

Model 5270 Data Acquisition
and Control Software
Installation and Technical Support Manual

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Section 1 - Getting Started Guide

Assumptions

This guide assumes that you are familiar with Windows[®] 95, Windows 98, Windows ME, Windows NT 4.0, Windows 2000, or Windows XP. If you are not familiar with common Windows terms, please see your Windows documentation.

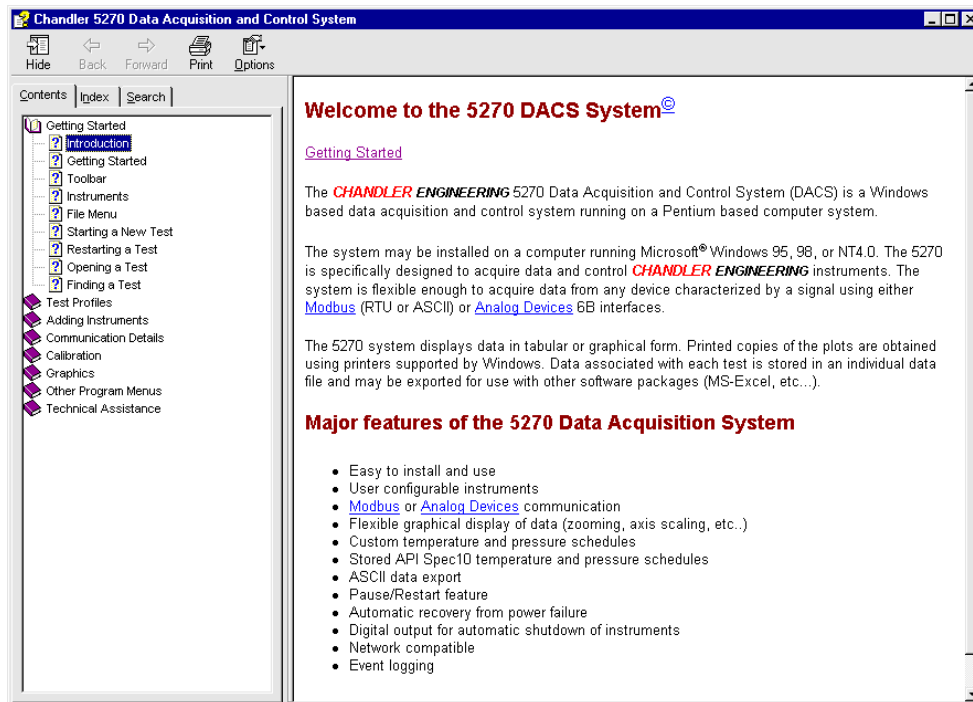
This guide does not assume that you have previous experience using the 5270 Data Acquisition and Control System (DACS).

Conventions

The instructions in this guide are the same for all versions of Windows. In most cases, the instructions describe the menu method. However, 5270 also supports a variety of common Windows shortcuts, including quick keys (keyboard shortcuts), toolbar buttons, right click menus, double click, and drag and drop.

Using the Help System

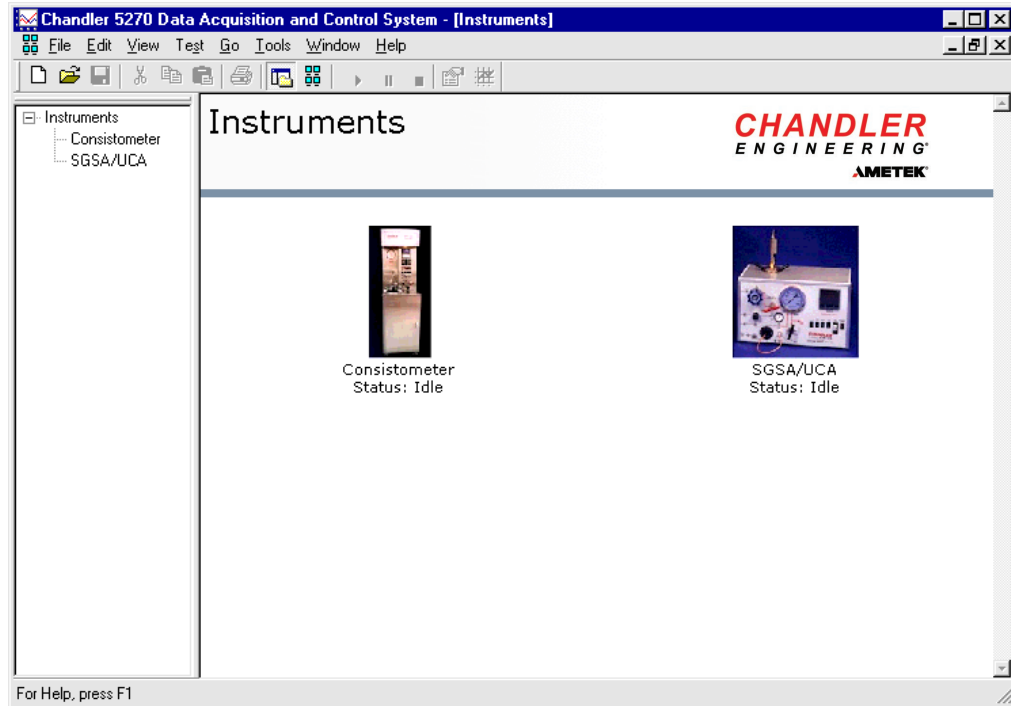
While this guide contains instructions for installing and getting started with 5270, the help system built into the program covers all features.



The Help Topics dialog is the main entry into the online help, and contains links to both feature overviews and instructions for the most commonly used options.

Introducing the 5270 Data Acquisition and Control System

This section introduces the 5270 DACS, a program for Windows 95, 98, ME, NT4.0, 2000, and XP used for data acquisition and control of Chandler Engineering instruments, as well as many other instruments.



About 5270 Data Acquisition and Control System

The 5270 system turns your lab computer into a versatile data acquisition and control system. Using 5270, you can control Chandler Engineering instruments and acquire data. In addition to these core functions, 5270 also provides a variety of features for displaying the data and producing attractive graphical reports.

What's New in This Version

If you are upgrading from the Chandler Engineering Model 4270 Data Acquisition System, read this section to learn about the new features in the 5270 Data Acquisition and Control System (DACS).

- **Control** – 5270 DACS provides built-in API temperature and pressure schedules and user-defined schedules. The controller programming information is automatically downloaded to the controllers at the start of each test.
- **Multiple Instruments** – 5270 DACS supports multiple instruments connected to serial port(s) on the computer using either Modbus or Analog Devices communication protocols.

- **Enhanced Graphical Display** – 5270 DACS provides advanced graphical display of the measurement in real-time. Features including axis scaling, data zooming, and data cursors make viewing the results during a test simple. Multiple instrument graphs can be displayed and updated simultaneously.
- **Customized Report Format** – 5270 DACS provides features to add the company name and artwork in the header/footer of each printed report.
- **Data Exporting** – Each data file may be transferred to a text (CSV) file for use with other programs. Full support for the Windows clipboard also exists.
- **Support for E-mail** – 5270 DACS supports Windows “Send To” functionality as long as the computer is connected to the Internet using MAPI compliant software (e.g. Microsoft® Outlook). This feature provides a means to email a test data file as an attachment.
- **Individual Data Files** – 5270 DACS stores each test data file individually on a user defined storage device. All raw data, calibration data, graph scaling, test information, and event log data are stored with each test. This provides excellent portability of the test data. 5270 includes a search routine that allows the user to quickly find data files.
- **Improved Power Failure Support** – 5270 DACS supports test restarting in the event of a power failure or computer crash. Every attempt has been made to protect the data from hardware or power failures that are beyond the user’s control.
- **Improved Data Acquisition** – 5270 DACS uses advanced communication protocols (*Modbus*) that include error-checking features. This means that all data received at the computer is assured to be virtually error free.
- **Support for Analog Devices Communication** – Chandler recognizes that many instruments use the RS485/RS422 Analog Devices 6B modules for data acquisition. Support for this protocol is built into 5270.
- **Automatic Alarm Functions** – 5270 DACS provides automatic alarm notification using visible or audible alarms as well as many additional features that may be associated with a signal value or test duration.
- **Network Support** – 5270 DACS takes advantage of local area networking (LAN) allowing access to the Internet, easy access to Chandler Technical support, and remote monitoring of tests in progress.
- **Windows 95, 98, ME, NT4.0, 2000, XP Compatibility** – 5270 will operate on each of these operating systems.
- **Help** – 5270 DACS provides built-in help features.

Programs Included with 5270 DACS

When you install 5270 DACS, the Setup program creates and adds the 5270 DACS program to the Windows Start menu and places an icon on the desktop.

An additional utility is provided for use in configuring the Analog Devices modules, if required.

Technical Support

Chandler Engineering offers technical support for all Chandler products. Use the following information to obtain technical support from Chandler Engineering:

Contact	Details
Telephone support	Chandler offers telephone support at: <ul style="list-style-type: none">• U.S. dial: (918) 250 7200
World Wide Web	The www.chandlereng.com website offers various technical contact points and email addresses: <ul style="list-style-type: none">• Website: http://www.chandlereng.com• E-mail: chandler.sales@ametek.com
FAX	<ul style="list-style-type: none">• FAX: (918) 459 0165

Section 2 - Installation

Installing 5270 Data Acquisition and Control System

This section describes the 5270 DACS installation process. Topics in this chapter include:

- Reviewing system requirements
- Upgrading from an earlier version
- Configuring instruments
- Uninstalling 5270 DACS

Note: Before you install 5270 DACS on your computer, it is recommended that you read the system requirements section to familiarize yourself with the hardware and software requirements.

System Requirements

The following table outlines both the minimum and the recommended system requirements for installing and running 5270 DACS under Windows 95, Windows 98, Windows ME, Windows 2000, or Windows NT4.0.

Equipment	Recommended
<i>Operating System</i>	Windows 95, 98, or ME <u>Recommended:</u> Windows 2000 or XP
<i>Computer</i>	Computer – Pentium processor, mouse, 24X CD-ROM drive (or faster), an SVGA graphics display (1024 x 768 or higher), and a LAN connection The computer should be dedicated to the 5270 DACS system to avoid possible interference from other software Internet Explorer 5.0 or 6.0. 5270 uses advanced graphics support in Internet Explorer
<i>Computer Memory</i>	128MB or more
<i>Hard disk space (approximate)</i>	Typical Install 2MB for 5270 files Additional space for temporary installation files Additional free space for data files (1MB or more)

Equipment	Recommended
<i>Email</i>	Microsoft Outlook or other MAPI compliant email software and internet access
<i>Serial ports</i>	One or more unused serial communication ports (COM1, COM2, etc...). Serial ports created using a USB serial hub are also supported.
<i>Parallel port</i>	One parallel communication port (LPT1) to be used with the software security key
<i>Printer</i>	Printer – Any Windows compatible printer that provides graphical output
<i>Power</i>	An Uninterruptible Power Supply (UPS) is recommended for the computer

Upgrading from an Earlier Version

If you are upgrading from an earlier version of 5270 DACS, you do not have to uninstall your previous version since the Setup program automatically detects the previous version. The installation process will uninstall the previous version without deleting any configuration or data files.

If you are upgrading from a Chandler 4270 Data Acquisition System, make note of all the hardware I/O addresses used for the signal data acquisition since the same values may be used during the configuration of the 5270 System. The 5270 System may be installed in addition to the 4270 System but they must be used separately.

Before You Install 5270 DACS

To ensure a smooth installation, we recommend you follow the procedure below before you install 5270.

1. Exit all programs.
2. Check for sufficient disk space. See “Reviewing System Requirements.”
3. If you are upgrading from a previous version of 5270, see “Upgrading from an Earlier Version.”
4. Verify that a serial port and parallel port are available. Locate them at the back of the computer or on the USB serial hub.
5. If using LAN resources, verify that the computer is logged onto the network.
6. If using an older computer with a slow CD-ROM drive (12X or less), the installer may have trouble reading the distribution CD-ROM. If this occurs, perform the following:
 - Copy the Setup.exe file to a location on the local hard drive and run the installation locally.
 - If the computer is connected to a network, install the program through the network connection.

- Change the CD-ROM driver settings to 2X with “No Read-ahead” in the Control Panel – System.
- Contact Chandler Engineering for assistance.

Starting the 5270 Installation

The Setup program guides you through the installation process by prompting you for information and automatically determining your system configuration, and available disk space.

Note to Windows NT, 2000, and XP users: If you are installing 5270 under Windows NT or 2000, you must have *administrative* privileges.

To install 5270

1. Start Windows.
2. Insert the 5270 DACS installation CD into the CD-ROM drive.
3. If the installation does not start automatically, you can start the installation manually. Click the Windows Start button and click Run. The Run dialog appears. In the Open field, type D:\SETUP.EXE, where “D” is the letter of your CD-ROM drive.
4. Follow the instructions on the screen. Click Next to proceed. Unless absolutely necessary, choose the default options and file locations for the program.
5. Attach the software security key to the LPT1 parallel port on the computer. Note that the key may be placed inline to the cable of the printer.

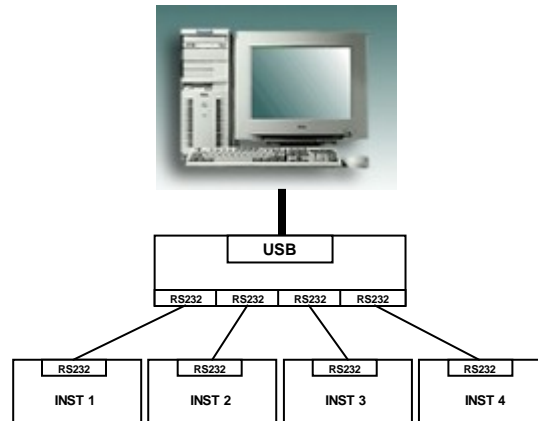
Connecting Instruments to the Computer

The 5270 System communicates with the instruments using one of the standard serial ports from the computer. Generally, COM1, COM2, or COM3 are used for this purpose. Optionally, a USB Serial Hub may be used to expand the number of serial ports available for use.

To minimize data transmission errors, Chandler recommends a separate RS232 serial connection to each instrument.

1. Locate the serial port to be used to communicate with the instruments (COM1, COM2, or COM3).
2. Connect the serial cable to the serial port at the back of the computer and the communication port on the first instrument.
3. Some instruments are equipped to use the Modbus communication protocol. Other instruments may use the Analog Devices protocol. In this case, separate serial ports (i.e. COM1 and COM2) will be required.
4. Turn ON the instrument(s).
5. Verify the communication hardware addresses for Modbus and/or Analog Devices

modules are configured properly. Each signal must have a unique hardware address. The addresses are pre-configured by Chandler before the instrument was shipped. If this is not the case, or if the addresses must be changed, please contact Chandler Engineering or consult the applicable technical manuals for the controllers, recorder, and Analog Devices modules.



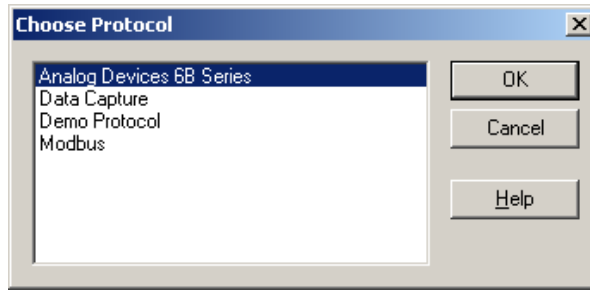
Note: Each instrument will contain one or more controllers, analog devices modules, and/or recorder. Each device must have a unique Modbus or Analog Devices address (1, 2, 3, etc.). It is recommended to start with address 1 and increment by one for each device in sequence.

Configuring Instruments

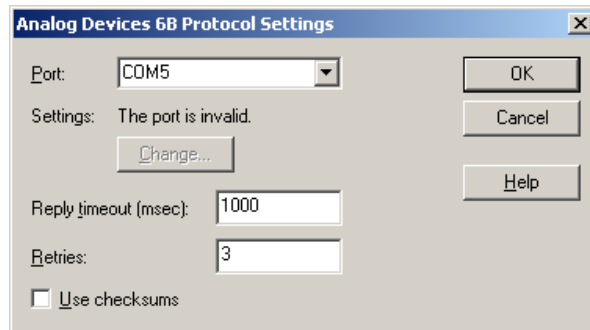
Once the program is installed, it is necessary to connect the serial port(s) to the instruments and configure the instrument(s).

To configure the instruments

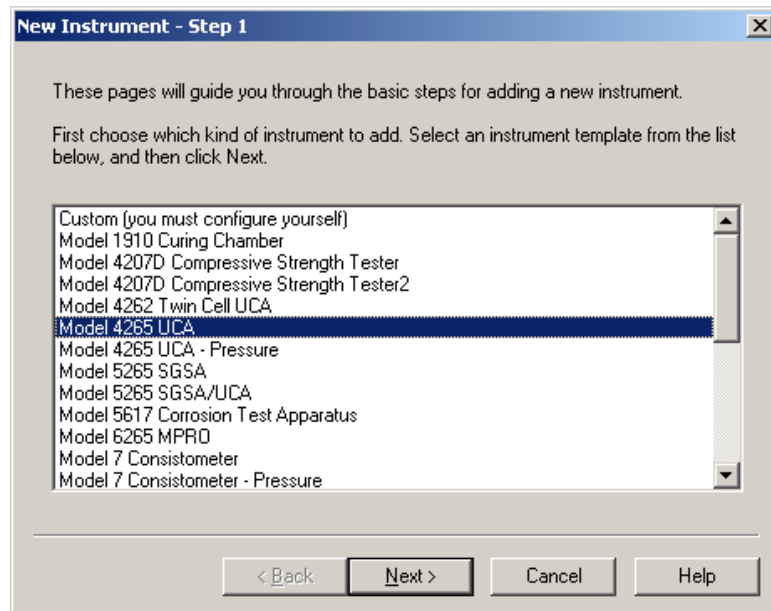
1. Start the 5270 DACS program.
2. Select the **Tools – I/O Connection** option. Select **New** as specified in the documentation for the particular instrument. Configure a New I/O connection using Modbus, Analog Devices, Demo, or Data Capture protocol. Each protocol must use a separate COM port.
 - Analog Devices: Used with Consistometers, UCA, SGSA, Twin Cell UCA, MPRO, FMA instruments
 - Modbus: Used with Consistometers
 - Demo: Used to create simulated signals for testing and demonstration of the software.
 - Data Capture: Used for binary file capture from the MPRO instrument



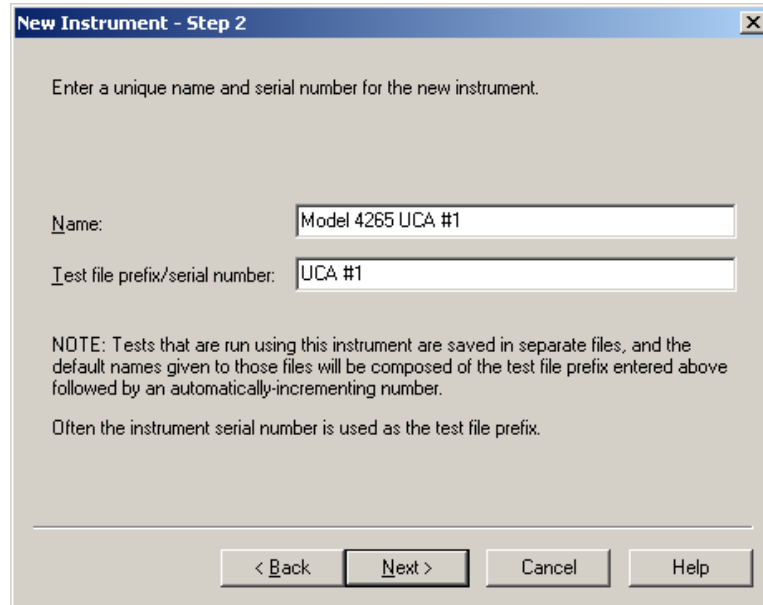
3. Select the COM port that is connected to the instrument.



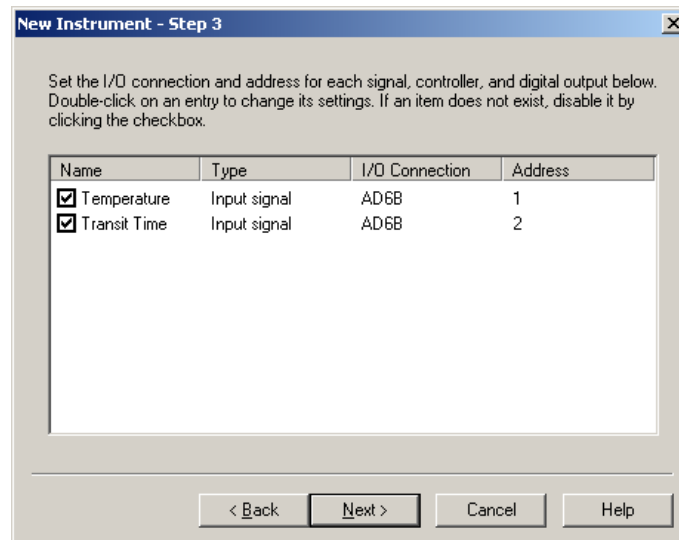
4. Select Tools – Configure. Select New. Choose the Instrument Type that most closely matches the instrument being installed.



- Assign a name and serial number for the instrument to be displayed on the main screen. The serial number value becomes the file name prefix for all data files for this instrument.



- Select the signals that will be used with the instrument. Uncheck any signals that are not used.
- One at a time, double-click each signal and assign the I/O connection that was previously created in Step 3, and the hardware I/O address.
- Proceed to configure additional instruments noting that the same I/O connection is used but unique hardware addresses must exist for each signal.



9. If the instrument is equipped with a Chessell 4103C recorder and it is used to control the automatic shutdown of the instrument at the completion of a thickening time test, the following additional configuration is required. Note that this dialog is accessed using Tools – Configure – Instruments – Modify.

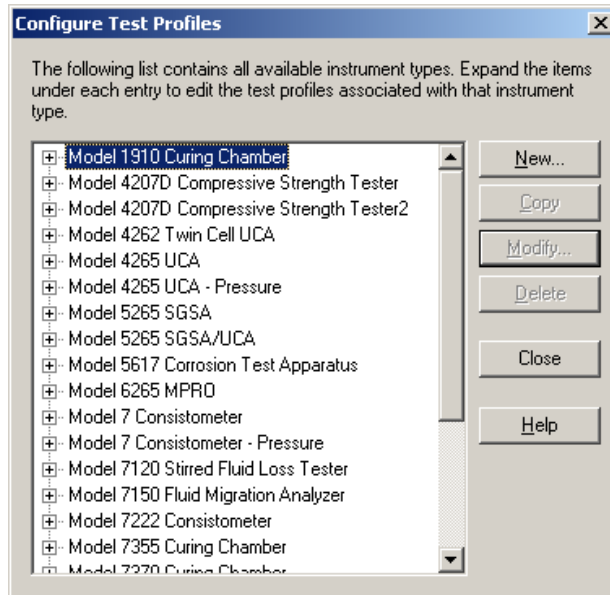
10. Select the Consistency Signal. Select the Advanced button.

11. Enter the Modbus addresses “3:1250u” and “3:1500u”. The “3” may vary if more than one instrument is equipped with a Chessell recorder. These addresses control the automatic alarm setpoint download to the recorder when a test is started.

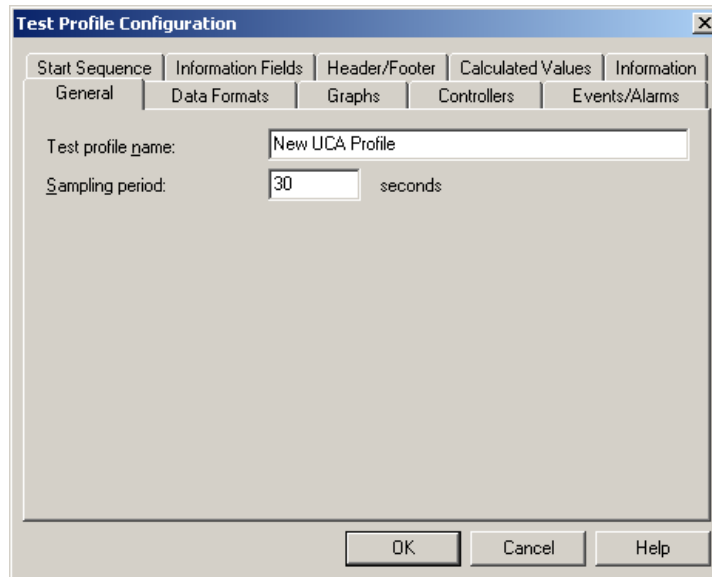
Configuring a Test Profile

The 5270 System includes features used to define the characteristics of data acquisition sessions based on the instrument type. For example, the graphing, event alarms, printed test formats, vary for different instruments. Each instrument type may have more than one test profile.

To create a new test profile select *Tools – Configure – Test Profiles*.



Select the desired instrument type and select *New*.



Enter the desired name for the profile, in this case, “New UCA Profile”. Once the name is defined, the tabs along the top of the dialog box may be selected to define the features specific to this instrument.

When a test is started involving this instrument, this profile may be selected for use.

General: Used to define the Profile Name and default sampling time period.

Data Formats: Used to define the number of decimal points used for logged data.

Graphs: Used to define the graph format and create additional graphs for use during a test.

Controllers: Used to define the temperature and pressure controller schedule(s) that are used as the default.

Events/Alarms: Used to define alarm set-points that will notify the operator of an event. Examples are the time at which 100Bc is reached. Actions may be set that will either notify the operator and/or stop the test.

Start Sequence: Used to define the set-point downloaded to the strip chart recorder at the start of a consistency test. Generally, this is set to 100Bc and provides the consistometer auto-shutdown set-point for the recorder. This feature may be used with other devices that support Modbus communication.

Information Fields: Used to select the information fields that are prompt the operator at the start of each test. Fields may be created or modified using the “testinfo.fld” file located in the 5270 Program configuration folder.

Header/Footer: Used to define the content of the header and footer on a printed test report. More information is provided below.

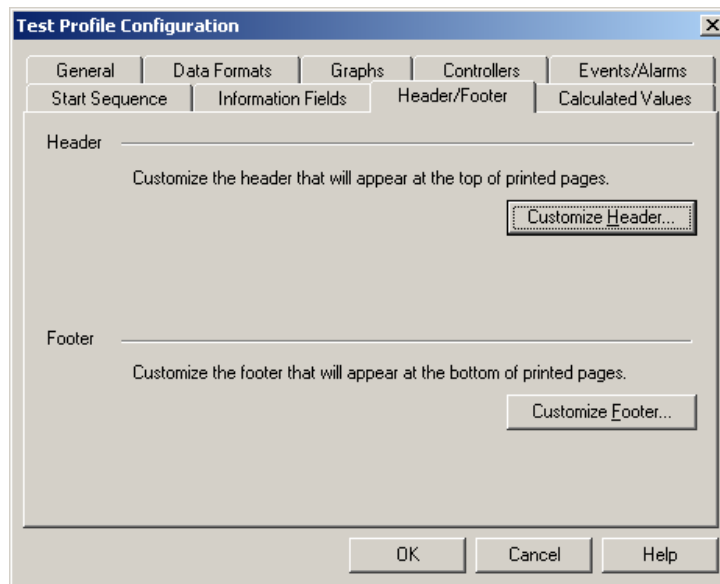
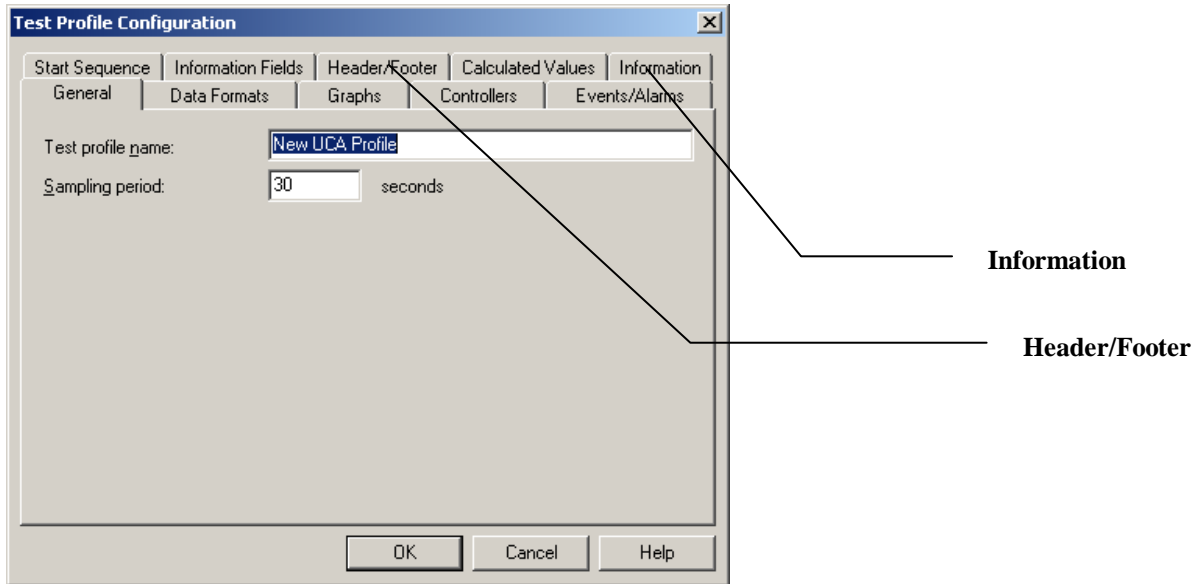
Calculated Values: Used to define new Calculated Curves or Values based on logged data. Examples are the UCA and SGSA calculated curves based on transit time and gel value respectively. Other examples are the determination of intermediate values at specific times during the test. The name of each calculated value is used as a field-name for use in the header or footer.

Information: Used to define the content of the information bar above the graph and the content of the test report that may be viewed by selecting the Information tab below each graph. More information is provided below.

Modifying the Header, Footer, Information Bar, Information Page

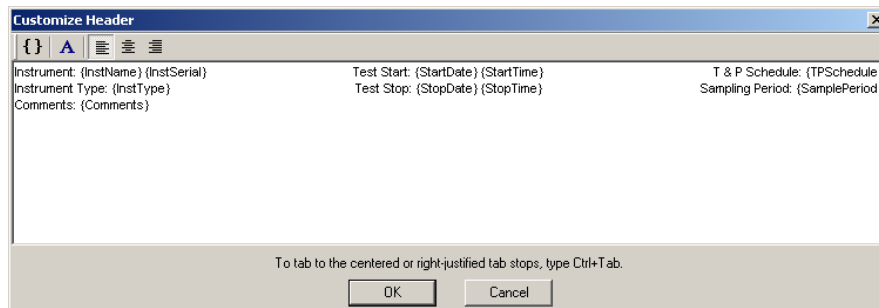
The 5270 System includes a default header, footer, information bar, and information page configuration that may be used without modification. The default configuration varies with the instrument type. The default test profiles may not be altered. However, after a copy is created, each may be modified to include additional information including a company logo BMP file, test information, intermediate data values, etc...

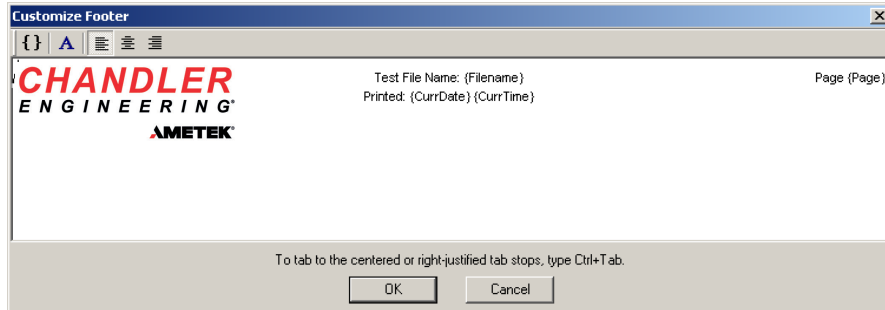
To modify the content of the header, footer, information bar, or information page select either the Header/Footer or Information tab from within the test profiles dialog:



Select either *Customize Header* or *Customize Footer*.

One of the following dialogs will appear:



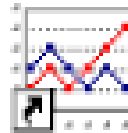


Each window may be edited using text information, graphics (bmp), and field names. The field names include standard test information and user-defined field names from the *Calculated Values* definition.

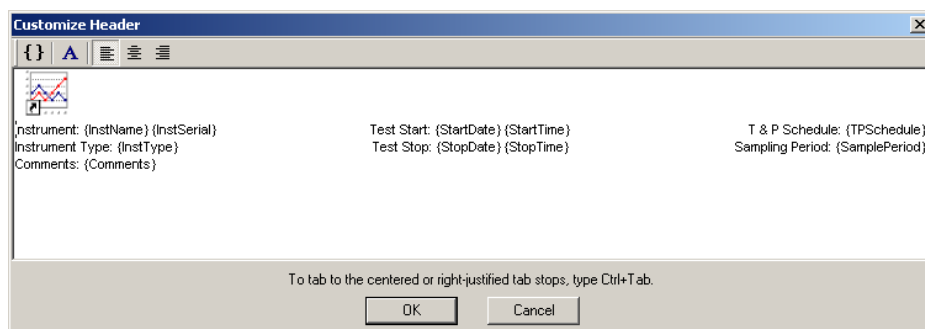
To insert a field name, select the { } button and select from the lists of field names that appear. Usually, the field name is preceded by a description such as:

Final Pressure: {Data:Pressure:final}

To insert a graphic, the Windows clipboard is used. The user must use the Ctrl-V keystroke to paste graphic into the header or footer. The graphic file must be a bitmap (bmp) file. For example, to insert the following icon into the header:



Copy the graphic into the Windows clipboard using a “Cut” command from within a program or use the Ctrl-C keystrokes. Position the cursor in the desired location and use the Ctrl-V keystrokes to paste the graphic into position.



Configuring the Information Bar and Information Page is very similar.

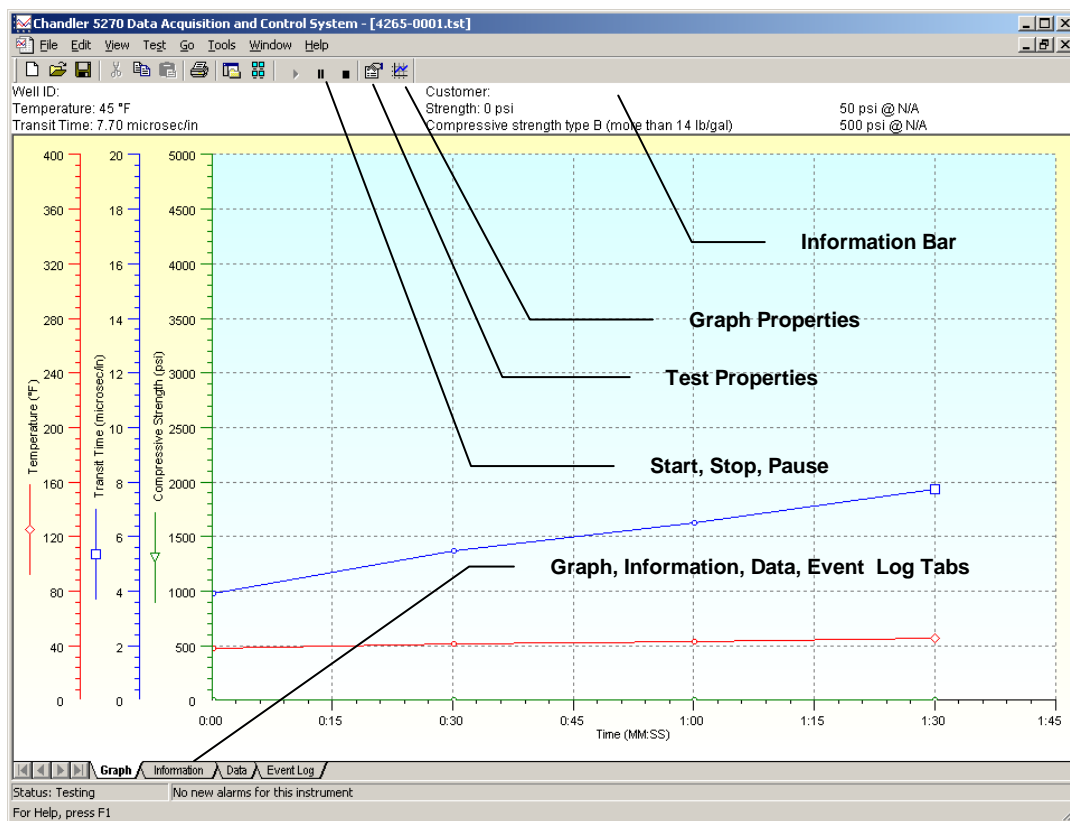
Starting, Viewing and Stopping a Test

Once the system is configured, a test may be started by selecting **File – New**, **Ctrl-N**, or **Click on the Instrument Graphical Icon**.

Verify that all signals are active as evidenced by a green light to the left of each active signal.

Select the test profile for the instrument. The user will be prompted to choose a file name and to enter pertinent data for the test. The test properties may be updated after the test is running by selecting the Test Properties button on the menu bar. Note that the controller temperature and pressure programming can not be changed once the test has started.

Once the test is running, note that three tabs exists at the bottom of the viewing area. These tabs allow selection of graphical, tabular, or test event information. If multiple graphs are defined, a tab exists for each graph.



To change the graph formatting during a test, right-click within the graphical area and select from the options that appear.

Permanent changes to the test profile are made using the Tools – Configure – Test Profiles.

To stop a test, click on the Stop Test button on the menu bar, or close the window. In either case, the user will be prompted to save the data file.

Uninstalling 5270 DACS

At some point, you may want to uninstall the 5270 DACS software (for example, if you are changing computers or reinstalling the software).

Note to Windows NT, 2000, and XP users: To use the Uninstall feature, your Windows account must have administrative privileges.

To Uninstall 5270 DACS

1. Click on the Windows Start button, point to Settings, and then click Control Panel.
2. Double click Add/Remove Programs. The Add/Remove Programs Properties dialog appears.
3. In the program list, click Chandler 5270 DACS.
4. Click the Add/Remove button. The Chandler 5270 DACS Uninstall program starts.
5. Follow the instructions on the screen to uninstall 5270 DACS.

Section 3 – Troubleshooting Guide

Installation Problems

Installing 5270 DACS is usually straightforward. However, if you encounter difficulties with the installation, please reference the following table.

Solutions	Details
Check for sufficient disk space	<p>The Setup program checks for sufficient disk space before proceeding with the installation. If a message appears warning that you do not have enough disk space, exit the Setup program and do any or all of the following to create additional space:</p> <ul style="list-style-type: none"> • Delete program and data files that you no longer require. • Empty the Recycle bin on the Windows desktop. • Delete temporary files. • Delete file content related to Internet Explorer (if applicable).
Copy the CD image to your local hard drive	<p>If you are having difficulty installing 5270 from a CD-ROM, copy the CD image to a directory on your local hard drive and install 5270 from that directory.</p> <p>Change the hardware settings for the CD-ROM to 2X with “No Read Ahead” in the Control Panel – System.</p>
Optimizing your hard drive	<p>Files should be stored in one place on the hard drive, if possible. However, as files are added and deleted, the availability of sufficient space in one location decreases, and files must be broken up and stored in fragments throughout the drive. File fragmentation slows down disk access, which can slow down the performance of 5270 and the installation program. If necessary, de-fragment the hard drive to rearrange files before beginning the installation. For additional information about de-fragmenting your hard drive, see your Windows documentation.</p>
Communication	<p>If you are having difficulty with the serial communication, verify the following:</p> <ul style="list-style-type: none"> • The cable(s) are connected. • The baud rate, data bits, word length, parity, stop bit configuration agree with the I/O Connection configuration. The default is 9600, no parity, 8 data bits word, 1 stop bit. • Select “No Flow Control” in the I/O Connection port configuration. • Verify that the correct I/O Connection is assigned to the signals (if multiple ports and I/O Connections are used). <p>Verify that the I/O addresses are correct. The Modbus addresses are configured from the front panel of the controllers and recorder. The Analog Devices addresses require the use of the Analog Devices Configuration Utility that is included on the CD-ROM.</p>
System performance is sluggish	<p>If the system seems sluggish, verify the following:</p> <ul style="list-style-type: none"> • The data polling rate is not too fast for the application. Although the maximum data polling rate is 1 data point/second, this usually generates more data than is required for a long term test. A suggested data rate is 1 data point/30 seconds. • Verify that a test is not being started and the startup dialog is hidden behind the Instrument Window. When a test is being started, the instrument is being polled at a maximum rate and can slow down the computer. Complete the process of starting the test before opening other windows. • Verify that there are not any other applications running on the computer that could interfere with the 5270.

Solutions	Details
	<ul style="list-style-type: none">• Verify that the computer has adequate memory for the application. If the computer will be used to run several tests simultaneously, verify that the amount of memory is at least 128MB. Consider using NT4.0, Windows 2000, or Windows XP in these applications.

Software Security Key

The 5270 DACS software requires the use of a security key to enable full functionality of the system. The key must be connected to the parallel port (LPT1:) for the full system to operate. Without the key, the 5270 program may be used to view test (*.tst) files or monitor a test in progress on a computer that is equipped with the key through a LAN connection.

Each key is programmed by Chandler Engineering with information that defines the maximum number of active instruments, available instrument types, and available calculation algorithms.

If a modification to the security key programming is required, please contact the Sales personnel at Chandler Engineering.

cut out postcards on dotted lines

Please Send Us Your Comments on This Manual

Model Number _____ Serial Number _____

Printing Date of this manual (from the Title Page) _____

Please circle a response for each of the following statements. Use:

(1)= Strongly agree (2) =Agree (3) =Neutral, no opinion (4) =Disagree (5) =Strongly disagree

- | | | | | | |
|---|---|---|---|---|---|
| a) The manual is well organized. | 1 | 2 | 3 | 4 | 5 |
| b) I can find the information I want. | 1 | 2 | 3 | 4 | 5 |
| c) The information in the manual is accurate. | 1 | 2 | 3 | 4 | 5 |
| d) I can easily understand the instructions. | 1 | 2 | 3 | 4 | 5 |
| e) The manual contains enough examples. | 1 | 2 | 3 | 4 | 5 |
| f) The examples are appropriate and helpful. | 1 | 2 | 3 | 4 | 5 |
| g) The manual layout is attractive and useful. | 1 | 2 | 3 | 4 | 5 |
| h) The figures are clear and helpful. | 1 | 2 | 3 | 4 | 5 |
| i) The sections I refer to most often are _____ | | | | | |

Other comments _____

Contact us at our website: www.chandlereng.com

Email: chandler@chandlereng.com

Please add me to your mailing list-

for Product Updates and New Product Releases, Information,
Technical Articles, and General Announcements of interest to users of this instrument.

Name _____

Company _____

Address _____

Email address _____

My instrument is Chandler Model _____

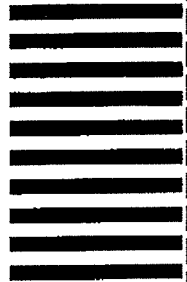
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cut out postcards on dotted lines



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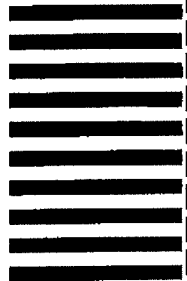
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