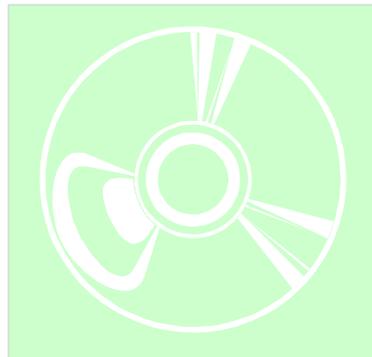
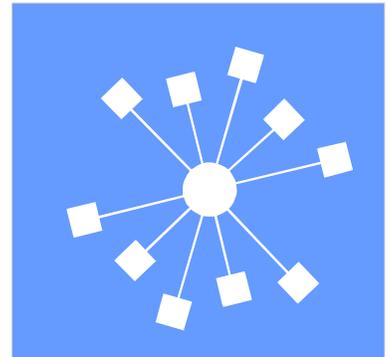




GEH-6405A
(Supersedes GEH-6405)

GE Industrial Systems

Innovation Series

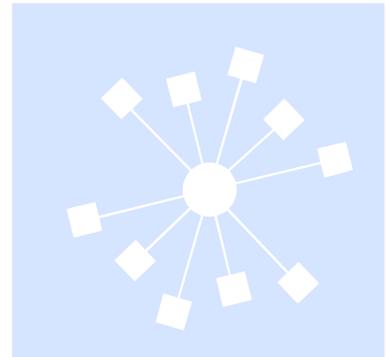


Control System Toolbox

**For Configuring AV-300, DV-300,
and AV-300i (AVDV Series) Drives**

Publication: GEH-6405A
Issued: 1999-06-12

Innovation Series



Control System Toolbox

**For Configuring AV-300, DV-300,
and AV-300i (AVDV Series) Drives**

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These instructions do not purport to cover all details or variations in equipment, nor to provide every possible contingency to be met during installation, operation, and maintenance. If further information is desired or if particular problems arise that are not covered sufficiently for the purchaser's purpose, the matter should be referred to GE Industrial Systems, Salem, Virginia, USA.

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Safety Symbol Legend



Warning

Indicates a procedure or condition that, if not strictly observed, could result in personal injury or death.



Caution

Indicates a procedure or condition that, if not strictly observed, could result in damage to or destruction of equipment.



Attention

Indicates a procedure or condition that should be strictly followed in order to optimize these applications.

Note Indicates an essential or important procedure, condition, or statement.



Warning

To prevent personal injury or equipment damage caused by equipment malfunction, only adequately trained personnel should modify any programmable machine.



Caution

The example and setup screens in this manual do not reflect the actual application configurations. Be sure to follow the correct setup procedures for your application.

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Glossary of Terms

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Chapter 1 Overview

Introduction

This manual describes the Control System Toolbox, which is micro-processor-based software used to configure and maintain AV-300™, DV-300™, and AV-300i™, (AVDV Series) drives. The toolbox is a Windows®-based application, which runs on a Pentium® 100 or higher, personal computer (PC).

Primary functions of the toolbox include:

The toolbox software configures various control equipment. Therefore, each product package can consist of the toolbox, product files for the drive, and Trend Recorder. To order the toolbox software and specific product support files, refer to the Product Catalog, GEP-9145.

- Configuration wizards
- Live data block flow diagrams
- Online Help files
- I/O configuration and monitoring
- Signal management and signal trending
- Generate report(s)

Before Beginning

Windows-based screen borders may vary in appearance.

This manual describes the features of the toolbox and presents step-by-step procedures for using the software applications provided. It presumes that the user has already installed Windows. This manual also assumes that the user possesses at least a medium-level knowledge of Windows. Hardware requirements and instructions for installing the products are in Chapter 2.

How To Use This Manual

This manual provides the user with information on installing the toolbox and other products used to configure control equipment. It also describes other features provided in the toolbox software package. This manual is organized as follows:

Chapter 1 Overview. This chapter defines functions of the toolbox, contents of this manual, and the conventions used.

Chapter 2 Installation. This chapter describes the PC and installation requirements for the AVDV Series drives.

Chapter 3 Using the Toolbox. This chapter provides basic startup procedures and features for using the toolbox to configure a product.

Chapter 4 Configuring an AVDV Series Drive. This chapter describes how to use the toolbox to configure a drive.

Glossary. The Glossary provides definitions of configuration terms and toolbox concepts.

Refer to the Table of Contents for the organization of these chapters.

Conventions

The following conventional terms, text formats, and symbols are used throughout this documentation for the toolbox.

Convention	Meaning
Bold	Indicates that the word is being defined.
Arial Bold	Indicates the actual command or option that is chosen from a menu or dialog box.
<i>Italic</i>	Indicates a word used as a word or a letter used as a letter. For example, the display should now read <i>SDB has stopped</i> . Italic also indicates new terms, margin notes, and the titles of figures, chapters, and other books in the toolbox package.
UPPERCASE	Indicates a directory, filename, or block name. Lowercase letters can be used when typing names in a dialog box or at the command prompt, unless otherwise indicated for a specific application or utility.
Monospace	Represents examples of screen text or words and characters that are typed in a text box or at the command prompt.
➤	Indicates a procedure.
◆	Indicates a procedure with only one step.
•	Indicates a list of related information, not procedural steps.

The following list presents some basic guidelines for working with menus:

When a menu is displayed, press the up/down arrow keys to highlight a command name. Then press Enter to choose the menu command. The menu can also be selected by clicking with a cursor-positioning device (CPD), such as a mouse.

When a command ends in an ellipsis (...), the application displays a dialog box that asks the user to supply more information.

If a command turns a feature on and off, a checkmark (✓) is displayed by the command name when the feature is on.

When a command ends with an arrow (▶), the menu cascades to display more command names.

If a command name is grayed out, it indicates that the command does not apply to the current situation or there is another selection or action before choosing the command.

Related Publications

GE provides system instruction manuals that include publications for the different components of each product. If additional manuals are needed or for questions about the publications, contact the nearest GE sales office or authorized GE sales representative. Also, refer to the following publications for more information about AVDV Series equipment:

- GEI-100331, *AV-300 Adjustable Speed Drives*
- GEI-100360, *AV-300I Adjustable Speed Drives*
- GEI-100332, *DV-300 Adjustable Speed Drives*
- GEI-100275, *6KCV300CTI Instruction Book*

Notes

Chapter 2 *Installation*

Introduction

This chapter describes the PC and installation requirements for the products in Control System Solutions. The contents of this CD depends on which products are ordered. Some orders are issued a License Key. Available products display in the Product Selection dialog box (see the section, Product Selection).

<i>Section</i>	<i>Page</i>
Computer Requirements	1
Installing Control System Solutions	2
License Key	2
Destination Directory.....	3
Registration License Agreement.....	4
Product Selection	5
Uninstall Products.....	5

Computer Requirements

The minimum PC requirements are determined by the selected product combination and the topology configuration of the PC(s). The minimum requirements to use the Control System Solutions products are as follows:

A cursor-positioning device is highly recommended.

- 100 MHz processor (Pentium 166 or higher recommended)
- Microsoft® Windows® 95 or Windows NT® 4.0
- VGA display (640 x 480 x 16 color or gray scale)
- 16 MB RAM in Windows 95 (32 MB recommended) **or** 24 MB RAM in Windows NT (32 MB recommended)
- Serial port for direct connection to a drive
- Printer (with appropriate Windows driver installed)

Installing Control System Solutions

For assistance, contact:

*Industrial Systems
General Electric Company
Product Service Engineering
1501 Roanoke Blvd.
Salem, VA 24153-6492 USA
Phone +1 540 387 7595
Fax +1 540 387 8606
(replace + with the
international access code)*

*Install the desired products
from CD, following the
directions on the screen.
Then, install each product
file.*

Control System Solutions installs various products for control systems as selected in the setup program. It is recommended that you exit all Windows programs before beginning. A dialog box may prompt you for a License Key, which can be found on the actual CD. Also, you must agree to the standard Software License Agreement for these products.

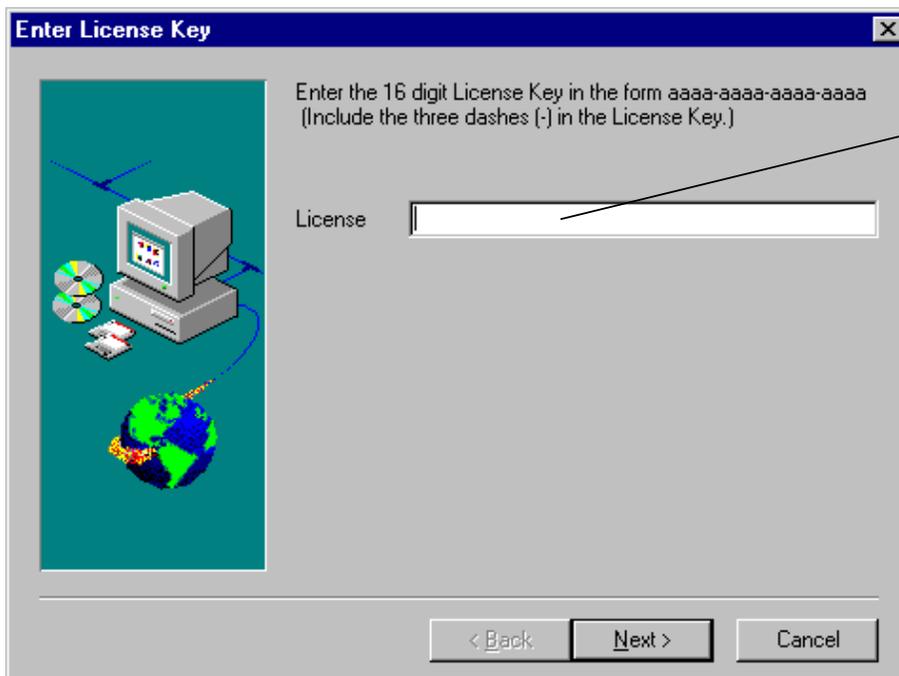
A default destination directory is set for all products selected. This directory can be modified, but only during the first installation. Setup installs the required components and checks available disk space before copying files. You can also choose to cancel setup and exit at any time before you initiate the selected products.

➤ To install from a CD

1. Place the Control System Solutions CD in the disk drive.
2. The Setup program executes automatically.
3. Follow the Setup instructions from the screen.

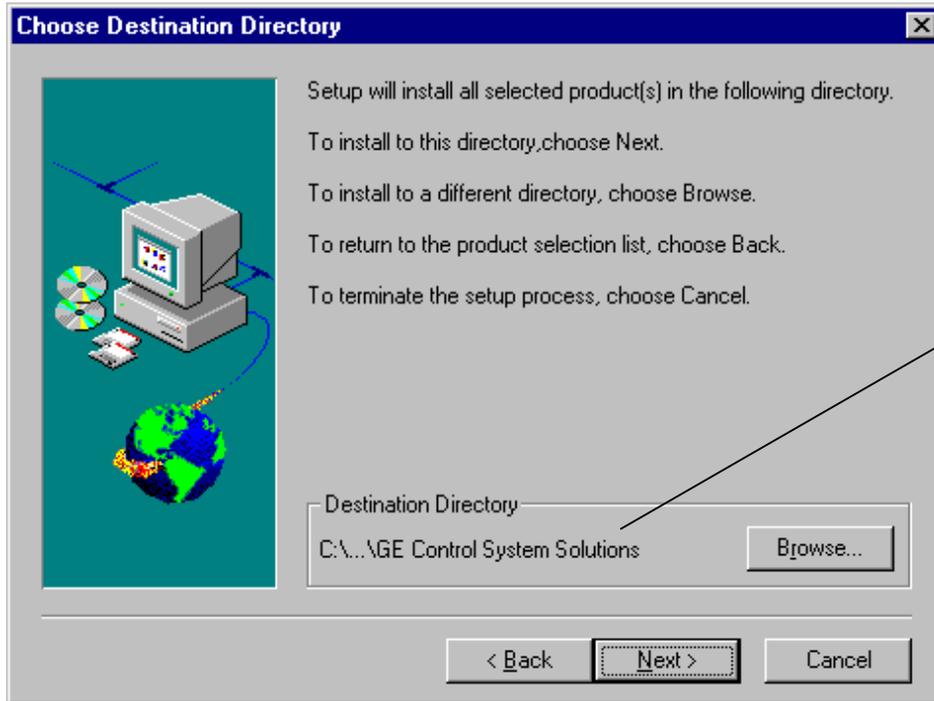
License Key

Note The License Key dialog box may appear, depending on the products ordered.



Enter the License Key number. This number is printed on the actual CD. The number is not case sensitive.

Destination Directory



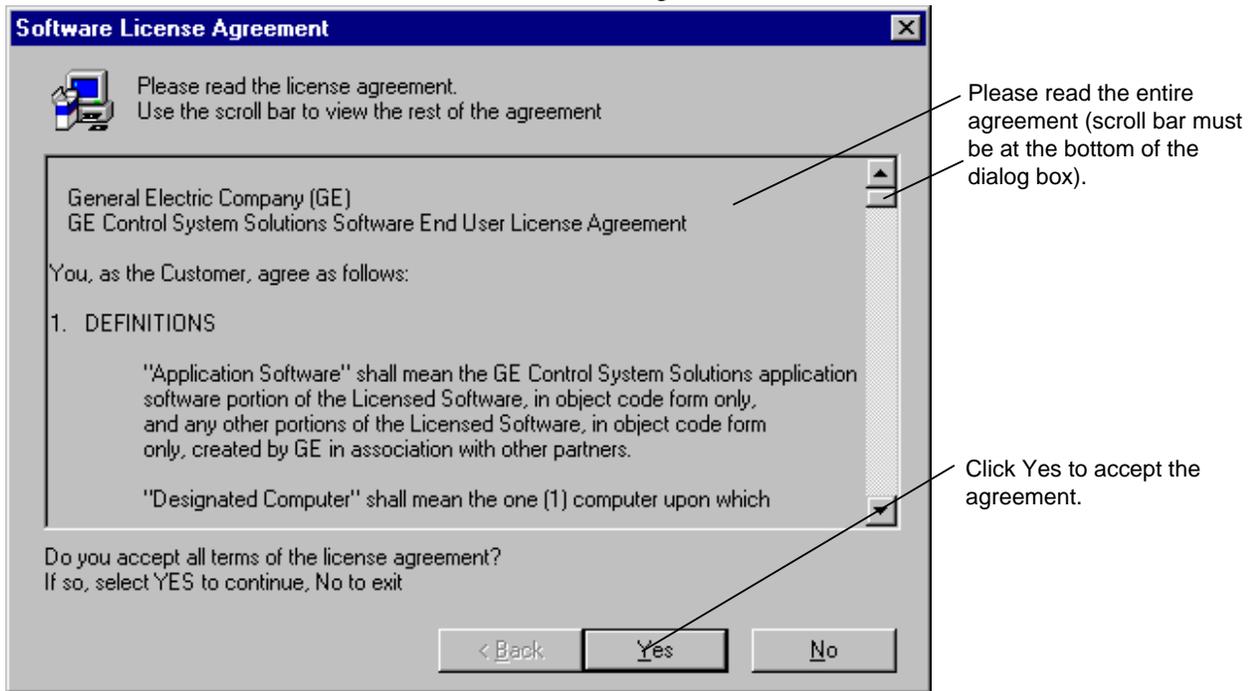
The destination directory for each product is set to the default directory C:\Program Files\GE Control System Solutions. If desired select a different directory to load the products.

This dialog box option can only be selected during the initial installation of these products. After that all future installs and upgrades default to the first directory selected.

Select a directory and click Next. Setup automatically continues to load. The Control System Solutions product selection dialog box displays to allow you to select desired products described in the following sections.

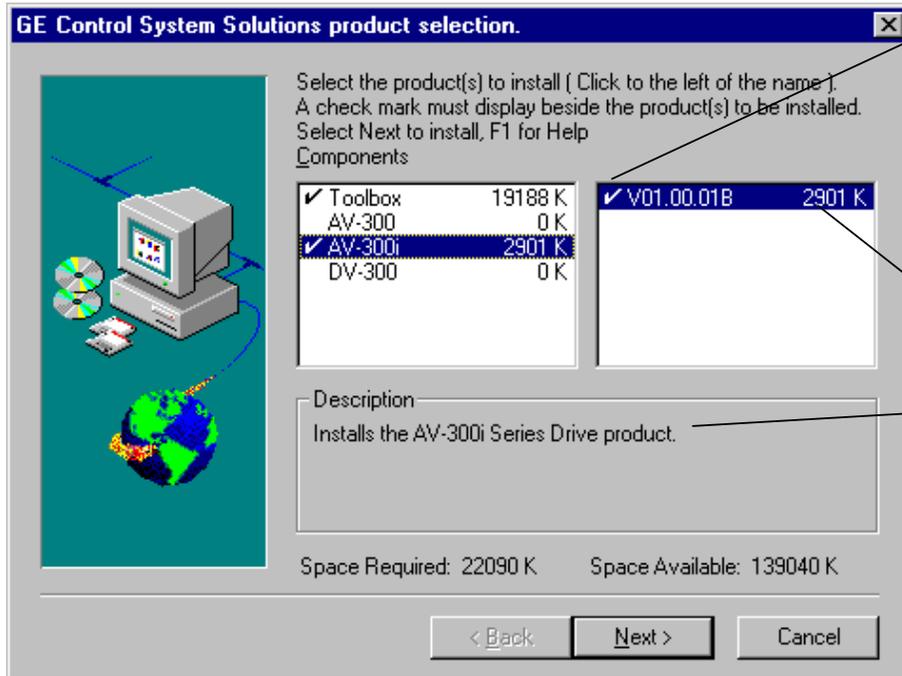
Registration License Agreement

The following License Agreement dialog box displays during installation. The license must be read and agreed to before installation can continue.



Product Selection

Tip ➤ From the Product Selection dialog box, click on a product (highlight) to display its description and required disk space. The total required space for all **checked** items and the space available displays at the bottom of the dialog box.



You must click to the left of each product you want to install. A check mark must display beside the product name.

Click the product name in the left column to check all the application in that group. Click again to uncheck all.

The number beside each product indicates the amount of space required for that product.

A description of each product displays when it is selected (highlighted).

Uninstall Products

Note Before upgrading to Release 5, product components should be uninstalled and then installed again using the Release 5 CD or network installation.

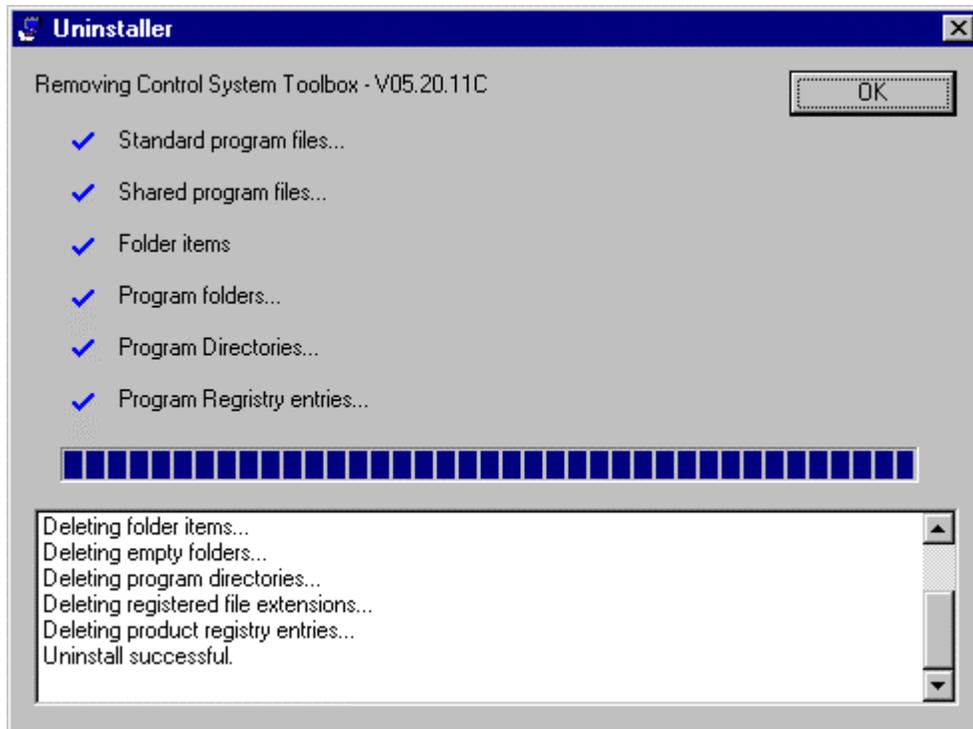
➤ To uninstall product(s)

1. Click Windows  **Start** button,  **Settings** and click  **Control Panel**.
2. From the **Control Panel** dialog box, double-click on **Add/Remove Programs**. The Add/Remove Program Properties dialog box displays.
3. Click on the tab **Install/Uninstall**. A list of all installed programs displays.
4. From the list box, click on the program to uninstall and click .

– Or –

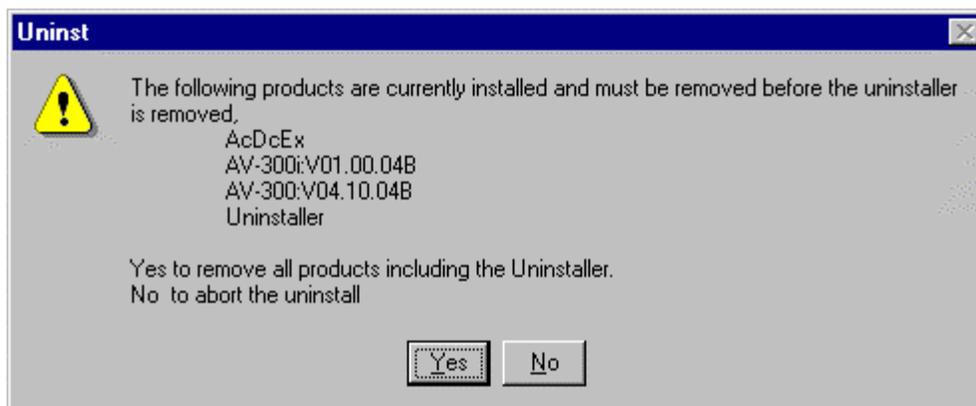
To remove all Control System Solution products, click **Uninstaller** and click .

The following screen displays to show when uninstall is complete and the status of all items deleted.



If you choose to remove all products by selecting Uninstaller, the following dialog box displays. All installed products are listed and will be removed.

Caution



Chapter 3 *Using the Toolbox*

Introduction

Settings in the Options menu should be determined before starting a configuration.

This chapter provides basic instructions for using the toolbox. It defines the toolbox menu commands, including the Options menu, which has a Settings dialog tab for each product. Methods of communication and toolbox connections are also described.

Section	Page
Upgrading from Previous Releases.....	2
Starting the Toolbox	3
Accessing Online Help	5
Privilege/Password.....	5
Toolbox Options	8
Connecting the Toolbox.....	12

Upgrading from Previous Releases

Note To upgrade to Version 5 of the toolbox, it is recommended that you first uninstall any previous version of toolbox.

Maintaining Multiple Releases of Toolbox

To maintain different releases of the toolbox on a single system, consider the following:

- **Multiple versions of Release 5 cannot be installed on one system.** The installation directory for Release 5 of the toolbox is chosen only once, the first time that the Control System Solutions products are installed. The default directory is C:\Program Files\GE Control System Solutions.
- **There is only one set of toolbox options settings for a given user on a given computer.** There are several toolbox options settings that may need to be unique to a particular release of toolbox. For example, Release 4 of the toolbox would probably need a different directory setting for standard library .tre files than that of Release 5. In order to use multiple releases, it is recommended to use different user accounts for each release.
- **Opening a toolbox file from the Windows Explorer is not recommended if multiple copies of toolbox are installed.** When you open a file from the Windows Explorer, the application that starts up depends on what is registered for that file type. Releases of toolbox prior to Release 5 register each time they execute. Release 5 of toolbox, however, registers only at installation.
- **Modifying a toolbox file can make the file unusable to older releases of toolbox.** A warning dialog displays when the toolbox opens a file that was written by a previous release. Do not save the file if it must be used by the previous release.

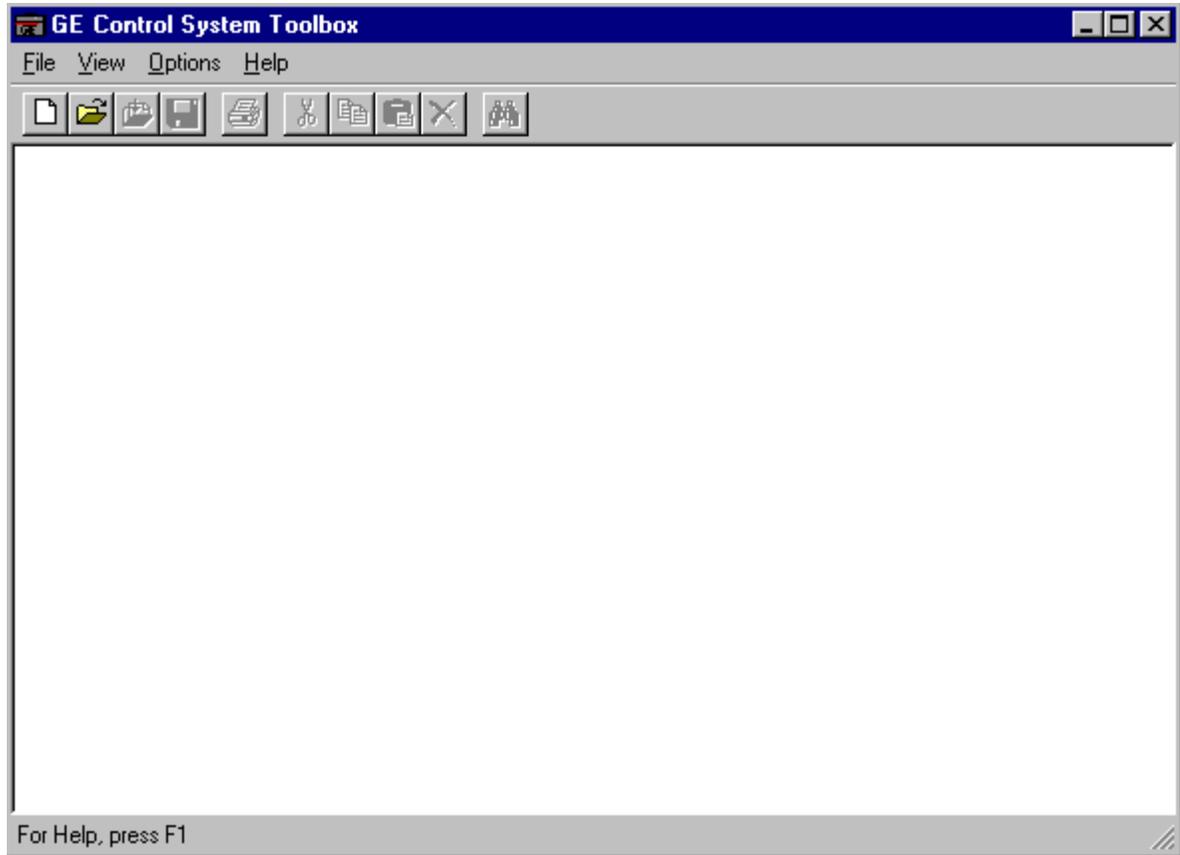
Starting the Toolbox

The toolbox is started from the Windows NT or 95 Workstation.

➤ **To start the toolbox**

1. Click Windows Start button, **Programs, GE Control System Solutions** and **GE Control System Toolbox**.
2. Click the toolbox icon. The toolbox Work Area displays. It is blank until a device is created or opened.

To create a device, refer to Chapter 4.



Work Area

If more than one drive is open in the Work Area, each drive will have a window with an Outline View and Summary View.

A drive's runtime action is configured using the toolbox. From the File menu, begin a **New** configuration or **Open** a previously saved configuration file. The toolbox Work Area (shown below) is the main screen and contains the following:

Outline View (left side) displays the configuration in a hierarchy, with the drive name as the first item and other configuration items listed in levels below it.

Summary View (right side) displays information for the item highlighted in the Outline View. For example, in a drive configuration, the item *Diagram* displays block diagrams (which can be configured from this view).

Detached Summary View is a separate window from the Work Area window and displays a *copy* of the Diagram. This window can be sized, configured, and edited.

Click  to display the Detached Summary View.

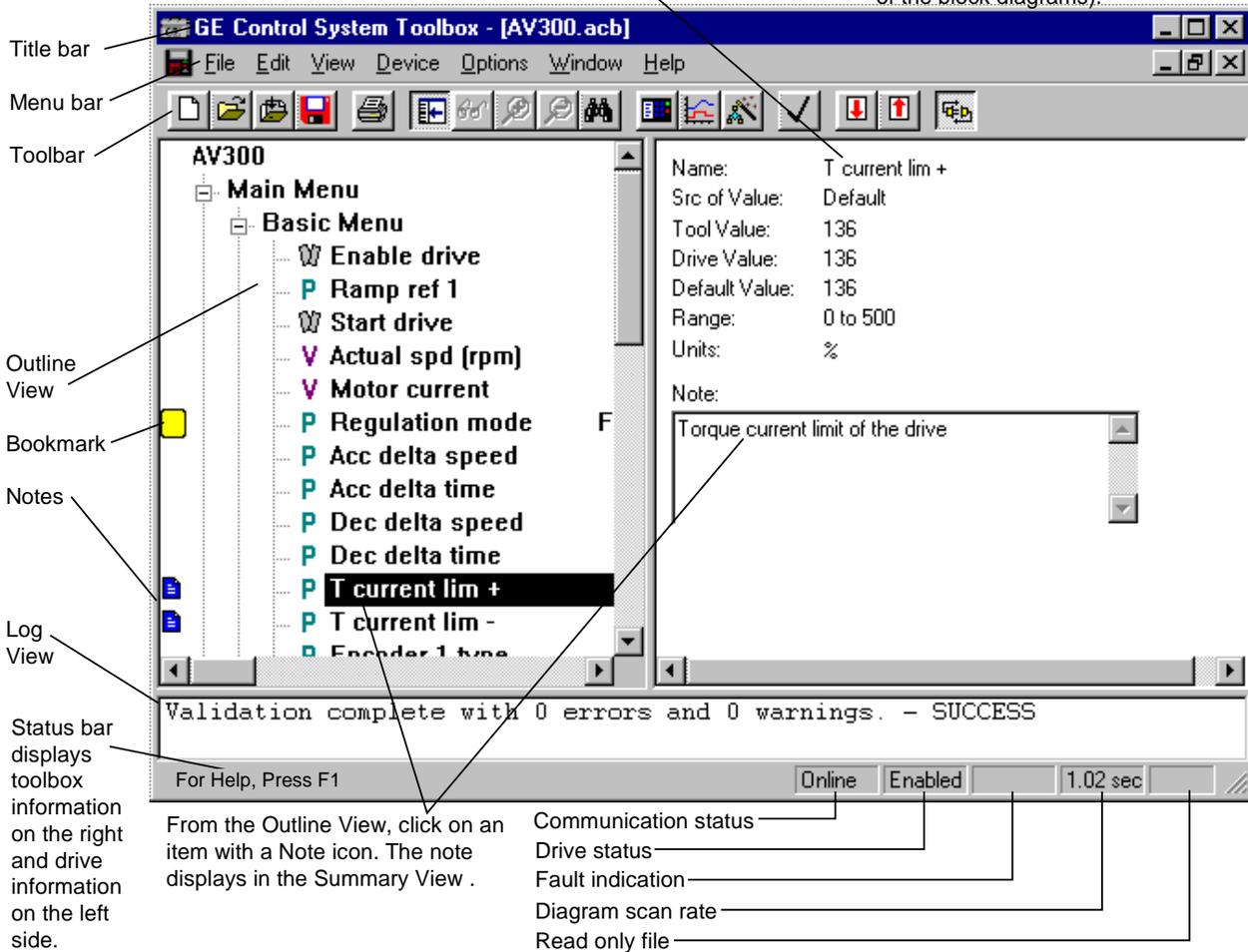
To find the cause of an error, double-click on the error message.

Log View (bottom of window) displays status messages for toolbox activities, such as file imports, validations, builds, or errors.

Note The following screen represent a basic toolbox Work Area format. Menu commands, toolbar button, and Outline View items will vary with the product installed.

Summary View display details of the item selected in the Outline View. For example, the parameter *T current Lim+* is shown below.

Click  to display the Detached Summary View. This view displays details of Diagram (an overall picture of the block diagrams).



Double click on the  Note icon to edit the note.

Bookmark items display this icon .

Status Bar can be toggled on and off from the View menu. When online, the left side displays a description of various toolbox commands or notes entered by the user. The right-hand side displays the drive status of the current drive.

Notes can be created for most items in the drive. Choose *an item*, then choose Edit and Modify. Enter a note for the item and click OK. The Note icon  displays beside the item in the Outline View (shown above).

Bookmark enables you to mark major items in the Outline View and then return to them easily using the Bookmark commands in the Edit menu. The Toggle Bookmark command turns the icon on and off. The Goto Next Bookmark command jumps to the next item marked with the .

Accessing Online Help

To obtain Help for the dialog box on the screen, press **F1**.

Specific dialog box Help is available by pressing the **F1** function key, when a dialog box is displayed. Help can also be accessed using the following methods:

To obtain Help on . . .	Do this . . .
Menu commands	Highlight the command and press F1
Dialog boxes	Press F1 when the dialog box displays on the screen
Block information	Click on the desired block with the right mouse button and choose Item Help
Help contents	Choose the Help menu and choose Contents
Help	Choose the Help menu and choose Using Help
Specific word(s)	Choose the Help menu, choose Contents, and choose the tab Find, then enter the word(s) to search

Privilege/Password

Refer to the next section to change the password.

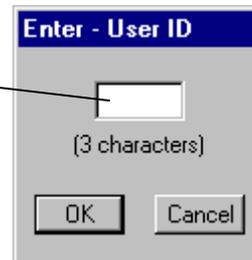
To avoid this dialog box, choose Options menu, Settings, and the tab General. At the bottom of the dialog box in the text box **User Identification**, enter your user ID.

The privilege/password system assigns different levels of access to the devices. Then, passwords can be established for the different privilege levels, so that each user can access a device at the level necessary for the job that person is assigned.

➤ To set a privilege level

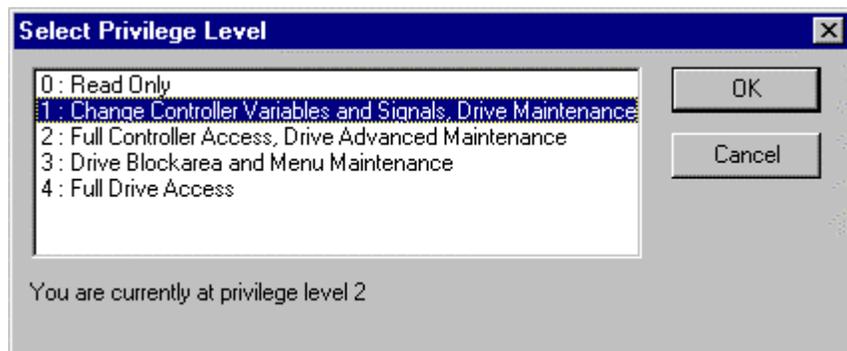
- From the **Options** menu, choose **Privilege**.

Enter a three-character ID, such as your initials. Click OK.



Privilege Level Functions

A password can be assigned to each of the five toolbox **privilege levels** defined below. Each successive level allows all the functions of the previous level. The levels are defined in the table, *Privilege Levels* (below).



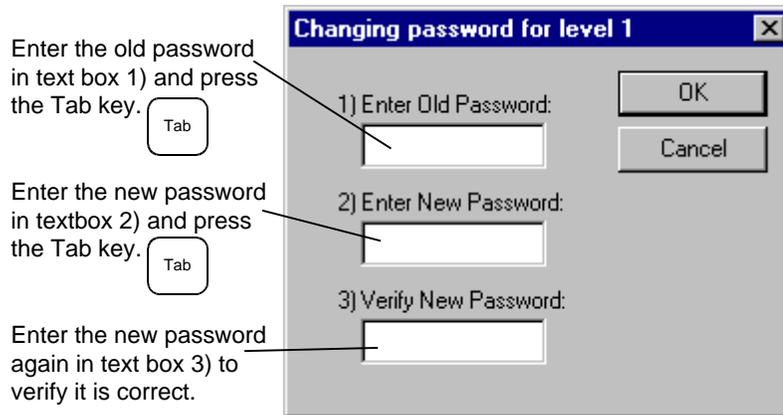
Privilege Levels

Level	Functions
0: Read Only	View code Use the Finder Monitor live data Trend (including saving trend definitions in .TRN files and saving collected data) Change View attributes under Option menu/ Settings Print blockware code and reports Change the password for level 0
1: Change drive Advanced Maintenance	All functions allowed in Level 0, including change password levels in Levels 0 and 1 Change the value of variables
2: Full drive Advanced Maintenance	All functions allowed in Level 0 and Level 1 Make code changes Download Import/Export Put in database and Get from database Validate, build, save, backup, and pack signals Change the password for Levels 0, 1, and 2 Change the location of the password file
3: Drive Block Area and Menu Maintenance	Alter block area and change application menu structure
4: Full Drive Access	Change GE parameters View parameters that are not on a menu Edit Hardware

➤ **To change the password**

1. From the **Options** menu, choose **Password**. The **Changing password** dialog box displays.
2. Click on the privilege level to change.
3. Click **OK**. The **Changing password** dialog box displays to enter the new password.

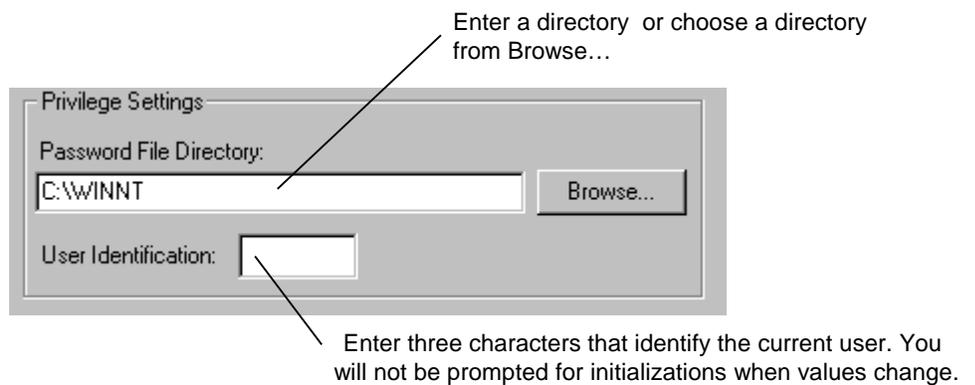
Change Password or Default Password Directory



When a password is created, it is encoded in the file UCPASSWD.INI in the Windows NT installation directory. This default directory can be changed, if the user has a privilege level 2.

➤ **To change the default password file directory**

- ◆ From the **Options** menu, choose **Settings**, and then choose the tab **General**.



Note It is recommended that the password file be kept on the local PC to avoid loss of access in the case of downtime on a remote node.

Toolbox Options

Option settings are saved in the user's Windows registry when the toolbox is closed.

The toolbox's working environment can be defined for each application. This section describes each tab that can be set to customize the drive, such as general settings, directories, and the Trend Recorder. These tabs are located in the Options menu under Settings.

➤ To customize the toolbox settings

1. From the **Options** menu, click **Settings**. The **Setting** dialog box displays. Click on a tab to bring it to the front and select options.
2. Choose **OK** to apply the changes and close the dialog box. Choose **Cancel** to exit and not change any settings. Or, choose **Apply** to install the change immediately and continue to customize other tab settings.

General

Choose a font for the Outline View. The default font is System Bold.

Choose from the following File options:

Load last file on startup automatically loads the last file that was in use when the toolbox was exited.

Backup files before save makes a backup copy of files before saving new information. This includes .ucb, .dcb, .icb, and .ocb.

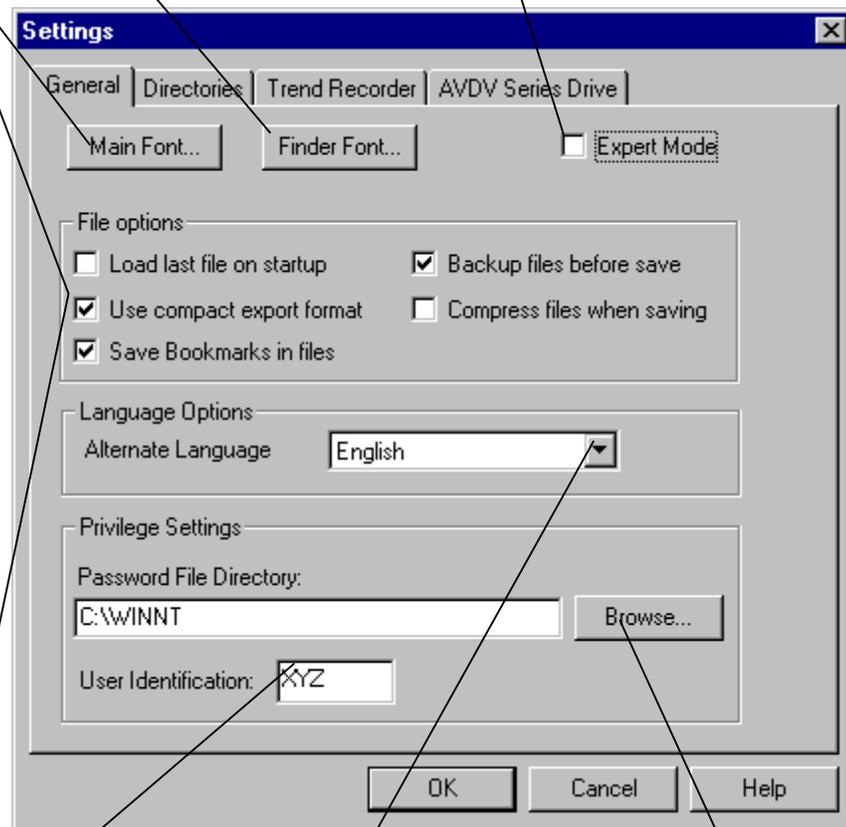
Use compact export format compresses the .tre files produced by exporting. This uses less hard disk space and is easier to read and edit. This setting is recommended.

Compress files when saving saves and stores files in a compressed format and save disk space.

Save bookmarks in files saves bookmarks between closing and reopening files.

Choose a font for the Finder.

Click this check box to skip a level of verification menus and process changes more quickly.



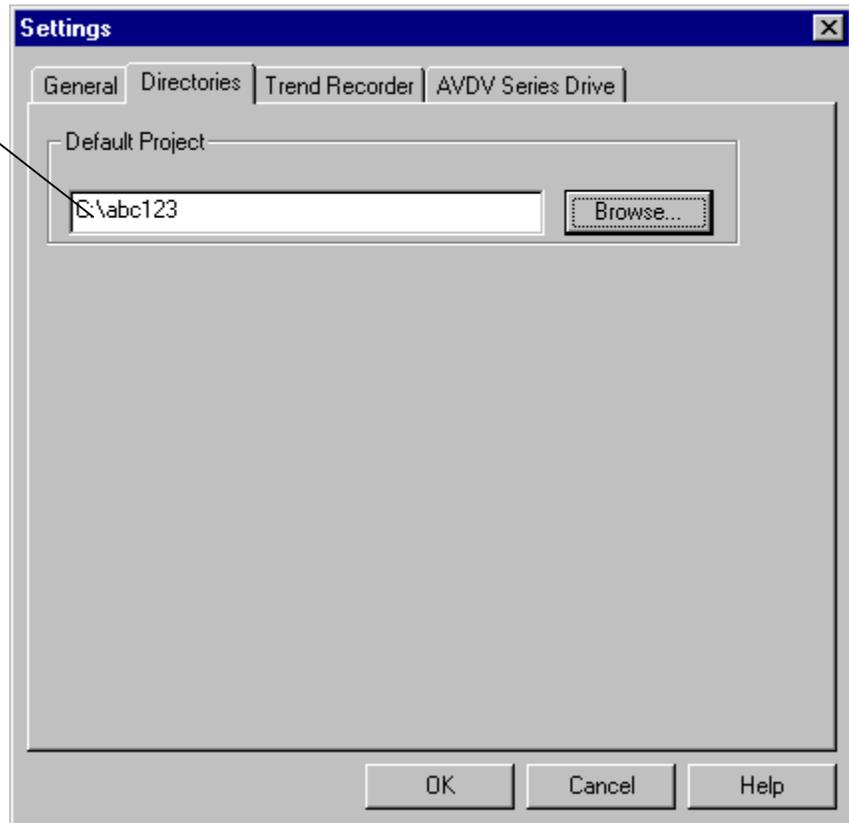
Enter three character initials, which are used in the privilege/password. You will not be prompted for initializations when values change.

Choose an alternate language that the toolbox can use for the database and diagnostic symbol table. The default is English.

Choose the directory for the password file. A local directory is recommended. Click **Browse...** to search the directory structure and choose a location.

Directories

Enter the default directory that will display when File/Open is selected.



Trend Recorder

The Trend Recorder tab allows you to choose specific options as follows:

The screenshot shows the 'Settings' dialog box with the 'Trend Recorder' tab selected. The dialog has four tabs: 'General', 'Directories', 'Trend Recorder', and 'AVDV Series Drive'. The 'Trend Recorder' tab contains the following settings:

- Fonts:**
 - Trend Recorder Font: 8 (dropdown menu)
 - Signal List Font: Select (button)
- Horizontal Grid Lines
- Vertical Grid Lines
- Right Vertical Axis
- Automatically Configure Real-Time Trends
- Enable Drag-and-Drop Zooming
- Show Confirmation dialog when Drag-and-Drop Zooming
- Default Signal Pen Width: 1 (dropdown menu)
- Trender Memory Buffer size: 2 MB (text input)
- Show memory usage in status bar

Callout boxes provide the following explanations:

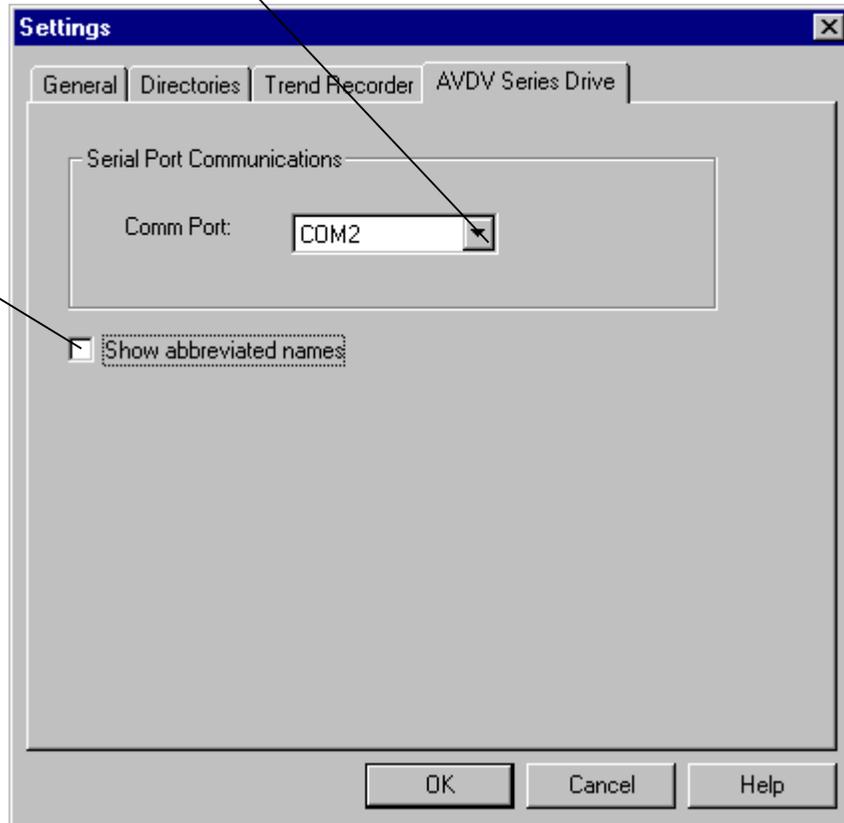
- Horizontal Grid Lines:** Check **Horizontal Grid Lines** to display horizontal grid lines when in Replay mode.
- Vertical Grid Lines:** Check **Vertical Grid Lines** to display vertical grid lines in Replay mode.
- Right Vertical Axis:** Check **Right Vertical Axis** to display vertical axis on the right-hand side of the Trend Recorder.
- Automatically Configure Real-Time Trends:** Click here to automatically configure the Trend Recorder with predefined signals. (This feature currently only works with Innovation Series drives and when performing MarkVI I/O board calibrations.)
- Enable Drag-and-Drop Zooming:** Click here to zoom in the Trend Recorder, using the mouse to drag-and drop a rectangle on the screen. Click here for a Yes/No confirmation prompt to display before the zoom takes place.
- Default Signal Pen Width:** Select the default pen width (measured in pixels) used to draw the signal traces.
- Trender Memory Buffer size:** This sets the amount of memory the toolbox reserves for storing traces. The default value of 2 MB allows 4 signals to be captured at 32 ms intervals for about 14 minutes before the oldest data starts to be overwritten.
- Signal List Font:** Signal List Font sets the font type and size used in the lower window of the Trend Recorder.
- Trend Recorder Font:** Select the font size used in the upper window of the Trend Recorder.

AVDV Series Drive

The AVDV Series Drive tab allows you to choose options specific to the drive.

Click on the drop-down box to choose the communication port.

This option changes the names used on the diagrams and Outline View to internal names used mainly by firmware developers. **It should not be checked.**

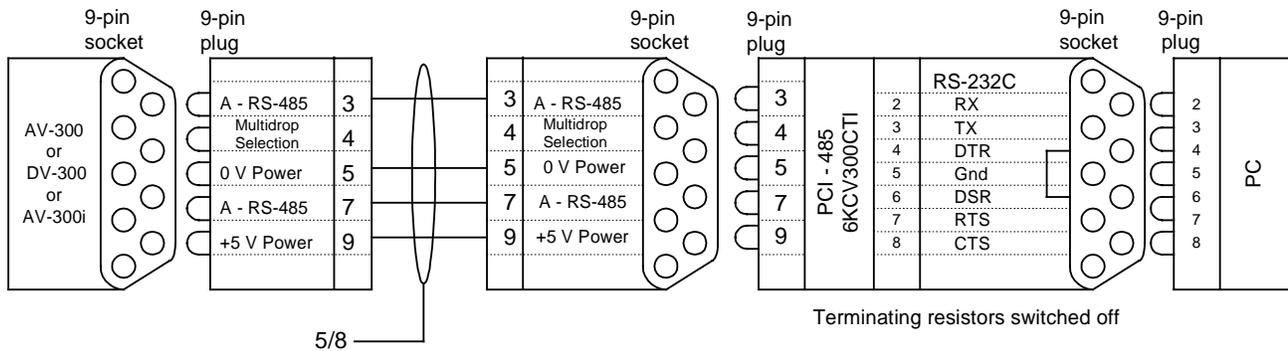


Connecting the Toolbox

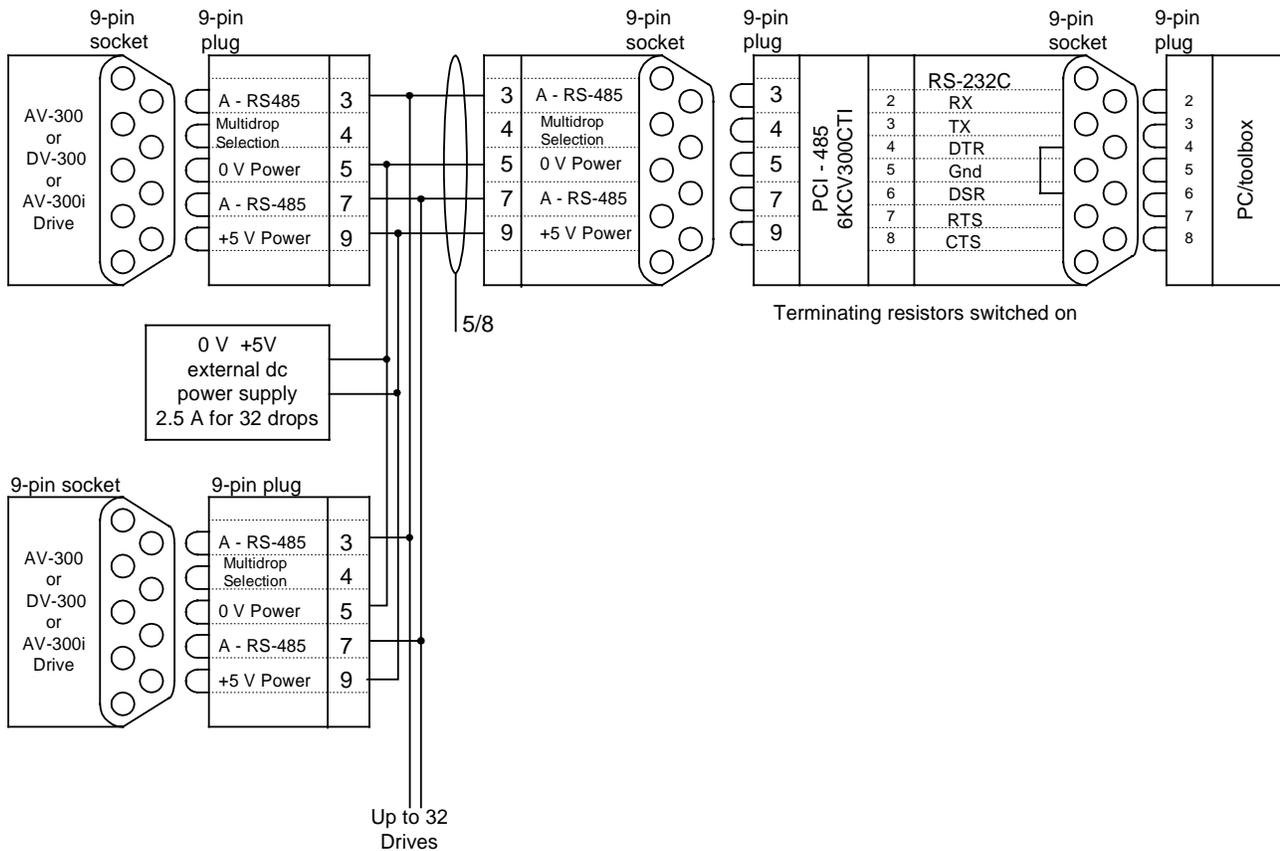
The drive requires an RS-232C to RS-485 converter (6K6V300CTI).

The toolbox can communicate with an AVDV Series drive through an RS-232C/RS-485 serial port connection. Refer to the manual, GEI-100275, 6KCV300CTI Instruction Book.

Note To connect to a drive, refer to the section Connecting to an AVDV Series Drive. Only one drive at a time can go online (communicate).



Point to Point Communication



Multidrop Communication

Chapter 4 *Configuring an AVDV Series Drive*

Introduction

This chapter provides instructions for using the toolbox to configure and monitor an AVDV Series drive. It also contains information on using other features of the toolbox specific to the drive.

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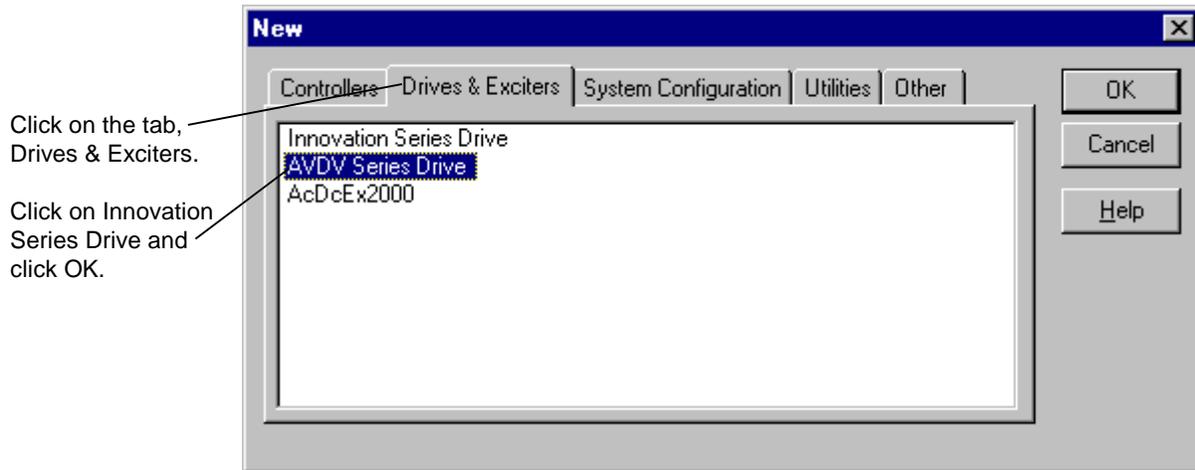
Creating an AVDV Series Drive

When the toolbox starts, the toolbox *Work Area* displays (refer to the section, *Configuring the Drive*). The Work Area is used to maintain the drive configuration file in the toolbox. You must create a new drive configuration file (.acb) or open an existing one.

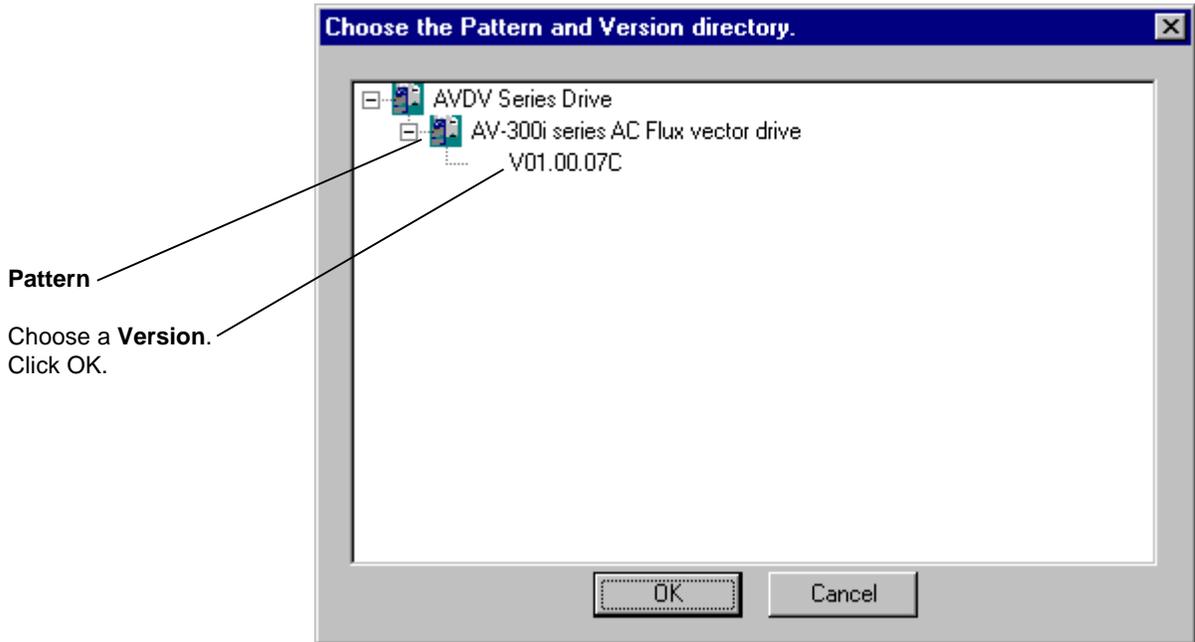
Or choose the  *New* button.

➤ **To create an AVDV Series drive**

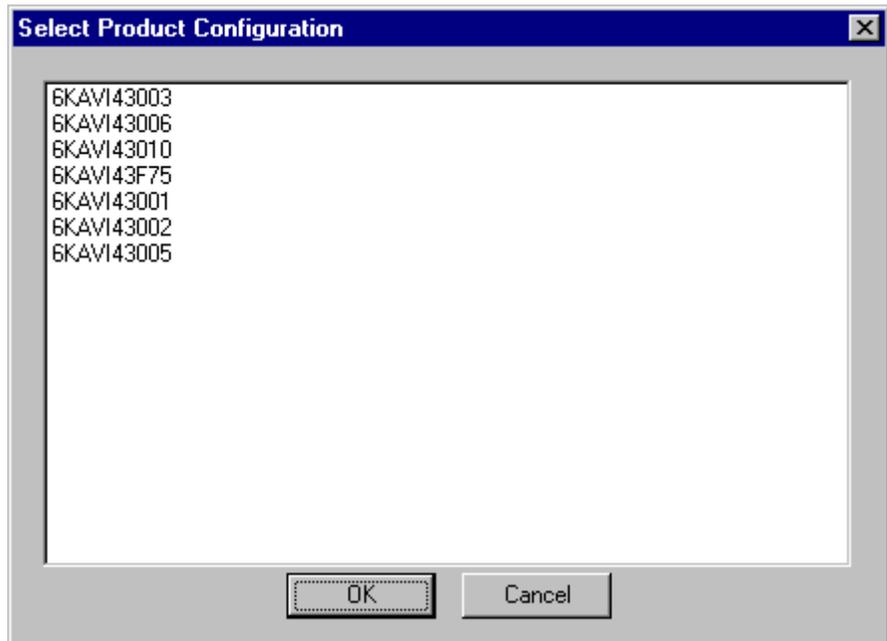
- ◆ From the **File** menu, choose **New**. The **New** dialog box contains all installed toolbox products. Choose the drive as follows:



Pattern and Version



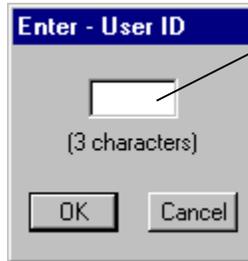
The **Select Product Configuration** dialog box displays. Select a configuration file that sets the values for the particular bridge size being configured. Obtain this number from the **drive nameplate** on the drive being configured.



Enter User Identification

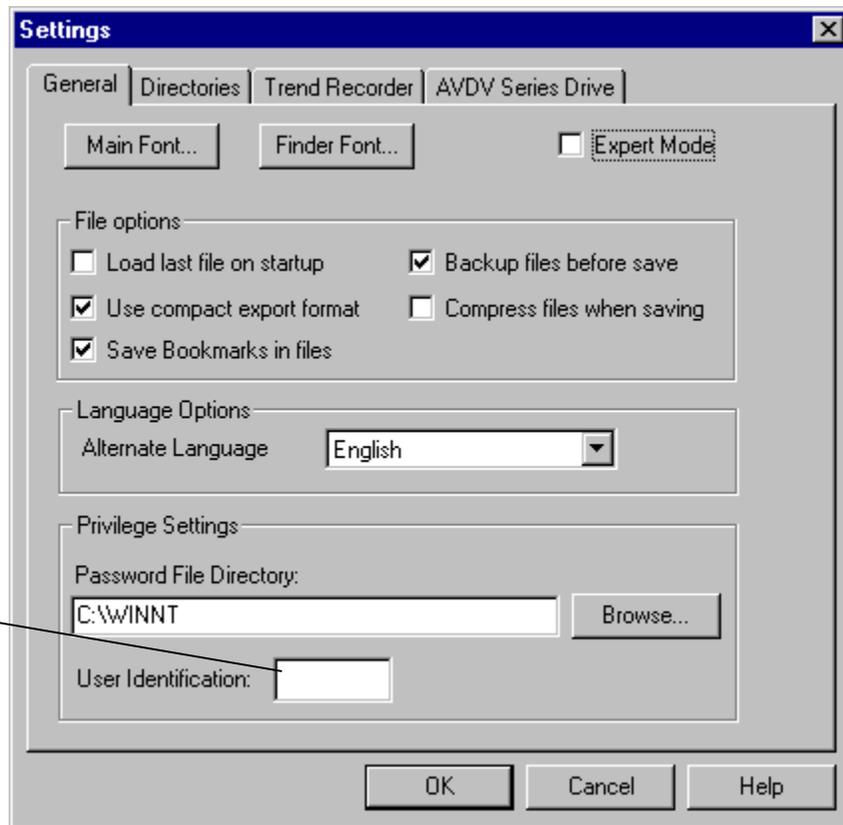
To view these configuration changes with User ID, choose the View menu and Reports.

If the Enter - ID dialog box (shown below) displays, you must enter an ID to identifies the user about to make changes to the configuration.



You must enter a three character ID (such as your initials).

If you are using the curent login on your PC and the only user making changes with the toolbox, you can permanently avoid this dialog box by entering your ID. Choose the **Option** menu, **Settings**, and the tab **General**.



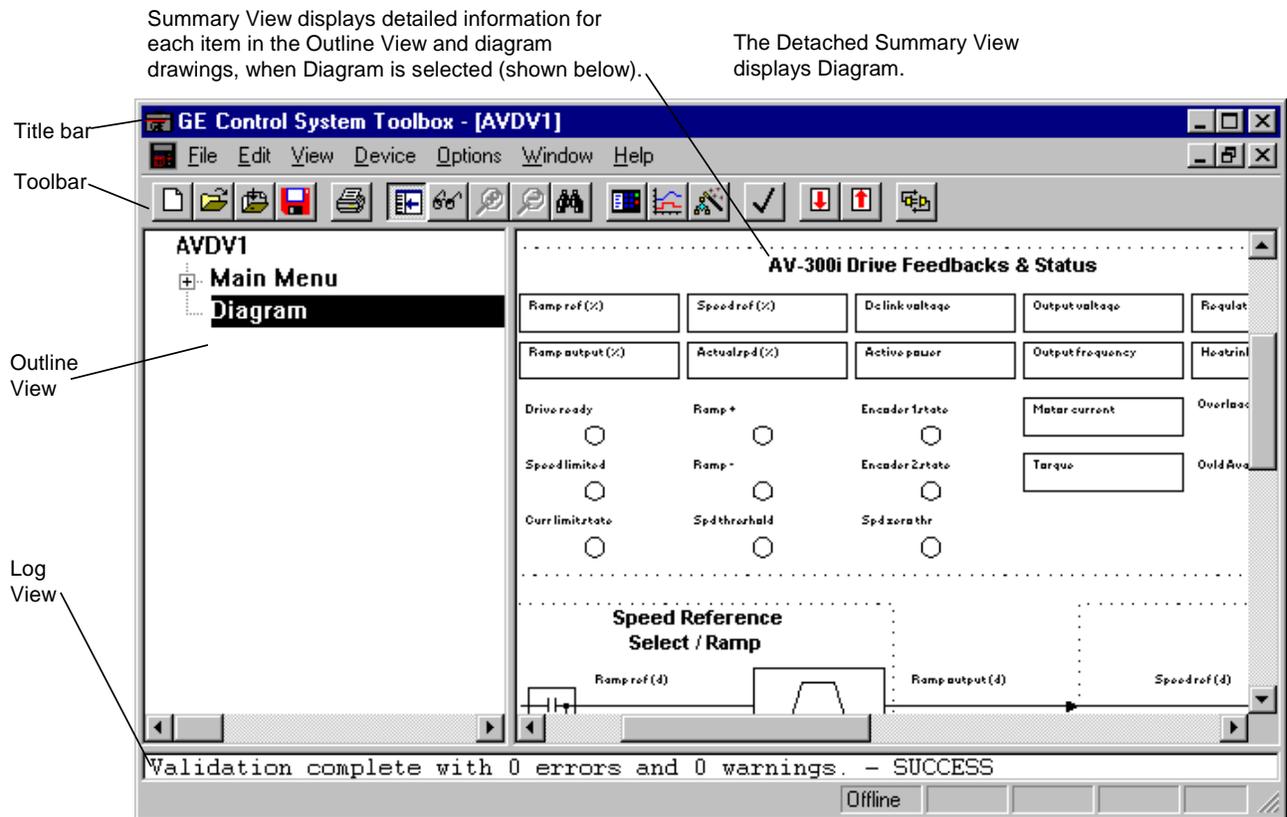
Enter your three character identification here to avoid the Enter-User ID dialog box above.

Configuring the Drive

The **Toolbox Work Area** is the main screen of an AVDV Series drive configuration (see screen below). This area is used to configure the drive. Across the top of this screen is the Title Bar, which contains the name of the toolbox and the name of the file (drive configuration) in use. Under the title bar is the Menu Bar containing all available menu commands. These commands are described in the section, *Working with Files and Menus*.

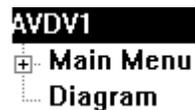
Toolbox Work Area

Tip To expand or collapse an item in the Outline View, use the mouse and click on . **Or**, use the left and right arrow keys to expand/collapse the list. To navigate through the items in the hierarchy list, use the up and down arrow keys.



Once a new drive is *created* (or a file is *opened*), the Outline View displays the drive name and two items; Main Menu and Diagram.

The default device name is **AVDV1** (where additional new devices are incremented by one). This name should be modified to more accurately refer to the drive being configured. The name is limited to five characters



➤ **To modify the drive**

1. Click on the **drive** name to highlight it.
2. From the **Edit** menu, choose **Modify**.

– Or –

Use the right mouse button to click on the drive name and choose **Edit** from the following pop-up dialog box.



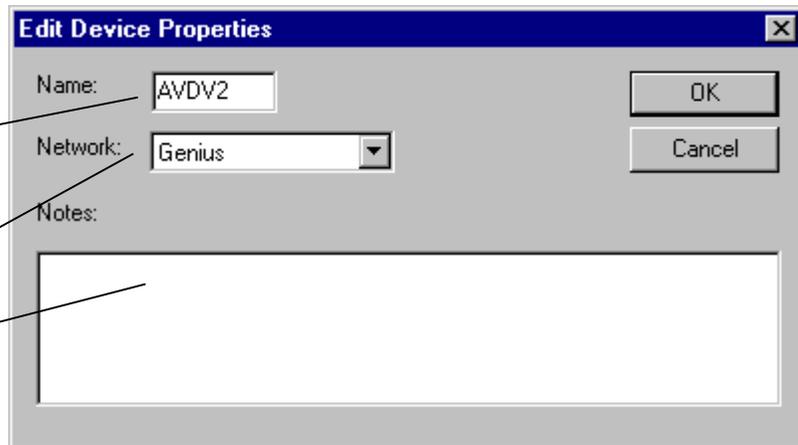
The **Edit AVDV Device Properties** dialog box displays and allows you to edit drive properties described in the next section, Modify Drive Properties.

Modify Drive Properties

The default device name is **AVDV1**. Each additional new drive is incremented by one number. If desired, edit the name to more accurately refer to the drive being configured. Enter up to five characters.

Select the active communications network from the drop-down box.

Enter a note to describe the drive.

A screenshot of a Windows-style dialog box titled 'Edit Device Properties'. The dialog has a blue title bar with a close button (X) on the right. It contains three main sections: 'Name:' with a text input field containing 'AVDV2'; 'Network:' with a dropdown menu showing 'Genius'; and 'Notes:' with a large empty text area. On the right side, there are two buttons: 'OK' and 'Cancel'. Three lines with arrowheads point from the text on the left to the 'Name' field, the 'Network' dropdown, and the 'Notes' text area.

Also, items in the hierarchy that had problems during validation will display red after the validation.

Or click 

Each wizard dialog box contains a Help button.

Each configuration depends on application requirements. For more information, contact Product Service Engineering at + 1 540 387 7597 or Fax at + 1 540 387 8606 (replace + with the international access code).

Validating the Drive

Validation checks for errors that might prevent successful operation of the drive. If the configuration needs to be validated, items in the Outline View displays in red.

Note In most cases, the configuration is automatically validated.

➤ To validate the drive configuration

- ◆ From the **Drive** menu, choose **Validate**.

The validation results display in the **Log View** at the bottom of the toolbox Work Area screen.

Entering Job Specific Information

Once a new drive has been created and the properties are modified, you must enter job specific data, such as motor hp, motor amps, and motor speed. This information can be entered in a new configuration using the menus or the Offline Commissioning Wizards (refer to the section, *Wizards*). A wizard is an interactive Help utility that guides the user through each step of a particular task, such as drive commissioning.

➤ To configure the drive offline

1. From the **Edit** menu, choose **Wizards**.
2. Choose the **Offline Basic Commissioning Wizard**.

Note Entering the Offline Basic Commissioning wizard information and performing the applicable tune ups should be sufficient to configure the drive for basic operation.

Working with Files and Menus

An AVDV Series drive is configured using different types of files, which are described in the following sections. Menu commands are also described.

File Types



Attention

Back up all files often to avoid loss of data.

The **configuration** files generate **output** that can be downloaded to the drive.

Configuration files include:

Drive configuration file (.acb) is a binary working file that contains an exact copy of the drive configuration used by the toolbox. Users generally work from drive configuration files. When the file is saved, the *prior* .acb is renamed to Backup of File. For example **AV300.acb** would have a backup file named **Backup of AV300.acb**. To restore the backup copy, rename the file to a .acb file.

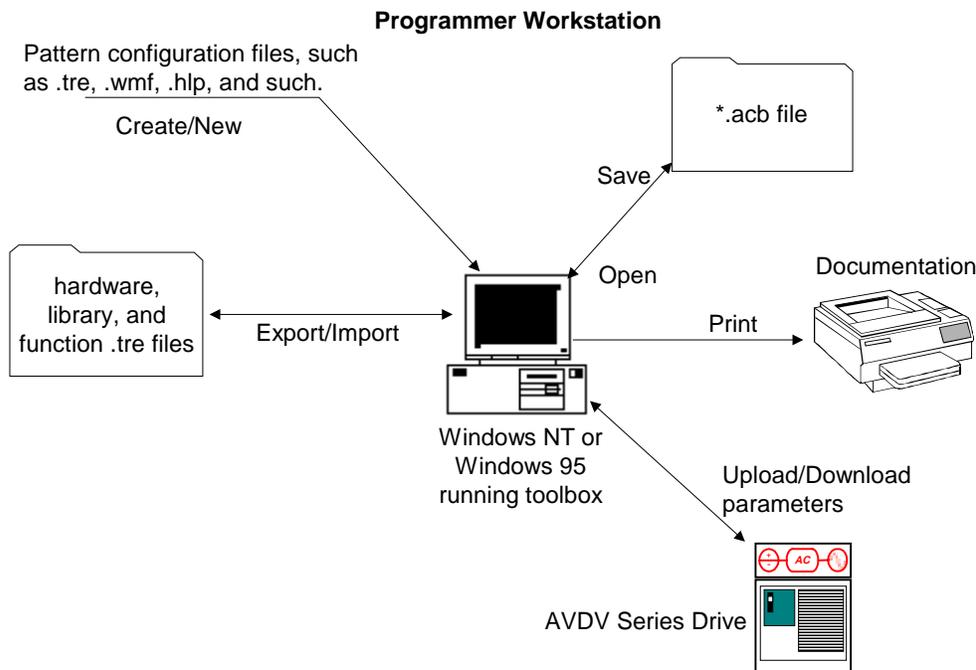
Tree files (.tre) are text files that contain configuration information for the drive product. Some define the parameters, faults, menus, and other items that exist within a particular drive. Others store configurations for transport between different drives, and possibly different versions of the toolbox.

Diagram files (.wmf) are drawing files that contain the toolbox block diagrams.

Help files (.hlp) provide product specific help from within the toolbox.

Project files (.prj) are text files that hold some drive configuration information. They are used, in conjunction with other tree files, to transport configurations across versions of drive products, and possibly different versions of the toolbox.

Note The .tre and .prj files are not normally used by users.



Opening and Closing Files

Opening an drive configuration file (.acb) reads a previously saved drive configuration into the toolbox.

➤ To open a file

1. From the **File** menu, choose **Open**. The **Open** dialog box displays.
2. Choose the file name and click **OK**.

Note If an older version toolbox is used to open a drive configuration file (.acb) that was saved with a newer version, a **Warning** box is displayed. Either install the version of toolbox the drive configuration file (.acb) was saved with (listed in the Warning box) or consult the toolbox Release Notes to see if they are compatible.

➤ To close a file

- ◆ From the **File** menu, choose **Close**.

Closing a file removes the configuration from the toolbox. If the configuration has not been saved, a dialog box displays and asks if the configuration should be saved.

Saving Files

Saving a file writes the entire contents of the configuration to a drive configuration file (.acb). The *prior* drive configuration file (.acb) is renamed to a Backup of .icb file and used as a backup file.

➤ To save a file

1. From the **File** menu, choose **Save**. The **Save As** dialog box displays.
2. Enter the file name and click **OK**. (Once a configuration has been saved, the Save button saves the new file without asking for a file name.)

Tip  The Save button also indicates that a change was made to the configuration by highlighting (red) and becoming enabled. If the computer or toolbox fails when the button is red, all changes since the last save is lost, so save files often.

Or choose the  Open button.

Check the Release Notes located in the toolbox Help menu under About Toolbox.

Or choose the  Save button.

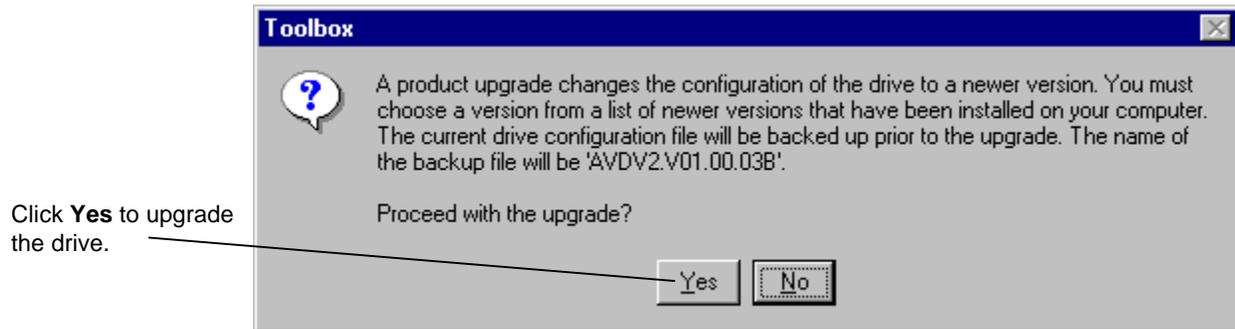
Upgrading a Configuration

Refer to Chapter 3, *Using the Toolbox*.

The upgrade command adds the required functions of a newer version of the product to the current drive configuration file. For example, the current drive configuration file (.acb) is version V01.00.03B. The application requires the functions of version V01.00.04B. Upgrade the drive configuration file as follows:

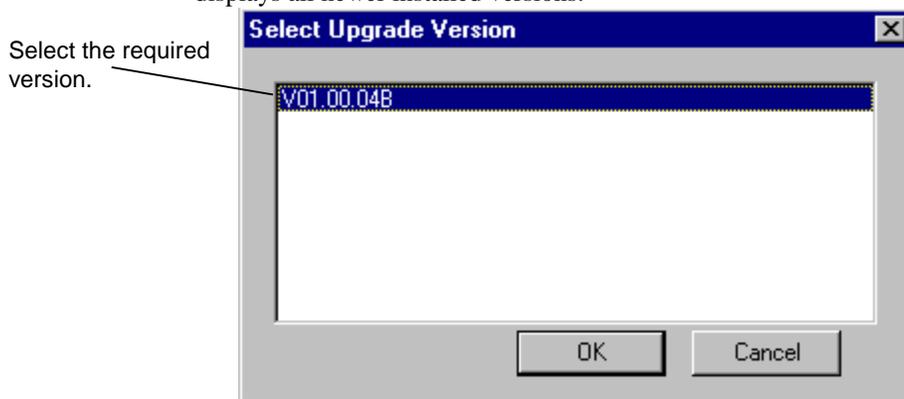
➤ To upgrade a file

1. Make sure the new required version is installed (refer to Chapter 3).
2. From the current drive configuration file, such as version V01.00.03B described above, choose the **File** menu and choose **Upgrade**. The following message box prompts to proceed you with the upgrade.

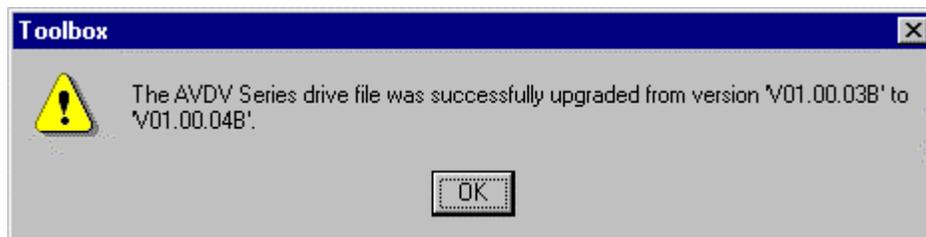


Select Upgrade Version

If you select to upgrade the drive, the **Select Upgrade Version** dialog box displays all newer installed versions.



The following message displays.



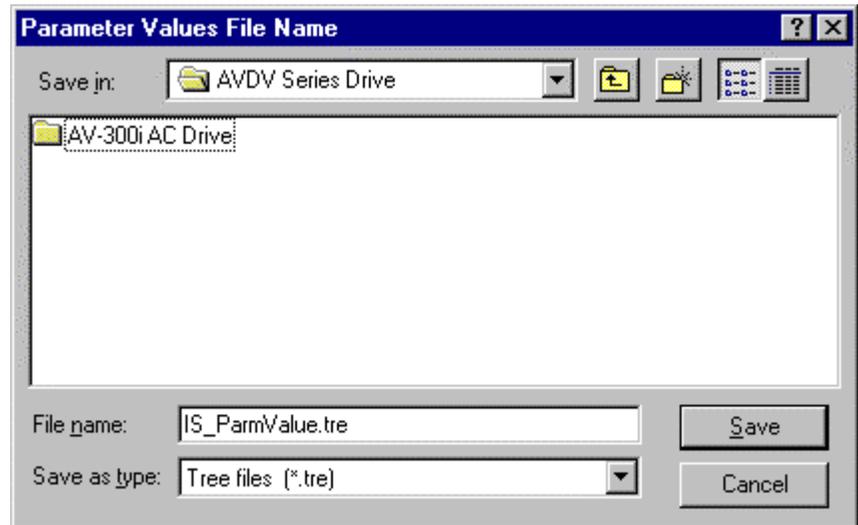
The .tre files can be exported selectively or for an entire drive.

Exporting Configuration Files

The parameter values contained in a drive configuration file (.acb) can be exported in a .tre file format. Exporting drive parameters allows settings among drives to be shared. Refer to the next section Exporting/Opening.

➤ To export parameter values

1. From the **File** menu, choose **Export**, then choose **Parameter Values**. The **Parameter Value File Name** dialog box displays.



2. Confirm the current project directory/file name or choose a new directory. Click **Save**. The file is saved as a .tre file.

Exporting/Opening Project Files



Attention

This option is normally not required, but is provided if a newer version of the toolbox makes a change to the format of the drive configuration file (.acb) that is not backward compatible.

Project files allow the user to export and import a drive configuration without having to know about all the files it contains.

Normally, newer versions of the toolbox can load drive configuration files created by older versions. However, if a major change in functionality of the toolbox occurs, the toolbox may not be able to load the drive configuration file. In this case, it is necessary to first export the drive configuration file to a project (.prj) file and then import it into the new version of the toolbox. A project file is a text file, which contains the names of all **.tre** files in a configuration. Project files save the drive configuration in a form that can be loaded by all newer versions of the toolbox.

➤ To create a project file

1. From the **Outline View**, click on the drive name.
2. From the **File** menu, choose **Export** and choose **All**. All .tre files and the .prj file is exported.

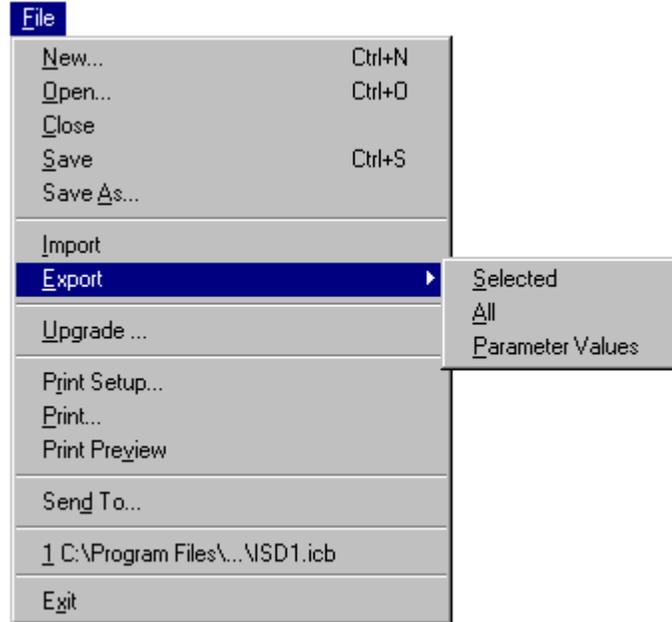


Once a project file exists, it can be used to create a drive configuration file (.acb). From the file **Open** command, choose a .prj file. This creates an AVDV Series drive and starts a series of file imports. The toolbox imports the files listed in the .prj file, including the parameter values file.

Menu Commands

File Menu

The File menu allows you to perform file operations with the following commands:



Or click 

Or click 

Or click 

Or click 

New creates a new drive configuration file.

Open loads an existing drive configuration file into the toolbox.

Close exits an existing drive configuration.

Save/Save As saves an opened drive configuration file to a specified name.

Import retrieves values from the specified file. The values in the current configuration are replaced with the imported values.

Export sends specified items (such as parameters and files) to a designated file.

Upgrade automatically makes the required changes to upgrade an older product version to a newer version.

Print Setup allows the user to choose a printer and printer connection.

Tip  *The block diagram is designed to print best in Landscape Orientation. Refer to the section, Block Diagrams/Printing Diagrams.*

Or click 

Print provides a paper (hard) copy of a specified file or page.

Print Preview displays the page as it would be printed.

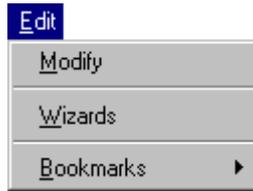
Mail To opens email and provides a copy of the currently opened file to send (you must have Window messaging, such as Exchange).

File 1, 2, 3... lists and opens the most recently used files.

Exit closes the toolbox.

Edit Menu

The Edit menu allows you to edit items with the following commands:



Modify allows you to edit the highlighted item.

Wizards allow you to choose from a list of wizards used for drive configurations commissioning, tests, and tune-ups.

Bookmarks enable you to mark major items in the Outline View and then return to them easily using the menu command Goto Next Bookmark.

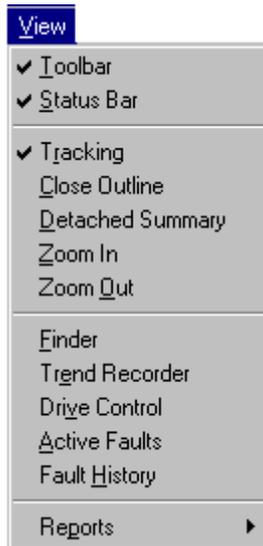
Or click 

Or click 

Some of these commands can be toggled on and off. A check mark (✓) displays next to the command name when the feature is on and it will display in the toolbox.

View Menu

The View menu allows you to manage the drive with the following commands:



Or click 

Or click 

Or click 

Or click 

Or click 

Or click 

Or click 

The list can also be displayed by double-clicking on the status bar (yellow indicates an alarm or red indicates a fault).

Toolbar displays or hides the Toolbar.

Status Bar displays or hides the Status bar.

Tracking toggles the tracking feature of the Summary View on and off.

Close Outline reduces the hierarchy list of items displaying in the Outline View to just the drive level.

Detached Summary creates a detached window of the Diagram View.

Zoom In enlarges the view of the block diagram area (Summary View).

Zoom Out reduces the view of the block diagram area (Summary View).

Finder starts the Finder view to search text.

Trend Recorder is a separate window in the toolbox (refer to the manual, GEH-6408). Use this feature to *find* items, such as text and variables within a configuration.

Drive Control starts the Drive Control view used to start and stop the drive. It also provides specific information, such as motor speed, volts, amps and power.

Active Faults displays a list of all active faults and alarms. Each fault is time stamped so that the order of events can be determined.

Fault History displays a list of faults that are saved in the drive.

Reports contain the following options:

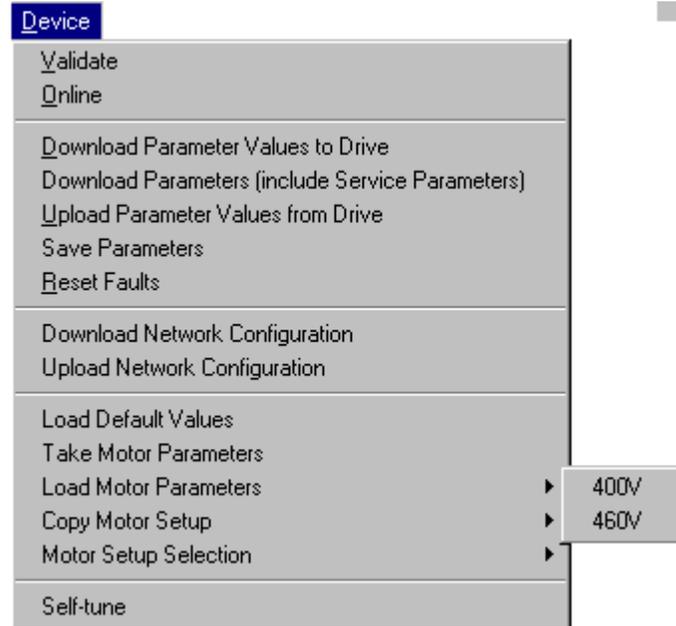
Compare Parameters Values produces a report that shows all parameters whose values in the toolbox are not the same as in the drive.

Parameter Values displays all parameters and their values in a menu hierarchical structure.

Change History produces a report of changes made to the drive configuration file.

Device Menu

The Device menu allows you to manage the drive with the following commands:



Or click 

Or click 

Or click 

Or click 

Validate makes certain that drive configuration does not contain errors.

Online/offline toggles to start or end communications between the toolbox and the current drive.

Download Parameter Values to Drive sends the values of all the parameters from the loaded drive configuration files to the current drive.

Download Parameters (include Service Parameters) sends the current parameter set from the loaded drive configuration files including the factory Service parameters.

Upload Parameter Values from Drive reads all the parameter values from the current drive and provides the option of replacing the values in the currently loaded drive configuration file in the toolbox.

Save Parameters saves the current active set of parameter values in the drive to permanent storage

Reset Faults resets all faults that are currently active in the drive.

Download Network Configuration downloads the active network configuration.

Upload Network Configuration uploads the active network configuration.

Load Default Values loads the factory defaults in the drive and the currently loaded drive configuration file in the toolbox. This selection requires the drive to be online. The drive loads factory settings only when the drive is **disabled**.

Take Motor Parameters corresponds to the **Take Motor par** command in the drive (keypad). This command must be issued after entering values into the “Mot plate data” submenu in order to validate them and compute estimates for the parameters in the “Motor parameter” submenu. Previous values in the “ Motor Parameter” submenu are overwritten. This menu item may not be enabled for all drive types.

Load Motor Parameters corresponds to the **Load Motor par** command in the drive (keypad). Choose 400 V or 460 V parameters.

Copy Motor Setup (Setup 0, Setup 1) copies the current motor parameters to the alternate storage provided by either **Setup 0** or **Setup 1**.

Motor Selection (Setup 0, Setup 1) causes the alternate motor parameter values in either **Setup 0** or **Setup 1** to be copied to the active motor parameters.

Self-tune activates the self-tune process where the drive and the motor perform predefined tests to determine the best running conditions for the system.

Options Menu

The Options menu allows you to manage general options for toolbox operation.



Settings allow you to set general toolbox options.

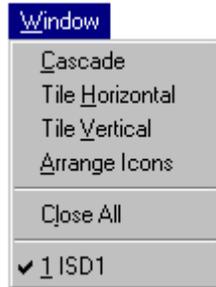
Privilege sets the privilege level for a session.

Passwords set the password for a privilege level.

Logout User closes the current user from the current session and sets the privilege level back to 0.

Window Menu

The Window menu arranges multiple views of open documents in the drive window with the following commands:



Cascade arranges the windows in an overlapped style.

Tile Horizontal arranges the windows horizontally in non-overlapped tiles.

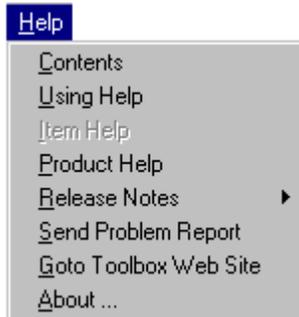
Tile Vertical arranges the windows vertically in non-overlapped tiles.

Arrange Icons arrange the icons of closed windows.

Close All closes all open windows.

Help Menu

The Help menu has the following commands:



Contents displays Help files for the toolbox. It also contains the Find tab with a work list to search for specific topics.

Using Help displays general instructions on how to use Help.

Item Help displays help for the item selected in the Outline View.

Product Help displays the Help file for the currently loaded pattern. The file contains help on parameters, faults, diagrams, and wizards.

Release Notes

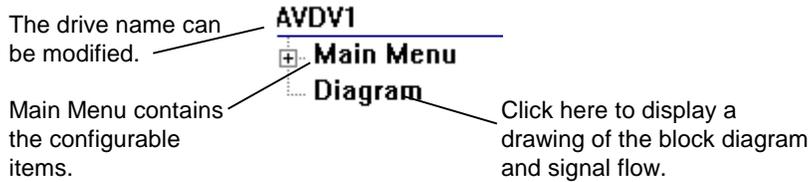
Send Problem Report

Goto Toolbox Web Site

About ... displays the version number of the toolbox.

Concepts

The following section defines items and features used when configuring an **AVDV** Series drive. When a drive is created, the Work Area displays as follows:



Parameters allow you to configure the drive behavior. Each parameter has a name with up to 20-characters, which identifies it and helps to convey its use. A parameter also can have units, such as RPM, displayed with the toolbox and keypad. The unit field is limited to five characters. Each parameter contains a value, which can be a number or a setting. The value is adjusted in order to modify the drive behavior. Some basic parameters along with their associated units are: *Motor rated current (Amps)*, *Motor rated freq (Hz)*, *Motor rated voltage (Volts)*, and *Regulator type*. Parameters can be set and modified from the Outline View under the items *Main Menu* or *Diagram*, or from a Wizard or the keypad.

Variables, similar to parameters, have a 20-character name and a 5-character unit field. However, unlike parameters, the user can not change variables. They are changed by the drive as a result of the execution of the pattern within it. For example, the variable *Speed feedback (RPM)* gets updated on a continuous basis and represents the drives actual speed.

Diagrams provide an overall picture of signal flow, sequencing and regulator control in the drive. While communicating with the drive, the diagrams display drive variables and their real time values. Contact and coil states are also indicated. Certain drive parameters can be modified from this view (refer to the section, *Block Diagrams*).

Configuration

For detailed information about a parameter, click on the parameter (to highlight it) and press F1.

Parameters

The drive contains a set of parameters whose values, together with the pattern and version, define the drive behavior. In the Outline View of the toolbox, parameters display as follows:

AVDV1

[-]	Main Menu		
[+]	Basic Menu		
[+]	Monitor		
[-]	Drive Parameter		
[-]	Mot plate data		
	P Nominal voltage		460 V
	P Nominal speed		870 rpm
	P Nom frequency		60 Hz
	P Nominal current		2.2 A
	P Cos phi		0.57
	P Base voltage		460 V
	P Base frequency		60 Hz

➤ To modify a parameter

1. From the **Outline View**, click on the parameter to modify.
2. Choose the **Edit** menu and choose **Modify**.

Or, double-click on the parameter. The **Edit Parameter** dialog box displays (refer to the next section).

Tip  If you know the name of the parameter (or partial name) choose the **Finder** and enter the name in the text box. Click **Find** and a list of parameters and variables display. Double-click on the parameter/variable to modify.

Use the **Finder** to easily locate a specific parameter.

Edit Parameter

Enter a new value (within the range) or choose a value from the drop-down menu. Then, click **Send to Drive** for the value to take effect.

The new value displays under the field **Drive Value**.

Name:	Nominal voltage
Value:	460
Source	SizeDepDef
Default	400
Drive Value	-- Offline --
Range	1 to 999
Units	V
Data Type	REAL

Note:

OK Cancel

This function is currently not available.

Click to display the detailed Help for this parameter.

Click to send the new value to the drive.

This button may not be enabled for all parameters. It allows you to change the display units. (This button only effects the displayed values and not the drive control.)

Enter a note for this parameter, if desired.

Note When a parameter value is edited, you must click *Send To Drive* for the value to take effect. Also, remember to permanently save the parameter, select **Device menu** and **Save Parameters**.

Toolbox/Drive Communications

The toolbox can communicate with the drive through an RS-232C/RS-485 serial port connection. However, only one drive at a time can be selected to go online (communicate). Refer to the next section, *Connecting to an AVDV Series Drive*.

The serial port connection settings used by the toolbox can be defined and modified. These settings are saved and used by the toolbox for every connection to a drive whose drive configuration file is set to communicate serially.

➤ To modify the communications setting

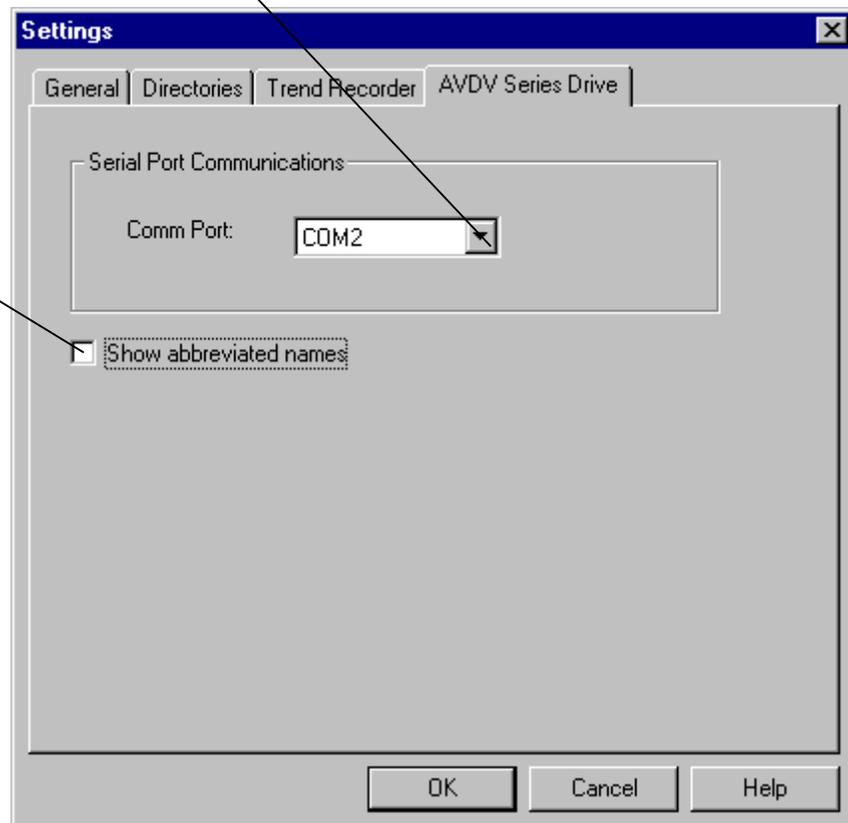
1. From the **Options** menu, choose **Settings**.
2. Click on the tab, **AVDV Series Drive**.
3. Modify the Serial Port Communications settings, as desired.

Settings

Note Depending on the products installed, all of the following tabs may not be available.

Click on the drop-down box to choose the communication port.

This option changes the names used on the diagrams and Outline View to internal names used mainly by firmware developers. **It should not be checked.**



Connecting to an AVDV Series Drive

Choose the **Window** menu to view multiple drive windows, when drives are offline.

Multiple drives can be wired on the same network through an RS485 link. Each drive on the network has a unique name and address. The drive displays in the Select Drive dialog box when you select to go online.

Note Only one drive at a time can be selected to go online. To select a different drive, you must choose to go offline.

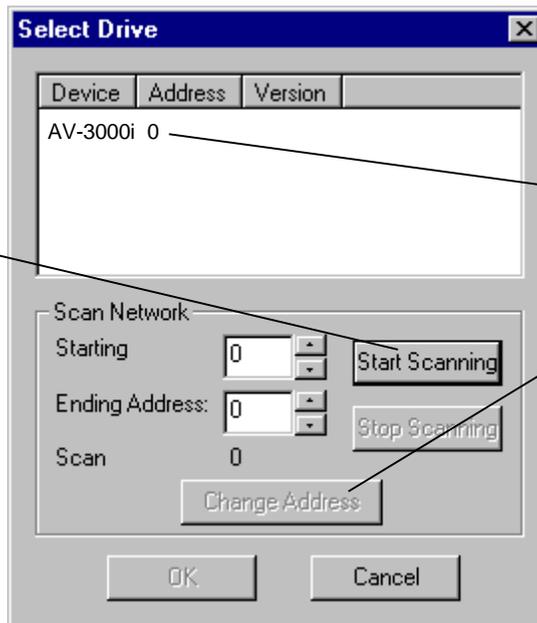
Or click 

➤ To connect to an AVDV Series drive

- ◆ From the **Device** menu, choose **Online**. The **Select Drive** dialog box displays (see the next section, Select Drive).

When the drive first goes online or requires updating, adjust the range of addresses to be scanned on the RS485 link.

Click the **Start Scanning** button. A list of drives displays in the list box.



Select the drive to connect to. Click **OK**. Or, double-click on the drive name.

To change the device's multidrop system, click on the desired drive and click **Change Address**. Select the new address.

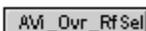
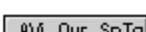
Links to Other Pages

Diagram provides links to other pages, which contain information on drive functions.

➤ To access diagram links

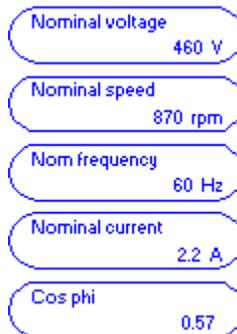
1. From the **Summary View**, place the mouse pointer on a **link button** in the diagram, such as .
2. When the pointer turns into a hand, click on the link button. Another diagram displays with more details and links. An Index is provided, as shown below.

AV-300i Inverter Contents

AV-300i Hi Level Overview	▶ 
Digital Inputs/Outputs & Mapping (HWIO)	▶ 
Analog Inputs/Outputs & Mapping (HWIOAN)	▶ 
Speed Reference Generation	▶ 
Ramp Reference	▶ 
Speed / Torque regulator	▶ 
Speed Feedback	▶ 
Speed Regulator	▶ 
Torque current regulator	▶ 

Modify Parameters from Diagram

Parameters can be modified from the Diagram. In the Diagram, the toolbox displays parameter names in the color blue as follows:

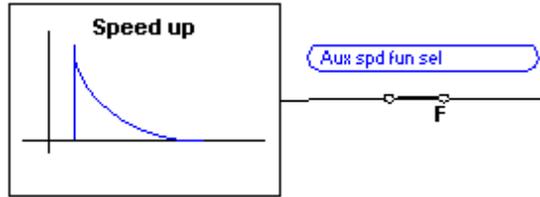


➤ To modify a parameter

- ◆ From the block diagram, move the cursor over the parameter until it changes into a hand. Click on the parameter. The **Edit Parameter** dialog box displays (refer to the section, *Parameter Settings*).

Parameter Jumpers

In the Overview diagrams, parameter **jumpers** show how different paths of the block diagram are connected together.



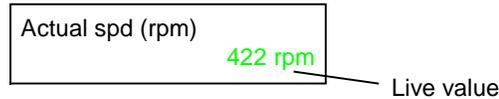
Live Data Display

If the toolbox is connected to the drive, all variables on the diagram display live values. On the Status bar, the scan rate shows the time it takes to update all the variables on the currently selected page.

Variables

Variables can be monitored by the toolbox. Live values display in the color green.

Green values are valid numbers received from the drive.



Drag-and-Drop Variables

➤ **To drag-and-drop a variable in the Trend Recorder.**

1. From the toolbox **Outline View**, click **Diagram** to display the Overview diagram in the Summary View.
2. Click the link buttons to locate the desired variable(s). The Diagram (Summary View) becomes full screen.
3. From the button bar, click  to open the **Trend Recorder**.
4. Resize and move the Trend Recorder window so that it *and* the block diagram can be viewed (using regular Windows features).

Variables in the block diagram can be copied to the Trend Recorder using the drag-and-drop feature.

Choose the Windows menu and Tile Horizontal or Tile Vertical.

Tip ☞ *To view both the toolbox and the Trend Recorder, from the Window menu, choose **Tile Horizontal** or **Tile Vertical** and adjust the size of the windows.*

5. From the **Diagram**, place the mouse pointer over the desired variable.
6. When the pointer changes to a hand, press and hold the **left** mouse button. The pointer changes to the drag-and-drop cursor.
7. Continue to hold the left mouse button down and **drag** to the Trend Recorder window. At the Trend Recorder, the cursor changes to the **drop** pointer.
8. Release the mouse button and the variable will **drop** in the Trend Recorder.

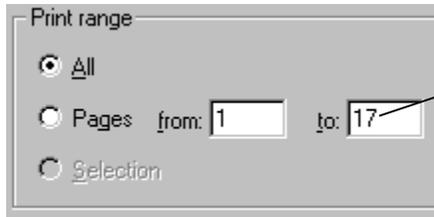
Printing Diagrams

Tip  The block diagram(s) is designed to print in Landscape Orientation. From the **File** menu, choose **Print Setup** and click the option **Landscape**.

➤ To print block diagrams

1. From the **Outline View**, click the item **Diagram**.
2. From the **File** menu, choose **Print**. The **Print** dialog box displays.
3. Choose the number of copies to print and the page(s).

Or click 



This field shows that there are 17 diagrams in this device. Click **OK** to print **all** the diagrams or enter the page number(s) to print.

Tip  To print a single block diagram, link to that page, so that it displays on the screen and click . Choose **OK**. Live data can be printed, if the drive is online.

Drive Controls

The Drive Controls command enables you to operate the drive from the toolbox, as though you were operating it directly from the keypad located on the cabinet door. The variables that display are the same as those that display on the keypad.

Note The actual Drive Controls (keypad) can vary depending on the product that connected to the toolbox.

➤ To display the Drive Control view

- ◆ From the **View** menu, choose **Drive Control**. The **Drive Control** view displays.

Or click 

Click here to **reset faults**.



Click here to toggle the direction of the drive (reverse request). The selected direction is shown with an icon  or .

Click here to **Run** the drive in the selected direction.*

Stop command can be used in Local or Remote mode.

Click here to **Jog** the drive in the selected direction.*

Wizards

A wizard is an interactive Help utility that guides the user through each step of a particular task, such as Drive Commissioning.

The Wizard list can vary with each product, but there is always a Offline Basic Commissioning Wizard.

The AVDV Series drive contains wizards that guide you through the setup of a drive. Wizards display a series of dialog boxes that prompt the user for drive configuration information. This information is also used as a basis to perform additional tests and tune-ups on the drive.

Note The Offline Basic Commissioning Wizard or the Offline Advanced Commissioning Wizard should be the first step when setting up a new drive.

➤ To perform a wizard

- ◆ From the **Edit** menu, choose **Wizards**, or click . The following list of wizards displays.

Choose Wizard

The Offline Basic Commissioning Wizard or the Offline Advanced Commissioning Wizard should be the first step when setting up a new drive.



The following dialog box is an example of the Offline Basic Commissioning Wizard. Enter a value in each field, unless you are instructed otherwise.

Enter data from the Motor nameplate.
Ensure voltage and current are consistent with the winding connection.
Enter value of full load speed for 'Nominal speed'

Nominal voltage	<input type="text" value="400"/>	V
Nominal current	<input type="text" value="6.8"/>	A
Nom frequency	<input type="text" value="60"/>	Hz
Nominal speed	<input type="text" value="1415"/>	rpm

< Back Next > Cancel Help

Click here to obtain interactive Help on each field.

Uploading Parameters

Parameter values can be uploaded from the drive to the toolbox. This is necessary after a self-tune or when values are modified using the keypad. The toolbox reads all the values from the drive and compares them to the values in the toolbox. A list of differences is generated and the user is allowed to select the parameter values to upload to the toolbox configuration.

➤ **To upload parameters**

- ◆ From the **Device** menu, choose **Upload Parameter Values from the Drive**, or click .

Tip ➤ Remember to save the toolbox configuration file. From the **File** menu, choose **Save** or click .

Fault Display

The toolbox can display two types of fault lists.

- **Fault History** list displays a list of faults that have cumulated since power was applied to the drive (see the section, Fault History).
- **Active Fault** list displays faults that are currently active in the drive (see the section, Active Fault).

The Status bar, located at the bottom of the screen, indicates that a fault has occurred.



The fault displays in red. Double-click on the fault to display the Active Fault list.

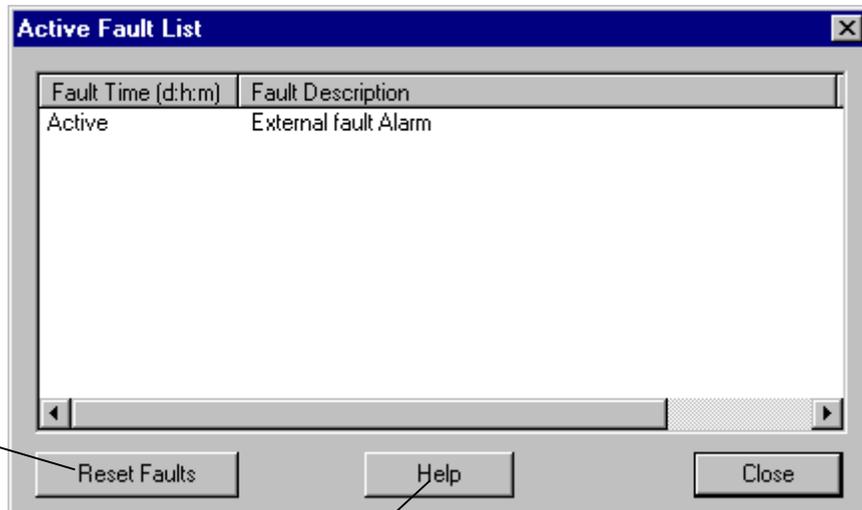
Active Fault

➤ To display the Active Fault list

- ◆ From the **View** menu, choose **Active Faults**.

– Or –

- ◆ Double-click on the Alarm on the Status bar (see previous section, Fault Display). The following dialog box displays.



Click here to reset the fault list.

Check here to display a description of the selected fault.

Fault History

➤ To display the Fault History List

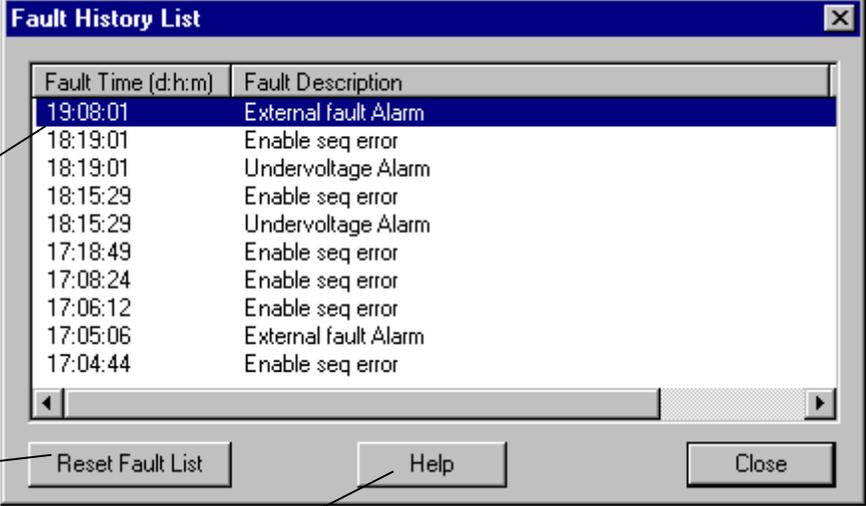
- ◆ From the **View** menu, choose **Fault History**. The following dialog displays.

This list is stored in the drive.

The fault time displays a list of faults that have cumulated since power was applied to the drive
The most recent fault appears at the top of the list.

Click here to clear the fault list.

Click **Help** for a description of the selected fault.



Fault Time (d:h:m)	Fault Description
19:08:01	External fault Alarm
18:19:01	Enable seq error
18:19:01	Undervoltage Alarm
18:15:29	Enable seq error
18:15:29	Undervoltage Alarm
17:18:49	Enable seq error
17:08:24	Enable seq error
17:06:12	Enable seq error
17:05:06	External fault Alarm
17:04:44	Enable seq error

Self-tune

For more information, refer to **GEI-100331**, AV-300 Adjustable Speed Drives; **GEI-100360**, AV-300I Adjustable Speed Drives and **GEI-100332**, DV-300 Adjustable Speed Drives.

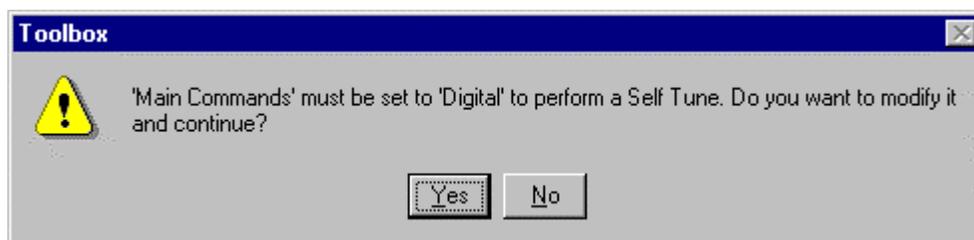
Self-tune is a process where the drive and the motor perform predefined tests to determine the best running conditions for the system.

➤ To self-tune a drive

1. Create or open an AVDV Series drive
2. From the **Device** menu, choose **Online** or click .
3. From the **Device** menu, choose **Self-tune**. The Self-tuning dialog box display (see the next section, Self-tuning the Drive). For DV-300 drives, refer to the section DV-300 Current Tune.

Self-tune the Drive

The parameter, *Main Commands* (that determines whether the drive is controlled by hard wired terminal inputs or digitally), must be set to *Digital* or the toolbox sends the following prompt:



Choose **Yes** to continue and the **Self-tune** dialog box displays.

Self-tune

Current Values

Name	Value	Units
Inertia	0.0018	Kg*m*m
Friction	0.001	N*m
Speed P	10	%
Speed I	1	%

Self Tune Selection
Self Tuning 3

Start

Stop

Take Values

Computed Values

Name	Value	Units
Inertia Nw	0.0018	Kg*m*m
Friction Nw	0.001	N*m
Speed P Nw	10	%
Speed I Nw	1.00057	%

Close

Fwd-Rev spd tune Fwd direction Edit

Test T curr lim 20 % Edit

Executing Self Tune

Choose the desired self-
from the drop-down

Click to Start the
self-tune test in

Click to Stop the self-tune
in process.

Click here after the self-
has completed.
This command takes the
Computed Valueslist
created from the self-
and copies them to the
Current Valueslist to be
used by the current

Click **Close** to end the
process (see note)

Note: These values must
be saved to non-volatile
From the **Device** menu,
choose **Save Parameters**

The state of the self-
displays here.

Additional messages may display here as the self-tune

Click **Start** and the following caution displays. Click **Yes** to continue.

Toolbox

Warning! Mechanical Motion Hazard.
Motor shaft may rotate during execution of self tuning procedure!

Do you wish to continue?

Yes No

Note When you close the Self-tune dialog box, the following caution displays if your Main Commands setting was switched to Digital in the first step above. Choose OK to continue.

Toolbox

Setting 'Main Commands' back to 'Terminals'

OK

DV-300 Current Tune

Current Self-tune

File Values		
Arm resistance	2.55	Ohm
Arm inductance	34.33	mH

Drive Values		
Arm resistance	0.5	Ohm
Arm inductance	4	mH

Click to Start the selected self-tune test in process.

Click to Stop the self-tune test in process.

Click here after the self-tune has completed. This command takes the **Drive Values** listed and copies them to current drive configuration.

Click **Close** to end the process (see note below).

Using the Finder

The Finder is a separate window in the toolbox, which contains several useful *find* tools. It can help you find items, such as text and variables from the different types of drives.

➤ To use the Finder

Or click 

1. From the **View** menu, choose **Finder**. The **Finder** window displays.
2. Choose a target from the drop-down Target List. (All *loaded* targets are listed. The default target is the current device.)
3. Choose a tab according to the type of search desired.
4. Enter each field of the tab (described in the next section).
5. Click . Once the search completes, the Output View and Status bar display the results.

Tip  By default, the Finder closes when the *Find* button is clicked on or when you click on any part of the screen outside the Finder Window. Click  to keep the Finder open.

Finder Window

Enter the text to find. (wildcards such as * and ? are not supported). the drop-down list box allows you to access previous finds.

Method allows you to qualify the find by choosing one of the following from the drop-down box:

Anywhere In matches items that contain the find text anywhere within their text.

Begins with matches items whose text begins with the find text.

Exact matches items whose text is exactly as the find text.

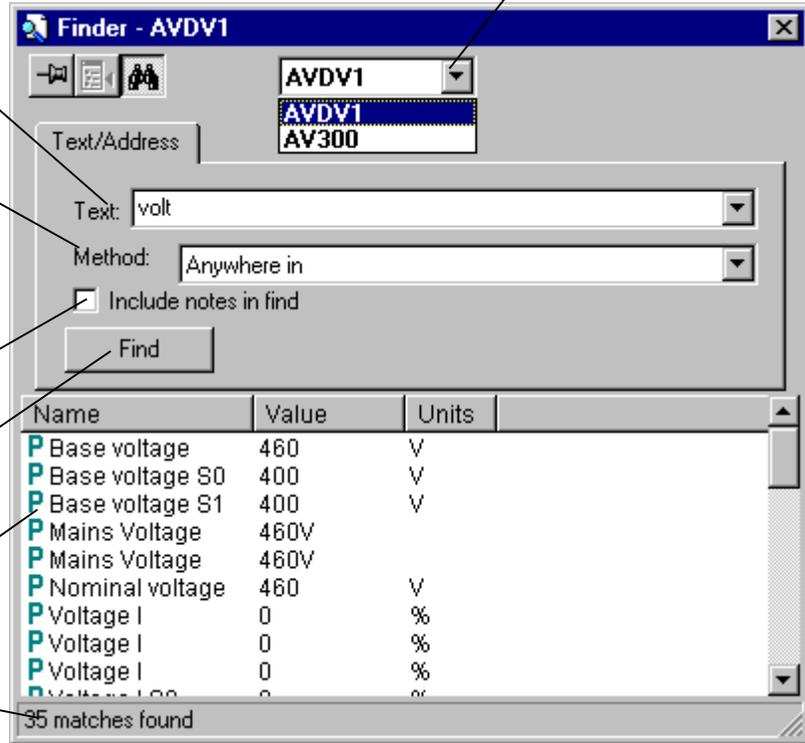
Click here to include all note message boxes in the find.

Click the **Find** button to start the find.

All text that is found displays in the **Output View**.

Status bar provides information about the find operation.

Choose a target from the drop-down Target List. (All loaded targets are listed. The default target is the current device.)



The **Finder target** determines the drive and area of the search. When the Finder is activated, it automatically chooses the current drive as the target and displays its name in the Title bar. An AVDV Series drive target can find parameters and variables.

Located below the Title bar is the toolbar, as described below:

Click	To
	Hold the Finder Window open. If this pushpin displays, the Window closes when the area outside the Finder Window is clicked. Click on the pushpin to keep the Finder on top of the Device Window, even when you click outside the Finder Window.
	Close the Finder Window. This pushpin displays when the pushpin above is clicked on. The Finder Window remains opens when the pushpin is in this position (even when working in another window).
	Goto an item in the Outline View. Highlight an item in the Output View , then click this button to find it in the Outline View. Double-click on an item to edit it.
	Hide the tabs and make the Finder window display only the Output View.

Genius Configuration

This section describes the Horner Electric's Genius™ Serial Bus Interface (SBI) for AVDV Series drives.

The Genius board configuration is separate from the drive configuration. The following sections describe how to insert a Genius and set communication values.

To insert Genius, right-mouse click on the drive name and select **Modify**. In the Properties dialog box, select Genius from the **Network** drop-down box.

Genius is inserted. Right- mouse click on **Genius**. The **Modify Genius Configuration** dialog box displays to edit communication values.

This is the address of the Genius board. This address must be unique from other devices on the same Genius bus. The **Comm Port** is selected from the **Options** menu. Select **Settings** and the tab **AVDV Series**.

The **Baud Rate** of the Genius bus must match the current setting of the other Genius devices on the same bus.

Select the amount of **Global Data** that is transmitted continuously from the drive on the Genius bus. The size can be from 0 to 32 words of data. The more data selected here, the higher the impact on the Genius bus scan time.

Select the amount of **Directed Data** that is received continuously by the drive and on the Genius bus. The size can be from 0 to 16 words of data. The more data selected here, the higher the impact on the Genius bus scan time.

Enter a note associated with the Genius configuration.

Modify - Genius Configuration

Address: 1

Comm Port: COM1

Baud Rate: 153.6K STD

Global Data Length: 32

Directed Data Length: 16

Note:

OK

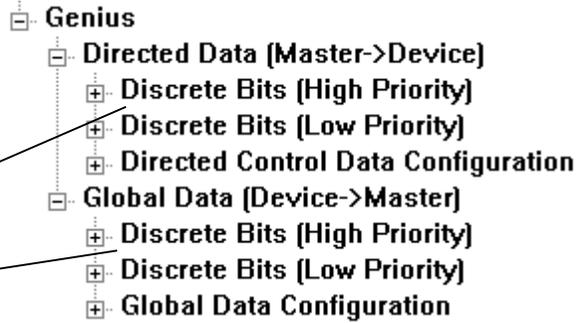
Cancel

Discrete Bit Data

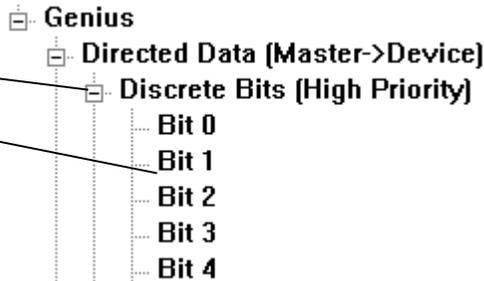
When the Genius item is expanded, four types of **discrete data** can be set:

Discrete bits passed from the Genius to the drive.

Discrete bits passed from the drive to the Genius.

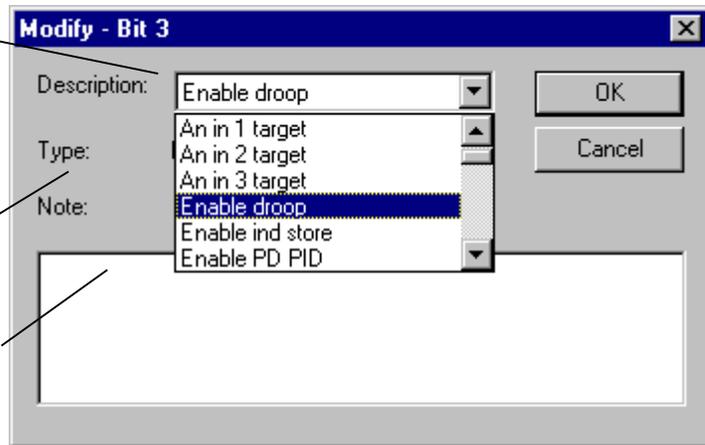


Expand the **Discrete Bits** item to view all the bits.
 Right-mouse click on the bit. The **Modify** dialog box displays.



Select a parameter or variable for this bit. **Note:** To view parameter and variable numbers, from the **Options** menu, select **Setting**, and the tab **AVDV Series Drive**, then select **Abbreviated Names** (You must be a Level 4: Full Drive Access user.)
 The **Type** of bit displays automatically (either None, BOOL, or CMD).

Enter a note to define this bit.

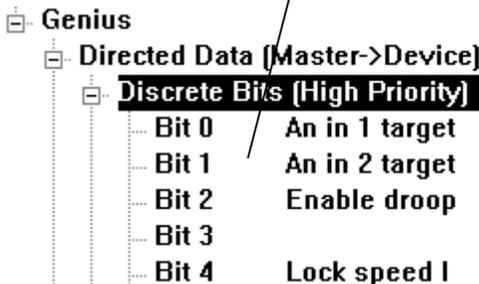


View Discrete Data

➤ To view discrete data

- ◆ Click on to expand **Discrete Bits**.

A list of the bits displays (including the description of the parameter/variable for this bit).



When **Discrete Bits** is highlighted, the **Summary View** displays all the data for the bits. (Note: Bit 3 does not display because no data is defined for that bit.)

Bit	Description	Type
Bit 0	An in 1 target	BOOL
Bit 1	An in 2 target	BOOL
Bit 2	Enable droop	BOOL
Bit 4	Lock speed I	BOOL

Directed Control Data and Global Data

Two types of word data can be set in the Genius configuration:

- Directed Data (Master->Device) – data passed from the Genius to the drive
- Global Data (Device->Master) – data passed from the drive to the Genius

➤ To set word data

Right mouse click on the **Word** and select **Modify**. The following dialog box displays.

Note: To view parameter and variable **numbers**, from the **Options** menu, select **Setting**, and the tab **AVDV Series Drive**, then select **Abbreviated Names**. (You must be a Level 4: Full Drive Access user.)

Select a **Source** to determine the priority and destination of the data received (To) as Directed Data or sent (From) as Global data. If you select **Low Priority To/From Device** or **High Priority To/From Device** select the **Description** name of the parameter/variable for this word and the **Type** automatically displays.

Enter a note, if desired.

If you select **Low Priority To/From Option** (only available with the Digital General Function (DGF) board), select an integer **Description** associated with parameters/variables on the Option board. Enter a value from 0 to 65532.

Select the **Type** of parameter/variable (INT and UINT are 16-bit and all others are 32-bit).

If you select **Discrete Bit Word To/From Device** the Description can be **High Priority** or **Low Priority**.

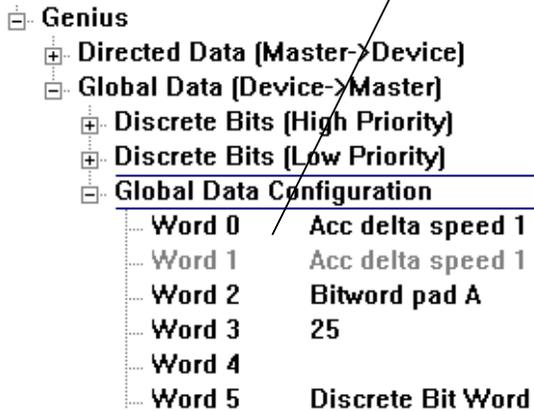
View Word Data

➤ To view word data

- ◆ Click on  to expand **Directed Data Configuration** or **Global Data Configuration**.

A list of the Words displays (including the description of the parameter/variable for this bit).

When Global Data Configuration is highlighted, the **Summary View** displays all the data for the bits. (Note: Word 4 does not display because no data is defined for that word.)



Word	Description	Source	Type
Word 0	Acc delta speed 1	Low Priority From Device	UDINT
Word 1	Acc delta speed 1	Low Priority From Device	UDINT
Word 2	Bitword pad A	Low Priority From Device	WORD
Word 3	25	Low Priority From Option	INT
Word 5	High Priority	Discrete Bit Word From Device	INT

Exporting/Importing Genius Values

Note In order to export/import Genius values, they must display in the Outline View. Be sure to select **Genius** in the drive **Edit Device Properties** dialog box.

➤ To export Genius values

1. From the **Outline View**, click on **Genius** to highlight it.
2. From the **File** menu, choose **Export** and **Selected**. The Export Genius dialog box displays. The file is saved and named for the current drive configuration, such as AVDV_GeniusValues.tre.

➤ To import Genius values

1. From the **Outline View**, click on **Genius** to highlight it.
2. From the **File** menu, choose **Import** or click . Choose the file to import.

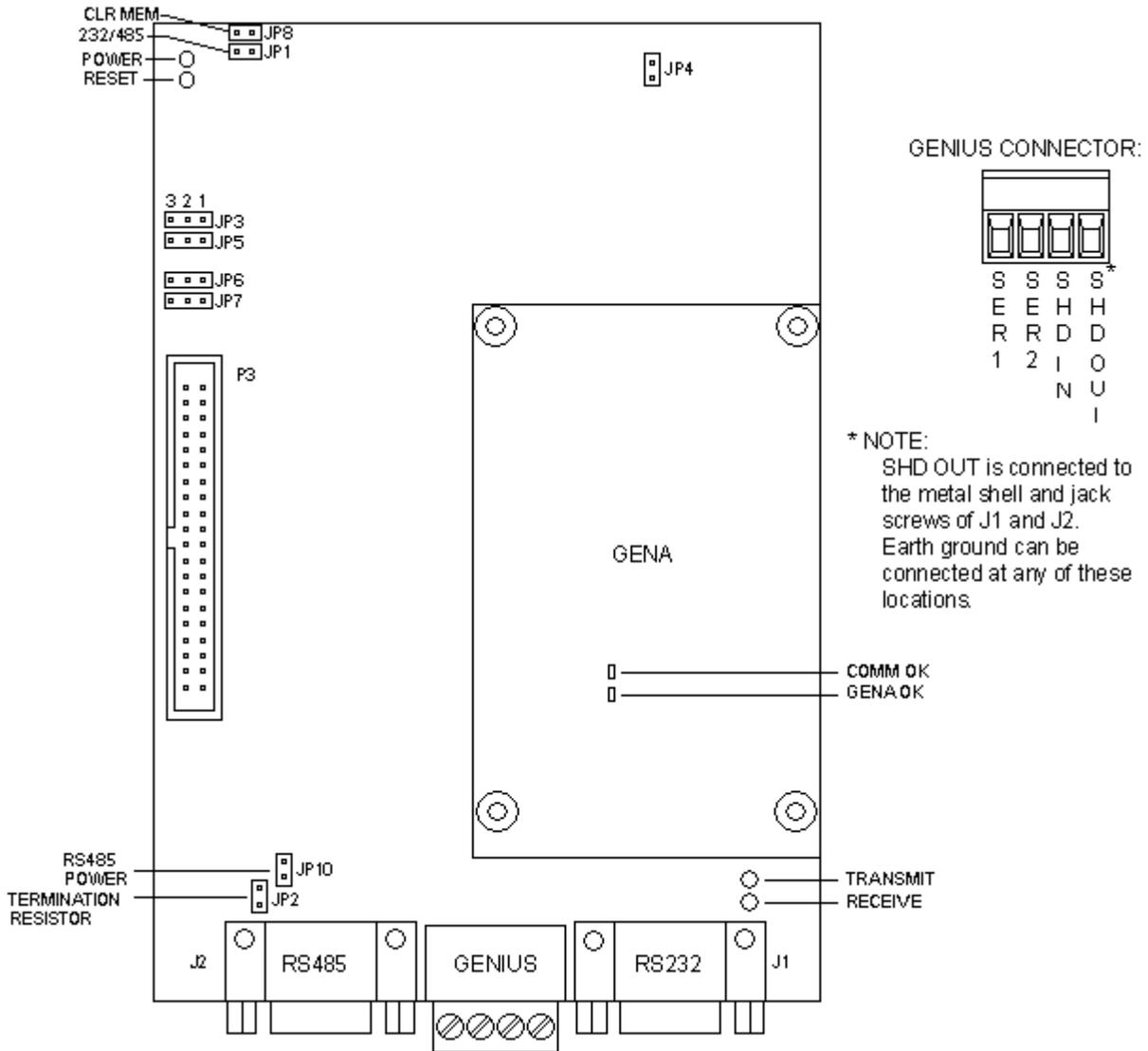
Downloading and Uploading

Note Make sure Genius is selected in the drive **Edit Device Properties** dialog box and that the serial cable is plugged into the RS-232C port of the Genius board.

➤ To download or upload Genius configuration

1. From the **Outline View**, right-mouse click on **Genius**.
2. From the drop-down menu choose **Download** or **Upload**

Hardware Settings



Jumper Settings

JP1	On - If using the RS-232C port Off - If using the RS-485 port	JP6	Always on pins 1 & 2
JP2	On - If using RS-485 port and Genius board is last device on network (default) Off - If using RS-485 port and Genius board is in middle of the network	JP7	Always on pins 1 & 2
JP3	Always on pins 1 & 2	JP8	On - To clear Genius board settings on power up Off - To retain Genius board settings on power up
JP4	Always on	JP9	Not used
JP5	Always on pins 1 & 2	JP10	On - 5 Vdc Power is supplied to the RS-485 port Off - No power is supplied to the RS-485 port

Port Connections

RS-232C Port Pinout (J1)

Pin	
2	TXD (output)
3	RXD (input)
5	GND
7	CTS (input)
8	RTS (output)

RS-485 Port Pinout (J2)

Pin	
3	Signal A
7	Signal B
5	GND
9	+5 V dc (If JP10 is installed)

Genius Pinout (between J1 and J2)

Pin	
1	Serial 1 (closest to J2)
2	Serial 2
3	Shield In
4	Shield Out

LEDs

Genius Board LEDs

D1	Power OK
D2	Reset
D3	Receive
D4	Transmit

GENA LEDs

1	GENA OK
2	Comm OK

Glossary of Terms

ASCII

American Standard Code for Information Interchange. An 8-bit code used for data.

attributes

Information, such as location, visibility, and type of data that sets something apart from others. In signals, an attribute can be a field within a record.

baud

A unit of data transmission. Baud rate is the number of bits per second transmitted.

BIOS

Basic input/output system. Performs the boot-up, which includes hardware self-tests and the file system loader. The BIOS is stored in EEPROM and is not loaded from the toolbox.

bit

Binary Digit. The smallest unit of memory used to store only one piece of information with two states, such as One/Zero or On/Off. Data requiring more than two states, such as numerical values 000 to 999, requires multiple bits (see Word).

board

Printed wiring board.

Boolean

Digital statement that expresses a condition that is either True or False. In the toolbox, it is a data type for logical signals.

bus

An electrical path for transmitting and receiving data.

bumpless

No disrupt to the control when downloading.

byte

A group of eight binary digits (bits) operated on a single unit.

COM port

Serial communication ports (two). COM1 is reserved for diagnostic information and the Serial Loader. COM2 is used for I/O communication

configure

To select specific options, either by setting the location of hardware jumpers or loading software parameters into memory.

dead band

A range of values in which the incoming signal can be altered without changing the outgoing response.

device

A configurable component of a process control system.

Diagram

Click on this item in the Outline View for an overall picture (in the Summary View) of drive function.

diagram links

Click on a button to go to other pages of diagrams or information on drive functions.

Drive Control

Enables you to control the drive from the toolbox, the same as the keypad on the cabinet door.

EIA

Electronics Industry Association (EIA), a trade organization representing the U.S.A. high technology community. The EIA establishes Recommended Standards (RS) for hardware devices and their interfaces.

EEPROM (EE)

Electronically erasable programmable read-only memory.

fault

A message from the drive indicating a warning or failure.

Finder

A subsystem of the toolbox for searching and determining the usage of a particular item in a configuration.

firmware

The set of executable software that is stored in memory chips that hold their content without electrical power, such as EEPROM.

flash

A non-volatile programmable memory device.

font

One complete collection of letters, punctuation marks, numbers, and special characters with a consistent and identifiable typeface, weight, posture, and size.

hexadecimal (hex)

Base 16 numbering system using the digits 0-9 and letters A-F to represent the decimal numbers 0-15. Two hex digits represent 1 byte.

initialize

To set values (addresses, counters, registers, and such) to a beginning value prior to the rest of processing.

insert

Adding an item either below or next to another item in a configuration, as it is viewed in the hierarchy of the Outline View of the toolbox.

logical

A statement of a true sense, such as a Boolean.

model

Interactive setup data (recipe) that automatically adjusts to the process. This function is usually used with hot mills or cold mills.

module

A collection of tasks that have a defined scheduling period.

non-volatile

The memory specially designed to store information even when the power is off.

online

Online mode provides full CPU communications, allowing data to be both read and written. It is the state of the toolbox when it is communicating with the system for which it holds the configuration. Also, a download mode where the device is not stopped and then restarted.

parameter

A value used to define drive behavior.

physical

Refers to devices at the electronic or machine level in contrast with logical. Logical implies a higher view than the physical. Users relate to data logically by data element name; however, the actual fields of data are physically located in sectors on a disk.

put into database

Command in the device menu used to add configuration information into a system database.

realtime

Immediate response. It refers to process control and embedded systems, and fast transaction processing systems that must respond instantly to changing conditions.

reboot

To restart the toolbox.

relay ladder diagram (RLD)

A ladder diagram has a symbolic power source. Power is considered to flow from the left rail through a contact to the coil connected to the right.

RS-232C

An EIA Recommended Standard (RS) for the serial link communications interface for interconnecting data terminal equipment, such as printers, computer monitors, or computers to data communications equipment, such as modems, for transmission over a telephone line or network. RS-232C uses an unbalanced or single-ended voltage interface. (Also see *EIA*.)

RS-485

An EIA standard for multipoint communications. RS-485 is similar to RS-422 but can support more nodes per line because it uses lower-impedance drivers and receivers.

sample set

Set of values taken when signals are being trended together with the Trend Recorder.

sampling rate

The period that values are collected to put in a sample set.

self-tune

Self-tune is a process where the drive and the motor perform predefined tests to determine the best running conditions for the system.

signal

The basic unit for variable information. Signals are the placeholders for memory locations in the toolbox's different platforms.

TCP/IP

Communications protocols developed to inter-network dissimilar systems. It is a de facto UNIX standard, but is supported on almost all systems. TCP controls data transfer and IP provides the routing for functions, such as file transfer and e-mail.

toolbox

A Windows-based software package used to configure drives.

trend

A time-based plot to show the history of values.

Trend Recorder

A subsystem of the toolbox that monitors and graphs signal values from a drive.

TrueType

Scaleable font technology that renders printer and screen fonts. Each TrueType font contains its own algorithms for converting the outline into bitmaps.

validate

Makes certain that items or devices do not contain errors and verifies that the configuration is ready to be downloaded.

var

An AVDV Series variable.

Windows NT

Windows New Technology. Advanced 32-bit operating system from Microsoft for 386s and above. It runs NT-specific applications as well as those written for DOS, Windows 3.x (16 and 32-bit), OS/2 character mode (non-graphical) and POSIX. NT does not use DOS; it is a self-contained operating system.

word

A unit of information composed of characters, bits, or bytes, that is treated as an entity and can be stored in one location. Also, a measurement of memory length, usually 4, 8, or 16-bits long.

Notes



Problem Report

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Name	Telephone Number
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Address	Job Site
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Name of Product:

Description of PC Hardware:		
Brand	Processor Type <input type="radio"/> 486 <input type="radio"/> Pentium <input type="radio"/> Other	Processor Speed (MHz)

Description of PC Software		
Version (see <u>H</u> elp, About Toolbox)	Windows NT Version	Amount of Memory

Problem Description (Describe problem thoroughly. Include sequence leading up to problem. If the program experienced a runtime error, attach a printout of the error.log file contained in the tools directory).

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Readability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____

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Page No. Comments

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