

1 GETTING STARTED WITH SYSWIN

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Welcome to SYSWIN

The OMRON SYSWIN software is designed for use with SYSMAC C and CV series Programmable Logic Controllers (PLCs). It provides a straightforward method of creating and maintaining programs and testing their operation, either offline or connected to a PLC.

SYSWIN offers a comprehensive range of facilities for the PLC programmer, from program editing to full symbolic and network debugging, including:

- New program creation
- Program storage and editing
- Uploading and downloading code to a PLC
- Program status during execution by PLC
- Commenting programs:
 - Symbolic addresses
 - Symbolic block and network names
 - Comments
- Maintenance of library files
- Printing program and documentation
- Conversion from other packages

SYSWIN runs in the Microsoft Windows environment (version 3.1 or greater) on standard IBM and compatible 486 and Pentium-based desktop computers. SYSWIN is intuitive to use, and allows the programmer to rapidly configure a specific project and enter network and program data. PLC programs can be constructed in either ladder or function plan format, and previously tested networks can be recalled from libraries. A special statement list editor allows PLC programs to be viewed and checked in their mnemonic format.

These features are designed to enable users to easily adapt PLC programs to changing requirements. Additional features allow the testing of new networks in a supportive and safe environment.

The SYSWIN software can communicate with both C and CV series PLC. Serial communications with the PLC can be through RS-232C or RS-422 serial interfaces with or without a modem. Network Service Boards can be used in the PC to attach to the PLCs using SYSMAC-LINK or SYSMAC-NET networking.

Communications are handled transparently, leaving the programmer free to focus on the coding aspects of a particular PLC project.



<p>NOTE! It is very important that you register your copy of the SYSWIN software with your local OMRON Sales Office, in order to qualify for technical support. OMRON is not able to help you unless you have registered.</p>
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1 GETTING STARTED WITH SYSWIN

Contacting Technical Support

If you follow the installation instructions for the copy protection system in this chapter and in the Advanced Installations chapter you should not encounter any difficulties. However, if you have a problem, then contact Customer Services.

If you have a problem, it is important that you check that it does not relate to a fault outside SYSWIN. It is essential that you check the following:

- The PC is working correctly
- The PLC is working correctly
- The communications system is set up correctly
- The errors are cleared in the PLC

When you need to contact Customer Services, fill in the details in the form below. A clear and concise description of the problem is required, together with the exact text of any error messages.

Version number of SYSWIN	
Licence Number of software	
Registration Number of software	
Operating system and version number	
PLC type, model and CPU details	
Type of communications in use	
Serial	
SYSMAC-LINK	
SYSMAC-NET	
Controller Link	
Ethernet	

Licence Registration Information

SYSWIN V3.4 takes advantage of a different method of Licence Registration, which replaces the Software Token and Hardlock (Dongle), which were used on previous versions.

On the back of the CD-ROM box, and incorporated in the label of Diskette 1, is a **“Licence Number”**.

e.g. 11111-22222-33333-44444-55555

You will be asked to enter this during installation of the software. The number must be entered exactly as it is printed.

After installation of the software, a **“Registration Number”** is displayed in the software information under the **“Help”** dropdown menu.

e.g. aaa-bbb-ccc-ddd-eee

When the **“Software Registration Card”** is filled in, both the **“Licence Number”** and the **“Registration Number”** are required. Support for your software may not be available if it is not registered.

If an existing Token or Hardlock are present on a PC, and SYSWIN is installed over a previous version, you will not be asked to enter the licence number. After installation a **“Licence Number”** can be entered by selecting **“Activate SYSWIN”** from the **“Help”** dropdown menu.

1 GETTING STARTED WITH SYSWIN

About this Manual

This User Manual will help you to get started with SYSWIN, by describing the software installation and computer configuration, and by leading you through the basics of SYSWIN programming. It also provides a detailed reference for all of the on-screen SYSWIN functions.

Separate OMRON manuals describe the PLC programming structure and instruction set in detail. Some small example programs are included with the SYSWIN software, to demonstrate some of the most commonly used features, and if you are new to PLC programming, you can work through these to familiarise yourself with the software.

SYSWIN comes with a comprehensive context-sensitive online help system, which is designed to complement this manual, and provide a quick reference at any point in the SYSWIN application when the manual is not to hand. This general help system allows you to obtain progressively more information about any topic by selecting keywords within the descriptive text. In addition, quick help is provided for all PLC instructions.

Throughout this manual, it is assumed that you have a working knowledge of Microsoft Windows, and know how to:

- Use the keyboard and mouse
- Select options from Windows menus
- Operate dialog boxes
- Locate, open and save data files
- Edit, cut and paste text
- Use the Program Manager or taskbar

If you have not used Windows before, it is recommended that you spend some time working with it using the Microsoft documentation, before using SYSWIN.

This introductory section deals with several important aspects of installing and setting up SYSWIN. We recommend that you read the entire section, especially the notes on copy protection, before installing the software.

Manual Conventions

For quick reference on how to do certain tasks, instruction sequences are in bold type and arrowed (for example **▶ Click on the OK button**).

Words in bold capitals (for example: **File|Open**) refer to commands in the SYSWIN menus.

Words in italics (for example: *Save Program*) are used for options such as check boxes and buttons in dialogs.

Keyboard combinations are indicated by the key names to be pressed together, for example **Shift+F6**.

Special Symbols

The **▶** character points to an instruction

 Special instructions for C series PLCs

 Special instructions for CV series PLCs

1 GETTING STARTED WITH SYSWIN

SYSWIN Features

This new version of SYSWIN V3.4 offers increased functionality for the creation and testing of PLC programs and increases the range of PLCs it supports.

Features in SYSWIN V3.4

- Support for the SYSMAC ALPHA PLCs with 3 digit Expansion Functions
- Controller Link Protocol Support
- Communications with C-series PLCs using Ethernet via the PCMCIA interface
- Communications with a CV-series PLC using Ethernet
- Communications with a PLC via a C200H^② Bridge using SYSLINK
- Import and export of data between SYSMAC-CDM and SYSMAC-SCS
- CV Memory Card support
- Error history log
- Project password protection
- Program Password protection
- Unit Setup
- Advanced Installations
- Support for updates to C200HX(CPU65 and CPU85)
- Additional PLC set up for C Series PLCs
- Additional CV I/O Table support
- C Series I/O Table support
- Memory Card Support for CV Series PLCs to allow for partial download

New features in SYSWIN V3.4:

- Support for the CQM1H PLC type
- Additional PLC setup support: High Speed Counter Settings for CPM1, CPM1A, CQM1, and CPM2 PLC types; Analogue settings for CQM1 (CPU45 only).

Introduction to Controller Link

SYSWIN additionally supports the Controller Link network. The Controller Link is an FA network that can send and receive large data packets flexibly and easily among the OMRON C200HX/HG/HE PLCs, CV series PLCs and IBM PC/AT or compatible computers.

The Controller Link supports data links that enable data sharing and a message service that enables sending and receiving data when required. Data link areas can be freely set to create a flexible data link system and effectively use data areas.

The network is connected using shielded twisted-pair cable, and high-volume data transmissions at high speed enable construction of a wide range of networks, from low level systems to high.

1 GETTING STARTED WITH SYSWIN

System Requirements

SYSWIN operates on IBM and compatible personal computers with 80486 or better central processors, including Pentiums. It should be possible to fully install SYSWIN on any computer that can run Windows 3.1 software.

The following configuration is recommended as a minimum system for running SYSWIN effectively:

- 50 MHz 80486 or better CPU, running in enhanced mode (90 MHz Pentium Processor is recommended)
- At least 8 Mbytes RAM (16 Mbytes RAM recommended or 32 Mbytes for Microsoft Windows NT users)
- Hard disk storage with at least 10 Mbytes of free space
- VGA or better display system (800 x 600 SVGA or higher resolution is recommended)
- Microsoft Windows 3.1 or higher (Microsoft Windows 3.11 for Workgroups is recommended)
- Mouse

It is possible to run SYSWIN in CPM1 or Demonstration mode on any machine that can run Windows software.

If you intend to connect a PLC to the computer for executing program code and testing, you will require:

- RS-232C connection via a standard serial port on the computer (COM1 etc.), or
- RS-422 connection, or
- SYSMAC-LINK Network Service Board, or
- SYSMAC-NET Network Service Board, or
- Controller Link Service Board, or
- Ethernet

Refer to the appropriate hardware system manuals for full information about connecting and configuring these devices for your environment. The Advanced Communications chapter in this manual provides detailed guidance on how to use SYSWIN for setting up communications. General information about cabling requirements is given in Appendix E.

NOTE! Windows 3.1 is not compatible with Ethernet connections unless this service is provided by a third party package

1 GETTING STARTED WITH SYSWIN

Token Copy Protection

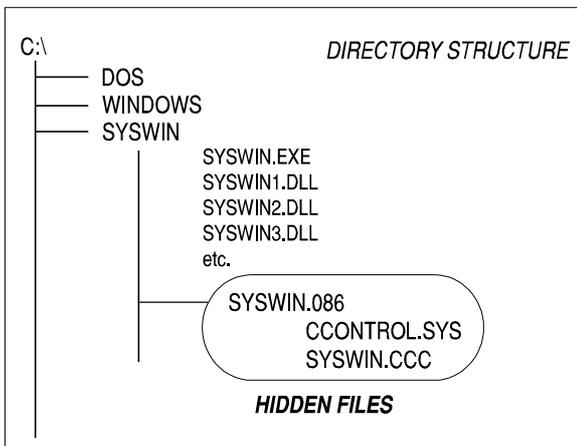
A copy protection mechanism within SYSWIN prevents illegal use of the software by locking it to a specific hard disk. The mechanism consists of an operation token, which must be installed on your system before you use the software. When SYSWIN is running, it looks for an operation token, and runs in demonstration mode if it is not found.

PLEASE READ THIS SECTION CAREFULLY! There are some important points to note about this copy protection system and how it might affect your computer.

Installation

If you are installing on a non-standard configuration, that is, not using either Windows 3.1, Windows 3.11, Windows 95, Windows 98 or Windows NT, you should read the Advanced Installations chapter before attempting to install the operation token.

When you install the operation token that protects your software, certain files are created on your system that are not normally visible. It is important that these hidden files are not moved or deleted. If they are, the operation token will be damaged, and SYSWIN will not work.



If you ever see the names of the hidden files on your screen, be careful: you may be about to invalidate your valuable SYSWIN software!

Restrictions

Your operation token must be transferred back to the master diskette, for example, if you need to move SYSWIN to a different computer, or in certain other situations. The token can only be transferred to or from an operation token diskette. You cannot install the token to a RAM disk.

System Backup

Most backup utilities do not touch the hidden files created by the protection mechanism. However, some utilities allow you to backup and restore hidden files. This option should not normally be used, because it would cause the protection mechanism to consider the token invalid. The hidden files used by the protection mechanism do not have the Archive file attribute set, so it may be possible to restrict a backup to files with this attribute set.

File Maintenance

Some file management utilities (for example: Xtree, and Norton Utilities) list hidden files, and can move them to other directories, or remove them from the system. Using this type of software, you may delete the SYSWIN copy protection files accidentally. If any software mentions these files during a maintenance operation that removes files, immediately STOP what you are doing, and move the token back to the SYSWIN master token diskette, using the Token Mover. Re-install the token after all maintenance has been done.

Disk Cache Operation

Certain disk caching software interferes with the installation of SYSWIN, and should be disabled temporarily during the installation process. The /d option of Multisoft Corporation's PC-Kwik utility should be disabled, for example. HyperCache has a non-standard option for accessing diskettes, which should also be disabled during installation.

1 GETTING STARTED WITH SYSWIN

Disk Compression

The copy protection mechanism is compatible with disks that have been compressed with programs such as *SuperStor*, *Stacker*, *DoubleSpace* and *DriveSpace*. However, SYSWIN must be moved back to the master diskette when installing any of these compression systems, as mentioned in their manuals. Failure to do so can cause the protection mechanism to consider the token invalid.

Disk Defragmenters

SYSWIN's copy protection mechanism is compatible with and not affected by disk defragmenters such as Central Point's *Compress*, Digital Research's *Diskopt*, Stac's *Sdefrag* and Microsoft's *Defrag*.

Backing Up SYSWIN Token Diskettes

The token diskettes each contain a 'fingerprint,' which is written to a non-standard track. This prevents them from being copied, even by advanced disk copying programs. You cannot, therefore, copy these diskettes for backup purposes. If the masters become damaged or lost, you must contact Customer Services for a replacement.

The SYSWIN program diskettes can be backed up, however, to allow the masters to be stored in a safe place.

<p>NOTE! If you are in any doubt about whether any of the actions you may perform could cause you to lose tokens, move the token back to the token disk.</p>

1 GETTING STARTED WITH SYSWIN

Installation

Installing the SYSWIN Software

This section deals with the installation of SYSWIN on a standard workstation. For installations related non-standard workstations please refer to Chapter 11.

The SYSWIN software is supplied on CD-ROM or on high-density 3.5" diskettes, and is installed easily from within Windows.

Installing from CD-ROM

Start Windows and insert the SYSWIN CD-ROM in the CD drive. If Autorun is enabled (Microsoft Windows 95, Windows 98 or Windows NT only), the setup program starts automatically. The setup program can be started manually, by following the instructions in the README.TXT in the root directory of the CD.

Installing from Floppy Disk

Start Windows and insert SYSWIN Program Diskette #1 in a suitable diskette drive (our example uses Drive A:). To install SYSWIN:

◆ **Launch the Run dialog**

Choose Run... from the Start button from the taskbar (Windows 95, Windows 98 or Windows NT only) or from the Program Manager File menu (Windows 3.1 or Windows 3.11 for Workgroups only). The Run dialog appears.

◆ **Enter the installation command line**

Type the diskette drive letter and the SYSWIN Setup program (for example: A:\SETUP).

◆ **Start the Setup program**

Click on the OK button. The installation begins.

Further dialogs appear during the installation:

- Select your desired language for SYSWIN operation.
- Enter a path name under which to store the SYSWIN program files.
- Select the operation mode as instructed. To fully activate SYSWIN type in the Licence Number exactly as shown on the CD-ROM or Diskette. This dialog is not shown if SYSWIN has already been fully activated with a token or valid Licence Number.

Once these are completed, the appropriate files are copied to your hard drive or the network drive. If necessary, you are prompted to insert other Program Diskettes when the software requires it.

SYSWIN V3.4 is fully activated by entering the Licence Number shown on the CD-ROM or Diskette. SYSWIN V3.4 can also be fully activated using a token or dongle from previous version of SYSWIN. For details on using tokens and dongles, consult the original documentation shipped with the previous version, and chapter 11 of this manual.

1 GETTING STARTED WITH SYSWIN

Starting SYSWIN

Initial Screen

After the software installation, a new group window for SYSWIN is created. The software is ready to run, and can be started by double-clicking on the SYSWIN icon.

If the default preferences have been used, the *Automatically connect to the PLC* facility will be set and SYSWIN starts by checking that the selected communications port is available. If then attempts to connect to the PLC. If the port is not available it displays an error message but still continues.

When SYSWIN first starts up, it displays a window similar to the one shown below. The SYSWIN window offers many features to ease the process of programming, using the mouse or keyboard or both. You can configure the display for any size monitor so that you have as much or as little information as you need, using options from the **Preferences** menu (see Chapter 10). Any changes you make are saved in the SYSWIN.INI file and are restored next time you run SYSWIN.

Use this section to familiarise yourself with the layout of the SYSWIN display, and to set it up as you desire for programming.

The screenshot shows the SYSWIN software window titled "SYSWIN [C:\WINAPPS\SYSWIN31\SAMPLES\DEM01C.SWP] [Ladder Diagram] <Net 000 Node 000>". The interface includes a menu bar (File, Edit, Function, Block, Online, Editors, Project, Data, Preferences, Help), a toolbar with function keys (sF2-sF12, cX, cC, cV, cZ, cF2-cF4, sF5-sF8, cF5-cF8, sF9-sF10, cF11-sF12), and a main workspace for ladder logic programming. The workspace contains three networks: Network 1 (Reset the changed flag (HR00.01) to FALSE), Network 2 (Reset Toggle flag (HR00.00) if it is already Set, Set Changed flag (HR00.01) so Network "Toggle 2" does not get changed), and a network for a Toggle flag (HR00.00) with associated logic. Labels on the left side of the screenshot identify various UI components: PROGRAM WINDOW TITLE, MENU BAR, SYSWIN TOOLBAR & KEYS, BLOCK HEADER BAR, DRAWING TOOLS, NETWORK HEADER BAR, DRAWING TOOL KEYS (OR F KEYS), LADDER PROGRAMMING WORKSPACE, SCROLL BAR, DATA BAR, ADDRESS BAR, and INSTANT HELP & STATUS BAR. The status bar at the bottom shows "Main 1: Toggle Network 1: Clear Reset the Changed flag (HR00.01) to FALSE 00000 001:001 STOP DEMO".

1 GETTING STARTED WITH SYSWIN

Configuring the SYSWIN Environment

SYSWIN is supplied with default settings that are suitable for the first time user and there is no requirement for these to be changed when starting the system. These are global settings and apply to all projects. These settings, for the Drawing, Window, Editing and Options, are listed in Configuring the Environment chapter where all the options are described. All settings may be viewed by selecting **Preferences** from the Menu Bar and selecting the appropriate item.

Project Preferences, which are local settings for each project, are discussed in the Working with PLC Projects chapter and are detailed in the Advanced Projects chapter.

SYSWIN Help System

SYSWIN comes with a detailed context-sensitive help system. At any time while using the software, you can get help on the particular point at which you are working, or on general aspects of SYSWIN. This system is intended to complement the manual, by providing online reference to specific functions of the software and how to use them. The manual is designed to provide more tutorial information and discuss the various facilities offered by SYSWIN.

Three levels of help are provided in the software: General Help, for dialogs, messages and menus; Quick Reference, for programming reference; Instant Help, providing brief descriptions of commonly used commands.

 = GENERAL HELP

General help is obtained by pressing the **F1** key or by selecting an option from the **Help** menu. This provides descriptive help on SYSWIN menus and dialogs, as well as guidance on messages. It can be used at any point in the software, to take you straight to the topic on which you need help. The Help menu can be accessed from the main screen editors, and is best used when you are browsing for help on the use of SYSWIN.

 +  = QUICK REFERENCE

Detailed help on programming elements - functions, timers and counters, editing and function selection dialogs - can be obtained by pressing **Ctrl+F1** while the desired element is highlighted. This is termed Quick Reference, since it displays a summary of the necessary programming information for any specific item.

If there is not a valid instruction highlighted then Quick Reference starts up on the contents page and allows you to click on any item to have help information displayed.

In the Statement List Editor **Ctrl+F1** can also be used in the same way if you place the cursor over an instruction.

1 GETTING STARTED WITH SYSWIN

When the bubble help facility (see the Configuring the Environment chapter) is switched on, a brief description of each button is displayed when the cursor is positioned over it for a few seconds.

Status Bar

There is a general status bar at the bottom of the SYSWIN screen. This provides several helpful pieces of information while programming:

<i>Instant Help</i>	A brief message appears in the Status Bar as menu commands and buttons are selected. This field normally shows the current block and network information.
<i>Step Number</i>	This is the step number of the first instruction in the network.
<i>Cursor position</i>	The point in the ladder program where the cursor is currently located.
<i>Online Edit status</i>	The online status.
<i>PLC mode</i>	When connected to a PLC, this shows the current PLC mode. Connection errors are also displayed here.
<i>PLC scan time</i>	This field is only shown when the PLC monitoring is active, and indicates the scan time for the currently executing program.

The SYSWIN status bar can be enabled and disabled with the **Preferences|Window** dialog.

1 GETTING STARTED WITH SYSWIN
