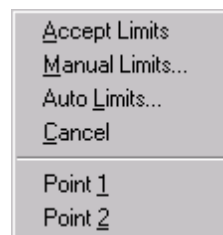
In this section we will use the integrate peak linear analysis option to demonstrate the basic analysis steps. You can apply these basic steps to all types of analyses in the Universal Analysis program. For further details on analysis options consult the *Thermal Advantage* Universal Analysis online manual or context-sensitive help.

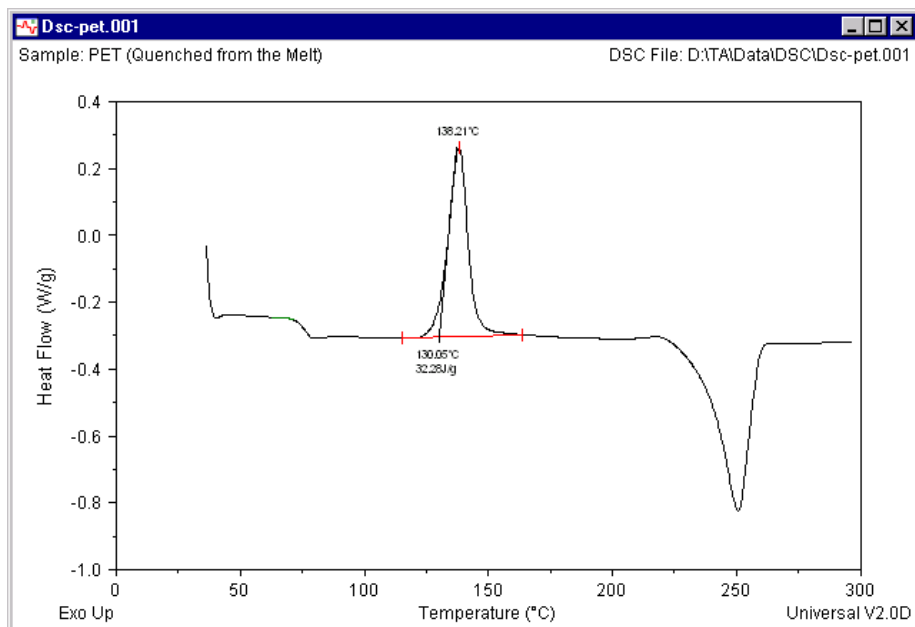
We will use the **Analyze/Integrate Peak/Linear** option to perform a peak integration using a linear baseline. A linear baseline is defined as a straight line drawn between the selected start and stop limits. It is used when the baseline varies directly (linearly) with time.

1. Click on the appropriate Y-number label displayed above the desired axis on the graph to select that axis, if more than one y-axis is displayed.
2. Select **Analyze/Integrate Peak/Linear** from the main menu, from the pop-up menu, or click the  button.

The markers are displayed. (See pages 4-19 and 4-20 for tips on selecting, positioning, and activating markers.)

3. Double click at the point on the curve where you want the baseline to begin (before the transition) to position the first marker. The next marker becomes active.
4. Double click at the point on the curve where you want the baseline to end (after the transition) to position the second marker.
5. Right click to display the **Analyze pop-up** menu (shown here), then select **Accept Limits** (or press Enter). The peak integration analysis results are displayed. See the figure on the next page for an example.





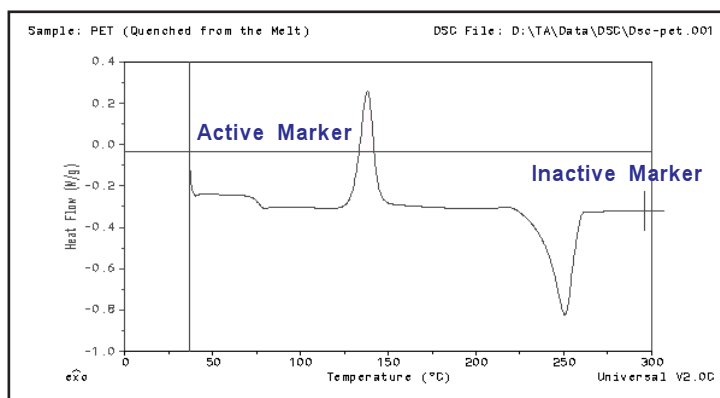
NOTE: You can change the parameters of this analysis by setting the options found on the **Analysis Options – Onset/Peak Integration Page**.

Tips on Using Markers (Positioning and Selecting)

Markers are lines that are used to select points on a graph during rescaling and analysis operations. When using markers, keep in mind the following tips:

Active vs. Inactive Markers

- Only one marker is active at any time.
- The active marker can be indicated two ways depending on the action or file: As a full-length vertical and horizontal line or as a single vertical or horizontal line.
- Inactive markers are generally seen as a cross. See the figure here.



Moving Active Markers

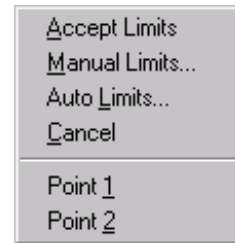
- To move active markers with the mouse follow these steps:
 1. Grab the marker with the left mouse button as follows: Position the point at the intersection of the cross or anywhere on the single line. Press and hold down the left mouse button.
 2. Drag the marker to the desired position and release the mouse button.
- To move the active marker with the keyboard, use the right and left arrow to move the marker or hold down the Ctrl key while using the arrows to move the marker 10 pixels at a time.

- To move an active marker quickly you can also position the pointer at the desired location and double click the left mouse button to move the marker to this point. This action causes the next marker to become active.

Activating a Marker

To activate (select) the next marker you can use any one of these methods:

- Position the pointer over the inactive marker and click the left mouse button.
- Right click to display the **Analyze pop-up** menu (shown here) and select the next point from the menu.



Entering Manual Limits for Markers

To numerically enter the limits for the marker positions using the keyboard, follow these steps with the markers displayed on the graph:

1. Right click to display the **Analyze pop-up** menu and select **Manual Limits** from the menu. The window shown here is displayed.

The 'Manual Limits' dialog box contains the following data:

	X	Y
Point 1:	100.0	-0.305
Point 2:	200.0	-0.310

Buttons at the bottom: OK, Cursor, Cancel, Help.

2. Enter the desired limit points and click the **OK** button. The analysis is performed using the limits entered and the results are displayed.

Printing Plots

You can print plots at any time during your use of the Universal Analysis program.

To print the plot follow these steps:

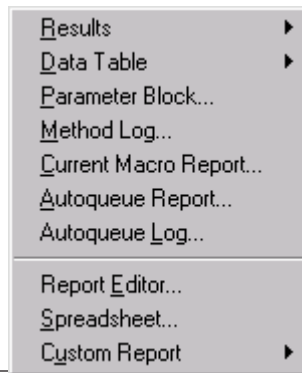
1. Select the window containing the curve you want to print. You can use the **Windows** menu or just click on the desired window to select it.
2. Select **File/Print** from the main menu. The standard print window is displayed. Select the **OK** button to print using the default printer and the options shown.

or

2. Click on the  button to print directly to the default printer.

Generating and Viewing Reports

Universal Analysis contains many different types of reports that may be viewed, edited, or printed using the **View** menu (shown here). In addition, you can create a customized report using the **Custom Report** option. A brief description of all the **View** options are listed below. The items marked with an asterisk (*) are only available in Universal Analysis 2000 and require either Microsoft Word® or Microsoft Excel® to function.



Option	Description
Results	Use this function to view the results of your analysis in a written report form or spreadsheet* form.
Data Table	Use the Data Table function to display the sample information and raw data points from the data file in either report or spreadsheet* form. For multiplexed data, such as frequency or amplitude, a separate table is generated for each multiplexed value.
Parameter Block	Use the Parameter Block function to view a listing of the experimental parameters that were used when obtaining the data stored in the data file.
Method Log	<p>Use the Method Log function to view a listing of the method segments that were used to obtain the data file.</p> <p>Each experimental method is made up of a group of segments, which are preprogrammed instructions that are sent to the analytical instrument.</p>
Current Macro Report	Use the Current Macro function to view the list of steps contained in the currently open macro.

(table continued)

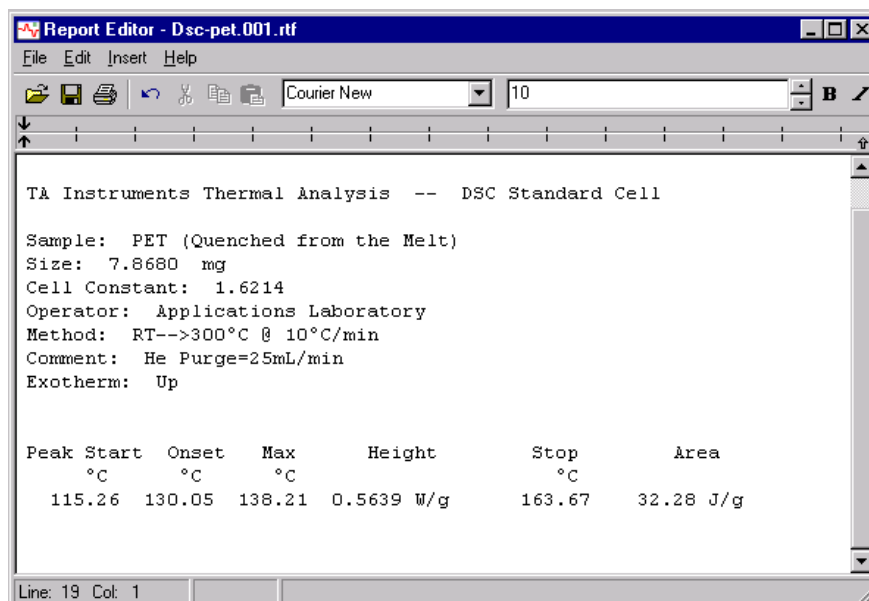
Option	Description
Autoqueue Report	Use the Autoqueue Report function to view the list of records contained in the autoqueue for autoanalysis. Each record is made up of the data filename, macro filename, and associated macro.
Autoqueue Log	Use the Autoqueue Log function to view the log of the results obtained during autoanalysis. Each item in the log is made up of the pass/fail message, the data filename, the macro filename, the associated macro, and a short comment.
Report Editor	Use the Report Editor function to open the Report Editor program. (Additional report options are available with the Autoanalysis option.)
Spread-sheet*	Use this function to open the Microsoft Excel® program with a blank first sheet.
Custom Report**	Select View/Custom Report/New to create and edit customized Universal Analysis report templates.
* Requires Microsoft Excel®, which is a registered trademark of the Microsoft Corporation.	
** Requires Microsoft Word® and Microsoft Excel®, which are registered trademarks of the Microsoft Corporation.	

Viewing Reports

To view, edit, or print the various types of reports in Universal Analysis follow these steps:

1. Select the window containing the curve you want to use to generate the report. You can use the **Windows** menu or just click on the desired window to select it.
2. Select one of the applicable options from the **View** menu. (See the table beginning on the next page for the available **View** options.)
3. Edit or print the report using the available functions.

See the figure below for an example of the results report.



Opening the Spreadsheet Program

Use the **View/Spreadsheet** function to open the Microsoft Excel® program (which must be present on your system) with a blank first sheet.

NOTE: If you want to bring the data file into Microsoft Excel, select **View/Data Table/Spreadsheet** from the menu.

If you need help using the program, see the documentation provided with the program.

Creating a Custom Report Template

The Custom Report Editor is used to create and edit customized Universal Analysis report templates. The templates are created using any number of report objects such as plots, results, parameters, method log, data tables, etc. The report object boxes (which represent the plots, results, etc.) can be sized and positioned as desired to fit on a single piece of paper. After a template file is created and saved, it can be used over and over again with different data files and can even be linked to an Autoanalysis macro to further automate the process of analysis and report generation.

The Custom Report Editor program requires that you have Microsoft Word® 97 or Word 2000 installed on your computer. In order for the spreadsheet function to operate, Microsoft Excel® must be installed on your computer.

You can create templates that call for only one file or templates that use multiple files. A template using one file will create the report from the current file. A template that requires multiple files will prompt you to select the files desired.

NOTE: Only one Custom Report window at a time is available within the Universal Analysis program.

Universal Analysis generates custom report documents by directly running Microsoft Word and Microsoft Excel from within Universal Analysis. Each report object inserted is dynamically created at run time and inserted into a

single integrated Word document. Once the Word document is created, you can edit any spreadsheets within the document by double-clicking on the object to open Excel with Word.

You can insert, edit, import, export, and print the report objects using the menus and tool bar buttons. For further information see the following pages.

Basic Instructions on Creating a Template

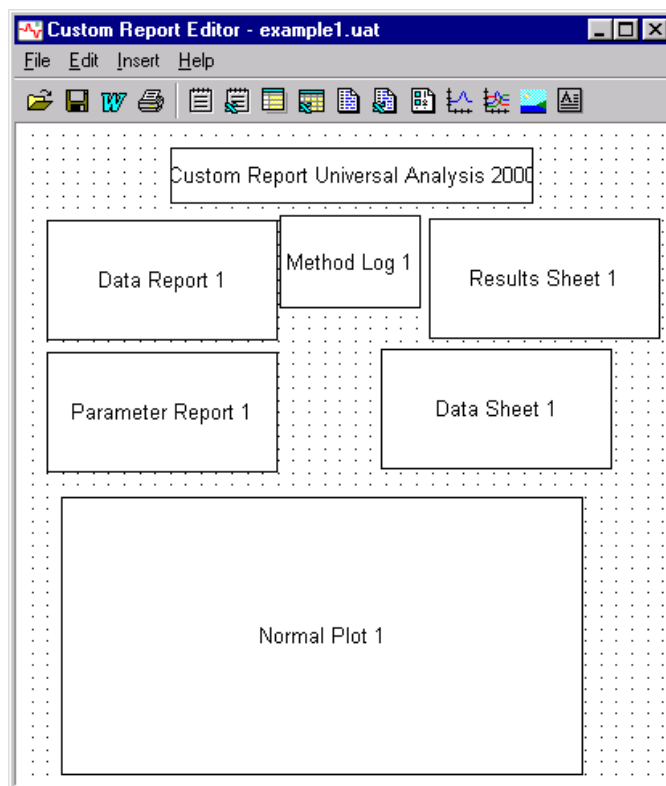
There are many different ways to create a report template in Universal Analysis. The set of steps that follows is intended to give you a basic idea of the steps involved with creating a custom report template. For more detailed information see the online help associated with the program.


1. Open the desired data file(s) and analyze the data to obtain the results you want.


NOTE: You can create a report template with no files open (which creates empty report objects). The report objects will be filled in when a data file is open and the appropriate information is supplied. For example, there can be no results report created if no analysis is done on the open file.

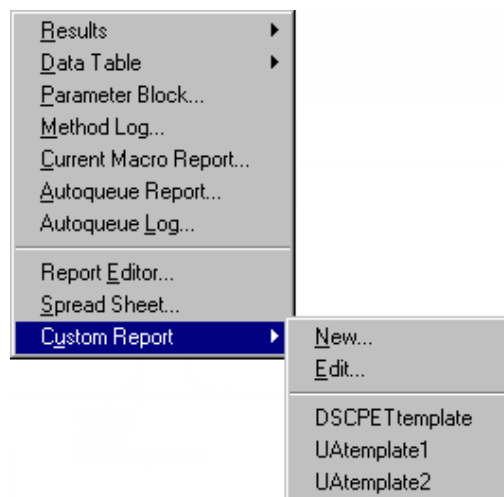
2. Select **View/Custom Report/New** from the main menu. The Custom Report Editor program opens.
3. Select the desired object to insert in your template from the **Insert** menu or from the tool bar.
4. Size the object block by positioning the cursor over the border of the block and hold down the mouse while moving the cursor.
5. Drag-and-drop the object anywhere you desire on the template window. This window represents an 8 ½ by 11-inch page.
6. Repeat steps 3 through 5 for as many objects as desired. Some objects, such as Text and Data Table insertion, require that you enter information to configure that object.

7. Format the objects as desired. See the figure to the below for an example of a finished template.



8. Click the  button or select **File/Save** from the menu to save your template. Once you save this file, it will appear in the **View/Custom Report** menu as seen here.

9. Export the report to Microsoft Word® by clicking on the  button or by selecting **File/Export to Word** from the menu. If you have more than one



See the figure below for an example of a finished report.



Saving the Results and the Program Session

If you want to save the analysis results or the entire program session in a file, you can do so.

- Select **File/Save Analysis** from the main menu to save the current analyses in the data file for future recall.
- Select **File/Save Session** from the main menu to save the current state of the Universal Analysis program to a file for future recall (*i.e.*, curve overlay plot can be saved).

Exiting the Program

When you have finished analyzing your data, you can exit the program by selecting **File/Exit** from the main menu.

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