O P E R A T I N G M A N U A L

Cygnus™ Editor

Cygnus Configuration Editing Software

IPN 074–394–P1

INFICON

INFICON

OPERATING MANUAL

Cygnus™ Editor

Cygnus Configuration Editing Software

IPN 074-394-P1A

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Part # (see Title Page) 074-_____

Aspect	Very Dissatisfied	Dissatisfied	No Opinion	Satisfied	Very Satisfied	Importance (ranked from 1 to 5, where 1 is low and 5 is high)
Found everything I needed	VD	D	NO	S	VS	
Easy to read	VD	D	NO	S	VS	
Easy to use	VD	D	NO	S	VS	
Relevant to my work	VD	D	NO	S	VS	
Accurate information	VD	D	NO	S	VS	
Well-written	VD	D	NO	S	VS	
Well-organized	VD	D	NO	S	VS	
Technical Enough	VD	D	NO	S	VS	
Helped me solve problems	VD	D	NO	S	VS	

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Chapter 1
Getting Started

1.1 Introduction

The Cygnus™ Editor is a Microsoft® Windows®-based application that provides both programming capability and data collection for the INFICON® Cygnus Thin Film Deposition Controller. It is written as a full 32 bit application which takes advantage of the capabilities of 32 bit operating systems such as Windows 2000 and Windows XP.

The Cygnus Editor provides online and offline editing, structured as functional windows, that allows for saving multiple configurations. The program makes use of a simple, intuitive user interface which clearly displays the parameters and performs boundary checking.

The editor can be used to create new configurations, read existing configurations from a file or the Cygnus controller, and send any or all parameters from a Configuration file to the Cygnus controller.

Please see the **`Cygnus Readme.wri`** file distributed with the software for the latest information.

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1.1.1 How To Contact Customer Support

If you have a question about your software, first refer to this Operating Manual or the Help function within the software. If you cannot find the answer here, or no online Help is available for your topic, then contact Customer Support. When calling Customer Support, please have this manual at hand, along with the following information:

- The Cygnus Editor version number (available from the **Help >> About CygnusEditor...** dialog box).
- The type of computer that you are using and its specifications.
- Your MS Windows type and version number.
- A description of your problem.
- What you were doing when the problem occurred.
- An explanation of the corrective action that you may have already attempted.

CAUTION

Please contact your Customer Support Representative before sending any files.

Customer support may be reached at the following phone numbers.
Please contact the location that is closest to you. If you are located outside the USA please contact your sales office, or see www.inficon.com for a complete listing of worldwide service centers.

Application Support

Syracuse, NY . . . . .ph. 315-434-1128 . . . . . fax 315-437-3803
San Jose, CA . . . . .ph. 408-436-2828 ext. 125 . . . . fax 408-436-1580
Austin, TX. . . . . .ph. 512-448-0488 . . . . . fax 512-448-0398

Field Service and Repair Support

Syracuse, NY . . . . .ph. 315-434-1167 . . . . . fax 315-434-2551
Austin, TX . . . . . .ph. 512-448-0488 . . . . . fax 512-448-0398
San Jose, CA . . . .ph. 408-436-2828 ext. 120 . . . . fax 408-436-1580

Customer support is also available on the World Wide Web or via email:

WWW . . . . . .http://www.inficon.com/support.html
EMail . . . . . .Thin.Film@inficon.com

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1.2 Operating Manual Style Conventions

File names, diskette labels, environment variables, program names, screen prompts, command strings, and text that you must enter on your keyboard are presented in **`this font`**. For example, Enter **`a:\install`**.

Windows dialog options, title bars, and menu options are presented in **this font**. For example: select **File >> Open...**.

When you must hold down a key then press another key, this is expressed as (for example) Press Ctrl+C

We assume that the floppy drive you'll be using is drive A. If you're using another drive, whenever you see "**`a:`**" substitute your floppy drive letter.

We also assume your hard drive is C, so if this isn't the case for you, whenever you see "**`c:`**" substitute the letter for your hard drive.

Often you will be required to select an option from a cascading menu. Instead of verbose statements, for example, "position the mouse pointer over the word **File**, press the left mouse button to display the cascading menu, then drag the pointer to highlight the words **Edit Configuration** and release the left mouse button," you will read, "select **File >> Edit Configuration**."

You will also be required to use icons and buttons. For example, instead of the statement, "position the mouse pointer over the **Configuration Editor** icon, then press and release the left mouse button to select **Configuration Editor**," you will read, "click the **Configuration Editor** icon." or, you may read "select the **Configuration Editor** icon".

Similarly, left-click means to press and release the left mouse button and right-click means to press and release the right mouse button.

The Cygnus Editor operates in the Windows environment. We make the assumption that you know how to use the Windows Graphical User Interface (GUI). Therefore, actions in the Cygnus Editor GUI that are common to the Windows GUI are not explained in detail in this manual. If you do need help with the Windows GUI, please refer to the Windows documentation supplied by Microsoft.

NOTE: This is a note paragraph. Notes provide additional information about the current topic.

HINT: This is a hint paragraph. Hints provide insight into product usage.

CAUTION

This is a Caution paragraph. It cautions against actions which may cause damage to the Cygnus Controller or lead to the loss of data.

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1.3 Inventory Of Supplied Items

You should have one CD ROM (or may have floppy disks) which contain the Cygnus Editor program and online Operating Manual.

1.4 Computer System Minimum Requirements

Table 1-1 Computer System Minimum Requirements

	Recommended for communication with one Cygnus Controller	**Recommended for communication with up to 8 Cygnus Controllers (more than 8, consult factory)**
Processor	Pentium® III 550 MHz or greater	Pentium 4 2.2 GHz or greater
RAM	512 MB or greater	1 GB or greater
Hard Disk space to load CygnusEditor	15 Mb	15 MB
Hard Disk Space for storage	20 GB (see Note below)	60 GB (see Note below)
Disk Drives	(1) Floppy, (1) CD	(1) Floppy, (1) CD
Monitor	15 inch, SVGA or greater	15 inch, SVGA or greater
Resolution	1024 x 768 or greater	1024 x 768 or greater
Communications	one RS-232 port	One GPIB (IEEE-488) card
Operating System	Windows 2000 or XP	
NOTE: Data files should be archived and removed periodically as a maintenance step to provide storage space for ongoing data collection.		

The Cygnus Controller and Communications Interface must meet the requirements shown in the following sections.

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1.5 Cygnus Requirements

1.5.1 Firmware

The Cygnus firmware must be Version 1.30 or higher.

1.5.2 Thin Film Models Supported

The Cygnus is the only Thin Film Deposition Controller supported at the time of this release.

1.6 Communications Interface

Communications interfaces supported are RS-232 for a single Cygnus and GPIB, via a GPIB card and IEEE-488 cable, for communications with multiple Cygnus controllers.

The recommended board for IEEE-488 communications is the PCI/PXI8212, a high performance GPIB interface for the PCI bus from National Instruments.

1.6.1 Communications Baud Rate

- RS-232 — selectable: 19200, 9600, 4800, 2400. 19200 is the default.
- IEEE-488 — not selectable: > 1.5 Mbytes/sec

1.6.2 Communications Cable

Communication cables are required to connect the PC running the Cygnus Editor to the Cygnus Controller. Cables are different and dependent on the Communications Interface.

- If you will use RS-232C Communications, refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379) section titled “RS232C Serial Port” for detailed information concerning constructing an RS-232C cable.
- If you will use IEEE-488 Communications, you’ll need to purchase a standard IEEE-488 cable at a length appropriate for your installation. INFICON does not supply IEEE-488 cables.

Maximum Length

RS-232 — 50 feet (15 meters)

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1.7 How To Install The Cygnus Editor

Install the Cygnus Editor from within Windows as follows:

NOTE: To install the Cygnus Editor on a system running Windows 2000 or XP system you must have Administrative or Standard user rights.

NOTE: This description assumes your CD-ROM drive is drive "**d**". If it is not "**d**", substitute the appropriate drive letter.

1. Insert the CD into the CD-ROM drive.
2. Select **Start >> Run...** to display the **Run** dialog
3. In the **Open** field, type **`d:\setup`**
4. Select **OK**.
5. When you are prompted, answer the questions. See note at bottom of page.

   NOTE: If during the installation you are prompted to replace a system file (e.g. a DLL file), it is recommended that the file be replaced. Normally this prompt is only presented if the file on the hard disk is older than the file on the installation disk. The newer version should still work with older programs that use this file; however, if you are concerned that it may cause problems, then you can abort the installation, save a copy of the file in question, and restart the installation program. The Cygnus Editor may not function properly if all files are not installed.

When the installation is complete, put the original CD in a safe storage area.

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1.8 The Software Controls

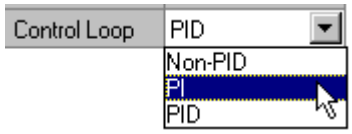
The Cygnus Editor software utilizes some common Windows controls as well as a few custom controls for easy editing and entry of parameters and information.

The following controls may be in use throughout the software:

. . . . . **Button**. Pressing this will promote a dialog box for user input or take the action noted on the button.

. . . . . **Checkbox**. This is used to enable or disable a feature or action taken upon the system. Checkboxes are normally group based upon functionality but are often mutually exclusive.

. . . . . **Entry box**. An entry box generally accepts a numeric or alphanumeric entry and has upper and lower boundaries associated with the parameter. The boundaries are checked after the entry has been input and the cursor has been moved to another entry point. The value in an entry box can be typed over by clicking once in the box, to focus on the box, and then typing the new entry. A double-click in the box will highlight the value, which allows for the value to be edited or deleted.



. . . . . **Pulldown**. A pulldown, indicated with a downward triangle, provides a list of acceptable inputs for the parameter. A highlight is used to select the parameter. Some entry boxes that use pulldowns can also be directly edited.

HINT: When editing from the keyboard, the Alt+DownArrow key combination will "pull" the pulldown.

. . . . . **Radio buttons**. These buttons are used to accept a single selection from at least two choices. Radio buttons are often grouped according to functionality and sometimes enable other controls based on the choice selected. If radio buttons are shown, but are disabled (greyed), then they are being used to show a status not selectable by the user.

. . . . . **Spinners**. These are used to increase or decrease a parameter. Most often used with an entry box, spinners only act upon the entry box selected with the mouse pointer. When two or more entry boxes are on the same line as the spinner, the mouse pointer must be used to select an entry box before the spinners will change the value in that box. When an entry box contains a value with punctuation (e.g. a value of time), the spinners act upon each piece of the value individually. Some entry boxes that use spinnners can also be directly edited.

HINT: When editing from the keyboard, the Alt+UpArrow key combination will increase the value. The Alt+DownArrow key combination will decrease the value.

. . . . . **Toolbar**. A collection of buttons that is often visible for an associated functionality and invisible when that function is inactive. Toolbars can be moved with the mouse pointer or made visible/invisible from a menu selection.

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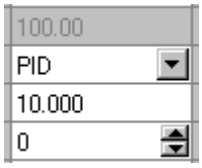
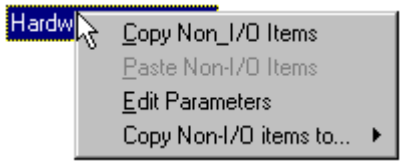


. . . . . **Grid**. The grid is a row and column collection of cells of related data that use many of the controls mentioned above. Some grids allow for all cells to be edited and some contain a mixture of protected and editable cells. Controls used in grid cells include Pulldowns, Entry Boxes, and Spinners. Some grids support use of the **Delete** and **Insert** keys.

In grids that support deletion, any row can be deleted by selecting an item in the row and pressing the **Delete** key.

In grids that support insertion, a row can be inserted above any row by selecting an item in a row and pressing the **Insert** key.

In grids that support duplication, a row can be duplicated by selecting an item in the row and pressing the **Shift-Insert** key combination. The duplicated row is then inserted as the next row.



. . . **Context Menu**. This menu is accessed by clicking the right mouse button on a view, grid or panel. Many parts of the software contain a context menu; the menu provides functionality appropriate for the data or parameters displayed.

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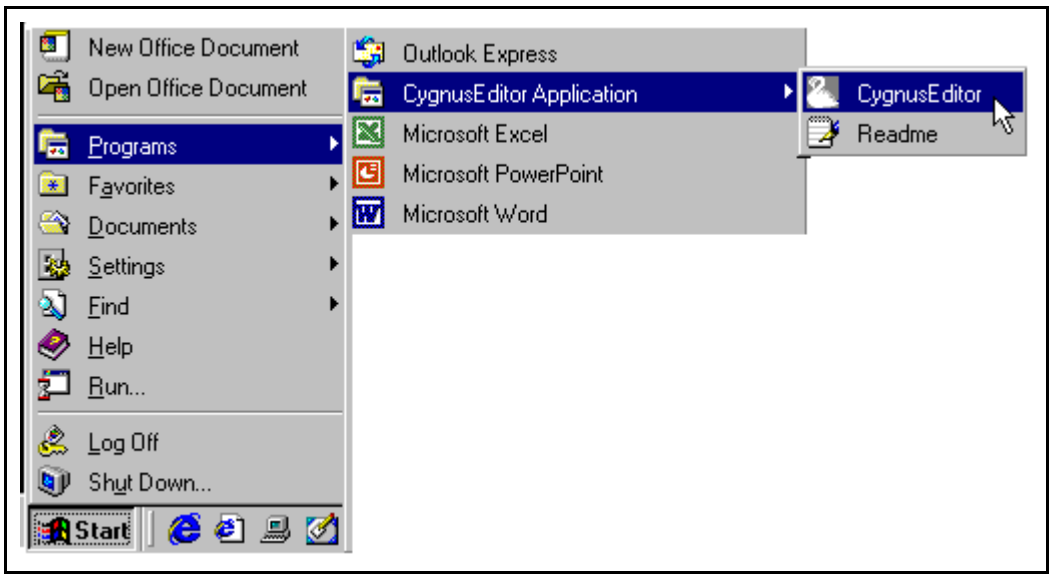
1.9 How To Start The Cygnus Editor

To start the Cygnus Editor select **Start >> Programs >> CygnusEditor Application >> Cygnus Editor** (see Figure 1-1).

HINT: You may want to make a shortcut to Cygnus Editor on your desktop to facilitate starting the program in the future. See the Windows documentation for instructions on how to create shortcuts.

When upgrading the Cygnus Editor program it is not possible for the installation program to upgrade existing shortcuts. After an upgrade, an existing shortcut will not work if the Cygnus Editor is installed in a folder that is not the folder pointed to by the shortcut.

Figure 1-1 Starting CygnusEditor



The first time Cygnus Editor is run on a computer it will start in the setup screen with the communication configuration dialog displayed.

See Chapter 2 for information on how to configure the communications interface, individual controllers and user preferences on your system.

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1.10 Where To Go From Here

This Operating Manual is intended to make the process of setting up, installing, and using the Cygnus Editor a pleasurable and trouble-free experience. Please, take a few moments to look through it and become familiar with its contents.

The information in this manual is organized into the following chapters:

Chapter 1, Getting Started
: An introduction to the Cygnus Editor application, provides instructions on how to install and run the Cygnus Editor, and explains how to use this Operating Manual.

Chapter 2, Setup
: A description of how to set up the software and communications ports for your installation and customize it to your preferences.

Chapter 3, Editing Configurations
: Describes how to edit, save and send Configuration files, which specify the measurement parameters for the Cygnus Controller.

Chapter 4, The Data Logger
: Describes how to acquire, save, recall and report Cygnus Controller data.

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Chapter 2
Setup

2.1 Introduction

When the Cygnus Editor is first installed on a system, there are a few things that need to be set to customize it to the particular hardware configuration. In addition, several aspects of how the program looks and acts can be customized to individual preferences. This chapter discusses how to customize your system to the needs of your location.

2.1.1 Initial Setup

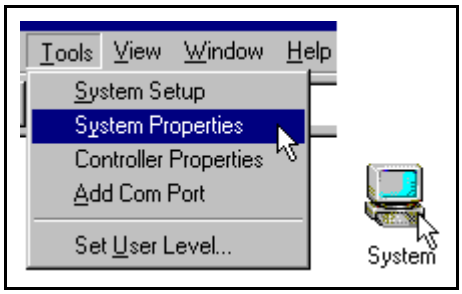
The first time the Cygnus Editor is run the following steps should be taken to set up the system:

1. Set up the communications ports for your system (see section 2.2 below).
2. Configure each controller (see section 2.3 on page 2-9).
3. Configure the user preferences (see section 2.4 on page 2-13).

2.2 Communications Setup

The communications interface is set up via the **System Properties Pages**, which are accessed via the **Tools >> System Properties**, or from the **System >> System Properties** menu on the **System Setup Screen,** or by clicking on the **System Icon** on the **System Setup Screen** (see Figure 2-1).

Figure 2-1 Accessing System Properties and Communications Settings



The first time the Cygnus Editor is run it starts on the **System Setup Screen** and prompts for a communications port (Com Port) to be configured. See Figure 2-2. From this dialog select and add the Com Port to be used for communications with the Cygnus Thin Film Controllers.

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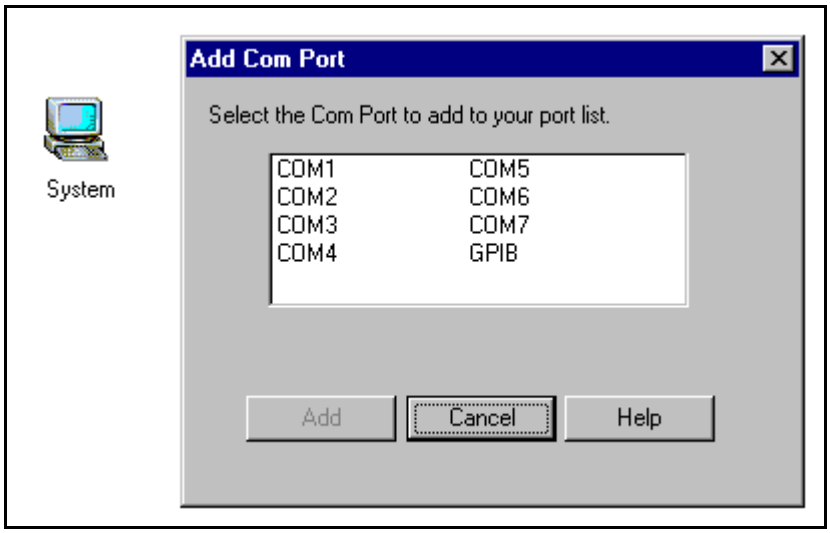
Figure 2-2 Add a Com Port



NOTE: Communication problems often occur when other programs (for example, PDA link programs) that either actively use the communications port, or wait for activity on the communications port, are running in the background. These types of programs should be disabled or removed from the computer used for Cygnus Editor communications.

For most installations, the default settings applied by the program to the newly added port will work without being changed. Adding a port, and pressing OK to any dialogs that follow, will configure a port that is immediately ready for use.

Com Ports can be added or reconfigured from the **System Properties** page, shown in Figure 2-3, which provides three tabs: **Port Settings**, **Display** and **Miscellaneous**. The **Port Settings** tab is described in section 2.2.1 on page 2-4 and the **Display** and **Miscellaneous** tabs are described in section 2.4 on page 2-13.

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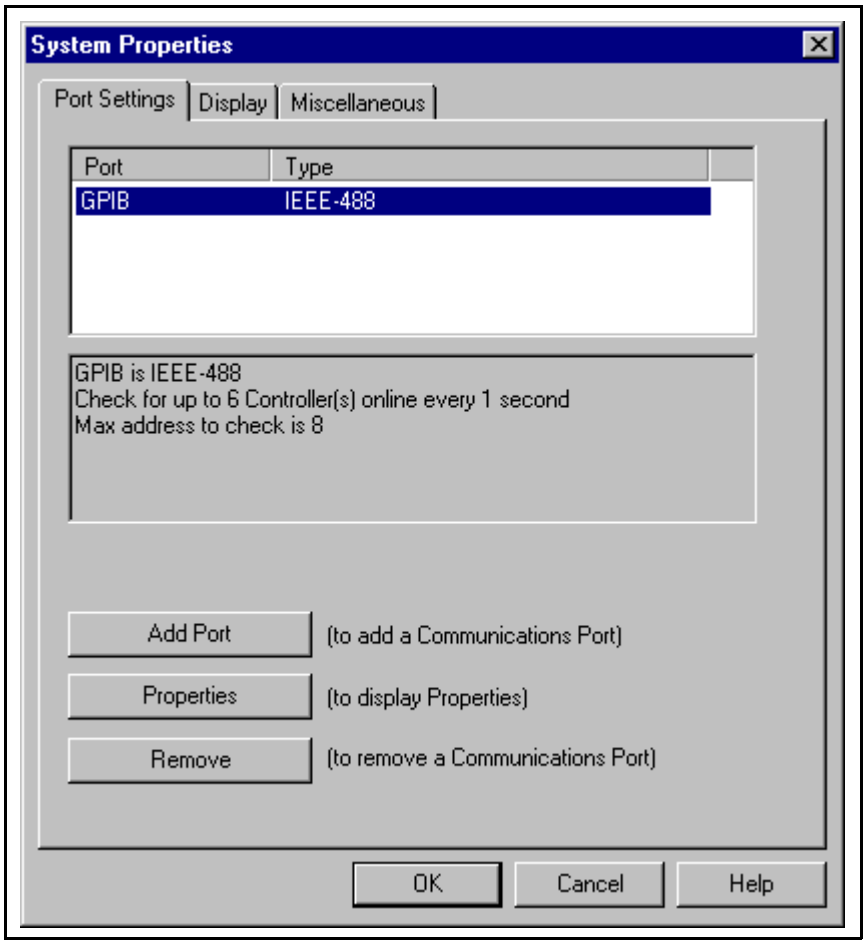
Figure 2-3 System Properties Page



Three buttons are provided on the Port Settings tab which affect the port highlighted in the list: **Add Port**, which is described in section 2.2.1 on page 2-4, **Properties**, which is described in section 2.2.2 on page 2-6, and **Remove**, which deletes the port and any associated parameters from the System Properties.

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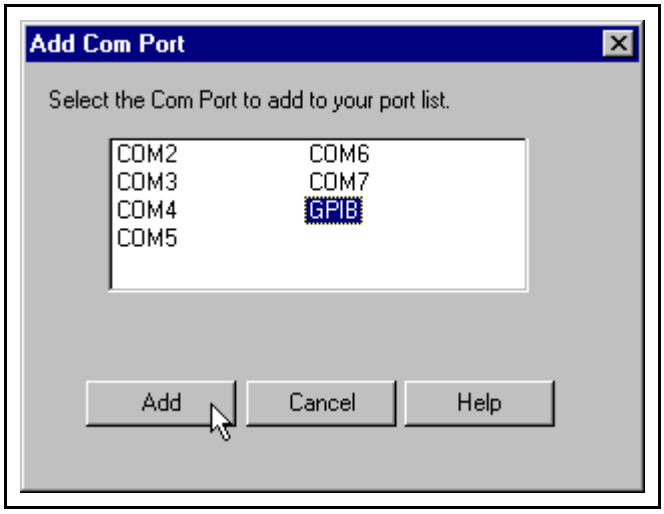
2.2.1 Adding A Communications Port and Controllers

The **Port Settings** tab (Figure 2-3) shows the ports currently configured. Clicking on the **Add Port** button will bring up the dialog shown in Figure 2-4. If communicating to the Cygnus Controller via **RS-232**, select the port in which the **serial cable** is connected. After selecting the correct port, click the **Add** button. This will return to the **System Properties** dialog and will now display the added port as shown in Figure 2-6 on page 2-5. If communicating to the Cygnus Controller via **GPIB (IEEE-488)**, select the GPIB item and press **Add**.

Figure 2-4 Adding a Communications Port



If this is the first time the GPIB port has been added to the Cygnus Editor, the following dialog (Figure 2-5) will assist with the configuration.

Figure 2-5 Enabling AutoDetect for a New Communications Port

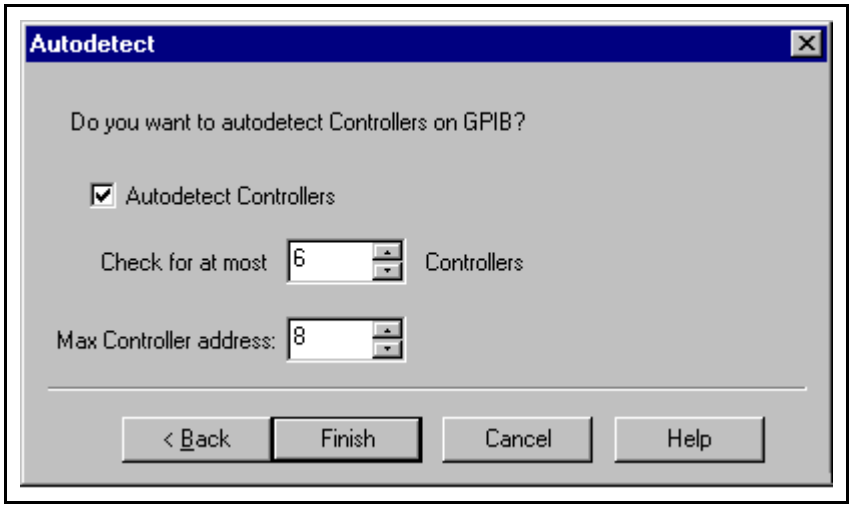


Figure 2-5 asks if **AutoDetect** should be enabled for this port. **AutoDetect** is a function that periodically checks the communications port for controllers and automatically bring them online.

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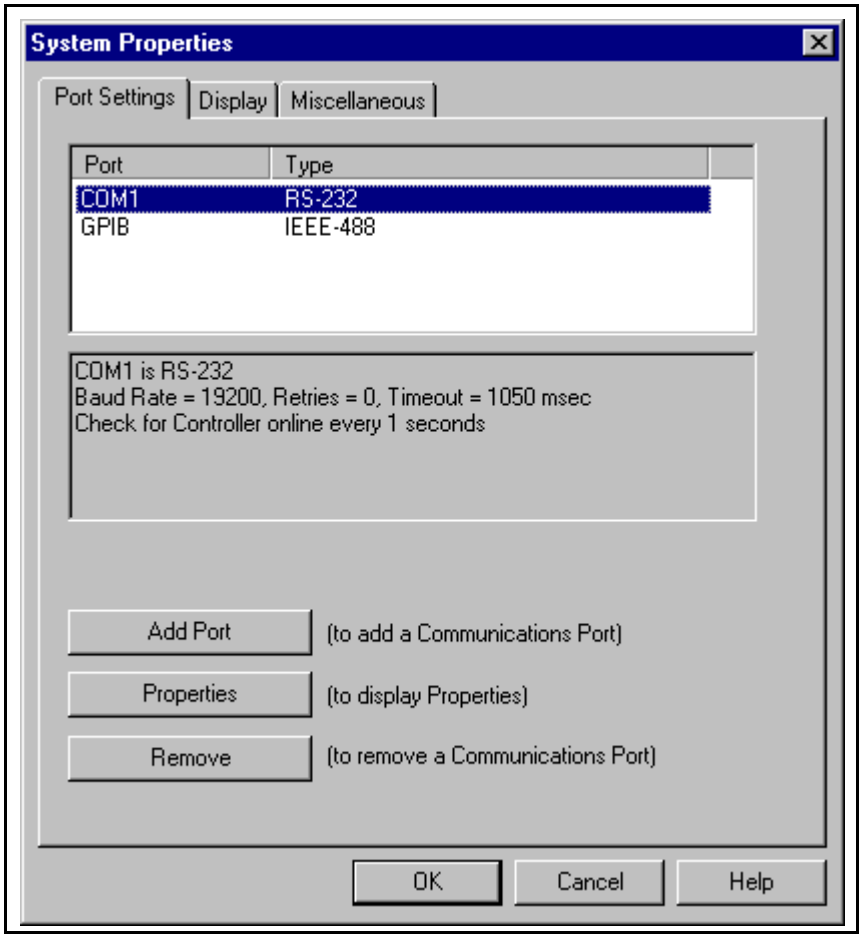
Refer to Figure 2-9 on page 2-7 and the text accompanying it for information on **Check for at most "n" Controllers** and **Max Controller Address**.

When initial **Autodetect** changes are finished, click **Finish** to accept the settings (or **Cancel** to abort the action). If **AutoDetect** was selected, the program will automatically detect and bring online any controllers connected to the ports. A short delay may occur while bringing the controllers online.

When the **Finish** button is selected, the display returns to the **Port Settings** tab of the **System Properties** display. (See Figure 2-6.)

Figure 2-6 System Properties: Port added



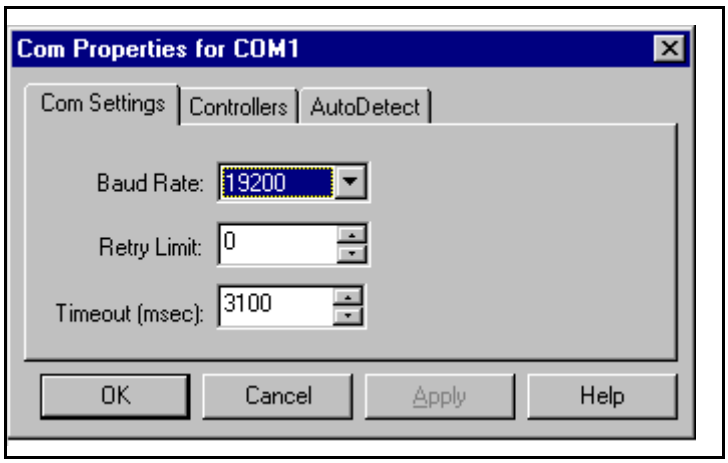
The port type and properties can be changed when controllers are offline by clicking the **Properties** button on the **Port Settings** page. Clicking the **Properties** button will display the **Com Properties** page with either three tabs, for RS-232, or two tabs for GPIB.

The first page that appears for RS-232 is shown in Figure 2-7 and described in section 2.2.2.

2.2.2 Communications Port Properties

Figure 2-7 shows the properties of the Communications Port.

Figure 2-7 Com Properties: Com Settings tab



The **Baud Rate** is set by default to 19,200 for RS-232 communications. This is the fastest rate possible (at this time) in the Cygnus Controller.

The **Retry Limit** is the number of times the program will try to reestablish communications with the Cygnus Controller after a communication error. The default should be adequate for most installations, however, if the Controller goes off line frequently try setting the Retry Limit to a higher count.

The **Timeout** is the number of milliseconds the communication module will wait for a response from the controller. Normally, the default value is adequate and should not be changed. Setting this value too high will increase the time it takes to detect a controller which has gone off-line. Setting it too low may cause an error to be reported when communication commands with long execution times are issued.

Click **OK** to accept the selections, or **Cancel** to abort the action. You can also click on the **AutoDetect** tab to access the other parameters associated with the **Com Properties** for this port.

The **Controllers** tab provides a list of Controllers configured to communicate with the software. For RS-232 communications, this list will contain one Controller. Multiple Controllers may be listed for GPIB communications depending on the number of Controllers attached to the communications port.

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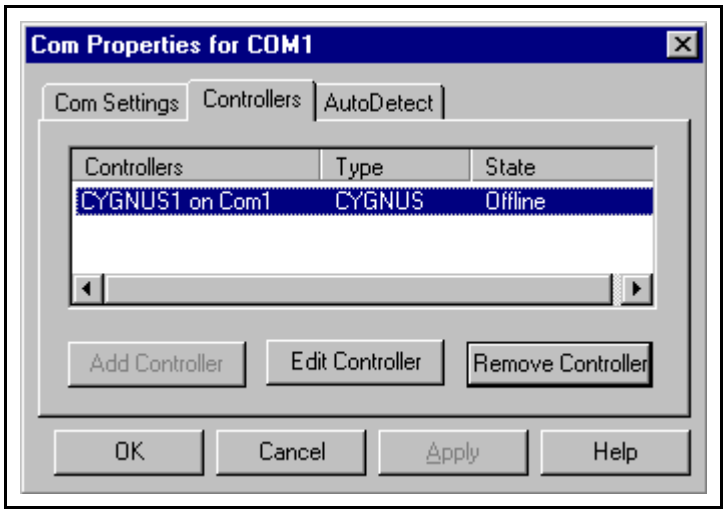
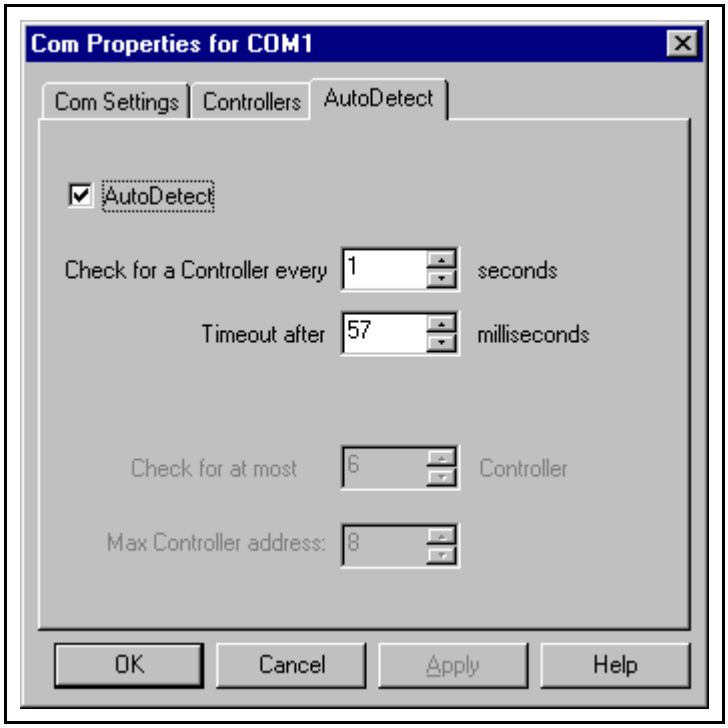
Figure 2-8 Com Properties: Controllers tab



The **Controllers** tab (refer to Figure 2-8 an RS-232 example) allows for a Controller to be removed (using the **Remove Controller** button) or edited (using the **Edit Controller** button). When editing the Controller, changes can be made to the **Controller Name**, which is used to identify the Controller in the software, and, in the case of GPIB communications, the **Controller Address**, which is used by the software to identify the Controller on the communications port.

The **AutoDetect** tab (see Figure 2-9) allows the Cygnus Editor communications to be streamlined to look only for a specific group of Controllers.

Figure 2-9 Com Properties: AutoDetect tab



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The **AutoDetect** check box (see Figure 2-9) specifies that the software should periodically check the communication port for controllers and automatically bring them online.

The other four boxes can be set to further improve the timing of the communications. Specify the maximum number of controllers expected and the frequency with which the Cygnus Editor will check to achieve optimum communications performance.

The interval specified (**Check for a Controller every "t" seconds**) is the time between successive checks.

Once the maximum number of controllers is found, the Cygnus Editor discontinues searching. If the **Check for at most "n" Controllers** value is set to the actual number of controllers, it can save significant overhead by not looking for controllers that don't exist. Specifying the maximum address (**Max Controller address**) for the port can significantly reduce overhead, also.

NOTE: The **Max Controller Address** is the largest address of any Cygnus Thin Film Controller connected to this port. If this value is set too high it could take a long time for the Cygnus Editor to detect a new controller coming online. However, if the **Max Controller Address** is set too low then controllers with addresses larger than this value will not be detected.

For the least amount of communications overhead (i.e. the fastest communications) set the Cygnus Controller addresses from 1 to the maximum number in consecutive order. For example, for six controllers, set the addresses to 1,2,3,4,5 and 6, set the "**Check for at most**" parameter to 6 and set the **Max Controller address** to 6.

When **Autodetect** changes are finished, click **OK** to accept the settings (or **Cancel** to abort the action). If **AutoDetect** was selected, the program will automatically detect and bring online any controllers connected to the ports. A short delay may occur while bringing the controllers online.

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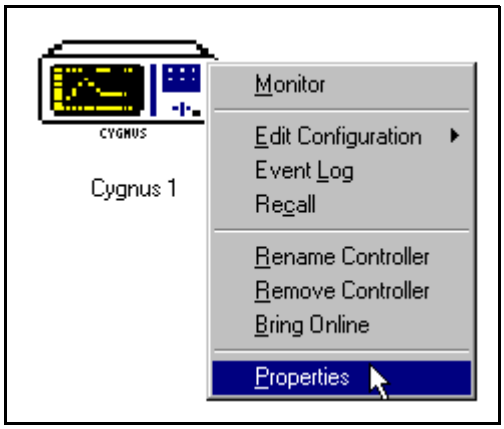
2.3 Controller Configuration and Setup

When a controller first comes online, an icon representing the controller is placed on the System Setup screen. One page is available to configure system parameters for the controller. This **Data Settings** page is accessed by right-clicking on the controller icon (Figure 2-10) and selecting **Properties**.

Figure 2-10 Accessing the Controller Properties



NOTE: The Controller Icon will normally appear as shown in Figure 2-10. If the Controller Icon is shown with a blue 'X' on it, that indicates that the Controller has never been online. If the Controller Icon is shown with a red 'X' on it, that indicates that the Controller was once online but is currently offline.

The **Data Settings page** (Figure 2-11) allows the configuration of the event reporting and logging facility and the specification of the directory paths for storage of event data, controller data, configuration, and other Cygnus Editor files.

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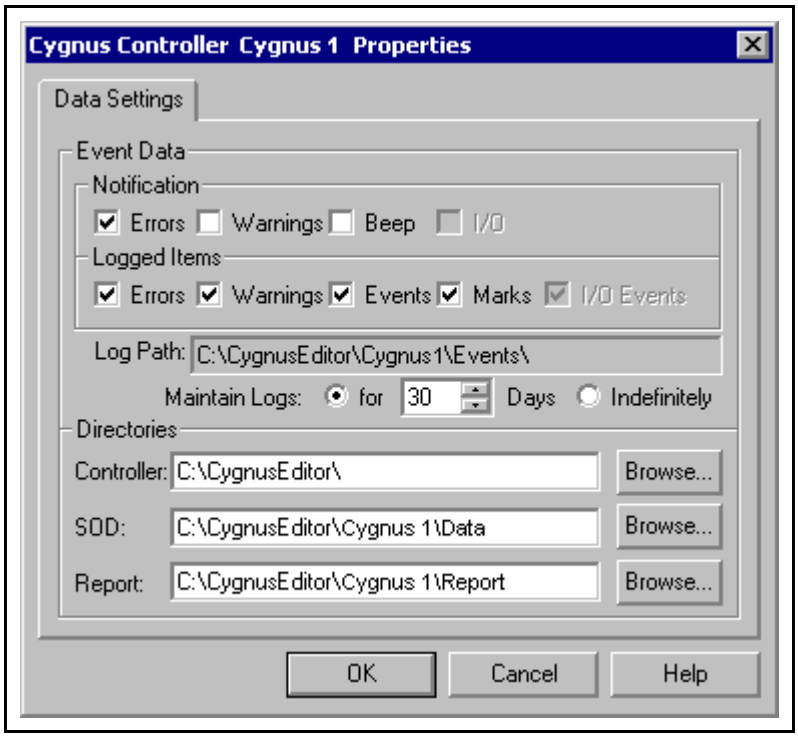
Figure 2-11 Controller Data Settings



Event Data

Notification . . . . . This parameter allows the specification of the level of errors that will be reported to the user in an error dialog box. The choices are **Errors, Warnings** and **Beep**. If only **Beep** is selected then the error dialog box will *not* be displayed when an error is detected, but rather the PC will beep once indicating an error has occurred. The error log can be examined to determine the nature of the error.

Logged Items

Errors . . . . . When checked, all errors reported from this controller will be logged in the event log file.

Warnings . . . . . When checked, all warnings reported from this controller will be logged in the event log file.

Events . . . . . When checked, all events for this controller will be logged in the event log file.

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Marks . . . . . When checked, if a mark is automatically inserted in a data stream as a result of an alarm condition, it will be logged in the event log file.

Log Path . . . . . The location where the event log files will be written. A new event log file is written each day and named according to the date with a **`.evt`** extension. The path is automatically determined by the program, which automatically adds **\Events** to the **Controller** directory path (see below).

Maintain Logs . . . . . Event log files over a specified age will be automatically deleted. The expiration may be specified or **Indefinitely** may be selected to keep them until explicitly removed.

Directories

Three paths can be specified for the storage of files associated with the Cygnus Editor: **Controller, SOD** and **Reports**. To change any directory you may type in the new path or select a path using the **Browse** button.

Controller . . . . . This is the top level directory for all files that are related to a specific controller. Sub directories under the **Controller** directory are used to save the **Configuration file**, **Event Logs**, etc. The default **Controller** directory is built by adding the **Controller** name (with illegal characters converted to underscores) to the **Main** directory specified during installation.

SOD . . . . . This is where the **Sea of Data** (**SOD**) files are stored. This can be changed to a larger disk or network drive to allow saving of more data without overflowing a local disk. The default **SOD** directory is built by adding **\Data** to the **Controller** directory.

Report . . . . . This is where the **Report** files are stored. The default **Report** directory is inherited from the **SOD** directory.

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CAUTION

If a network or removable drive is selected for the SOD directory then it must be available and writable when the Cygnus Editor is ready to write data. If the network or drive is not available, a loss of data could occur.

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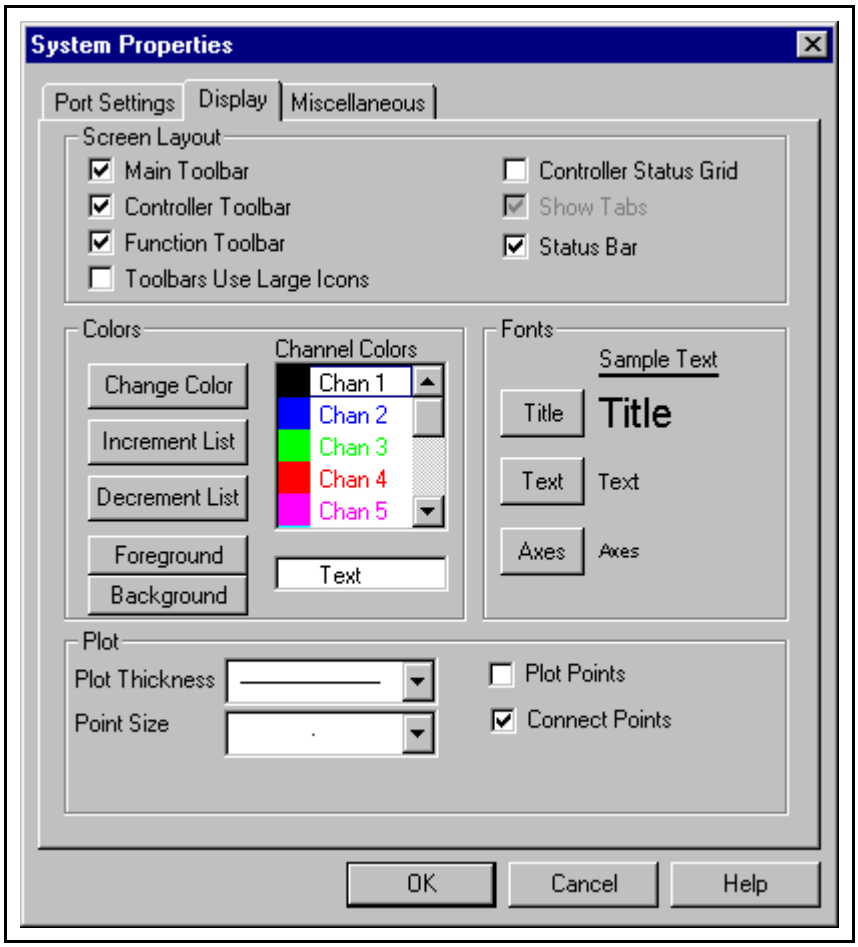
2.4 User Preferences

The **System Properties** pages allow the customization of several global (that is, system wide as opposed to controller specific) options. Selecting **Tools >> System Properties** on the main menu, selecting the **System >> System Properties** menu on the **System Setup** screen or clicking on the **System** icon on the **System Setup** screen brings up the **System Properties** display used to configure your system. The **Port Settings** tab allows the configuration of the communication channels (refer to section 2.2 on page 2-1). The **Display** tab has several options which customize the display (see section 2.4.1 below). The **Miscellaneous** tab allows the customization of several options (see section 2.4.2 on page 2-16).

2.4.1 Configuring The Display Options

Figure 2-12 shows the **Display** tab of the **System Properties** pages.

Figure 2-12 System Properties, Display Tab



Screen Layout

This section allows the specification of which screen elements are displayed by default when the program is run. Each element can be enabled or disabled at any time while the program is running.

Main Toolbar . . . . . The **Main Toolbar** is displayed when checked.

Controller Toolbar . . . . . The **Controller Toolbar** with function buttons is displayed when checked.

Function Toolbar . . . . . The **Function** or view specific toolbar is displayed when checked.

Toolbars Use Large Icons . . . . . When checked, all toolbars will use larger icons than initially presented at startup. Due to icon size and screen size, some toolbars may be displayed on a second line when using **Large Icons**.

Controller Status Grid . . . . . The **Controller Status Grid** is displayed when checked.

Show Tabs. . . . . If the **Controller Status Grid** being displayed contains multiple pages, tabs are used to select the desired page. This option displays the tabs when checked and hides them when unchecked.

Status Bar . . . . . The program **Status Bar** is displayed at the bottom of the screen when checked.

Colors

Channel Colors. . . . . The default color set used for trend channels in **Monitor** are displayed in this box.

Change Colors . . . . . Changes the color used for the highlighted channel. A standard color selection palette is displayed. Select the desired color and click **OK**.

Increment List. . . . . Add a channel to the end of the list.

Decrement List . . . . . Delete a channel from the list.

Foreground . . . . . Set the color in which text will be displayed on the graphs. A standard color selection palette is displayed. Select the desired color and click **OK**. The selected color is displayed in the text box to the right of the button.

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Background . . . . . Set the background color for the graphs. A standard color selection palette is displayed. Select the desired color and click **OK**. The selected color is displayed in the text box to the right of the button.

Fonts

Title . . . . . Select the font size and typeface to be used for titles on the graphs. A standard font selection dialog will be displayed. Select the font and size and click **OK**. A sample of the text in the selected font is displayed to the right of the button.

Text . . . . . Select the font size and typeface to be used for miscellaneous text on the graphs. A standard font selection dialog will be displayed. Select the font and size and click **OK**. A sample of the text in the selected font is displayed to the right of the button.

Axes . . . . . Select the font size and typeface to be used for the axis labels on the graphs. A standard font selection dialog will be displayed. Select the font and size and click **OK**. A sample of the text in the selected font is displayed to the right of the button.

Plot

Plot Thickness . . . . . Provides choices of different thickness lines for plotting and printing trend data.

Point Size . . . . . Provides choices of different size points for plotting and printing data. Some point sizes are indistinguishable when using the **Connect Points** option.

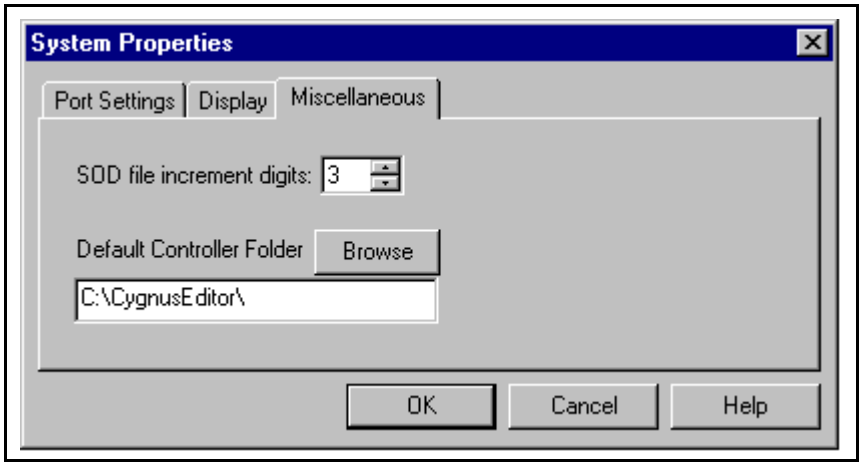
Plot Points . . . . . Plots a point of **Point Size** when enabled. When used with a large **Point Size** and **Connect Points** enabled, this provides a marker at each point along the trend lines.

Connect Points . . . . . When enabled, provides a line connecting all points on a per channel basis. When disabled, data is plotted as points only.

NOTE: The effect of changing the above parameters may differ based on the monitor, display board, resolution and user settings.

2.4.2 Miscellaneous User Options

Figure 2-13 System Properties, Miscellaneous Tab



SOD file increment digits. . . . . This entry configures the number of numerical places used in the file name index for SOD (data) files. For example, selecting 3 will allow the index to increment to 999 as SOD data files are saved.

Default Controller Folder. . . . . This entry allows for specification of a base folder for the controller. The base folder is used as the storage folder if the folder specified during installation becomes corrupted.

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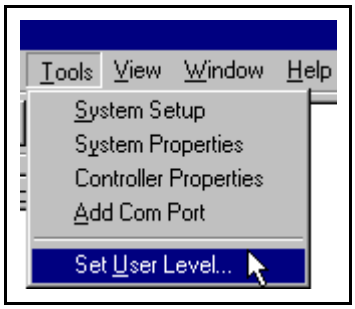
2.4.3 User Level (Access Levels)

The Cygnus Editor can be operated from one of two User Levels — *Advanced* or *Normal*. These levels, referred to as Access Levels, provide protection against modifications of controller configurations and System Setup. An Advanced user may want to completely set up the system and then set the User Level to Normal for the system operators. The Cygnus Editor system can be password protected to operate at one of two access levels:

- **Advanced**. All system controls are available. The system may be controlled manually while in **Advanced** mode.
- **Normal.** A limited set of system controls are available. Major functionality that is not available to a **Normal** user includes **Edit Configuration** and any changes to the System Setup. Many functions are available but provide read-only access at the **Normal** user level.

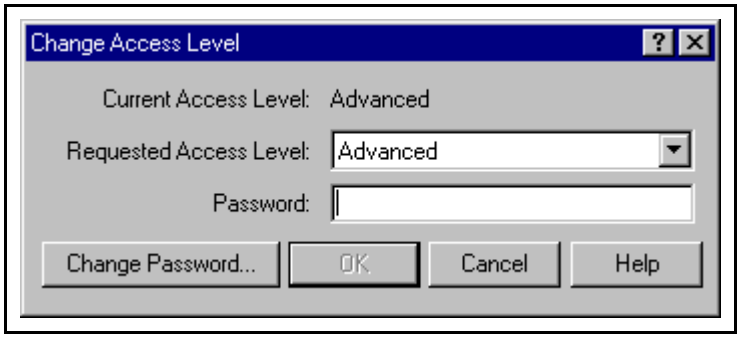
To change the security level, select **Tools >> Set User Level...**. See Figure 2-14.

Figure 2-14 Tools >> Set User Level



The **Change Access Level** dialog will display the current security level. In Figure 2-15 the **Current Access Level** is set to **Advanced**.

Figure 2-15 Change Access Level Dialog



When changing from **Normal** level to **Advanced** level, enter the correct password in the **Password:** field and click **OK**. To change a Password, click the **Change Password...** button, enter the old Password and the new Password in the appropriate boxes, and click **OK**. As with any password, it should be remembered and protected.

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Chapter 3
Editing Configurations

3.1 Introduction

This chapter describes the **Configuration Editor** and how to use it. The Editor is constructed as a **Main Page** (see Figure 3-7 on page 3-5) which provides access to separate pages for each of the parameter groups within the Configuration. The Configuration is separated into the following parameter groups:

- **General Parameters**, which are grouped under System Parameters. See section 3.4, Editing the General Parameters, on page 3-9 for details.
- **Input Names**, which are considered System Parameters. See section 3.5, Editing the Input and Output Names and Output Types, on page 3-10.
- **Output Names** and **Output Types**. These are also considered System Parameters. See section 3.5, Editing the Input and Output Names and Output Types, on page 3-10.
- **Logic Statements**. See section 3.6, Editing Logic Statements, on page 3-14 for information on creating Logic Statements.
- **Hardware Parameters**, which are edited, queried and sent on a per Channel basis. See section 3.7, Editing Hardware Parameters, on page 3-22.
- **Process Parameters**, which are edited, queried and sent on a per Channel basis. See section 3.8, Editing Process Parameters, on page 3-23 for details on editing Process Parameters.

NOTE: Please refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379) for technical details on the operation and parameters of the Cygnus Controller. No detailed information specifically for the parameters is provided here.

NOTE: Each Editor page provides buttons that allow for changes to be sent to the controller (if attached), saved or cancelled. The Save functionality on each page does not save the Configuration to disk, it only saves the parameters to the computer memory (referred to here as the Editor memory) and to the Main Page of the Editor. To save the Configuration to disk, use the **Save** button on the Main Page of the Editor. To send the entire configuration to the Cygnus controller, use the **Send All** button on the Main Page of the Editor.

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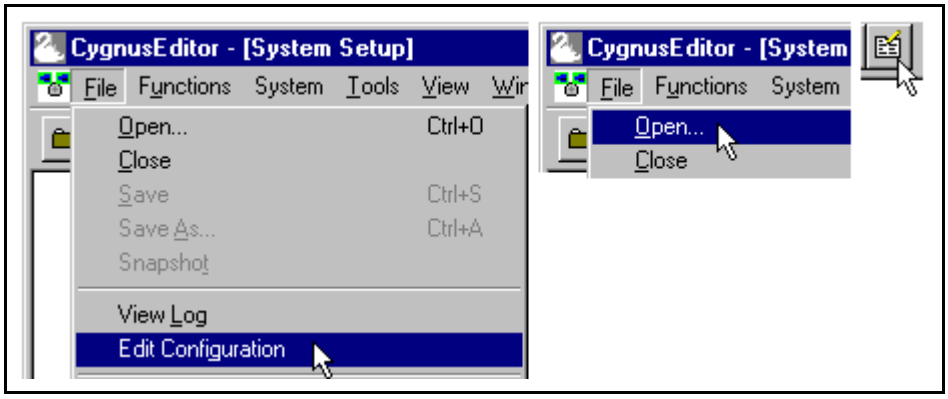
3.2 Using the Configuration Editor

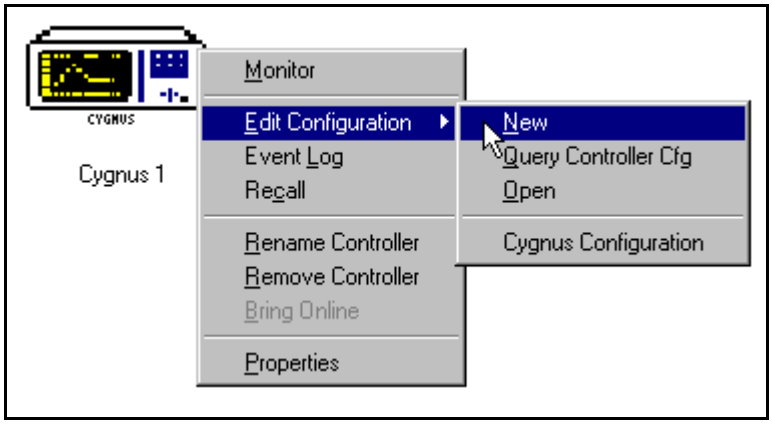
The **Configuration Editor** is invoked by selecting **File >> Edit Configuration**, **File >> Open**, or clicking on the **Configuration Editor Icon** (see Figure 3-1).

Figure 3-1 Opening the Configuration Editor



The editor can also be accessed from the Cygnus icon's context menu, which is available by right-clicking on the icon. See Figure 3-2.

Figure 3-2 Cygnus Controller's Context Menu



This context menu allows you to access the most recently edited Configuration or edit a new or existing Configuration.

HINT: When editing a Configuration for an attached Controller, the best starting point is the choice of **Query Controller Cfg** as shown in Figure 3-3. This selection reads the entire Configuration from the Controller and fills the Editor pages with all the parameters of the Configuration file. This allows for full synchronization of the parameter settings before any changes are made through the Editor. As changes are made they can be checked, by the Editor, against other related parameters to ensure that no conflicts exist.

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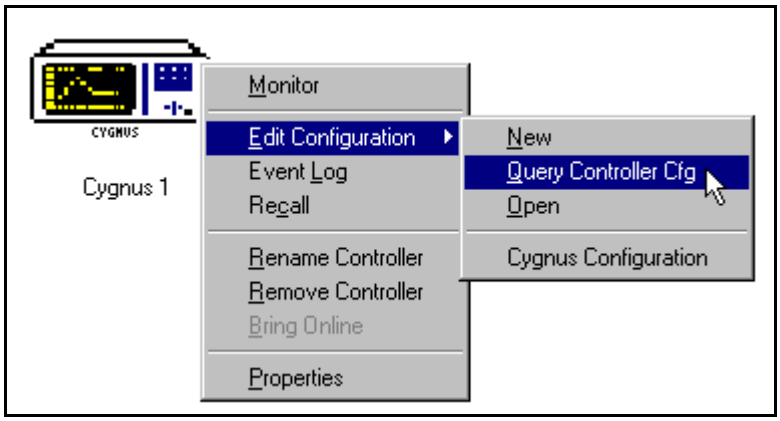
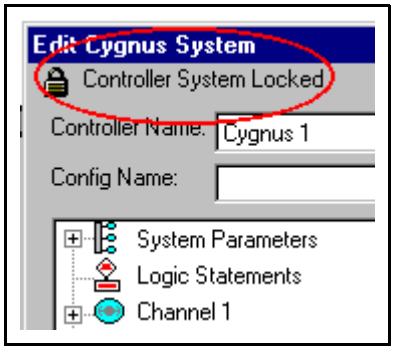
Figure 3-3 Starting the Editor with Query Controller Cfg



NOTE: When the **Query Controller Cfg** command has been used, the Controller front panel is essentially locked against any changes being entered. This ensures that all parameters in the Editor, and any changes being made, will be applied without conflict to the Controller. The "Locked" status of the Controller is shown in the upper left corner of all Editor pages (see Figure 3-4). The "Locked" status can not be applied if, while editing a new or existing Configuration, a single page is queried from the Controller without having queried the entire Configuration first.

Figure 3-4 Controller Locked Status, example



If either **File >> Edit Configuration** or the **Configuration Editor** Icon is selected to start the Editor then the dialog shown in Figure 3-5 will be displayed. This allows for a Controller to be specified as the target for a new or existing Configuration. To open an existing Configuration file select **Open**; to create a new Configuration from scratch select **New.** The item <*Unknown Controller*> is highlighted by default when the **Edit Configuration** dialog appears. To edit a configuration for a known Controller (e.g. Cygnus 1 in Figure 3-5), highlight the Controller entry and press **Open**. This will open a **File Open** dialog, as shown in Figure 3-6, in the appropriate folder for this Controller.

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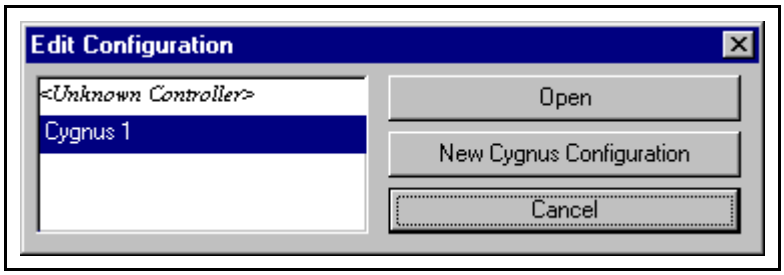
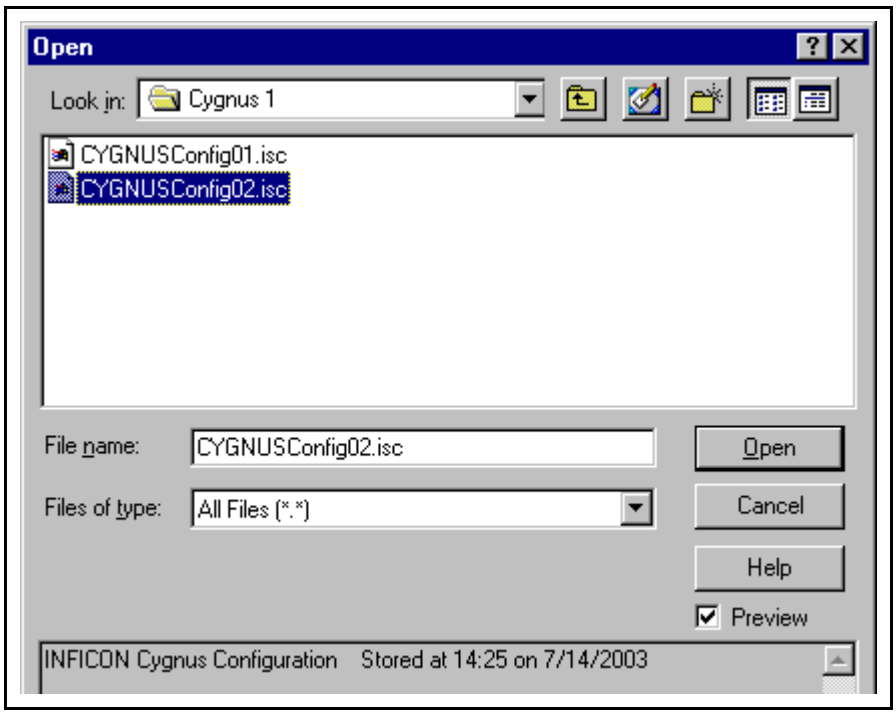
Figure 3-5 Selecting A New Or Existing Configuration



Selecting **New** will open the Configuration Editor immediately to the main window (see section 3.3 on page 3-4).

Figure 3-6 Selecting A Configuration To Open



If the **Files of type** box does not show a Cygnus Configuration (**`*.isc`**) or All Files (*.*), then click on the pulldown and select one of these types from the list. Clicking on a filename will display a few lines of text in the preview box which describe the Configuration. Once a file is selected and opened, the main window of the **Configuration Editor** will be displayed (see Figure 3-7).

3.3 Configuration Editor Main Window

Figure 3-7 shows the **Main Window** of the **Configuration Editor**. The **Controller Name** and **Config Name** appear in this window to identify which Cygnus Controller this Configuration is for and in which file this Configuration will be stored. These two items can be changed at any time before the Configuration is saved.

NOTE: The **Controller Name** is not stored in the Cygnus Controller, it is simply a text field used on the PC to identify the intended target for the Configuration file.

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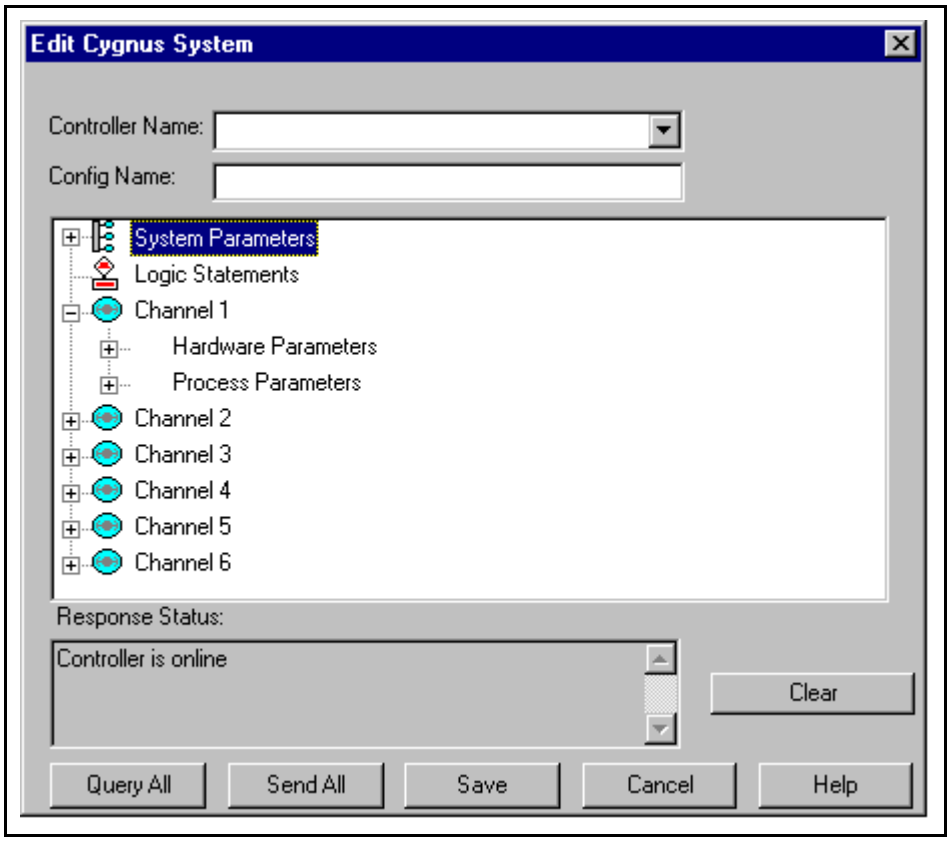
The Main Window is the only window from which the entire Configuration file can be saved to disk and sent to the controller. Editing of each individual page is launched from this window by double-clicking on either a Parameter Group name or individual parameter name within the Main Window.

Figure 3-7 Configuration Editor: Main Window



All of the parameters can be listed within the Main Window by clicking on each plus sign [+] at the front of any Parameter Group name. For instance, to list the parameters within the Hardware Parameters for Channel 1, click on the plus sign that precedes Hardware Parameters (see Figure 3-8). The result of that action will be a list of all Hardware Parameters for Channel 1 (see Figure 3-9).

Figure 3-8 Expanding the parameter list

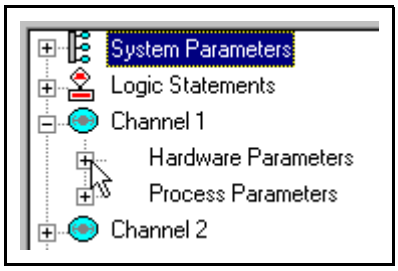
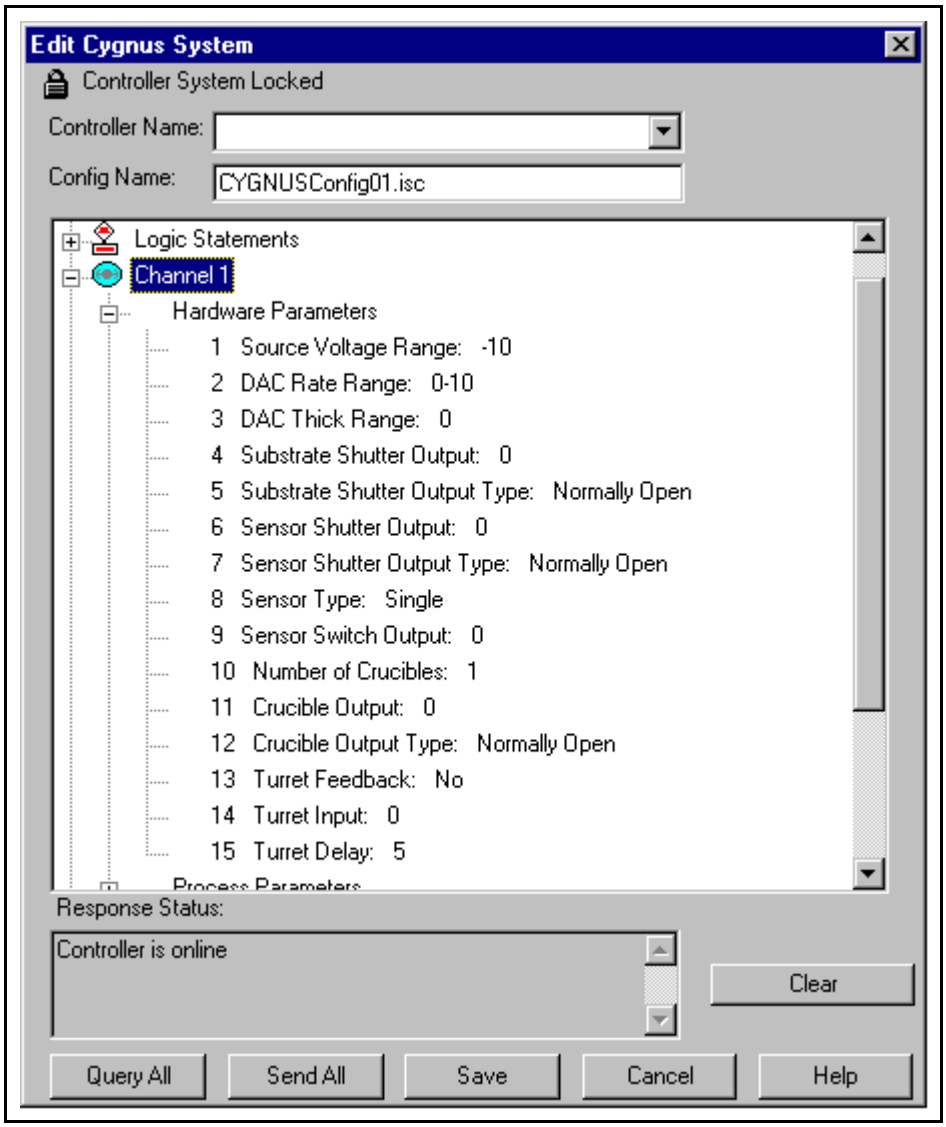


Figure 3-9 Hardware Parameters for Channel 1



The following describes the entry points and buttons on the Main Page (refer to Figure 3-7 on page 3-5):

Controller Name . . . . . The name of the Cygnus Controller for which this Configuration is intended. Select the name from the drop-down list if Cygnus Controller icons have been placed on the System Setup screen.

The first line in the **Controller Name** list is *<Unknown Controller>*. This can be selected when creating a Configuration for a controller which is off-line or attached to a different computer. When editing a Configuration for a controller which is off-line, or if *<Unknown*

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Controller> is selected, any bounds checking that is performed based on the controller hardware is not reliable. However, when the Configuration is sent to the controller it will be checked against the actual hardware for the controller on which it is being loaded, and any parameters that are out of bounds will be flagged as errors. At that time the Configuration must be corrected in order to be run.

Config Name . . . . . The file name used to save the Configuration. Any name can be used, but a descriptive name is recommended. Since the Cygnus Editor is a 32 bit application, the name is not limited to eight characters and an extension, thus allowing a more descriptive name to be chosen. If the extension is omitted, **`.isc`** will be appended to the filename. The filename can be changed at any time during the Configuration editing process.

Query All . . . . . The **Query All** button will, if a controller is attached, read the entire contents of the controller and load those parameters into the Editor. This is the best way to edit a Configuration for a controller that has already been programmed as it ensures that the contents of the Editor are synchronized with the controller contents.

NOTE: The **Query All** button on the main page (Figure 3-7 on page 3-5) reads all the parameters from the controller for all of the editor pages. This is not true for the Query All buttons on each page, which only read the parameters for the page being edited.

NOTE: It is recommended that the **Query All** button be used prior to editing a configuration for a controller that is online (i.e. connected to the PC).

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Send All . . . . . This will, if a controller is attached, send the entire contents of the editor (i.e. all parameters on all pages) to the controller. This is the best way to program (or update) a controller as it ensures that the entire contents of the Editor is sent and stored in the controller.

NOTE: If standard procedure is to use the **Send All** button then it is recommended that the **Query All** button (or the **Query Controller Cfg**, Figure 3-3) be used prior to editing a configuration.

Save . . . . . Pressing **Save** will provide a **Save As** dialog, which allows the Configuration to be saved to disk. Saving the Configuration to disk will close the Editor.

Cancel . . . . . This will discard any changes made to the Configuration and close the Editor. However, this does not remove changes that have already been sent to the controller.

NOTE: The **Cancel** button on the individual pages will prompt you to save any unsaved changes before that individual page is closed. On individual pages, those changes are saved to the Editor memory and to the Main Page, but not to disk or the Controller.

Clear . . . . . This simply clears the status window shown at the bottom of the Editor page. The status window is used to show communication errors that may occur during the Query and Send operations.

To get started on Editing a Configuration, single click on the System Parameters plus sign (+) and then double click on the Parameter Group label "General Parameters". This will launch the editable page for **General Parameters** as shown in Figure 3-10.

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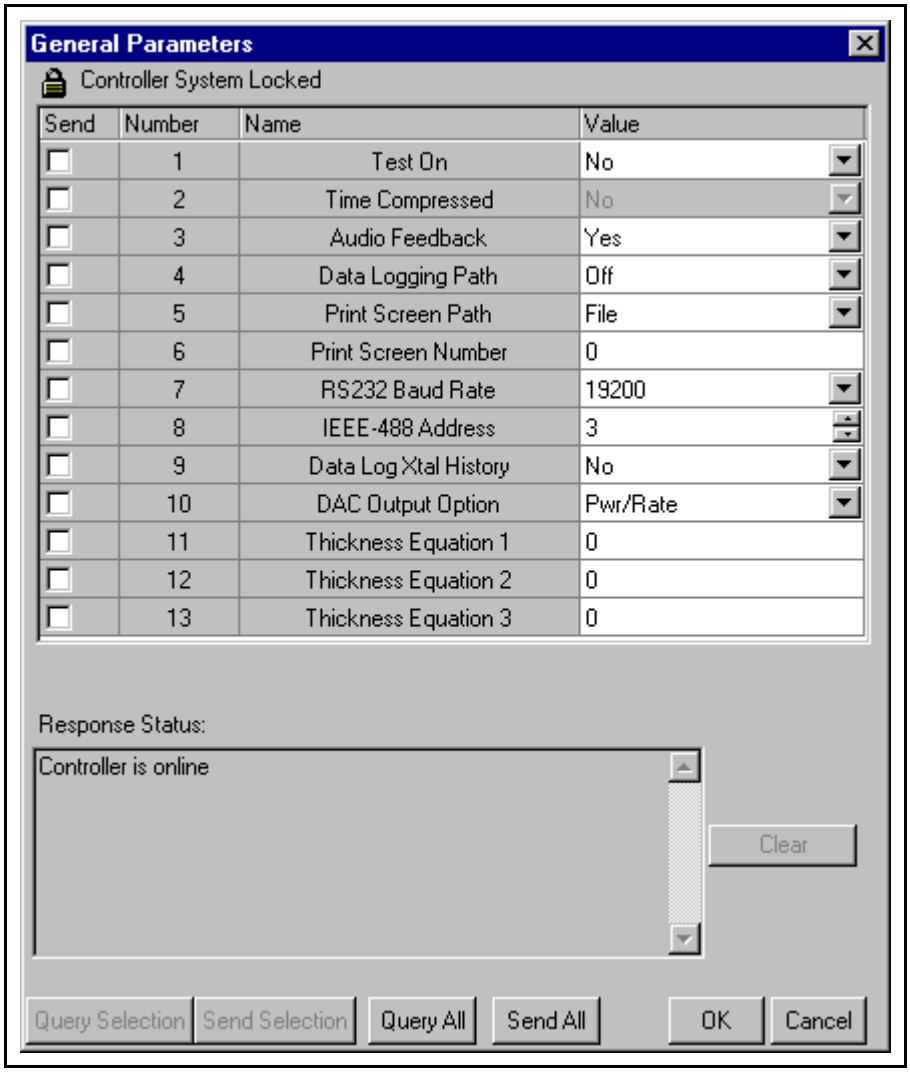
3.4 Editing the General Parameters

Figure 3-10 shows the **General Parameters** page of the **Cygnus Editor**. This page sets the parameters that are not specific to any of the Cygnus channels.

Figure 3-10 General Parameters Page



To edit any parameter, enter the desired value in the **Value** column or use the corresponding pulldown or spinner. Any parameter can be sent to the Cygnus Controller by selecting the parameter in the **Send** column and pressing the **Send Selection** button. The entire page of parameters can be sent by pressing the **Send All** button. The **OK** button will save all changes to the Editor memory; the **Cancel** button will discard all changes.

For specific information on any **General Parameter**, refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379).

3.5 Editing the Input and Output Names and Output Types

Figure 3-12 shows the **Input/Output Names** page of the **Cygnus Editor**. This page allows assigning of names to the system Inputs and Outputs. The assigned names are used on the Cygnus Thin Film Controller display and therefore must be entered in all capital letters. Alphanumeric characters, as well as the following list of characters,

_ underscore

! exclamation point

pound sign

~ tilde

- dash

% percentage sign

& ampersand

are the only characters allowed within a name. A name may contain up to 10 characters and can not contain spaces.

Names can be assigned using two techniques - user entry or system assignment - with the priority given to the system assignment. When programming the **Hardware Parameters** for each channel (see section 3.7, Editing Hardware Parameters, on page 3-22), the assignment of some hardware components, to use an input or output, will reserve that input or output name with a name dictated by the system. This system assigned name will overwrite a user entered name if a conflict is determined. An example of a system assigned name is shown in Figure 3-11, which shows that the Crystal Shutter for Channel 1 has been assigned to Output number 2. This output name (XTL_SHTR_1) has been assigned by the system and cannot be changed from this page by the user.

Figure 3-11 A system assigned Output Name

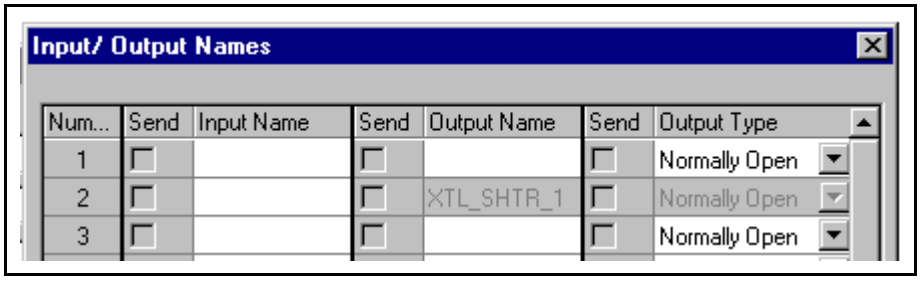


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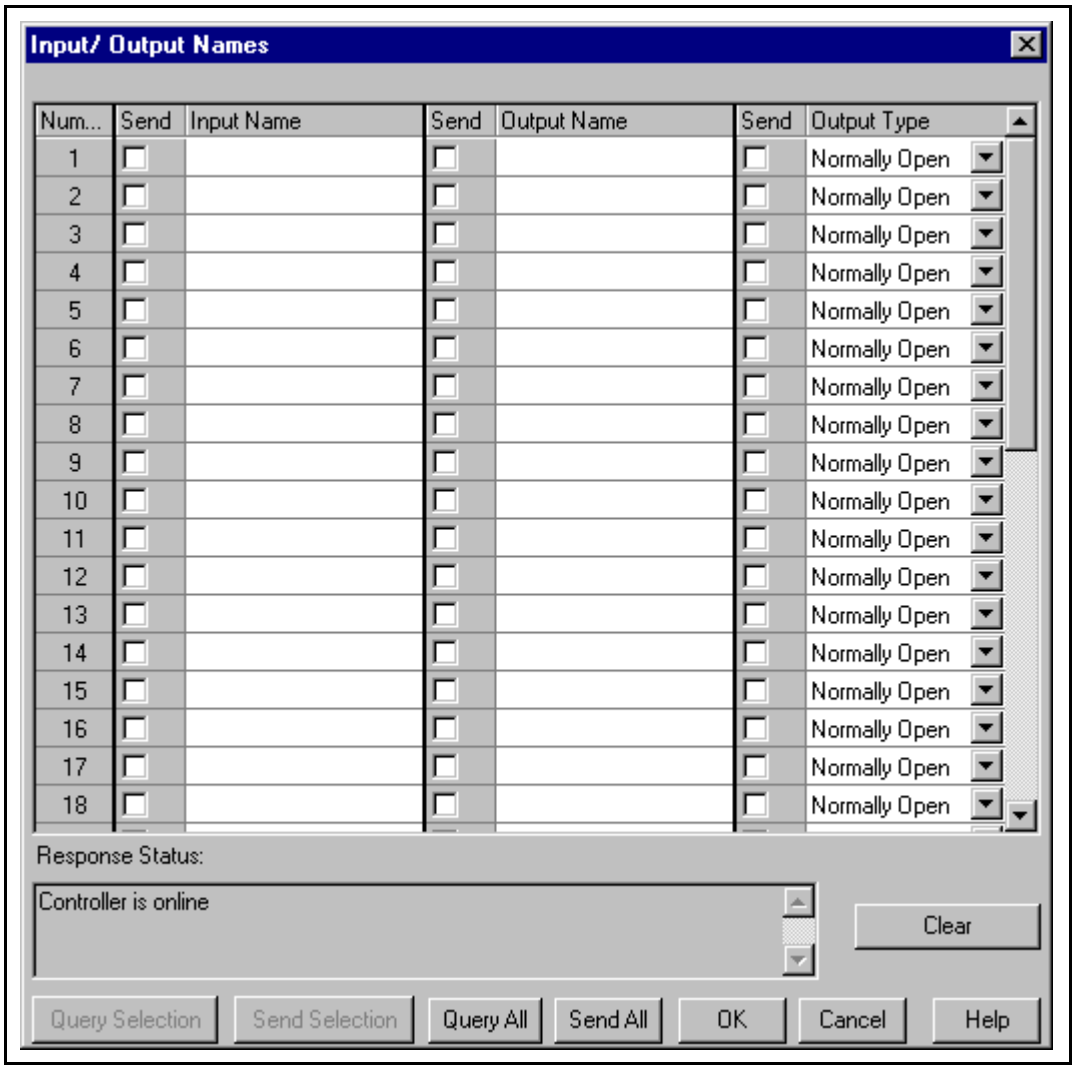
Figure 3-12 Input/Output Names Page



To enter an Input or Output Name, click in the cell for the desired I/O and type the name. For example, to enter the Input Name 'SIGNAL3" for Input 3, click in the third cell down in the Input Name column and enter the name (see Figure 3-13). The example shows the name typed as Signal3, which will be converted by the Editor to SIGNAL3 so that it is formatted correctly for the Controller. Clicking anywhere else on the window, or clicking OK, will accept the name (see Figure 3-14).

Any names entered on this page will be shown on the Main Page under the Input Names group and the Output Names/Types group. Both of these groups are found under the System Parameters group.

Figure 3-13 Entering an Input Name

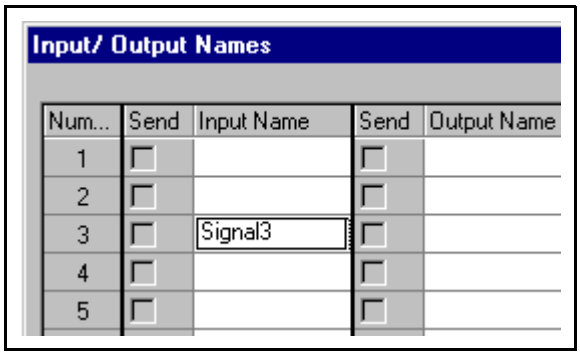
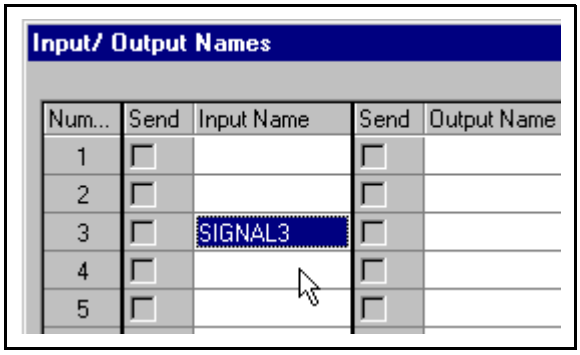


Figure 3-14 Accepting an Input Name



Output Types can also be assigned on this page. Each output can be configured as:

Normally Open . . . . . which means the relay is held open by the controller, during periods of inactivity, and then closed to indicate activity or provide a signal.

Normally Closed . . . . . which means the relay is held closed by the controller, during periods of inactivity, and then opened to indicate activity or provide a signal.

Configuring an Output to be Normally Open or Normally Closed is largely determined by the state required, at the input receiving this signal, to start or stop a device or process. Some Outputs are configured by the system based on parameter settings made in the Hardware Parameters, as shown in the example of Figure 3-11.

If a Controller is attached to the PC then the Input and Output names from the controller can be read and displayed in the Input/Output Names page of the Editor. If all parameters were queried from the Main Page then the names will be shown on the Input/Output Names page when the page is opened. Any name assigned by the system will be shown with a grey background and will be protected against editing (see Figure 3-15). Otherwise, when the page is opened the names can be read from the controller by pressing the **Query All** button on the Input/Output

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Names page. If a query is performed from the Input/Output name page then the names assigned by the system will be shown with a yellow background (see Figure 3-16). This yellow background indicates that although these names were read from the controller there is no information on the Channel Hardware Parameter pages (in the Editor) to confirm their accuracy. Therefore, the names highlighted in yellow cannot be saved to the Editor memory or the Main Page. Only the Names entered by the user will be saved to the Editor memory in this case.

Figure 3-15 Output Name displayed after querying the full Configuration

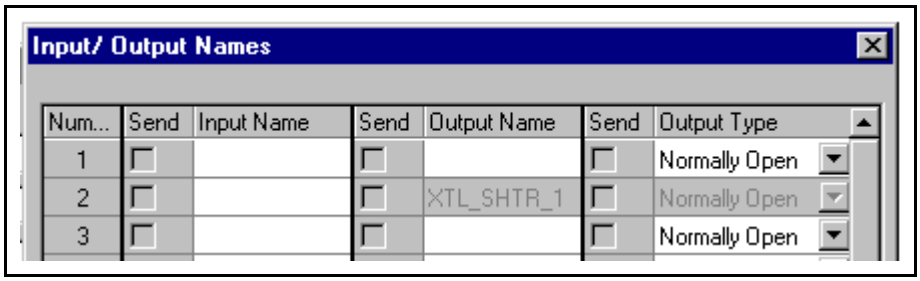
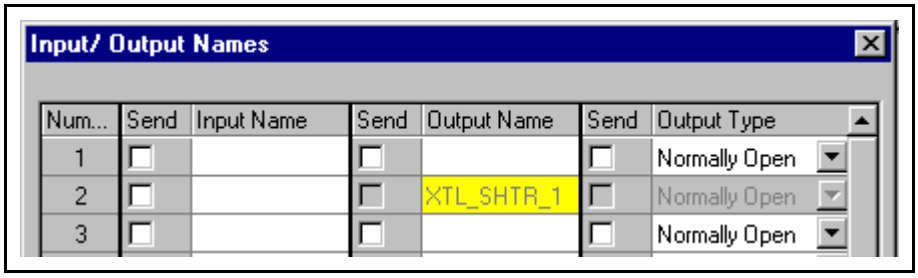


Figure 3-16 Output Name displayed after only querying the I/O Names Page



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3.6 Editing Logic Statements

Figure 3-17 shows the **Logic Statements** page of the **Cygnus Editor**. Logic Statements allow for a combination of up to five Events, which when found to be "true", produces a set of up to five Actions. Events can be combined with the **AND** or **OR** operators to form the Event portion of the statement. Actions can only be combined using the **AND** operator.

For example, if an Event is written:

If TIMER SECS 1 20.0

then that TIMER value is checked and is "false" until the value equals 20 seconds.

If more than one Event is combined with an AND operator, for example:

If TIMER SECS 1 20.0 AND COUNTER LIMIT 1 10

then in order for the statement to be "true", both the TIMER value must equal 20 and the COUNTER value must equal 10. No action would be taken on this statement for any other values.

If these two Events are combined with the OR operator, for example:

If TIMER SECS 1 20.0 OR COUNTER LIMIT 1 10

then when either the TIMER value equals 20 or the COUNTER value equals 10 an Action will be taken.

Two other operators are available for use with Events - the NOT operator and parentheses. The NOT operator is used when an Action is to take place but not if a given Event is active. For example:

If NOT TIMER SECS 1 20.0

would result in an Action taking place for any TIMER value other than 20 (i.e. the Event is "true" when the TIMER is not equal to 20). The NOT operator essentially is used to trigger an Action when something is not running, not at a maximum, or not at a minimum, for example.

The parentheses are used to combine two or more Events and separate their cumulative "true" from other Events. Parentheses are most often used when more than one type of operator is used in the statement. For example, this statement:

If TIMER SECS 1 20.0 OR (COUNTER LIMIT 1 10 AND READY 1)

is "true" if the TIMER value equals 20 or if both values within the parentheses are reached at the same time.

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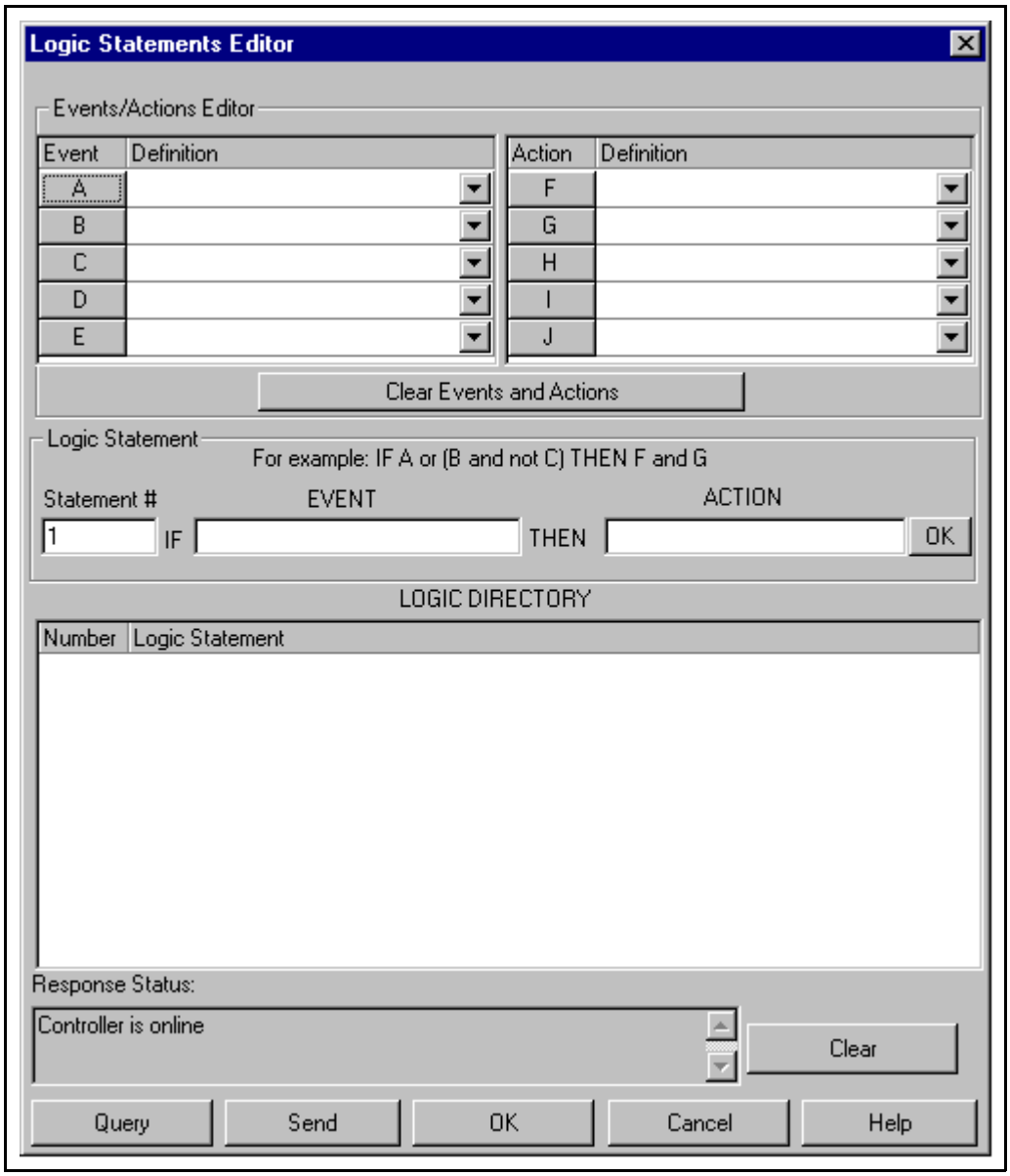
Figure 3-17 Logic Statements Page



The Logic Statement Editor page is constructed of three parts - the Events/Actions Editor (Figure 3-18), the Logic Statement (Figure 3-19) and the Logic Directory (Figure 3-20).

Figure 3-18 Events/Actions Editor

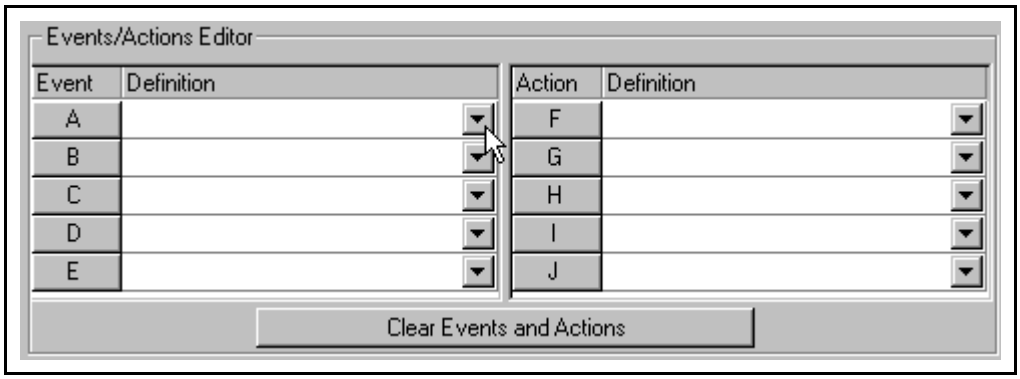


Figure 3-19 Logic Statement section of the Editor

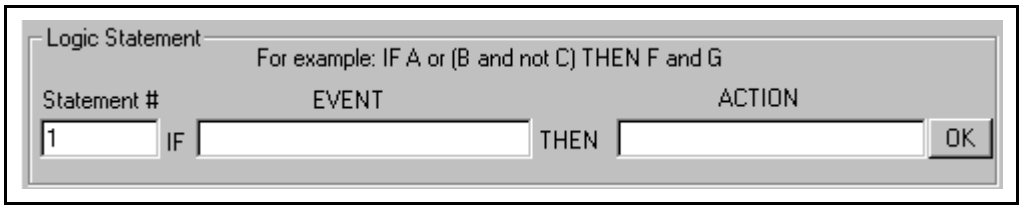
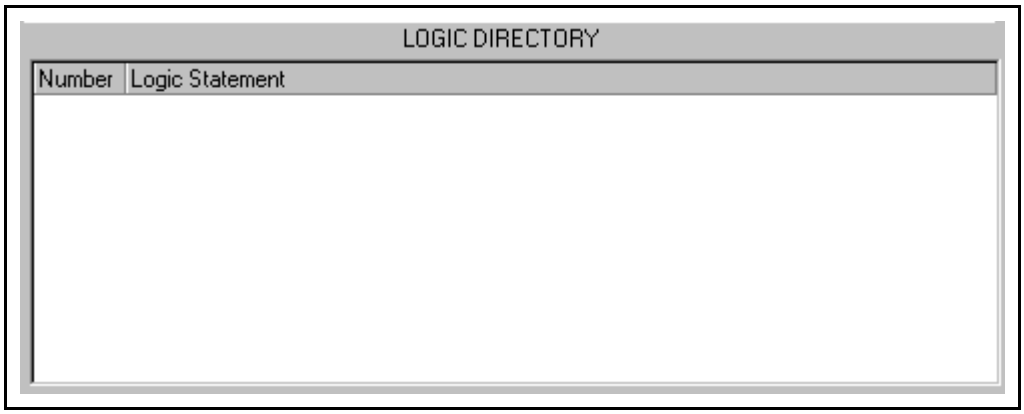


Figure 3-20 Logic Directory section of the Editor



3.6.1 The Events/Actions Editor

The **Events/Actions** Editor is a grid of pulldowns that list the available Events and Actions. The five Event cells are preceded by a letter A, B, C, D, or E and the five Action cells are preceded by F, G, H, I or J. These alpha labels are used to construct the actual Logic Statement in the Editor.

Each Logic Statement can contain up to five Events and five Actions.

To access the available Events, click on any pulldown in the Definition column to the right of letters A - E (see Figure 3-21).

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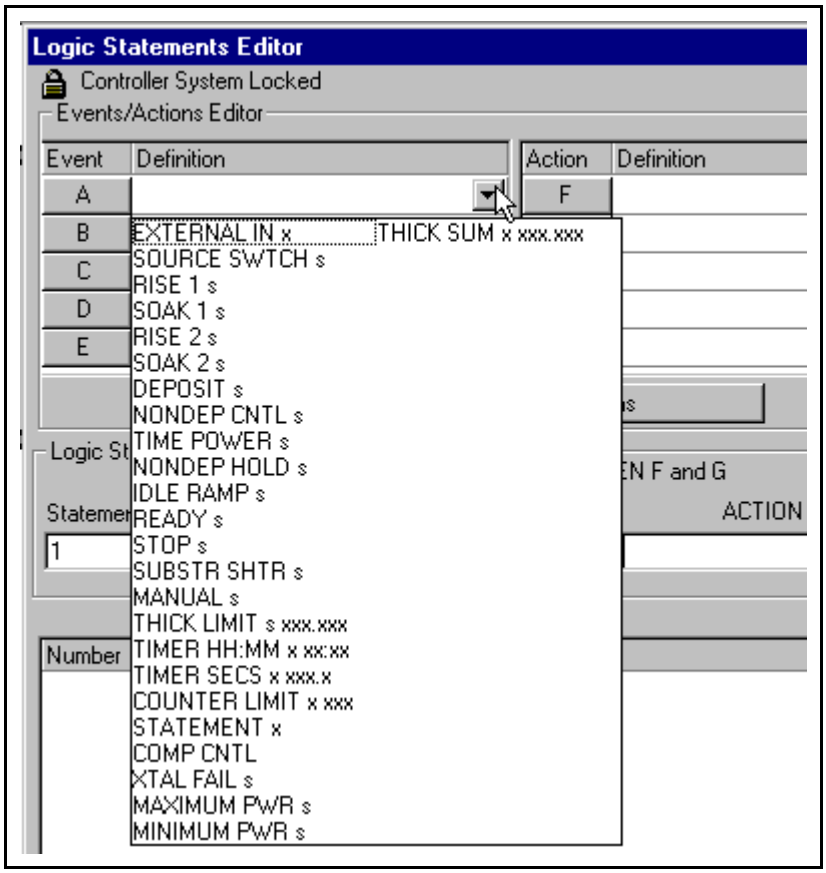
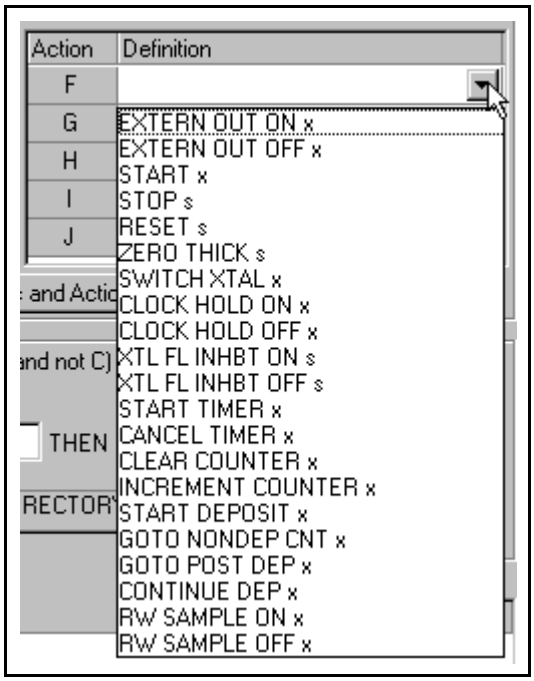
Figure 3-21 Events available for the Logic Statement



To access the available Actions, click on any pulldown in the Definition column to the right of letters F- J (see Figure 3-22).

Figure 3-22 Actions available for the Logic Statement



Most Events and Actions require that a parameter be set, as designated by a letter s, x, or some form of xx.xx or xx:xx, to complete the Event or Action.

The letter designations used as variables in the Events and Actions are:

s . . . . . The letter s is used to designate a **Channel**. Channels are listed as **1 - 6** or **All** for this application.

x . . . . . The letter x is used to designate a **required numeric entry**. This entry varies depending on the Event or Action.

The selection of an Event or Action that requires a variable parameter to be set is followed by an Event Editor (or Action Editor) dialog specific for that parameter. See Figure 3-23 for an example. In this example, the Event of "Rise 1 s" has been selected as Event A. This selection promotes a parameter dialog which requires a selection of the "s" value from the pulldown.

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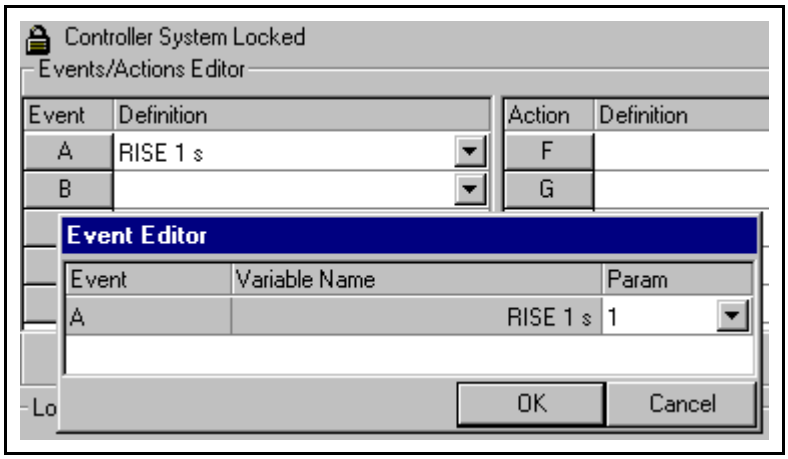
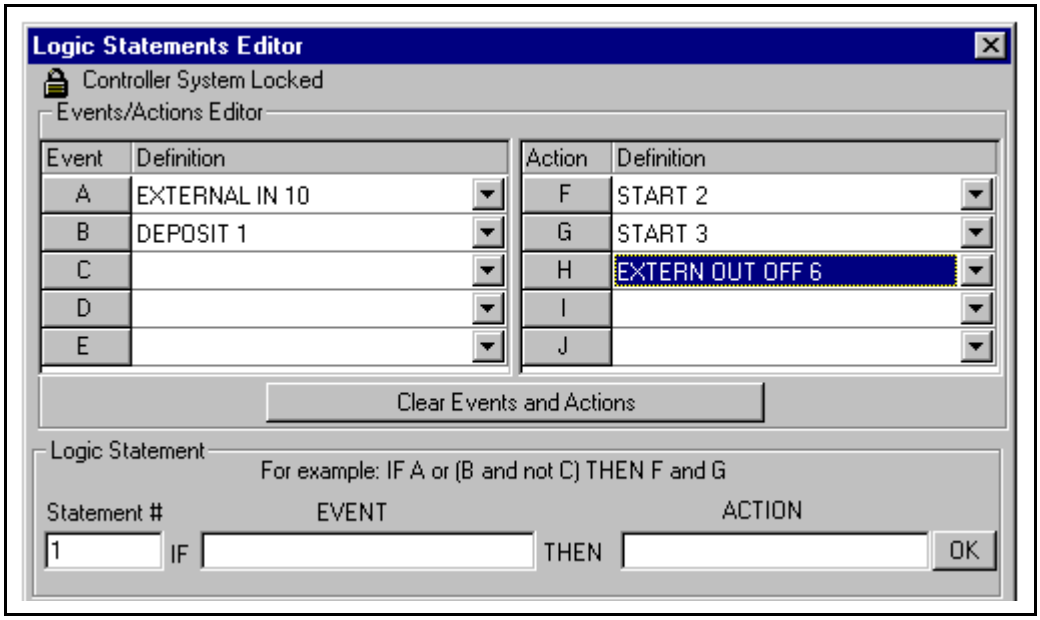
Figure 3-23 Event Editor, Parameter entry dialog



Once the desired Events and Actions have been selected (see Figure 3-24 for an example), the actual Logic Statement can be entered.

NOTE: If an incorrect **Param**eter is entered, it can be corrected by pressing the letter button (e.g. [A]) beneath the Event or Action column heading. This will promote the parameter dialog again for editing.

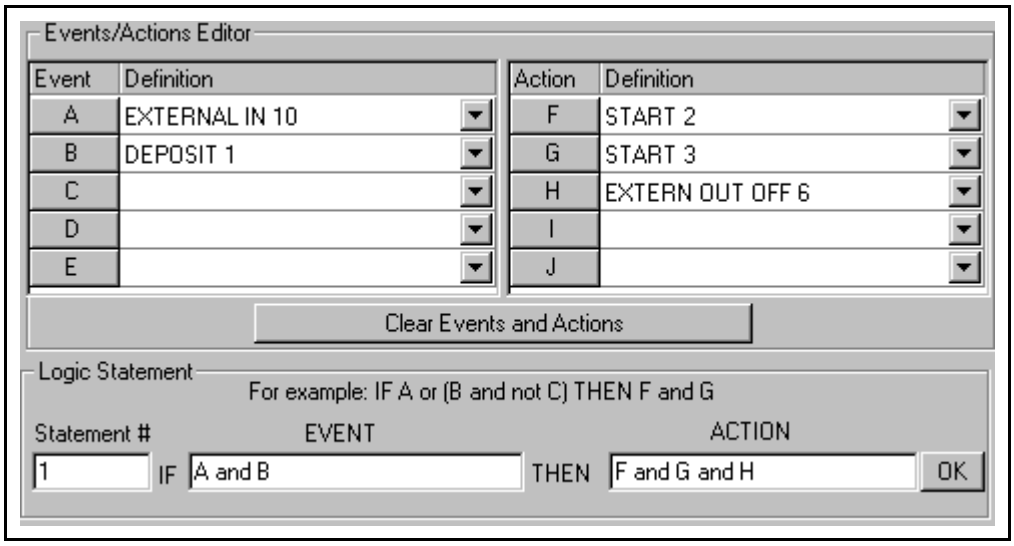
Figure 3-24 Logic Statement Example of Events and Actions



In the Logic Statement section, enter the letters of the Events and Actions, separated by a Boolean operator, in the appropriate entry boxes. For example, the Events and Actions shown in Figure 3-24 could be entered as shown in Figure 3-25, which when translated says:

> "IF External Input number 10 is active AND Deposit on Channel 1 is active THEN Start Channel 2 AND Start Channel 3 AND turn off External Output number 6".

Figure 3-25 A Logic Statement example

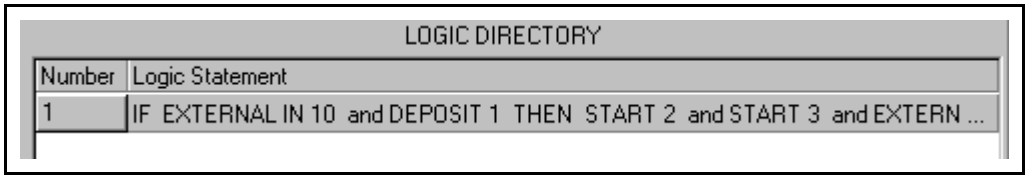


NOTE: This entry of Events and Actions can be done easily by double-clicking on each Event and Action listed in their respective **Definition** columns. When doing this, each Event is added and by default is separated with the AND operator. If the AND is not desired, then it can be changed within the Event entry box in the Logic Statement section. All Actions are automatically separated with the AND operator, too, and this cannot be changed.

NOTE: Any Action or Event can be deleted from the Events/Actions Editor section by highlighting the Event or Action and pressing the **Delete** key. All Actions and Events can be deleted by pressing the **Clear Events and Actions** button.

After the **Logic Statement** has been entered, the **OK** button can be pressed to check the validity of the statement. If the statement is found to be valid, it is added to the **Logic Directory** as shown in Figure 3-26. If the statement is incorrectly entered then an error dialog will appear and corrections must be made.

Figure 3-26 Logic Directory with newly added Logic Statement



Any statement can be recalled for editing or be used as the base for a new statement by pressing the **Number** button (e.g. 1) in the **Logic Directory**. If a statement is recalled for editing, a prompt will occur when the **OK** button is pressed to ask if the current statement should be overwritten. If a statement is recalled to reuse some of the Events and Actions in another statement, then the **Statement #** field in the **Logic Statement** section of the Editor must be changed to a new number before saving the statement.

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NOTE: Any Logic Statement (or multiple statements) can be used as actual Events in another Logic Statement. As Logic Statements are created they are added to the list of available Events. This allows for a virtual nesting of Events in that five Events from one statement can be combined with four Events from another statement to trigger a set of Actions. When creating one Logic Statement to be used as an Event in a second Logic Statement, it is not necessary to program any Actions in the first statement.

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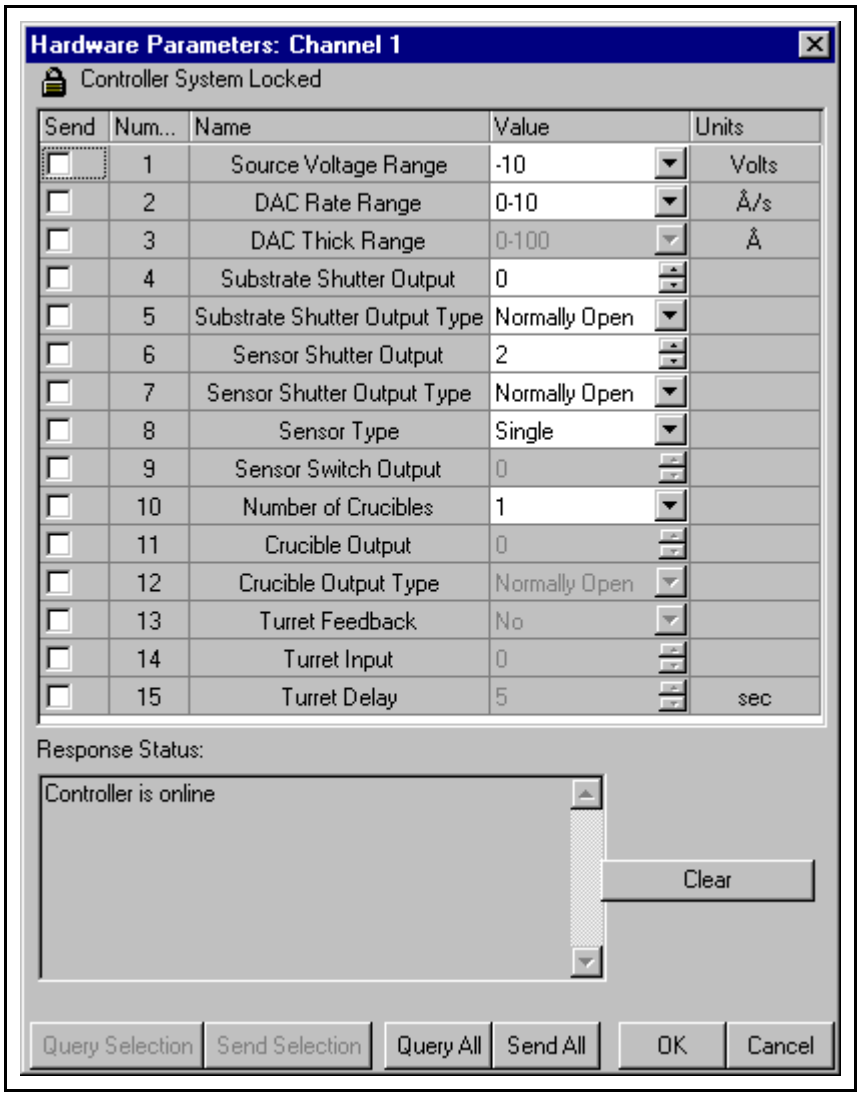
3.7 Editing Hardware Parameters

Figure 3-27 shows the Channel 1 Hardware Parameters for the Cygnus Editor. The Hardware Parameters page sets the Hardware Parameters that are specific to a Channel for the Cygnus Controller.

Figure 3-27 Hardware Parameters Page



To edit any parameter, enter the desired value in the **Value** column or use the corresponding pulldown or spinner. Some parameters are disabled because they are dependent on the settings of other parameters. Any parameter can be sent to the Cygnus Controller by selecting the parameter in the **Send** column and pressing the **Send Selection** button. The entire page of parameters can be sent by pressing the **Send All** button. The **OK** button will save all changes to the Editor memory; the **Cancel** button will discard all changes.

For specific information on any **Hardware Parameter**, refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379).

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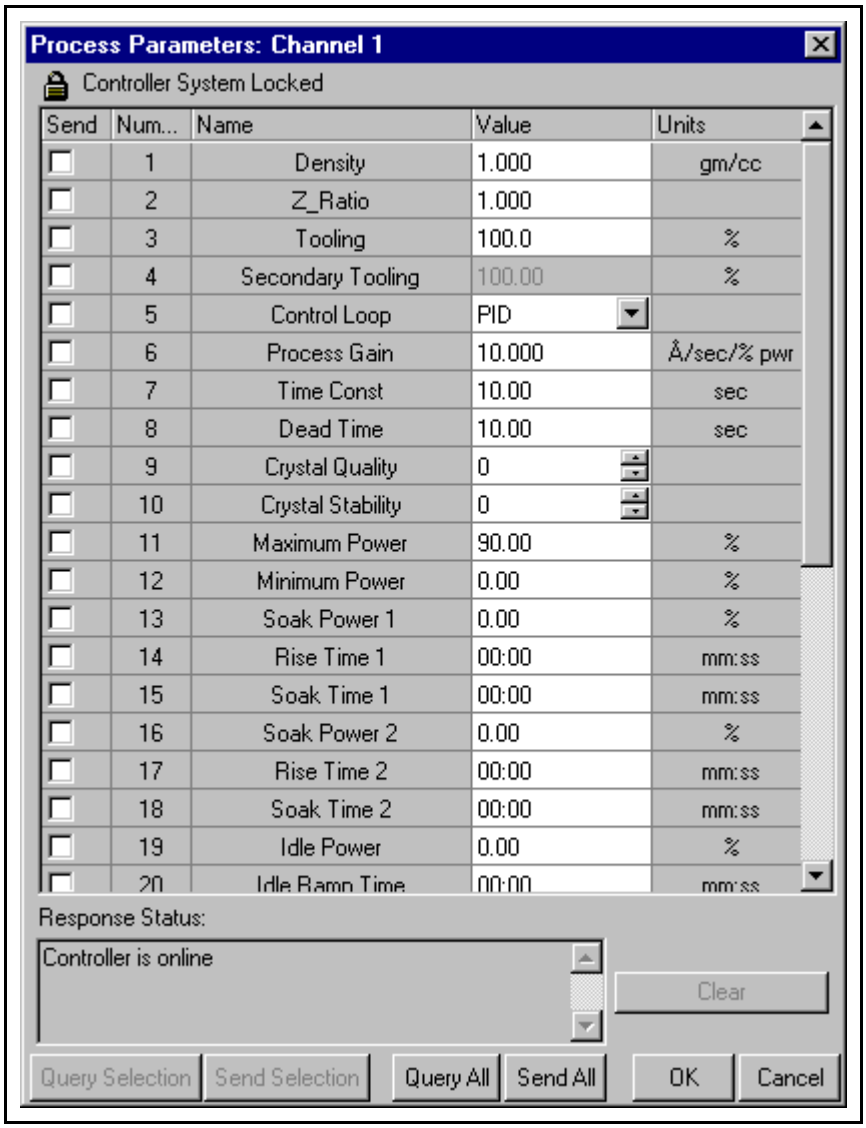
3.8 Editing Process Parameters

Figure 3-28 shows the Channel 1 Process Parameters for the Cygnus Editor. The Process Parameters page sets the Process Parameters that are specific to a Channel for the Cygnus Controller.

Figure 3-28 Process Parameters Page



To edit any parameter, enter the desired value in the **Value** column or use the corresponding pulldown or spinner. Some parameters are disabled because they are dependent on the settings of other parameters. Any parameter can be sent to the Cygnus Controller by selecting the parameter in the **Send** column and pressing the **Send Selection** button. The entire page of parameters can be sent by pressing the **Send All** button. The **OK** button will save all changes to the Editor memory; the **Cancel** button will discard all changes.

For specific information on any **Process Parameter**, refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379).

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Chapter 4
The Data Logger

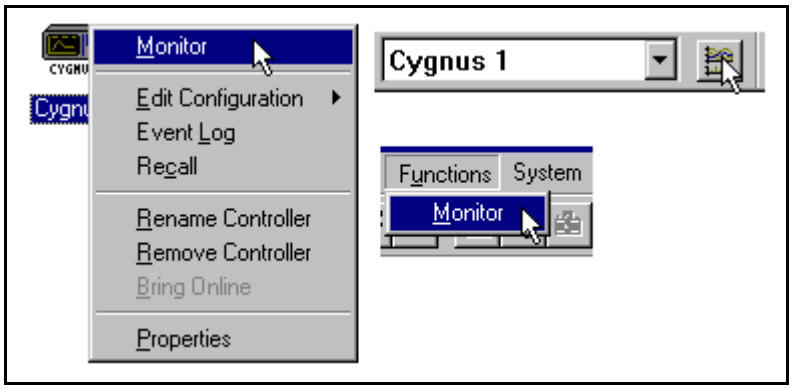
4.1 Introduction

The Cygnus Editor includes a simple Data Logger, which collects and stores data for up to six channels. The Data Logger can also be used to recall data from files, which can then be printed or output to an ASCII file for importing into other applications.

4.2 Monitor, the Data Logger

Data logging is performed by running the **Monitor** function, which can be started from the program menu, the Controller toolbar, or the Controller's context menu (see Figure 4-1). Data is collected for all active channels.

Figure 4-1 Different ways to run Monitor



4.2.1 The Data Display

The **Monitor** window (see Figure 4-2) has four main components - the **Trend Graph**, **Bar Graph**, **Menu and Toolbars** and **Data Grid/Control Panel** - each of which can be displayed or hidden to show the data as needed. The **Trend Graph** shows the measurement as a function of time and the **Bar Graph** shows the measurement at a point in time, based on the **Data Cursor**. The **Data Grid/Control Panel** shows the intensities of the selected parameters at the **Data Cursor**. The **Data Grid/Control Panel** also allows selected parameters to be changed.

The data can be saved automatically, in files of a maximum size of 21MB, or when the **Snapshot** icon is selected. All data can be saved by selecting **Monitor >> Save Data**.

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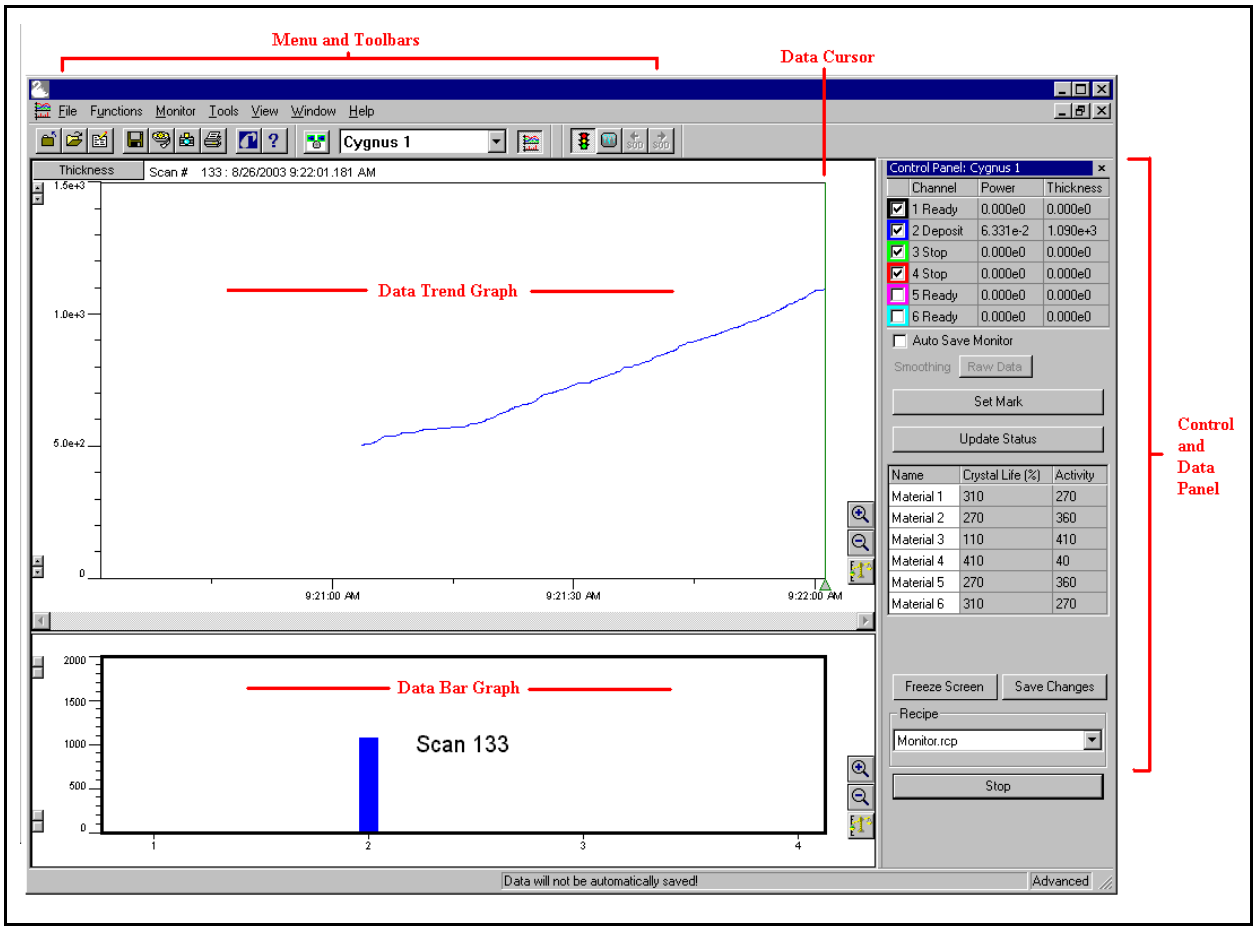
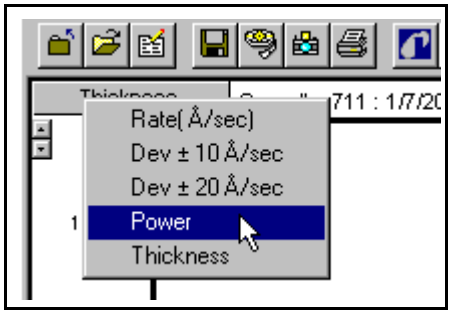
Figure 4-2 Data Logger Screen Layout



Data collection from the Cygnus Thin Film Controller is done for four data parameters across all configured channels. Only one group of data parameters can be displayed, for all six channels, at one time on the **Trend Graph**. A second graph (**Trend Graph Bis**) can be displayed (using the Context Menu) for comparison of two different data parameters. The display parameter choice is made from a button in the upper left corner of the **Trend Graph** as shown in Figure 4-3.

Figure 4-3 Select the Data for display in Monitor



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The following data are collected from the Cygnus Thin Film Controller for each Channel:

Rate . . . . . Specifies the rate at which the deposition is to be controlled during the DEPOSIT and NON-DEPOSIT CONTROL states.

Dev +/- 10 A/sec . . . . . The Rate Deviation, calculated from the difference of the measured rate to the rate setpoint. This selection is scaled to +/- 10 Angstroms per second.

Dev +/- 20 A/sec . . . . . The Rate Deviation, calculated from the difference of the measured rate to the rate setpoint. This selection is scaled to +/- 20 Angstroms per second.

NOTE: The two **Dev** choices above are for the same data but provide two different choices of scale for the Y-axis.

Power. . . . . The Power, in percent, of the Channel control output.

Thickness . . . . . The Thickness of the accumulation on the substrate.

NOTE: Refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379) for a more thorough understanding of the data parameters.

4.2.2 The Control Panel

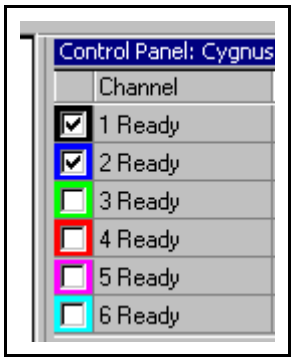
The **Control Panel** provides grids and buttons to control the display and collection of data.

4.2.2.1 The Display Channels

As a default, all active channels are displayed on the Data Trend Graph. One or more data parameters can be removed from the graph by unchecking the checkbox preceding the Channel label in the grid at the top of the Control Panel. This is shown in Figure 4-4. Removing a data parameter from the graph has no effect on the collection of that data (i.e. it is still collected). The color of any channel can also be changed by right clicking on the checkbox and selecting **Change Color**.

The state of each channel is shown as a text label next to the channel number. This state, when shown in black text, indicates a good crystal (channel) status. A red font indicates the crystal has failed, a yellow font indicates the crystal is invalid. The state of each channel can be included in data file reports by enabling the Sensor Status on the Data Format page (see Figure 4-19 on page 4-13). Refer to the *Cygnus Thin Film Deposition Controller Operating Manual* (IPN 074-379) for information on the individual channel states and crystals.

Figure 4-4 Selecting Channels for display



4.2.2.2 Saving Data

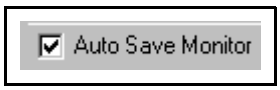
Data can be saved automatically or by manual selection. **By default, data is not saved**, based on the unchecked state of **Auto Save Monitor** shown in Figure 4-5.

Figure 4-5 Default is to discard all data collected

If **Auto Save Monitor** is checked (Figure 4-6), then data is automatically saved any time the data collection is stopped. This selection is maintained from session to session by the program.

NOTE: When data is saved, it is written to a file and the file is closed. Any data collected after the file is closed will be stored in a new file.

Figure 4-6 Auto Save Data enabled



Data can be saved at any time by pressing the **Save As...** toolbar button, which saves all data collected since the **Monitor** was started, into one file. This selection displays a standard **Save As...** dialog which allows for selecting the destination folder and file name. By default, the file name is Monitor_yymmdd-xxx.sod where:

- yy is the last two digits of the year
- mm is the two digit month
- dd is the two digit day
- xxx is an **index**, starting at 000 and incrementing up to the maximum number provided by the index digits (in this case, 999). By default, the index is three digits, but can be changed on the **System Properties >> Miscellaneous** page.

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Data can also be saved by pressing the **Snapshot** toolbar button, which only saves the data showing on the display at the time it is pressed. For example, if 3 hours of data have been collected and the X-axis is set to show 5 minutes of data, then pressing the Snapshot button will only save that specific 5 minutes of data. Taking a **Snapshot** does not close the current data file and does not stop data collection.

NOTE: No dialog is shown when a **Snapshot** is saved. However, the path and filename are displayed in the **Status Bar** at the bottom of the screen.

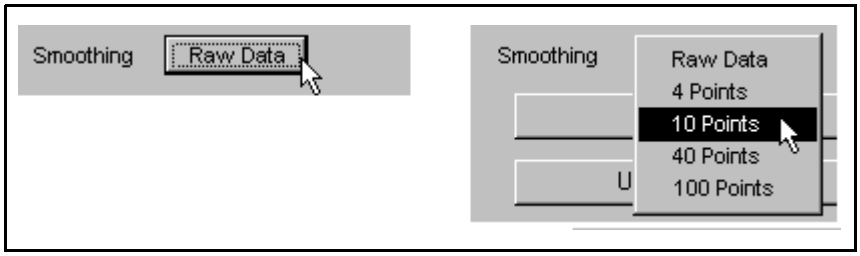
NOTE: A **Snapshot** can be taken of Live or Recalled data.

The maximum file size allowed for any data file is 21MB. It is the responsibility of the user to manage data files, data archiving and hard disk storage.

4.2.2.3 The Display Smoothing Setting

The effective noise of the displayed data can be filtered by changing the **Smoothing** setting(Figure 4-7). **Smoothing** provides an averaging of data points before the point is displayed but has no impact on the raw data collected and saved. **Smoothing** only affects the display of **Rate** or Rate **Dev**iation.

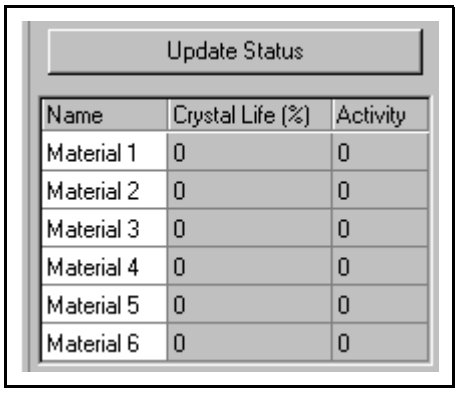
Figure 4-7 Changing the Smoothing



4.2.2.4 The Material Status Grid

The **Control Panel** also contains a status grid, which displays the **Material** name in use on each channel, the **Crystal Life** (in percent) and the **Activity**. This grid is static but can be updated at any time by pressing the **Update Status** button shown in Figure 4-8. The **Material** Name can be entered in the Name column by clicking on the default name shown (e.g. Material 1), deleting it, and entering a new name.

Figure 4-8 Materials Status Grid



4.2.2.5 Setting a Mark

The **Set Mark** button (Figure 4-9) on the **Control Panel** allows for a **Mark**, and text description, to be applied to the data. The Set Mark function will **Freeze** the graph and provide a crosshair cursor (+) to select the data scan to be marked. Text information (for the **Marks History** log) can be added in the **Set Mark** dialog (see Figure 4-10). That **Mark** is then indicated along the X-axis with a colored diamond (see Figure 4-11).

Marks are automatically generated for:

- the start of the Data Logger, to store a "benchmark" of the crystal status
- any Crystal state change - Crystal Good, Crystal Invalid, Crystal Failure
- any Channel state change.

Figure 4-9 Set Mark button

Figure 4-10 Set Mark Dialog

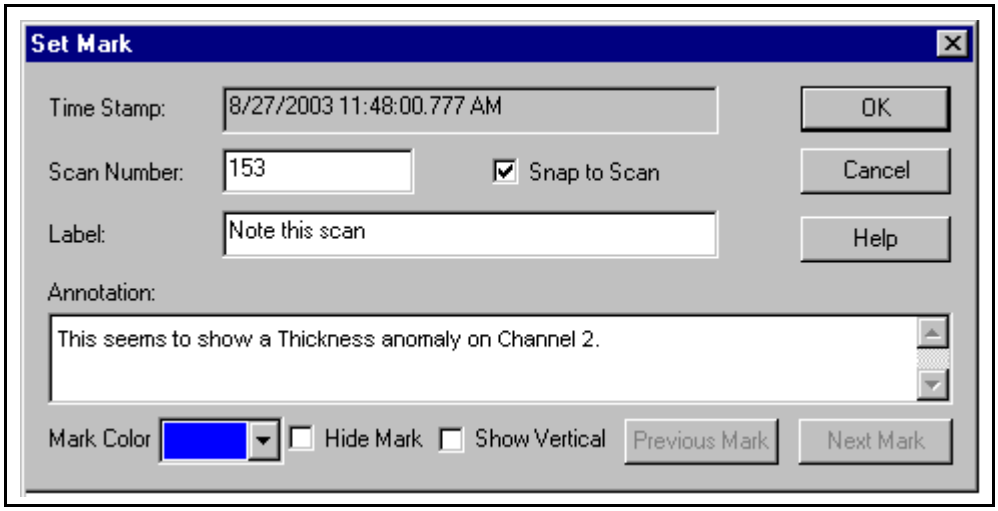
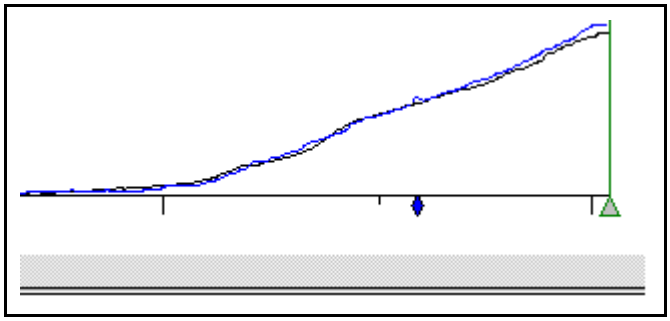


Figure 4-11 Mark Indicator on Graph



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4.2.2.6 The Freeze and Start/Stop Controls

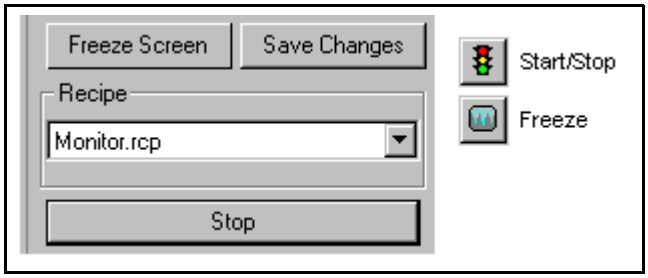
The **Freeze Screen** button (Figure 4-12) on the **Control Panel** stops the plotting of data collected, which allows the plotted data to be easily studied or reviewed. **Freeze** is essentially pausing the display but doing nothing to the data collection. Data collection continues in the background while the display is frozen and the **Freeze Screen** button is colored yellow. Pressing the yellow **Freeze Screen** button will unfreeze the display and update the graph with all the data collected since the button was pressed. There is an equivalent **Freeze** button on the toolbar.

Moving the **Data Cursor** will also **Freeze** the display during data collection.

NOTE: Changing the X-axis to 60 minutes or greater, when the Trend Graph is scrolling, will automatically freeze the display.

The **Start/Stop** button (Figure 4-12) on the Control Panel serves a dual purpose. When data is being collected, the button can be used to stop collection, which also stops the display. When data collection is stopped, the button can be used to start collection and the display. Stopping data collection results in the data being saved to disk, if the **Auto Save Monitor** function is enabled, or discarded. Starting data collection from this button starts a new collection session. There is an equivalent **Start/Stop** button on the toolbar.

Figure 4-12 The Freeze and Stop buttons



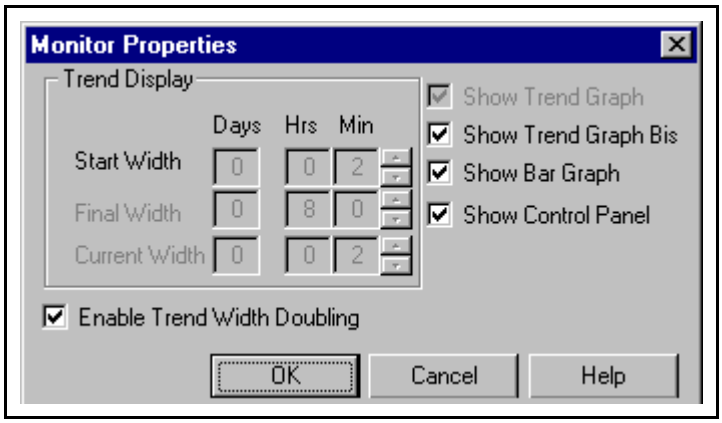
WARNING

Stopping the data collection when Auto Save Monitor is not checked will discard all data collected since the Monitor was started. There is no warning or prompt when this action is taken.

4.2.2.7 The Monitor Properties

To access the **Monitor Properties** (Figure 4-13), click on the **Monitor>>Properties...** menu item or right-click on the **Trend** graph and click on the context menu item **Properties**.

Figure 4-13 Monitor Properties



The **Properties** dialog allows for enabling or disabling the **Trend Width Doubling** feature, which when enabled automatically doubles the X-axis width whenever the data plotting reaches the full width.

NOTE: To maximize data collection and minimize system resource issues, the **Trend** Graphs plot only the maximum and minimum points for any one pixel column when more than two points exist within the column and more than 10 minutes of data is plotted on the graph. This is only true when using **Plot Points** and not using **Connect Points** (see section 2.4.1, Configuring The Display Options, on page 2-13).

The **Zoom In** button can be used when data has plotted beyond 10 minutes.

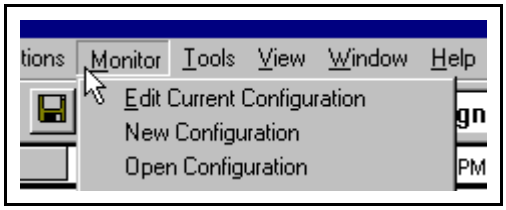
Zoom In () provides an adjustable rectangle on the **Trend** Graph that will display the data from within the rectangle across the full width of the graph. After using the **Zoom In** feature, the **Zoom Out** () button can be used to return all the data to the Graph.

The **Rescale** button () can be used to show the full height of the data.

4.3 Editing the Configuration

The **Configuration Editor** is available while collecting data so that changes can be made and the effect of the changes can be seen in real time. Three functions exist to edit the Configuration while collecting data - **Edit Current Configuration**, **New Configuration** and **Open Configuration** - and each function is accessed from the **Monitor** menu (see Figure 4-14).

Figure 4-14 Monitor, Edit Configuration choices



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4.3.1 Edit Current Configuration

The **Monitor >> Edit Current Configuration** reads the entire Configuration from the Cygnus Controller and locks the Controller front panel against any changes being made. This selection performs the **Query Controller Cfg** function that is recommended as the starting point for editing a Configuration (see section 3.2, Using the Configuration Editor, on page 3-2). Any changes made to the Configuration can be sent to the controller by selecting the parameter (i.e. checking the **Send** box) and pressing the **Send Selection** button in the Editor.

The effect of a parameter change should appear immediately in the data collection if the parameter is related to data collection.

NOTE: Use of **Monitor >> Edit Current Configuration** may result in delayed data plotting during the brief time that the entire Controller configuration is being sent to the computer from the Cygnus Controller.

4.3.2 New Configuration

The **Monitor >> New Configuration** loads the Editor with a default configuration from disk, which then allows for any parameter to be programmed and sent to the Controller. This is typically used to change a few parameters without impacting data collection.

4.3.3 Open Configuration

The **Monitor >> Open Configuration** loads the Editor with a previously saved configuration from disk. This is typically used to program an idle channel while other channels are running and data collection is ongoing.

4.4 Recalling Data

Data that has been saved to disk can be recalled into the Monitor view by using the **File >> Open** menu selection, the **File Open** toolbar button, the **Recall** toolbar button or the context-menu selection of **Recall**. All options are shown in Figure 4-15. When using **Recall**, the file type is defaulted to **Cygnus Data (*.sod)**, which is the correct file type for data files. When using **File >> Open**, the default file type is **Cygnus Configuration (*.isc)**, so to access and open a data file the path and file type must be changed to the **\Data** folder and **Cygnus Data (*.sod)**, respectively.

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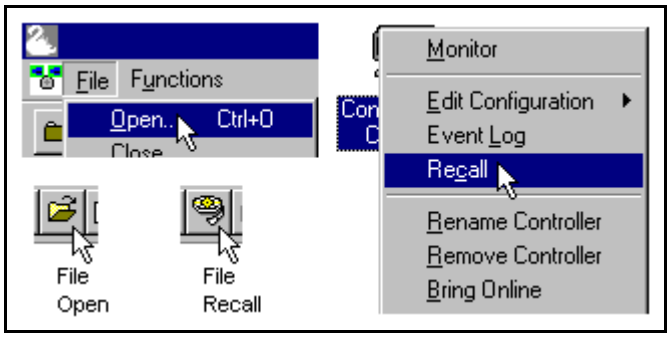
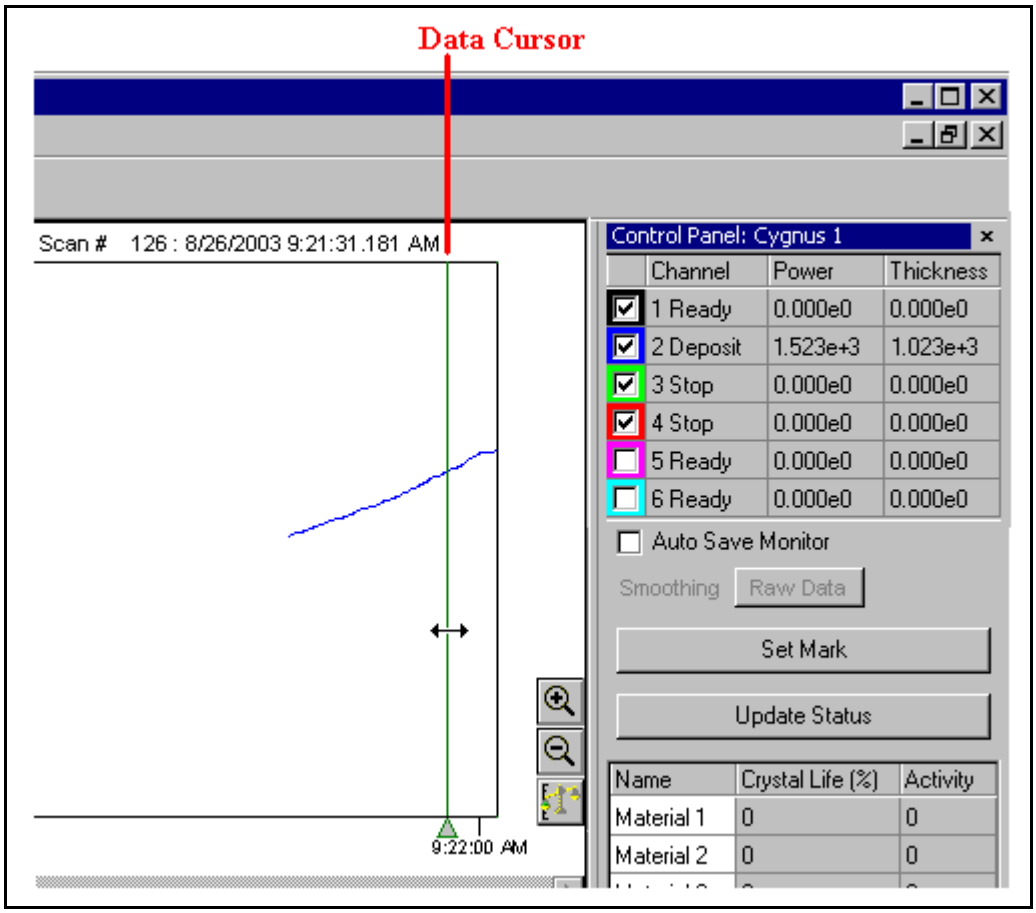
Figure 4-15 Recalling a Data File



After a data file is opened, the data cursor can be used to display numeric data for any scan of data contained in the file. The cursor can be repositioned by pressing and holding the left mouse button when over the Data Cursor, dragging the Data Cursor, and releasing the mouse button. The left and right arrow keys can also be used to move the Data Cursor once it has been repositioned on the graph. Figure 4-16 shows the Data Cursor repositioned.

Figure 4-16 Recall, Cursor Use



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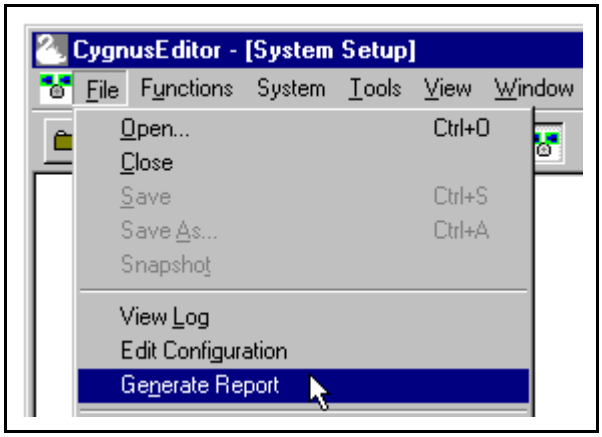
WARNING

Recall and manipulation of very large data files, while collecting data, may cause the system to slow down. It is advisable to recall very large data files only when data collection is idle to lessen the impact on the system performance.

4.5 Generating Reports

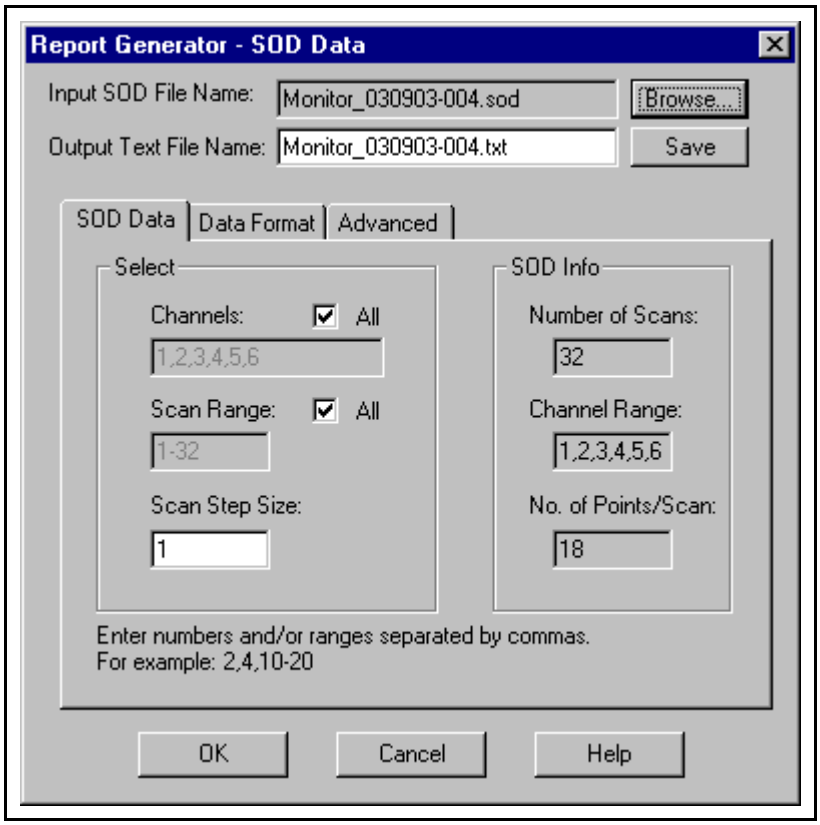
ASCII reports can be generated for data files by using the **File >> Generate Report** selection shown in Figure 4-17. **Reports** can be generated for individual files, live data, or a series of files.

Figure 4-17 Selection for Generating a Report



To generate a report, first select **File >> Generate Report**. If live data are being displayed or a data file has been **Recall**ed, the dialog in Figure 4-18 will appear. If generating a report from a saved SOD file, a standard file **Open** dialog will appear.

Figure 4-18 Generating a Report - SOD Data selections



If live data are being displayed, the **Input SOD File Name** box will be blank and the **Number of Scans** will be incrementing. Leaving the **Input SOD File Name** box blank will generate a report for the live data being acquired. If you are generating a report for a recalled data file, that filename will be shown in the **Input SOD File Name** box. If the desired data file is not being displayed in this box, click on the **Browse** button and use the standard Cygnus Editor file **Open** dialog to select the file or files for which to generate a report. To select multiple files highlight the first file, press and hold the control key, click on the other files to select them, and then release the control key. Holding the shift key down and clicking will select all the files between the current selection and where the mouse was clicked.

The output filename, by default, is the same as the input filename but with a **`.txt`** (tab separated) or **`.csv`** (comma separated) extension. When reporting a single file, this name can be changed to any valid filename. When reporting multiple files, it is possible, although not recommended, to edit the list of output files.

Three parameters that can be changed to customize the report are the **Channels**, the **Scan Range** and the **Scan Step Size**. Enter the desired channels in the **Channels** box or click the **All** check box. Enter the range of scans of interest in the **Scan Range** box or click the **All** check box. Enter the step size in the **Scan Step Size** box. Enter 1 to report every scan, 2 to report every other scan, etc. For single files, the actual limits are displayed in the **SOD Info** box. However, since multiple

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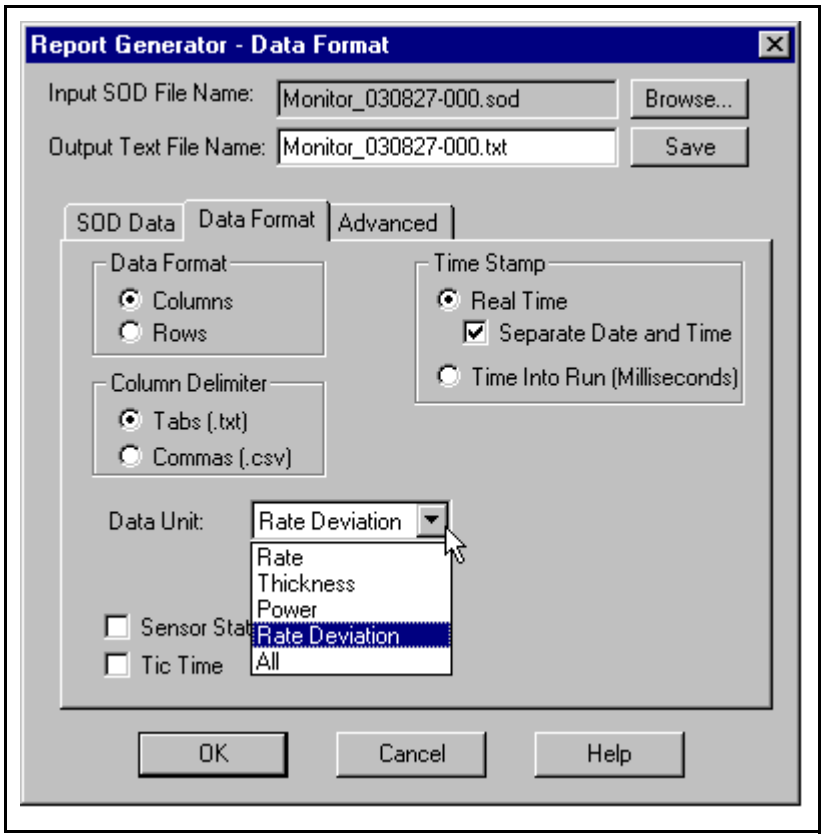
files may have different limits they are left blank if more than one file is selected. If the ranges selected exceed the actual limits of one of the files in a group, the points that fall within the specified ranges are reported and no error is displayed.

Click on the **Data Format** tab to display the **Data Format** page, shown in Figure 4-19, used to select the formatting options and the type of data for the report.

NOTE: It is important to note here that even though the data file contains four data parameters (Rate, Rate Deviation, Power, Thickness) for each channel, a **Report** can only contain either one data parameter for each **Channel** or all data parameters for all channels. The **Data Unit** choice is used to choose which parameter is being reported.

Figure 4-19 Generating a Report - Setting the Data Format

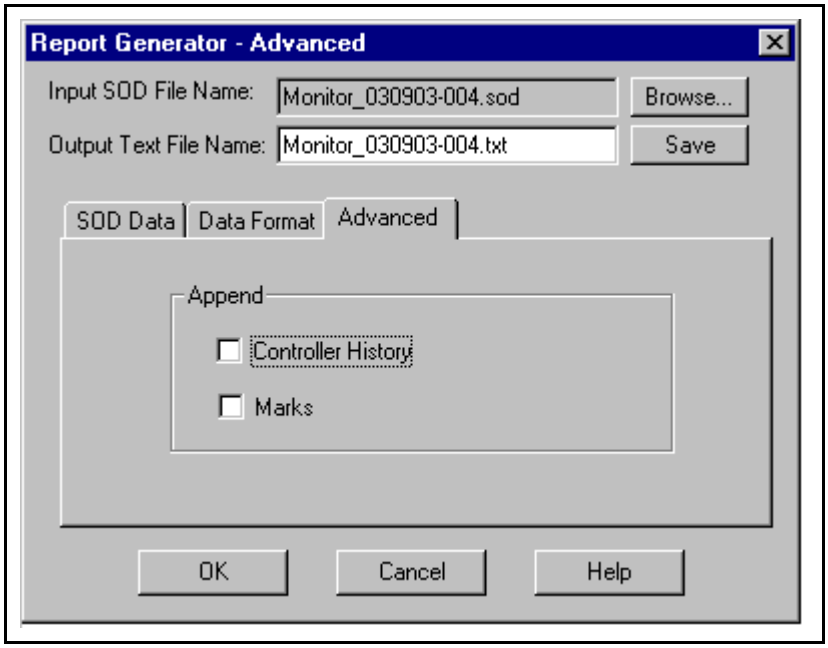


The data can be oriented in **Columns** or **Rows**. Selecting **Columns** places all the measurements for each parameter in a column with one scan per row. Selecting **Rows** generates a series of parameter-measurement pairs, grouped by scan. The delimiter between columns can be selected as either **Tabs** or **Commas**.

NOTE: The Report Generator creates text files, from data files, in two possible formats - **tab delimited** (.TXT) or **comma separated variable** (.CSV). When a large quantity of data is collected into one file (e.g. an SOD file - Sea of Data file) the resulting text file from the Report Generator will also be large. Files that are too large for the Windows Notepad should be opened from within a program such as Excel for viewing. Both .TXT and .CSV files are able to be opened from within Excel.

Select the **Advanced** tab to display additional options (see Figure 4-20). This page allows the **Controller History** and **Marks** to be included in the report.

Figure 4-20 Generating a Report - Advanced options



When the desired options are selected, click **Save** to write the data to the output file. The files generated are plain text files and can be viewed with any text editor, such as Notepad, and imported into other programs such as Excel.

The **Save** button will generate a report for the selected data file(s) but will not close the **Report Generator** dialog. This allows for use of the **Browse** button to select a different input file and continue generating reports. The **OK** button will generate a report for the selected data file(s) and close the **Report Generator** dialog.

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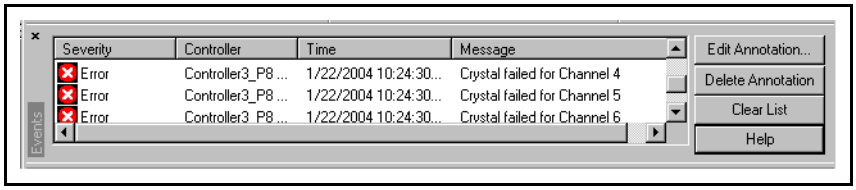
4.6 The Event Log (Errors and Warnings)

When an error on one of the Controllers is detected, an error window is displayed (Figure 4-21).

Figure 4-21 Error Window

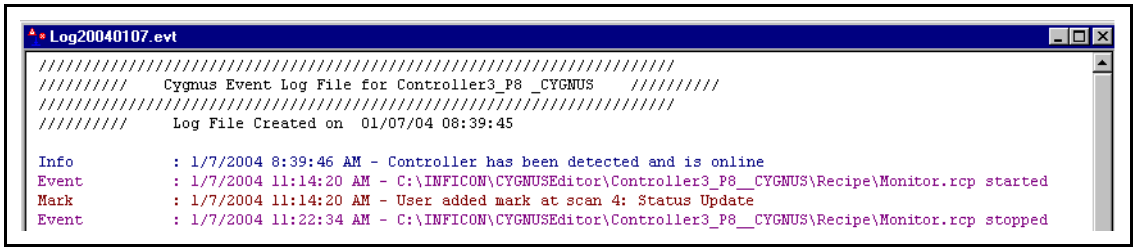


One or more errors can be displayed in this window and the window will stay displayed until it is closed by the user. This allows several errors or warnings to accumulate when no one is watching the screen, that can be viewed, for example, when the user returns. By default, only errors are displayed in this window, however, it is possible to configure the program to include warnings (see section 2.3 on page 2-9). Most errors displayed provide status about the crystals in use. There are errors that are displayed when communication problems exist; these are most likely due to a large amount of data transferring between the Controller and PC.

Errors, warnings, events and marks are logged in an event file according to the preferences selected in the **Sensor Properties** pages (refer to Figure 2-11 on page 2-10). A new log file is created every day with the name Log*yyyymmdd*.evt. Where *yyyy* is the year, *mm* is the month, and *dd* is the day. To view the log file for a Controller, select **File >> View Log** or select **Error Log** from the context menu when the cursor is over a Controller icon in the setup page.

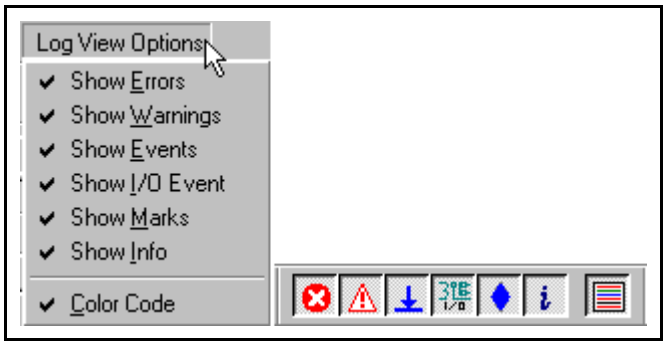
If invoked using the **File >> View Log** command, a file **Open** dialog will be displayed to allow the selection of a log file to view. If invoked from the context menu on the **Setup Screen** then the current log file for that Controller will be displayed, as shown in Figure 4-22.

Figure 4-22 Sample Event Log File



Log files contain Errors, Warnings, Events, I/O Events, Marks, and Informational messages. It is possible to selectively display or hide these classes of events or to color code them to facilitate locating errors, etc. **The Log View Options** menu and **Log View Toolbar**, shown in Figure 4-23, control these options.

Figure 4-23 Log View Options



The buttons on the toolbar are in the same order as the items in the log view menu.

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