PLC WorkShop™ for
Siemens 505™

Version 3.60 SP3

By FasTrak SoftWorks, Inc.

Quick Start Guide
This is a Quick Start guide, not a comprehensive manual. Its purpose is to get you started, and many features are not mentioned.

For detailed descriptions of the features, refer to the PLC WorkShop for Siemens 505 help system. Throughout this document, PLC WorkShop for Siemens 505 will be referred to as PLC WorkShop.

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SYSTEM REQUIREMENTS / INSTALLATION

Hardware
To install PLC WorkShop on your computer, you need the following hardware:

- A personal computer with an Intel Pentium 100 MHz processor or higher.
- 32 MB or more of RAM.
- An 800 x 600 VGA monitor with at least 256 colors.
- 100 MB free space on your hard drive.
- A mouse is recommended, but not required.

PLC WorkShop may not function properly on systems that are not 100% Intel compatible. Certain other hardware components and peripherals can create incompatibility problems.

Software
To install PLC WorkShop on your computer, you need the following software loaded on your computer:

- Windows® 95, Windows 98, Windows NT, Windows 2000, or Windows XP.

Installing PLC WorkShop
Before you begin installation, you should review the Systems Requirements section above.

To install PLC WorkShop, turn on your computer and start Windows. You may need to provide a user name and password to log in to a computer network. If you are unsure, contact your company’s System Administrator or IT representative. Follow these steps to install the software:

1. Insert the PLC WorkShop CD in your computer’s CD-ROM drive.
2. The CD should autostart. If not, click the Windows Start button. Then click Run, and type \setup.exe, where x is the letter for the CD-ROM drive.
3. Follow the instructions that appear on the screen.
DEMO MODE RESTRICTIONS

If you are using this software in demo mode, certain restrictions apply.

Viewing Limitations
You will be unable to:
- View more than 150 addresses in ladder in address mode.
- View more than 25 networks in ladder in network mode.
- View more than 25 lines in Special Function programs and subroutines.
- View more than 10 Special Function programs and subroutines, alarms, and loops.

Functional Limitations
You will be unable to:
- Perform a complete load online from the Open Program dialog.
- Save.
- Load by Parts.
- Insert more than 25 networks in network mode.
- Insert more than 25 lines in Special Function programs and subroutines.
- Edit more than 10 Special Function programs and subroutines, alarms, and loops.
- Print more than viewable parts as specified.
- Update the Data Window beyond 10 minutes.
- Update Ladder Status beyond 10 minutes.
- Search for addresses beyond the viewable area in ladder and Special Function programs and subroutines.
- Perform a Goto beyond the first 25 networks or Special Function program and subroutine lines in the Cross Reference Window.
SETTING UP COMMUNICATIONS

Pre-configure serial ports, a modem board, or network interface boards in the computer for use with a SIMATIC 505 PLC. To configure communications:

1. Select the **File/ Communications Setup** menu option. The **Communications Setup** dialog appears.

2. Select the appropriate PLC communications that you wish to set up.

**Fast PLC Connection Setup**

Prior to connecting via Fast PLC Connection the first time, you need to set up the PLC connection.

1. Select the **File/ Fast PLC Setup** menu option. The **Fast PLC Connection** dialog, which is identical to the **Communications Setup** dialog, appears.

2. Select the appropriate communication port to configure and select your serial port or board for communication with the PLC.
ONLINE/ OFFLINE

In the **Online mode**, you can edit the program in the PLC. The logic and data are read from the PLC memory, and the documentation is read from the *.FSS file, which is the 32-bit file type used by PLC WorkShop. The display can include ladder status and data values that reflect the current state of the PLC.

**WARNING** Editing or modifying a program online may produce unexpected or hazardous results.

In the **Offline mode**, you can edit the logic and documentation in the *.FSS file without involving the PLC in any way.
CREATING A NEW PROGRAM

To create a new logic program and begin programming:

1. Select **File/New** from the menu, click the toolbar button, or press [Ctrl-N]. The PLC Type Setup dialog appears.

![PLC Type Setup Dialog](image)

2. Select the **PLC Type** and **Revision** corresponding to the PLC to be used.

3. To share documentation with other applications or programs, click the Advanced button to display the Share Address Documentation dialog.
PROGRAMMING LADDER

Using Edit Mode and Validate and Enter
When you begin editing logic, the ladder is placed in **Edit mode**. Edit mode is indicated by a change in background color. In **Online** mode, a network in Edit mode is held in a special buffer outside the actual program, and the original network remains temporarily unchanged. When you have completed the edits, **Validate and Enter** the changes by selecting the **Program/Validate and Enter** menu option, clicking the check mark toolbar button, or pressing [F8]. PLC WorkShop validates the changed networks, and if the networks are valid, enters them in the actual program. If necessary, PLC WorkShop displays a dialog so you can stop the PLC. In either **Online** or **Offline** mode, the network background color returns to the normal display.

**WARNING:** The validation only examines the edited network. It is possible for changes in one network to affect another, causing unexpected results.

Inserting a New Network
You can insert a new network in the active logic program window.

1. Click the toolbar button. The new network attaches to the mouse pointer.
2. Click on the logic program in the location where you wish to place the new network. The new network is inserted, and the pointer returns to an arrow.

Appending a New Row
You can add a new row to a network in the active logic program window.

1. Click the toolbar button. The new row attaches to the mouse pointer.
2. Click on the logic program in the location where you wish to place the new row. The new row is inserted, and the pointer returns to an arrow.

Entering Ladder Instructions
You can enter ladder instructions by selecting the appropriate instruction from the **Instruction Bar**.

1. Click on the appropriate Instruction Group (for example, Relay) on the **Instruction Bar** to display the instructions within that group.
2. Select an instruction by clicking on it. The instruction attaches to the mouse pointer.
3. Click on the logic program in the location where you wish to place the instruction. The instruction is inserted, and the pointer returns to an arrow. If the instruction cannot be placed in that location, an error message is displayed.
Typing Mnemonic Instructions

Instructions can be entered using mnemonics. To enter an instruction mnemonic:

1. Place the cursor at the desired location, enter the instruction mnemonic, and press [Enter].

2. To display a list of instruction mnemonics, press [?] and then [Enter]. The following Mnemonics dialog appears.

<table>
<thead>
<tr>
<th>Mnemonics</th>
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<tbody>
<tr>
<td>ABS</td>
</tr>
<tr>
<td>CTR</td>
</tr>
<tr>
<td>EQU</td>
</tr>
<tr>
<td>JMPE</td>
</tr>
<tr>
<td>MCR</td>
</tr>
<tr>
<td>MOVW</td>
</tr>
<tr>
<td>NEQ</td>
</tr>
<tr>
<td>OUT</td>
</tr>
<tr>
<td>RTN</td>
</tr>
<tr>
<td>SKP</td>
</tr>
<tr>
<td>TASK</td>
</tr>
<tr>
<td>TTDW</td>
</tr>
</tbody>
</table>

3. Select a mnemonic by double-clicking it or arrowing to it and pressing [Enter].

TIP: The Mnemonics dialog will also appear if you enter an invalid mnemonic.

Obtaining Help

When working in the logic program, you can quickly reference help text regarding specific instructions. To display help text:

1. Click on the toolbar button. A question mark attaches to the mouse pointer.

2. Click on the desired instruction within the logic program. The help text related to that instruction will appear in a separate window, and the pointer will return to arrow.
For example, clicking on \texttt{Y1} with the \texttt{Help} toolbar will display the following help text.

\textbf{Normal Contact (STR)}

When the referenced address of a Normal Contact is ON, the contact is closed and passes power. When the referenced address is OFF, the Normal contact is open and does not pass power.
Editing Commands

PLC WorkShop provides a number of timesaving editing commands to help you program. Use these commands to quickly copy logic and documentation to either another location in the same program or to another program.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
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<tbody>
<tr>
<td>Cut</td>
<td>Removes the selected logic or data from the program and places it on the clipboard.</td>
</tr>
<tr>
<td>Copy</td>
<td>Places a copy of the selected logic or data on the clipboard.</td>
</tr>
<tr>
<td>Paste</td>
<td>Inserts the clipboard contents, not including documentation, into the program at the cursor location.</td>
</tr>
<tr>
<td>Paste with Rewire</td>
<td>Inserts clipboard contents into the program at the cursor location and allows you to re-address any addressable items contained in the clipboard.</td>
</tr>
<tr>
<td>Insert</td>
<td>Inserts space for new logic or data above or to the left of the insertion point, moving the existing logic or data as needed.</td>
</tr>
<tr>
<td>Append</td>
<td>Inserts space for new logic or data below the insertion point, moving the existing logic or data as needed.</td>
</tr>
<tr>
<td>Clear</td>
<td>Removes selected content, leaving a blank area, without moving the surrounding content.</td>
</tr>
<tr>
<td>Delete</td>
<td>Removes both the content and the space it occupied, and moves other content as needed.</td>
</tr>
<tr>
<td>Undo</td>
<td>Resets edited but invalidated logic to its previous state.</td>
</tr>
</tbody>
</table>
SETTING UP THE PROGRAM

Use program setup options to change the layout and appearance of PLC programs. These settings are saved with the program. To set up a PLC program:

1. Select the **Options/ Program Setup** menu option. The **Program Setup** dialog appears.

![Program Setup Dialog]

2. Click on the desired tabs to display setup selections.
PROGRAMMING SPECIAL FUNCTION PROGRAMS AND SUBROUTINES

The Special Functions Program and Subroutine Editor gives you the ability to display, access, and/or modify special functions. To display the Special Functions dialog:

1. Select the View/Special Functions menu option or click the SF toolbar button. The Special Functions dialog appears.

2. Highlight a special functions program or subroutine from the list and select the appropriate option button.
   - Click the Header button to display the Special Function Program dialog to view and edit header information.
- Click the **Display Used / Display All** button to list either all special functions or only special functions that have been programmed.

- Click the **Goto SF...** button to display the highlighted special function program or subroutine, in its own window, for viewing and/or editing.

- Click the **Copy, Paste, and Delete** buttons to copy, paste, and delete highlighted special function programs and subroutines.
ANALOG ALARMS AND PID LOOPS

Programming Analog Alarms

The Analog Alarm Editor gives you the ability to display, access, and/or modify analog alarms. To display the Analog Alarm Editor:

1. Select the View/Alarm menu option or click the toolbar button. The Analog Alarm Directory appears.

2. Select the Analog Alarm number that you wish to access and click the Edit button. The Analog Alarm Edit dialog appears.
3. To view or edit address documentation, click the **Modify Doc** button.

**Programming PID Loops**

The PID Loop Editor gives you the ability to display, access, and/or modify PID Loops. To display the PID Loop Editor:

1. Select the **View/PID Loop** menu option or click the toolbar button. The **PID Loop Directory** appears.
2. Click on the **PID Loop** number that you wish to access and select the **Edit** button. The **PID Loop Edit** dialog appears.

![PID Loop Edit dialog](image)

3. To view or edit address documentation, click the **Modify Doc** button.
DOCUMENTING A PLC PROGRAM

PLC WorkShop provides documentation features to describe addresses, networks, and special functions.

Documenting Addresses

**Tag:** A tag is a descriptive identifier for an address. In some parts of PLC WorkShop, you can specify addresses by tag. Tags must be unique.

**Description:** A description is a short explanation of the address, which can appear in logic, data and cross reference windows, and on reports.

**Description Comment:** A description comment is commentary on the address. The description comment can be much longer than the description. It can appear on reports but not in logic displays because of its size.

Viewing Address Documentation

Address documentation is listed in a spreadsheet-style display.

1. To display the documentation list, select the View/Documentation Window menu option or click the toolbar button. The Documentation Window appears.

![Documentation Window Screenshot]

2. The information on the list is not directly editable. To edit the documentation of an address, display the Edit Documentation dialog by double-clicking a line or by selecting New Doc or Modify Doc from the right-click menu.
Creating and Editing Documentation

Use the Edit Documentation dialog to create and edit address documentation. It is also the easiest location to view all documentation of an address.

Address: Enter the address to be documented. When this field does not contain a valid address, all the other fields are disabled.

Tag: Enter the tag for the displayed address. Tags must be unique.

Description: Enter the description of the address.

Description Comment: Enter comments about the address.

Prev Doc, Next Doc: Edit documentation for the previous or next documented address.

Prev Addr, Next Addr: Edit documentation for the previous or next address, whether it is currently documented or not.

Documenting an Address while Editing Logic

With the cursor on the address you wish to document, press [Ctrl-L] to open the Edit Documentation dialog.
Using Ladder, Network, and Special Function Headers

Document ladder with ladder header comments, entire networks with network header comments, and special functions with special function header comments.

To open a header comment for editing, double-click the toolbar button. The applicable header dialog displays.

In this network header example, double-clicking the toolbar button displays the **Header Input** dialog, used to enter network header comments.

Similarly, double-clicking the toolbar button displays the **Ladder Header** dialog.
GOING ONLINE

You are able to edit a program in the PLC (online) or within a file (offline). To connect online with a PLC:

1. Select the File/Open menu option, click the toolbar button, or press [Ctrl-O]. The Open Program dialog appears.
2. Click Browse and select the *.FSS file.
3. Click the Connect to PLC option button.
4. Click Setup and configure the PLC communication options.
5. If you wish to load the logic in the *.FSS file into the PLC, select the Transfer Logic to PLC check box.

Using Fast PLC Connect

Prior to connecting via Fast PLC Connection the first time, you need to set up the PLC connection. (See Fast PLC Connection Setup, pg. 6)

To connect online to a PLC, select the File/Fast PLC Connect menu option or click the toolbar button.

Transferring Offline Programs to Online

To transfer an existing offline program to online select the File/Transfer -> Online menu option.
SEARCHING

Finding Logic

Locate program elements such as a particular register or bit address, PLC instruction type, or network or special function line number with the Find dialog. To display the Find dialog:

1. Select the **Edit/Find** menu option, click the toolbar button, or press [Ctrl-F]. The **Find** dialog appears.

2. Specify the item you wish to search for and click **Find**. The found item is encircled by the Parameter Cursor.

**TIP:** To find the next instance of the item being sought, select the **Edit/Find Next** menu option or click the toolbar button.
Finding Documentation

Locate program documentation with the Documentation Find dialog. To display the Documentation Find dialog:

1. Open the **Documentation Window** by selecting the **View/ Documentation Window** menu option or clicking the toolbar button.

2. Select the **Edit/ Find** menu option, click the toolbar button, or press [**Ctrl-F**]. The **Documentation Find** dialog appears.

3. Enter the text to be searched for in the **Find what** field.

4. Select a **Search type** of Address, Tag, Description, or Keyword.

5. Select the **Exact Match** check box if the text in the **Find what** field is the entire text to be found. Select the **Match Case** check box to perform a case sensitive search on the **Find what** text if the search type is **Keyword**.
LOCATE all uses of an address in a program with the Cross Reference Window. To display the Cross Reference Window:

1. Select the **View/Cross Reference** menu option or click the toolbar button. The **Cross Reference Window** appears.

2. **Select the Display inline Address Documentation** check box to view documentation next to each address within the Cross Reference list.

3. Base the cross reference on addresses or networks by selecting **By Address** or **By Network**, entering a starting address or network, and clicking the **Refresh** button.

4. Double-click an address in the Cross Reference list to display the **Edit Documentation** dialog for that address.

5. Select a location in the Cross Reference list and click the **Goto** button or double-click the location to jump to the first occurrence of the address in the ladder or special function.

**TIP:** The title line displays the status of the cross reference. Click the Build Table button to make the cross reference current.
VIEWING STATUS AND VALUES

Displaying Ladder Status
You can display the values of the addresses in the PLC by using the online status feature. Turn ladder status on and off by selecting the Diagnostics/ Status menu option.

Displaying Register Values
Register values are displayed in the ladder editor as part of some instructions. For a more comprehensive view of register values, use the Data Window.

Displaying a Data Window
1. Select the View/ Data Window menu option.

2. Enter the addresses to be viewed in the Address column.

TIP: Use the right-click menu to change the data format and size.
LOADING AND SAVING PROGRAMS

Downloading a Program into the PLC
To load an existing program into an online PLC:

1. Select the File/Open menu option, click the toolbar button, or press [Ctrl-O]. The Open Program dialog appears.

2. Click Browse and select the program to be loaded into the PLC.

3. Select the Connect to PLC option button.

4. Select the Transfer Logic to PLC check box if you want the logic, data, and configuration written to the PLC. If you wish to view the logic, data, and configuration from the PLC but use the documentation from the *.FSS file, do not select this option.

Converting a *.VP5 Program
*.VP5 is the file extension used by TISOFT files. To load a *.VP5 program:

1. Select the File/Open menu option, click the toolbar button, or press [Ctrl-O]. The Open Program dialog appears.

2. Click Browse and select the *.VP5 program to be loaded. The logic and documentation of the *.VP5 file are imported into a new offline program. The new offline program is saved as an *.FSS file.
**Loading Parts of an Existing Logic Program Online**

To load parts of an existing logic file into an online PLC:

1. Establish an online connection with the PLC. (See Going Online, pg. 22)
2. Select the **File/Load By Parts** menu option. The **Load Program by Parts** dialog appears.

   ![Load Program by Parts dialog](image)

3. Click **Browse** and select the program to be loaded into the PLC.
4. Select the check boxes of the program parts you wish to load, or select the **Load Complete Program** check box to load all parts.
5. To share documentation with other applications or programs, click the **Advanced** button to display the **Shared Address Documentation** dialog.
Saving Programs from the PLC to Disk

To save a program in the PLC to a file:

1. While online, select the File/Save menu option, click the toolbar button, or press [Ctrl-S]. The Save dialog appears.

2. Select the check boxes of the program components to be saved.