

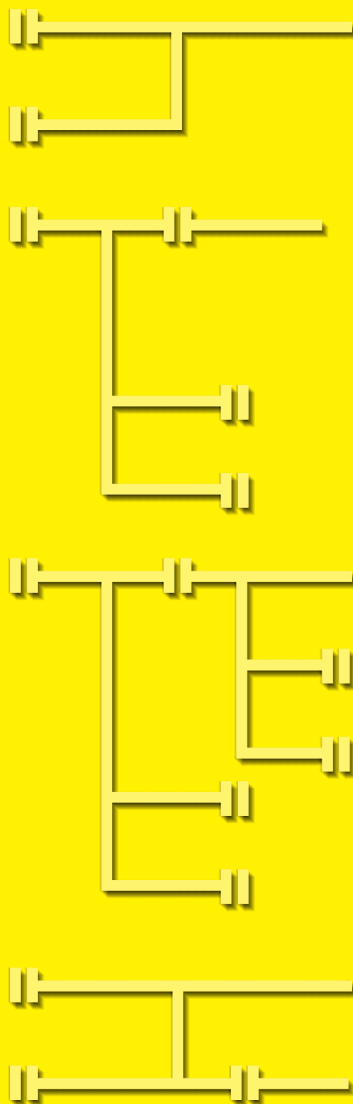
ZEN Support Software

OPERATION MANUAL



Cat.No.W386-E1-1

ZEN Support Software




ZEN-SOFT01 ZEN Support Software Operation Manual


Produced March 2001


Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

 **DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

 **Caution** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

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All OMRON products are capitalized in this manual. The word “Unit” is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

Note Indicates information of particular interest for efficient and convenient operation of the product.

1,2,3... 1. Indicates lists of one sort or another, such as procedures, check-lists, etc.

Precaution Indicates precautionary information that should be heeded in using the ZEN.

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About this Manual:

This manual describes the installation and operation of the ZEN-SOFT01 ZEN Support Software and includes the sections described below.

Please read this manual carefully and be sure you understand the information provided before attempting to install or operate the ZEN Support Software. Be sure to read the precautions provided in the following section.

Precautions provides general precautions for using the ZEN Support Software and related devices.

Section 1 describes how to install and start the ZEN Support Software. The screen configuration is also explained, along with the submenus for the Menu Bar, Toolbar, and Status Bar

Section 2 describes how to create, save, edit, and print ladder programs

Section 3 describes how to connect to the ZEN and how to transfer programs between the ZEN and the ZEN Support Software

Section 4 describes ZEN system settings, how to set passwords to protect ZEN ladder programs, and how to clear the ZEN memory

Section 5 describes errors that may occur while using the ZEN Support Software and possible countermeasures.

The following two manuals are provided for the ZEN Programmable Relays. Refer to them as required in operation.

Manual	Contents	Cat. No.
ZEN Programmable Relays Operation Manual	ZEN specifications, functions, and operating methods.	W385
ZEN Support Software Operation Manual	Installation and operating procedures for the ZEN Support Software	W386

Note On the ZEN Support Software displays bits in ZEN memory are called “relays,” program input bits are called “contacts,” and program output bits are called “coils.”



WARNING Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.

PRECAUTIONS

This section provides general precautions for using the ZEN Support Software for the ZEN Programmable Relays.

The information contained in this section is important for the safe and reliable application of the ZEN. You must read this section and understand the information contained before attempting to set up or operate a ZEN.

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1 Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of installing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of managing FA systems and facilities.


2 General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.


Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.

Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

This manual provides information for installing and operating OMRON Motion Control Units. Be sure to read this manual before operation and keep this manual close at hand for reference during operation.

 **WARNING** It is extremely important that a PC and all PC Units be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. You must consult with your OMRON representative before applying a PC system to the above mentioned applications.

3 Safety Precautions

 **WARNING** Always confirm the safety of the controlled system before transferring programs to the ZEN or before manipulating the status of bits in ZEN memory. Unexpected system response may result, possibly causing injury.

4 Application Precautions

Observe the following precautions when using the ZEN Support Software.

- Observe the following precautions before starting the ZEN Support Software
 - Close all software programs not related to the ZEN Support Software. It is particularly important to close all programs that start periodically or intermittently, such as screen savers, virus checkers, email and other communications programs, and schedulers.
 - Do not share hard disks, printers, or other devices with other network computers while running the ZEN Support Software.
 - Some notebook computers set the RS-232C port to modem or infrared application by default. Change the settings according to the operating instructions for your computer so that the RS-232C port can be used as a normal serial communications port.
 - Some notebook computers set the RS-232C port to not supply power (5 V) to the port to save energy by default. Change the settings according to the operating instructions for your computer to provide power to the port. (There are Windows settings and also possibly settings for computer-specific utilities or BIOS settings to save power.)
- Confirm that no adverse effect will occur in the system before attempting any of the following. Not doing so may result in an unexpected operation.
 - Changing the operating mode.
 - Setting and resetting bits in memory.
 - Changing bit status or parameter settings.
- Check the user program for proper execution before actually transferring it to or running it on the Unit. Not checking the program may result in an unexpected operation.

SECTION 1

Installation and Startup

This section describes how to install and start the ZEN Support Software. The screen configuration is also explained, along with the submenus for the Menu Bar, Toolbar, and Status Bar.

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1-1 Product Contents

Check that the package for the ZEN Support Software (ZEN-SOFT01) contains one CD-ROM setup disk.



1-2 Compatible Computers

The ZEN Support Software can be used on the computers specified in the following table.

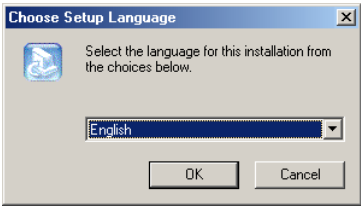
Item	Conditions
Operating system	Windows 95, 98, ME, 2000, or NT4.0 Service Pack 3
CPU	Pentium 133 MHz or better Pentium 200 MHz or better recommended.
Memory	64 Mbytes or more
HDD	40 Mbytes or more of available disk capacity
CD-ROM drive	Required.
Communications	1 serial port (COM port)
Keyboard and mouse	Required.
Monitor	800 x 600 dots (SVGA) min., 256 colors min.

1-3 Setup

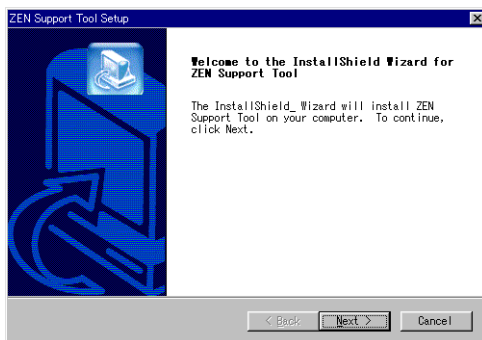
1-3-1 Installation

- 1,2,3...
1.

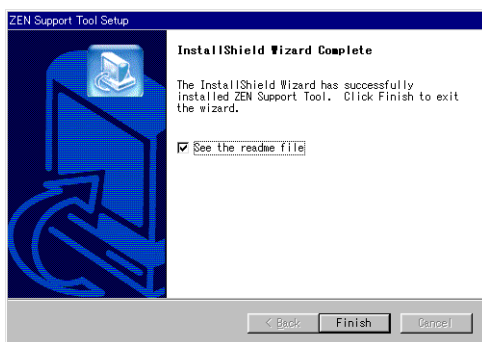
Insert the Setup Disk in the CD-ROM drive of the computer. After a short while the Language Selection Screen will be displayed. Click the **OK** Button.



- Note** If the Language Selection Screen is not displayed when the CD-ROM is inserted, go to *My Computer*, open the *Setup Disk (CD-ROM)* icon, and double-click the *Setup.exe* file.
2. The Setup Screen will be displayed. Check the details, enter the required information, and click the **Next** Button.



3. When the setup operation has been completed, the following screen will be displayed. Click the **Finish** Button.



1-3-2 Uninstalling the ZEN Support Software

Use the following procedure to uninstall the ZEN Support Software from a computer.

- 1,2,3...**
1. Select **Settings/Control panel** from the Windows Start Menu.
 2. Select **Add or delete applications** from the Windows Control Panel and then select and delete **OMRON ZEN Support Software**.

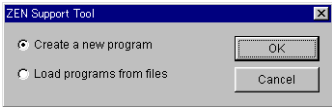
1-4 Starting and Quitting

This section explains the procedure for starting and quitting the ZEN Support Software.

- 1,2,3...
1.

Select **Program/Omron/ZEN Support Software/ZEN Support Software** from the Windows Start Menu.
2.

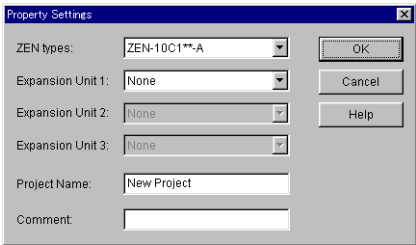
The following screen will be displayed. Select **Create a new program** and click the **OK** Button.



Note Click **Load programs from files** and double-click the **OK** Button to open existing ladder programs when starting up the ZEN Support Software. Refer to 2-3-2 *Opening Saved Files* for the rest of the procedure for opening existing ladder programs.

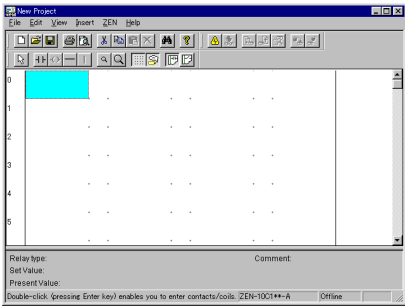
3.

The Property Settings Screen will be displayed. Enter the ZEN model and configuration (i.e., whether or not Expansion I/O Units are connected), the project name, and a comment and press the **OK** Button.



4.

The ZEN Support Software will start.

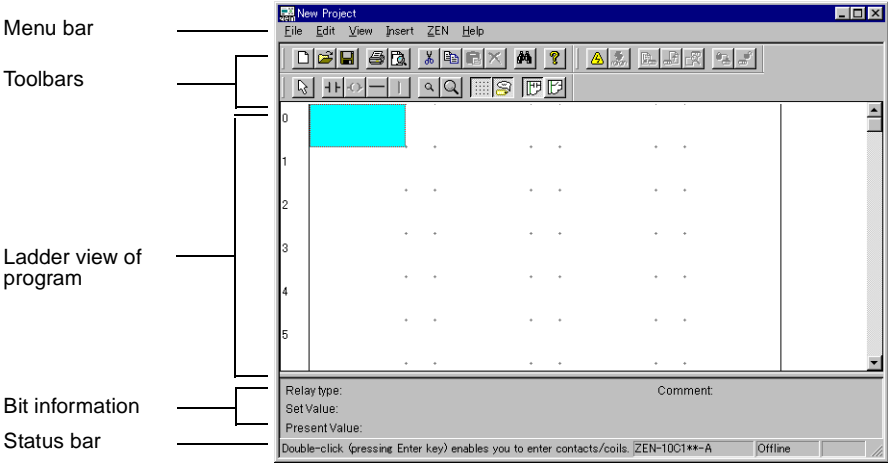


5.

Select **File/Exit** from the Menu Bar to close the ZEN Support Software.

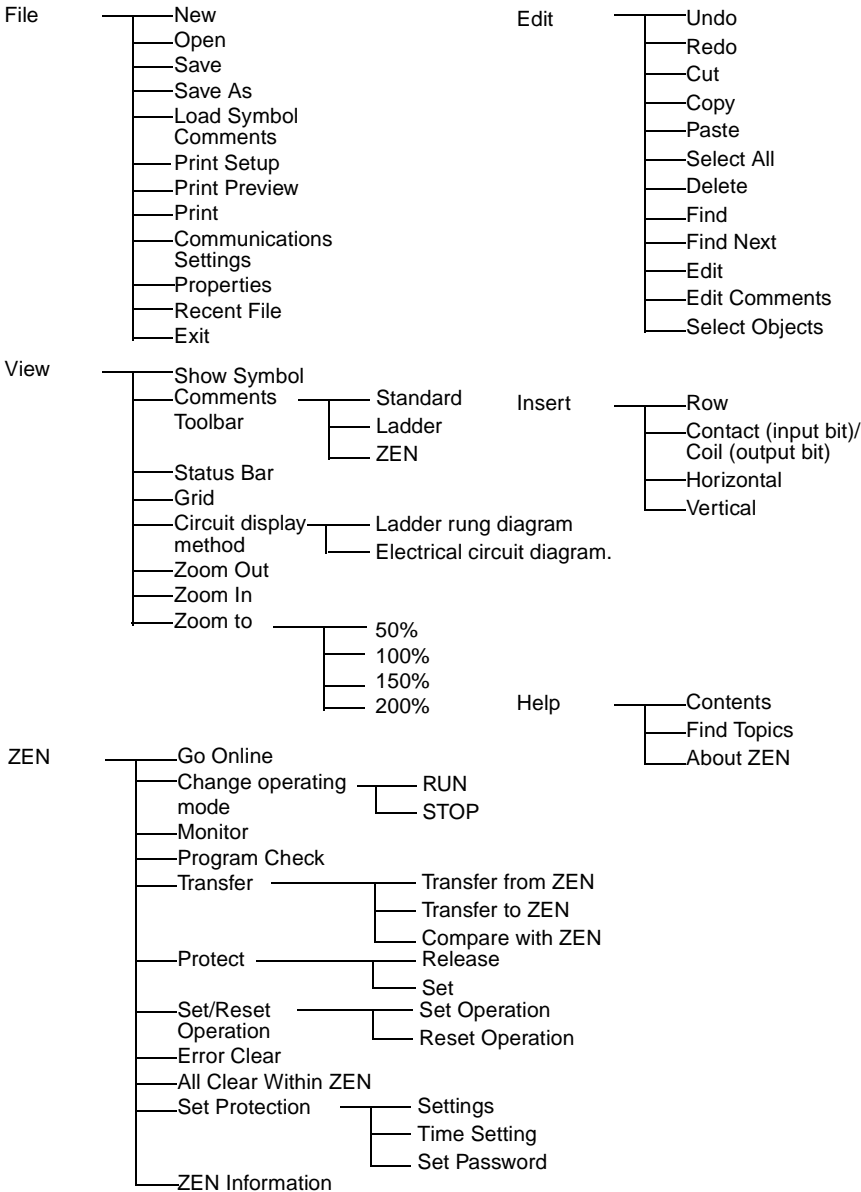
1-5 Screen Configuration

This section describes the screen configuration of the ZEN Support Software.



Note On the ZEN Support Software displays bits in ZEN memory are called “relays,” program input bits are called “contacts,” and program output bits are called “coils.”

Menu Bar The Menu Bar functions are listed in the following menu tree.



Note On the ZEN Support Software displays bits in ZEN memory are called “relays,” program input bits are called “contacts,” and program output bits are called “coils.”

Toolbars

The following shortcut keys can be used from the Toolbars. Select **View/Toolbar** from the Menu Bar to display or not display the Toolbars.

Standard

- New
- Open
- Save
- Print
- Print Preview
- Cut
- Copy
- Paste
- Delete
- Find
- About ZEN

Ladder

- Select objects
- Insert Contact (input)
- Insert Coil (output)
- Insert Horizontal
- Insert Vertical
- Zoom Out
- Zoom In
- Show Grid
- Show Comments
- Ladder rung diagram
- Electrical circuit diagram

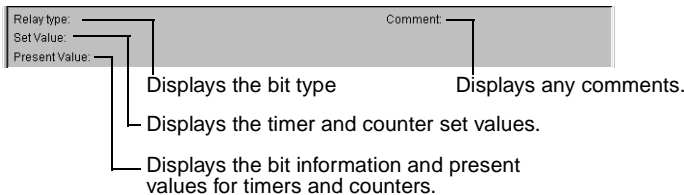
ZEN

- Go Online
- Toggle Monitoring
- Transfer to ZEN
- Transfer from ZEN
- Compare with ZEN
- Set Protection
- Release Protection

Note On the ZEN Support Software displays bits in ZEN memory are called “relays,” program input bits are called “contacts,” and program output bits are called “coils.”

Bit Information

Information on bits is displayed in the Bit Information Area.



Status Bar The Status Bar displays information on the model of the connected ZEN, the connection status, operating status, and comments.



1	Connected ZEN model	Displays the model of the ZEN selected at startup.
2	Connection status	Indicates online or offline status.
3	Operating status	Indicates RUN or STOP (displayed only when online).
4	Comments	Displays operation explanations and online errors.

SECTION 2

Creating Ladder Programs

This section describes how to create, save, edit, and print ladder programs.

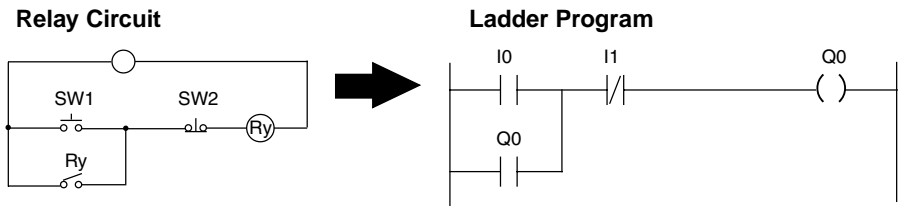
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2-1 Circuit Diagrams and Ladder Programs

In preparation for creating ladder programs, this section describes the relationship between relay circuits and ladder programs.

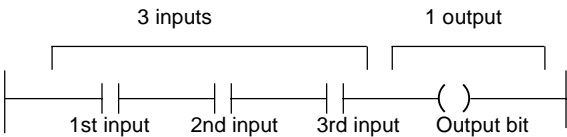
2-1-1 Ladder Programs

The ZEN uses ladder programs that appear like relay circuit diagrams.

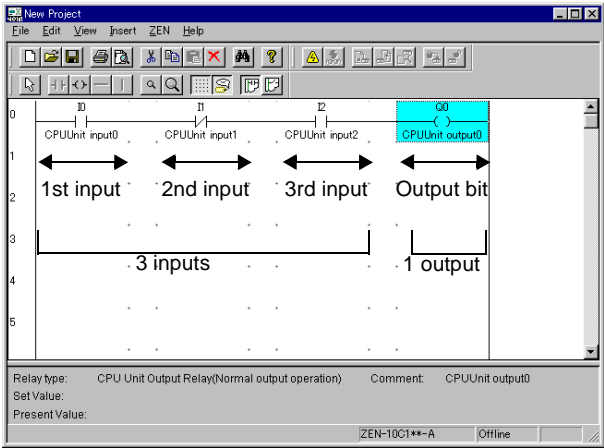


2-1-2 Basic Configuration of ZEN Ladder Programs

The ZEN can execute up to 96 lines of programming, with 3 inputs and 1 output per line. Outputs can be specified at the right ends of lines only. Inputs cannot be specified after outputs.



The ladder program inputs and outputs are displayed on the ZEN Support Software screen as shown below.



Note On the ZEN Support Software displays bits in ZEN memory are called “relays,” program input bits are called “contacts,” and program output bits are called “coils.”

2-1-3 I/O Bits

The I/O bits shown in the following table can be used in ZEN ladder programs.

Symbol	Name	Bit number (See note 1.)	Usable as input condition (See note 2.)	Usable as output	Function
I	CPU Unit input bits	0 to 5	Yes	No	Correspond to CPU Unit and Expansion I/O Unit input terminals.
X	Expansion I/O Unit input bits	0 to b (See note 3.)	Yes	No	
B	Button switches	0 to 7	Yes	No	
A	Analog comparator bits (See note 4.)	0 to 3	Yes	No	Function: Compares (\geq , \leq) I4 and I5, I4 and set value, and I5 and set value. Set value: 0.0 to 10.5 (3-digit decimal)
P	Timer/counter comparator bits	0 to f	Yes	No	Compares timer/counter present values and timer/counter present values and settings.
@	Weekly timers (See note 5.)	0 to 7	Yes	No	Settings: Turns ON/OFF between specified days and times.
*	Calendar timers (See note 5.)	0 to 7	Yes	No	Settings: Turns ON/OFF between specified dates.
Q	CPU Unit output bits	0 to 3	Yes	Yes	Q and Y correspond to CPU Unit and Expansion I/O Unit output terminals. Function: Can specify Normal output (I), Set (S), Reset (R), or Alternate (A) operation.
Y	Expansion I/O Unit output bits	0 to b (See note 3.)	Yes	Yes	
M	Work bits	0 to f	Yes	Yes	
H	Holding bits (See note 6.)	0 to f	Yes	Yes	

Symbol	Name	Bit number (See note 1.)	Usable as input condition (See note 2.)	Usable as output	Function
T	Timers	0 to 7	Yes	Yes	Function: Can specify ON delay (X), OFF delay (■), Oneshot pulse (O), or Flashing pulse (F). Settings: 00 s 010 ms to 99 s 990 ms 00 min 01 s to 99 min 59 s 00 h 01 min to 99 h 59 min
#	Holding timers (See note 6.)	0 to 3	Yes	Yes	
C	Counters	0 to 7	Yes	Yes	Function: Incremental or decremental counting. Settings: 0001 to 9999 (4-digit decimal)
D	Display bits	0 to 7	No	Yes	Function: Displays character strings, date, time, timer present value, counter present value, or analog conversion value on CPU Unit LCD display.

- Note
1.

Bit numbers are specified in hexadecimal (0,1,2,3.... 9, a, b,...e, f).
2.

Bits used as input conditions can be used as normally open or normally closed conditions.
3.

The bit numbers that can be used depend on the Expansion I/O Unit connection configuration.
4.

Analog comparator bits can be used for CPU Units with DC power supplied (ZEN10C1DR-D and ZEN10C2DR-D).
5.

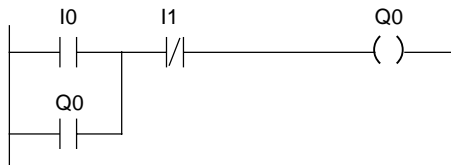
Weekly and calendar timers can be used with CPU Units that ave calendar and clock functions (ZEN-10C1AR and ZEN-10C1DR-D).
6.

If the power supply is turned OFF, holding timers will hold the ON/OFF status and present values prior to the power supply being turned OFF.

2-2 Inputting Ladder Programs

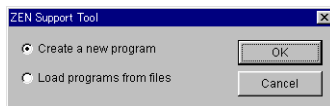
This section describes how to input the following simple program using the ZEN Support Software.

Example Ladder Program



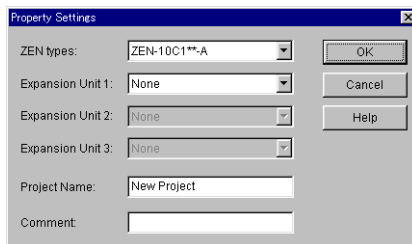
1,2,3...

1. If the ZEN Support Software has not been started, select **Programs/Omron/ZEN Support Software/ZEN Support Software** from the Windows Start Menu. Select **Create a new program** and press the **OK** Button.

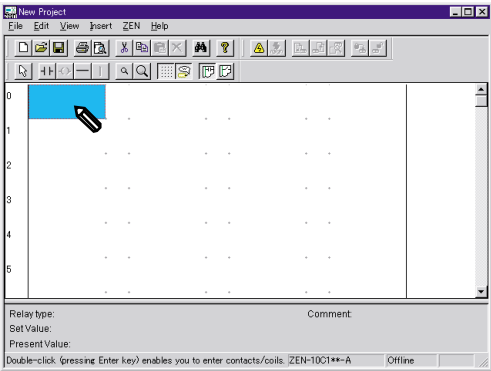


If the ZEN Support Software has already been started, click the **New** Button on the Toolbar. Alternatively, select **File/New** from the Menu Bar.

2. The Property Settings Screen will be displayed. Enter the ZEN model, configuration (i.e., Expansion I/O Units), project name, and comment, and then click the **OK** Button.

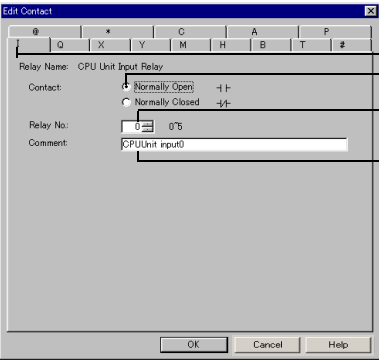


3. An empty screen in ladder-view format will be displayed. Double-click the mouse on the position for the first input condition.



Note Input positions for input and output bits can be set by using the mouse or cursor keys to move to the input or output position and then 1) pressing the **Enter** Key, 2) double-clicking, 3) clicking the **Insert Input** or **Insert Output** Button on the Toolbar, 4) selecting **Insert-Contact/Coil** from the Menu Bar, 5) selecting **Edit/Edit** from the Menu Bar, or 6) clicking the right mouse button and selecting **Edit**.

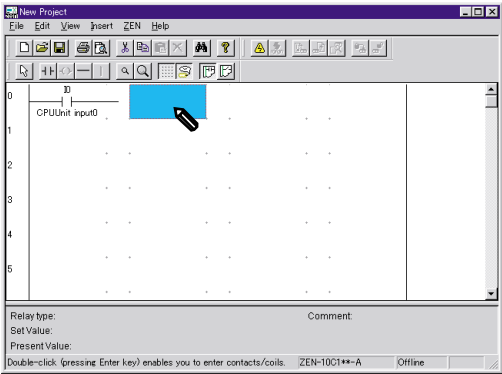
- 4. The Edit Input Dialog Box will be displayed. Specify the bit type, type of input, and bit number, and enter a comment if required.



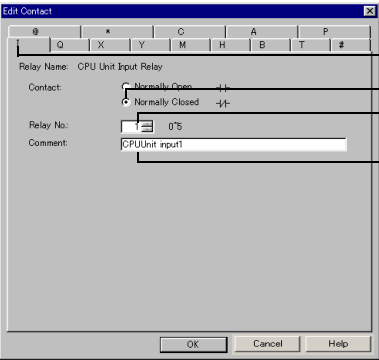
Bit name: I
Input: Normally open
Bit number: 0
Comment: CPU Unit input bit 0

Note Parameter settings are also specified for timers and counters.

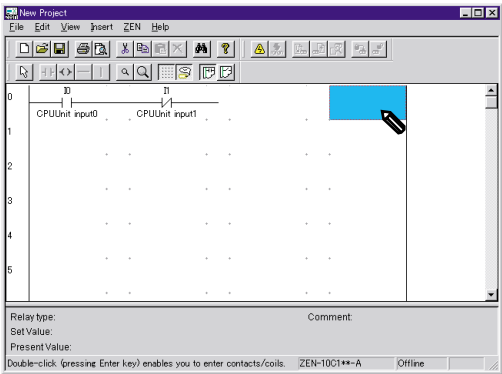
- 5. Double-click the mouse on the next input position.



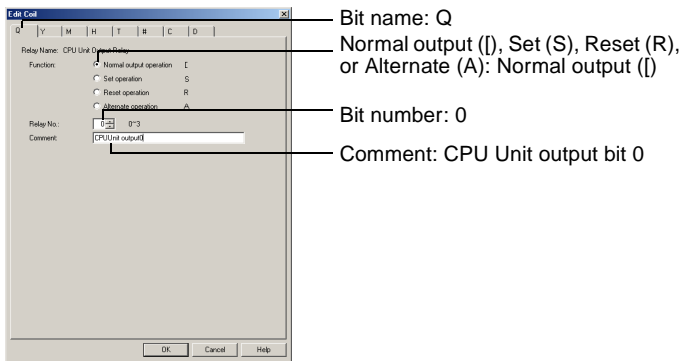
6. The Edit Input Dialog Box will be displayed again. Specify the bit type, type of input, bit number, and enter a comment if required, just as you did in step 4.



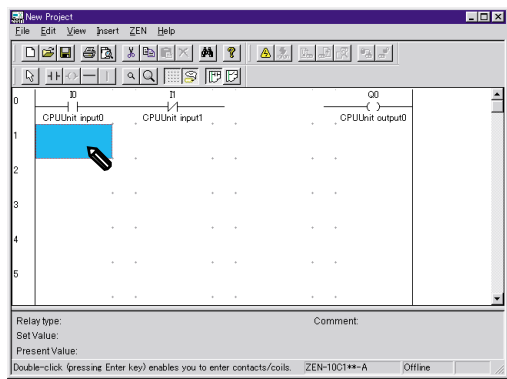
7. Move the mouse to the output bit position and double-click the mouse.



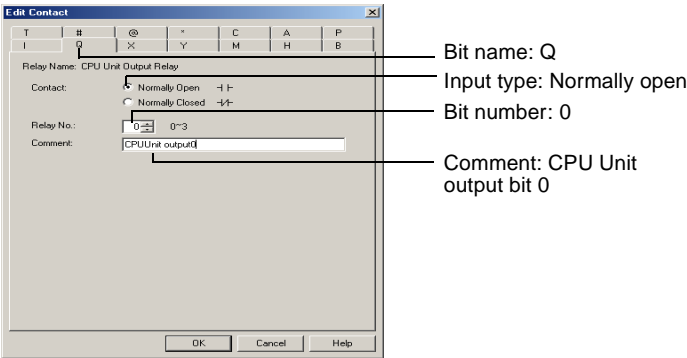
8. The Edit Output Dialog Box will be displayed. Specify the bit type, function, and bit number, and enter a comment if required.



9. Move the mouse to the input position on the next line and double-click.

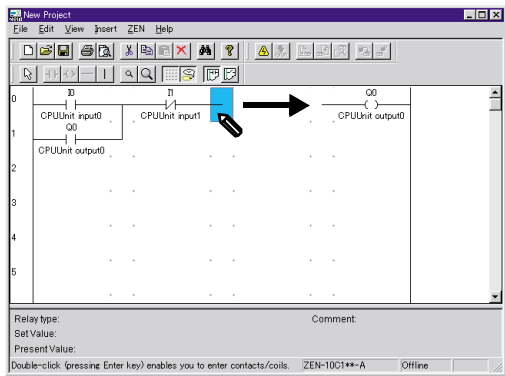
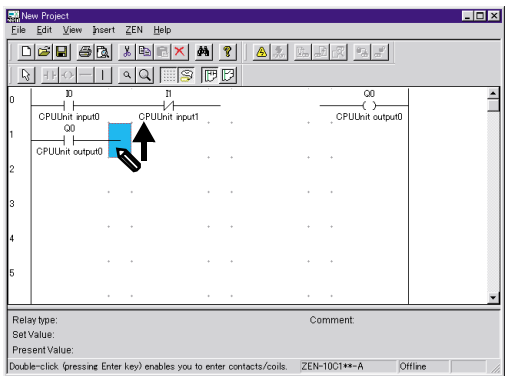


10. The Edit Input Dialog Box will be displayed. Specify the bit type, type of input, and bit number, and enter a comment if required, just as you did in step 4.



Note The comment will be automatically displayed for bit types and bit numbers that have comments.

11. Drag the mouse vertically to draw a connection line.

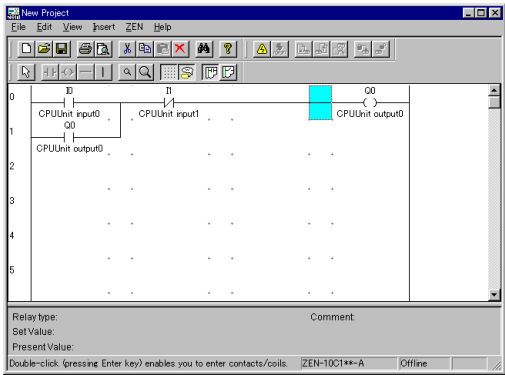


Note a) Vertical connection lines can also be drawn by 1) using the mouse or Cursor Keys to move to the connection line

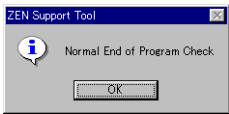
position and pressing the | Key, 2) clicking the **Insert Vertical** Button on the Toolbar, or 3) selecting **Insert/Vertical** from the Menu Bar. The vertical line will be drawn down from the cursor position.

- b) Horizontal connection lines can be drawn by using the mouse or Cursor Keys to move to the connection line position and pressing the - Key, clicking the **Insert Horizontal** Button on the Toolbar, or selecting **Insert/Horizontal** from the Menu Bar.

The ladder program has now been completed.



- 12. Select **ZEN/Program Check** from the Menu Bar and check the program. The following dialog box will be displayed if the program check was completed without finding any errors.



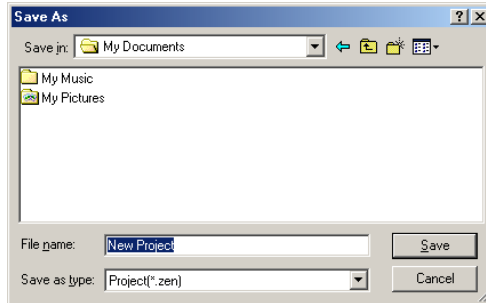
Note Refer to 5-2 Program Check Errors for information on any error messages that may appear during the program check.

2-3 Saving Ladder Programs

This section describes how to save ladder programs to file.

2-3-1 Saving to File

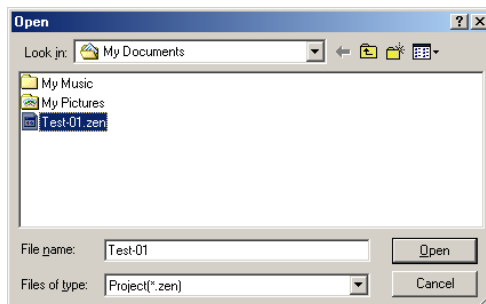
- 1,2,3...**
1. Select **File/Save As** from the Menu Bar.
 2. The Save As Dialog Box will be displayed. Enter the save destination and file name and click the **Save** Button.



- Note**
1. When saving existing ladder programs that have been edited since they were saved, you can also click the **Save** Button on the Toolbar or select **File/Save** from the Menu Bar to overwrite the existing file.
 2. The system settings and password set under **ZEN/Set Protection** will also be saved with the file.

2-3-2 Opening Saved Files

- 1,2,3...**
1. Click the **Open** Button on the Toolbar or select **File/Open** from the Menu Bar to open saved files.
 2. The Open File Dialog Box will be displayed. Specify the file location and file name and click the **Open** Button.



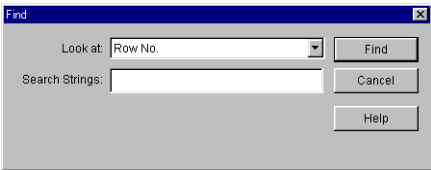
2-4 Editing Ladder Programs

This section describes how to edit existing ladder programs.

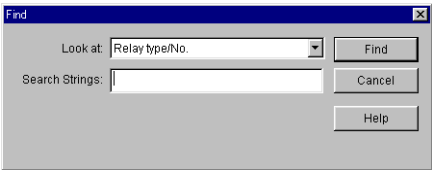
2-4-1 Searching for Inputs and Outputs

Click the **Find** Button on the Toolbar or select **Edit/Find** from the Menu Bar.

Finding by Row Number



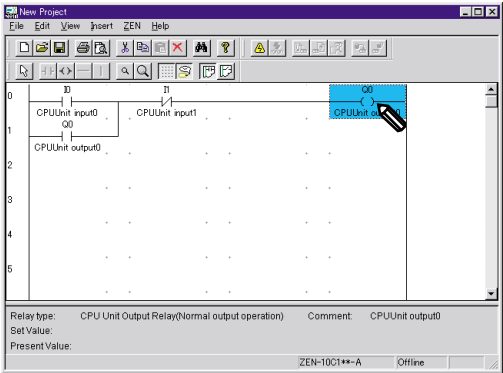
Finding by Bit Type or Bit Number



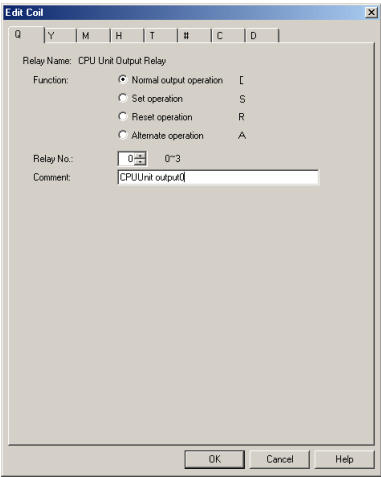
2-4-2 Changing Inputs, Outputs, and Settings

Input positions for input and output bits can be changed by using the mouse or cursor keys to move to the input or output position and then 1) pressing the **Enter** Key, 2) double-clicking, 3) clicking the **Insert Input** or **Insert Output** Button on the Toolbar, 4) selecting **Insert-Contact/Coil** from the Menu Bar, 5) selecting **Edit/Edit** from the Menu Bar, or 6) clicking the right mouse button and selecting **Edit**.

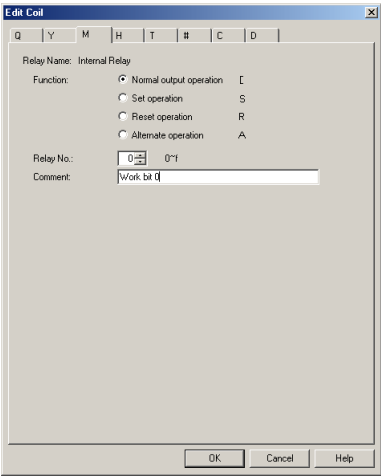
- 1,2,3... 1. For this example, double-click built-in output Q0.



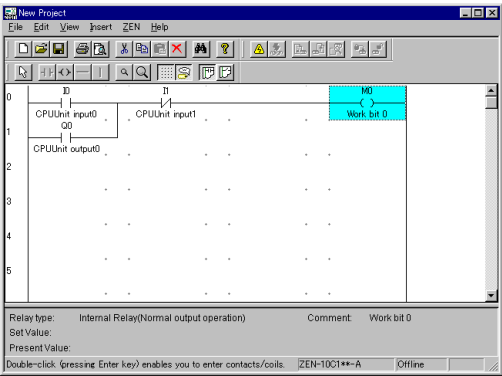
2. The Edit Output Dialog Box will be displayed.



3. Change the bit type in the Edit Output Dialog Box from Q to M (holding bit), specify the function and bit number, and enter a comment if necessary.



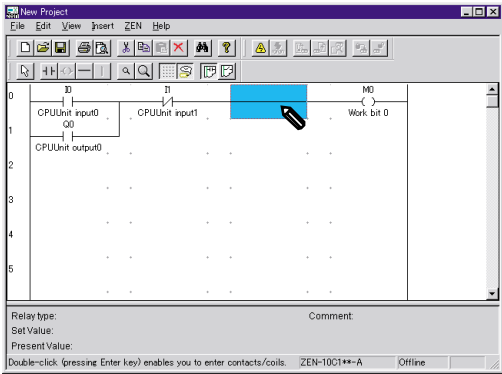
The output change has now been completed.



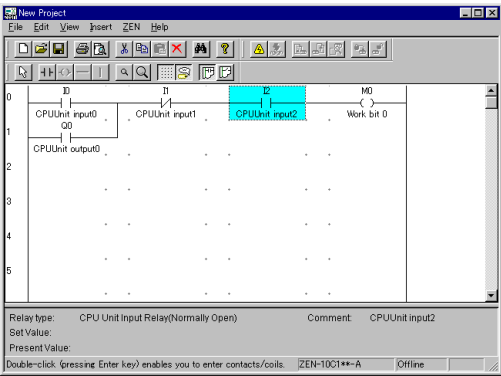
2-4-3 Inserting Inputs

Input positions for input and output bits can be inserted by using the mouse or cursor keys to move to the input or output position and then 1) pressing the **Enter** Key, 2) double-clicking, 3) clicking the **Insert Input** Button on the Toolbar, 4) selecting **Insert-Contact/Coil** from the Menu Bar, 5) selecting **Edit/Edit** from the Menu Bar, or 6) clicking the right mouse button and selecting **Edit**.

- 1,2,3... 1. Double-click the ladder program connection line.



2. Use the Edit Input Dialog Box to insert a input at the connection line.



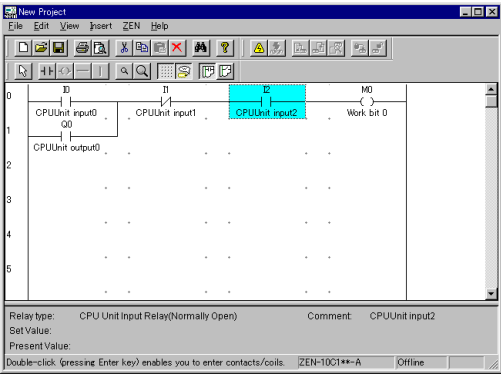
2-4-4 Deleting Inputs and Outputs

Use the mouse or Cursor Keys to move to the input or output bit to be deleted and click the **Delete** Button on the Toolbar. Alternatively, select **Edit/Delete** from the Menu Bar or press the **Del** Key on the keyboard.

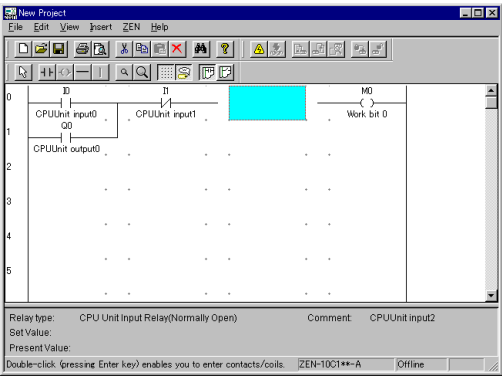
- 1,2,3...
1.

Move the cursor to the input.
2.

Click the **Delete** Button on the Toolbar.



The input will be deleted.



Note All inputs and outputs within a specified area can be deleted at once if the method to specify an area outlined under 2-4-6 *Cutting, Copying, and Pasting* is used.

2-4-5 **Editing Connection Lines**

Use one of the following operations to delete connection lines.

- 1,2,3...
1.

Drag the mouse along the existing line. (“Drag” means to move the mouse while holding down the mouse button.)
2.

Use the mouse or Cursor Keys to move to the connection line and 1) click the **Delete** Button on the Toolbar, 2) select **Edit/Delete** from the Menu Bar, or 3) press the **Del** Key on the keyboard.

Use one of the following operations to create new connection lines.

- 1,2,3...
1.

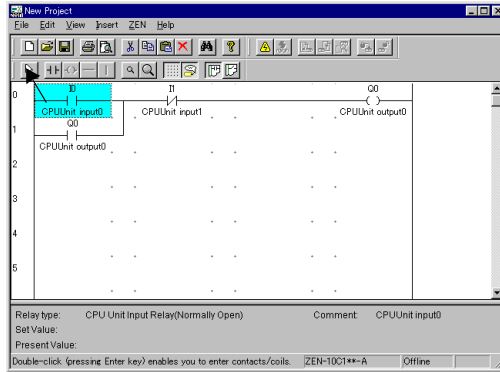
Drag the mouse from the desired position to create a new line. (“Drag” means to move the mouse while holding down the mouse button.)
2.

Use the mouse or Cursor Keys to move to the desired position for the connection line and 1) click the **Insert Horizontal** or **Insert Vertical** Button on the Toolbar, 2) select **Insert/Horizontal** or **Insert/Vertical** from the Menu Bar, or 3) press the **-** or **I** Key on the keyboard.

2-4-6 Cutting, Copying, and Pasting

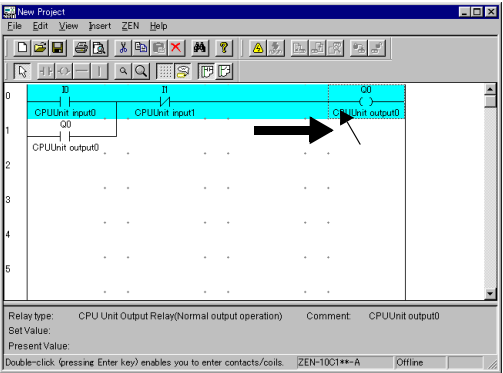
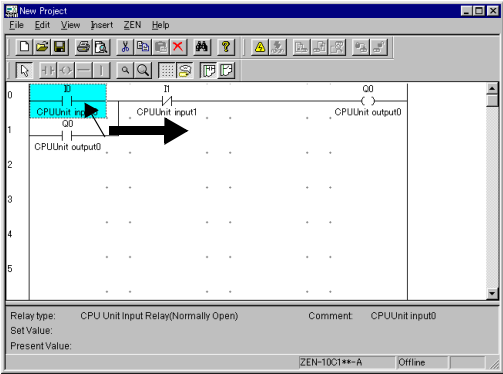
Inputs and outputs within a specified range can be easily copied and moved if the cut, copy, or paste functions are used.

- 1,2,3...**
1. Click the **Select objects** Button on the Toolbar or select **Edit/Select Objects** from the Menu Bar.



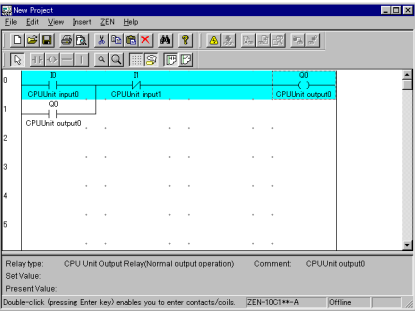
Note Normal program editing, such as entering or inserting inputs and outputs, cannot be performed after the Select Objects Button has been pressed. To return to normal program edit mode, click the **Select Objects** Button again or press the **Esc** Key.

2. Drag the mouse from the start of the range to the end of the range. ("Drag" means to move the mouse while holding down the mouse button.)

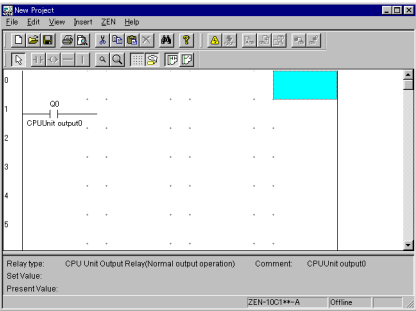


3. To copy, click the **Copy** Button on the Toolbar or select **Edit/Copy** from the Menu Bar to copy the specified range.
To move, click the **Cut** Button on the Toolbar or select **Edit/Cut** from the Menu Bar to move the specified range.

When Copying

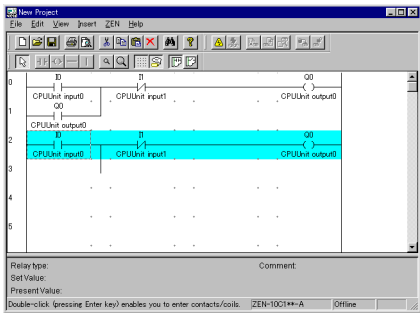


When Moving

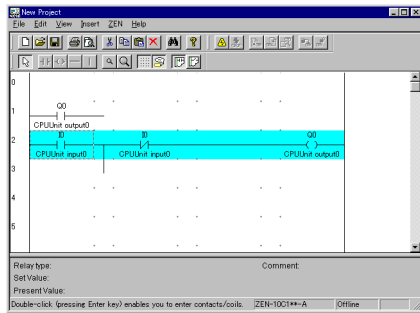


- 4. Move the mouse to the paste position and click the **Paste** Button on the Toolbar or select **Edit/Paste** from the Menu Bar.

When Copying



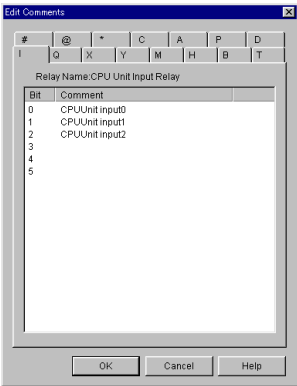
When Moving



2-5 Editing Comments

The comment edit function is used to display or edit all I/O comments by bit type.

- 1,2,3...
- 1. Select **Edit/Edit Comments** from the Menu Bar.
 - 2. Edit the comment in the Edit Comment Screen.



Note

- 1. Programs are easier to understand and manage if actual I/O device names or names relating to functions are used in the I/O comments.
- 2. Click the **Show Comments** Button on the Toolbar or select **View/Show Symbol Comments** from the Menu Bar to display or not display the I/O comments in ladder view on the screen.

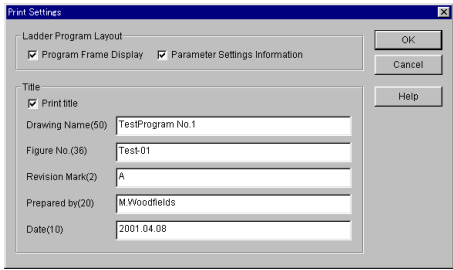
2-6 Printing Ladder Programs

2-6-1 Print Settings

This section describes the layout and heading settings that must be made before printing ladder programs.

1,2,3...

1. Select **File/Print Setup** from the Menu Bar.
2. The Print Settings Dialog Box will be displayed. Make the settings for each item.



Setting	Explanation
Program frame display	Check this box to print the print frame.
Parameter settings information	Check this box to print the timer, counter, and other parameter settings.
Print title	Check this box to print the title.
Drawing name	Enter the drawing name.
Figure No.	Enter the drawing number.
Revision mark	Enter the revision mark.
Prepared by	Enter the name of the person who wrote the program.
Date	Enter the date the program was written.

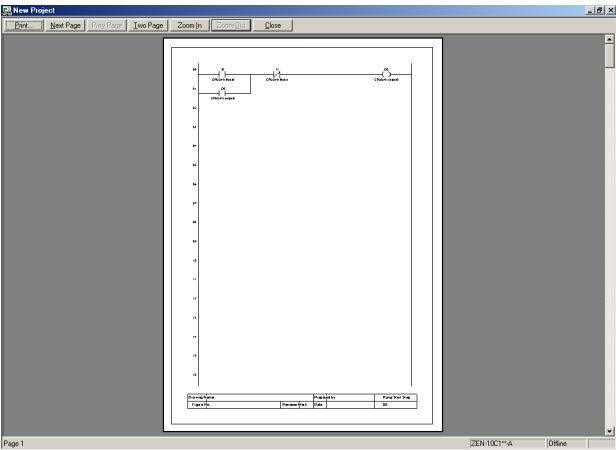
3. Click the **OK** Button to save the settings as the print settings for the ZEN Support Software. Click the **Cancel** Button to discard the settings.

2-6-2 Print Preview

- 1,2,3...
1.

Click the **Print Preview** Button on the Toolbar or select **File/Print Preview** from the Menu Bar to check the print layout.
2.

The Print Preview Screen will be displayed.

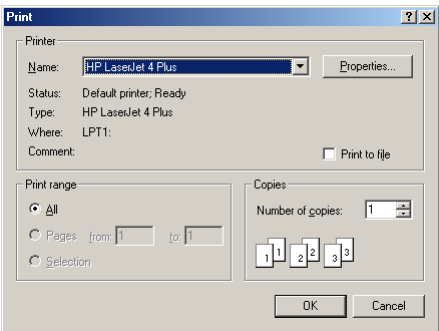


2-6-3 Printing

- 1,2,3...
1.

Click the **Print** Button on the Toolbar or select **File/Print** from the Menu Bar.
2.

The Print Dialog Box will be displayed. Make settings for each item and click the **OK** Button.



SECTION 3

Transferring and Monitoring Programs

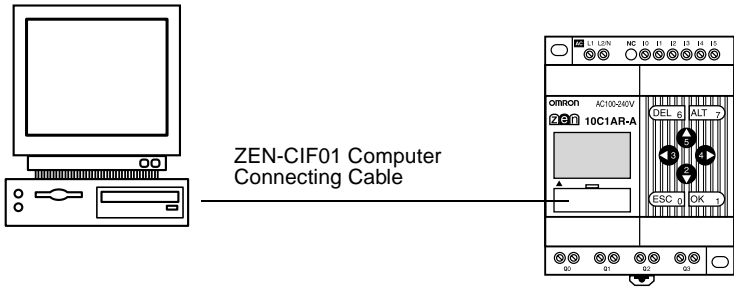
This section describes how to connect to the ZEN and how to transfer programs between the ZEN and the ZEN Support Software.

3-1	Connecting the ZEN and Communications Settings	32
3-1-1	Connecting to the ZEN	32
3-1-2	Communications Settings	33
3-2	Connecting Online	34
3-3	Transferring Programs to the ZEN.	35
3-4	Transferring Programs from the ZEN	36
3-5	Verifying ZEN Programs	37
3-6	Operating and Stopping the ZEN.	38
3-7	Monitoring Programs.	38
3-8	Setting and Resetting Inputs	39
3-9	Clearing Errors.	40

3-1 Connecting the ZEN and Communications Settings

3-1-1 Connecting to the ZEN

Use a ZEN-CIF01 Computer Connecting Cable to connect the ZEN and a serial port (COM port) of the computer.

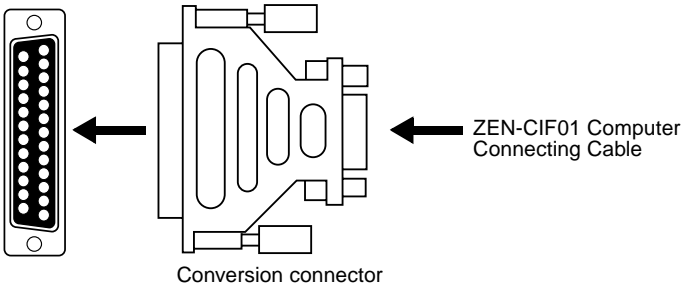


Note The connector on the computer side of the ZEN-CIF01 Computer Connecting Cable is a 9-pin D-sub connector. If the computer has a 25-pin D-sub connector, use a commercially available conversion connector or conversion cable.

For 9-pin D-sub Serial Port Connectors



For 25-pin D-sub Serial Port Connectors



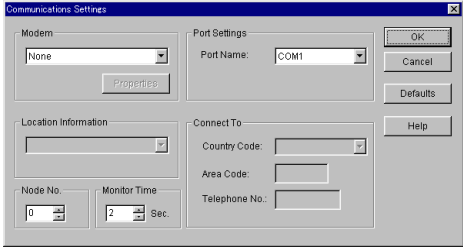
3-1-2 Communications Settings

Communications settings must be made in the ZEN Support Software before commencing communications with the ZEN.

- 1,2,3...
1.

Select **File/Communications Settings** from the Menu Bar.
2.

The Communications Settings Dialog Box will be displayed. Make the settings for each item.



Setting	Details	Default
Modem	Set to "None." The port specified under Port name will be connected to the ZEN.	None
Local information (See note b.)	This is the local information set on the computer.	---
Country code (See note b.)	The connection destination country code.	---
Area code (See note b.)	The connection destination area code.	---
Telephone No. (See note b.)	The connection destination telephone number.	---
Port name	Select either COM1 or COM 2.	COM 1
Node No. (See note a.)	Specify a node number between 0 and 9.	0
Monitor time	Specify the communications monitor time between 0 and 30 s.	2

Note a) Set the same node number as set on the ZEN. Communications cannot be performed if the node numbers are different.

b) Do not make any settings for these items. These settings are for function expansion.

3.
- Click the **OK** Button to save the settings in the project.

Click the **Cancel** Button to discard the settings.

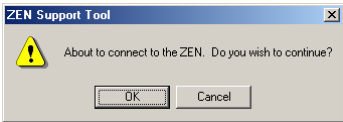
Click the **Defaults** Button to return to the default settings.

3-2 Connecting Online

Check communications with the ZEN before transferring or verifying programs. Connect the ZEN and perform the check operation with the project file open.

1,2,3...

- 1. Select **File/Properties** from the Menu Bar and make the ZEN model and Expansion I/O Units 1 to 3 settings in the Properties Dialog Box to match the system configuration of the ZEN to be connected online.
- 2. Click the **Go Online** Button on the Toolbar or select **ZEN/Go Online** from the Menu Bar. A confirmation dialog box will be displayed. Click the **OK** Button.



- 3. Check that the Status Bar display has changed from *Offline* to *Online*. The background color for the ladder view area will change to gray when the ZEN is online.

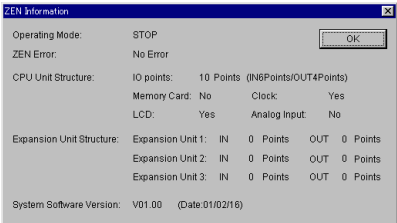


Click the **Go Online** Button on the Toolbar again or select **ZEN/Go Online** from the Menu Bar. The display on the Status Bar will return from *Online* to *Offline* and the Ladder Program Screen will change back to the normal background color.



Note


- a) Ladder programs cannot be edited when online. Always go offline before creating or editing ladder programs.
- b) Select **ZEN/ZEN Information** from the Menu Bar while on-line to obtain information about the connected ZEN.



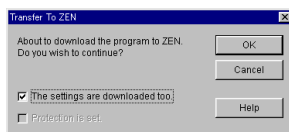
3-3 Transferring Programs to the ZEN

This section describes how to transfer ladder programs created using the ZEN Support Software to the ZEN.

The ZEN must be connected and online and the project file opened before the program transfer operation can be executed.

 **Caution** Check the safety of connected devices before transferring programs to the ZEN. Injuries may occur if programs are transferred carelessly.

- 1,2,3...**
1. Click the **Transfer to ZEN** Button on the Toolbar or select **ZEN/Transfer/Transfer to ZEN** from the Menu Bar. The Transfer to ZEN Dialog Box will be displayed. Click the **OK** Button to transfer the program to the ZEN. Click the **Cancel** Button to cancel the transfer.



Settings Details

- Turn ON *The settings are downloaded too* in the Transfer to ZEN Dialog Box to download the ZEN settings in the ZEN Support Software at the same time.
Refer to 4-1 *ZEN Settings* for information on the various ZEN settings.
- Turn ON *Protection is set* in the Transfer to ZEN Dialog Box if the ZEN is to be protected by the password set in the ZEN Support Software. Leave this check box turned OFF if no password has been set.
Refer to 4-2 *Setting a Password* for information on setting passwords.

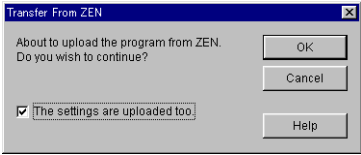
Note Refer to 5-2 *Program Check Errors* for information on error messages that occur during transfer from the computer to the ZEN.

3-4 Transferring Programs from the ZEN

This section describes how to transfer ZEN ladder programs to the ZEN Support Software.

The ZEN must be connected and online and the project file opened before the program transfer operation can be executed.

- 1,2,3...
1. Click the **Transfer From ZEN** Button on the Toolbar or select **ZEN/Transfer/Transfer from ZEN** from the Menu Bar. The Transfer From ZEN Dialog Box will be displayed. Click the **OK** Button to transfer the program from the ZEN. Click the **Cancel** Button to cancel the transfer.



Settings Details

Turn ON *The settings are uploaded too* in the Transfer From ZEN Dialog Box to upload the ZEN settings at the same time.

2. If the transfer from the ZEN to the computer has been completed normally, the set password will be cleared. A confirmation box confirming the clearing of the password will be displayed. If no password had been set, this confirmation box will not be displayed.



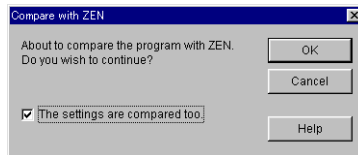
Note Refer to 5-2 *Program Check Errors* for information on error messages that occur during transfer from the ZEN to the computer.

3-5 Verifying ZEN Programs

This section describes how to compare the programs in the ZEN and ZEN Support Software to verify that they are the same.

The ZEN must be connected and online and the project file opened before the program verification operation can be executed.

- 1,2,3...**
1. Click the **Compare with ZEN** Button on the Toolbar or select **ZEN/Transfer/Compare with ZEN** from the Menu Bar. The Compare With ZEN Dialog Box will be displayed. Click the **OK** Button to compare the ZEN and ZEN Support Software programs. Click the **Cancel** Button to cancel the verification.



Settings Details

Turn ON *The settings are compared too* in the Compare With ZEN Dialog Box to compare the ZEN and ZEN Support Software settings at the same time.

2. A confirmation dialog box will be displayed if the verification has been completed normally.

When Programs Are the Same



When Programs Are Different



Note Refer to *5-2 Program Check Errors* for information on error messages that occur during verification.

3-6 Operating and Stopping the ZEN

This section describes how to operate and stop the ZEN from the ZEN Support Software.

The ZEN must be connected and online and the project file opened before these operations can be executed.

- Note
1.

Check that the power supply and input and output circuits are wired correctly before starting operation.

2.

Remove the output wiring before performing operation tests for systems that have loads connected to the output circuit that could cause serious damage to persons or equipment if there is a malfunction.

3.

Always check safety in the vicinity of equipment before turning ON the power or changing operation modes.

- 1,2,3...
1.

Select **ZEN/Change operating mode/RUN** from the Menu Bar.

2.

Check that the Status Bar display changes from *STOP* to *RUN*.



3.

Select **ZEN/Change operating mode/STOP** from the Menu Bar to stop ZEN operation. The Status Bar display will change from *RUN* to *STOP*.



3-7 Monitoring Programs

This section describes how to monitor programs being executed by the ZEN.

The ZEN must be connected and online and the project file opened before the programs can be monitored. The ZEN and ZEN Support Software programs must be the same before programs can be monitored. Use the procedures outlined under 3-3 *Transferring Programs to the ZEN*, 3-4 *Transferring Programs from the ZEN*, and 3-5 *Verifying ZEN Programs* to transfer and verify the programs.

- 1,2,3...
1.

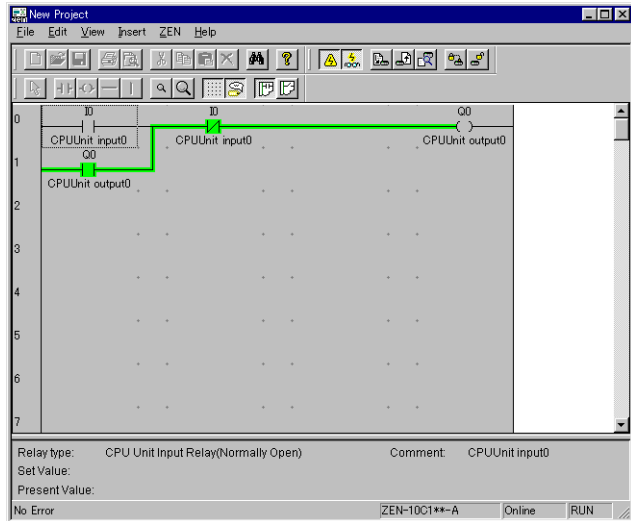
Use the procedure outlined under 3-6 *Operating and Stopping the ZEN* to start ZEN operation. Check that the Status Bar display changes from *STOP* to *RUN*.



2.

Click the **Toggle Monitoring** Button on the Toolbar or select **ZEN/Monitor** from the Menu Bar.

- When you change to MONITOR mode, the flows of ON input conditions in the ZEN ladder program are displayed highlighted in green. Also, present values will be displayed in the bit information for timer and counter inputs.



3-8 Setting and Resetting Inputs

This section describes how to set (turn ON) and reset (turn OFF) ZEN bits from the ZEN Support Software.

The ZEN must be connected and online and the project file opened before inputs can be set or reset. Also, the ZEN and ZEN Support Software programs must be the same before inputs can be set or reset. Use the procedures outlined under *3-3 Transferring Programs to the ZEN*, *3-4 Transferring Programs from the ZEN*, and *3-5 Verifying ZEN Programs* to transfer and verify the programs.

Caution Check that connected devices are safe before changing bit status. Injuries may occur if bit status is changed carelessly.

- 1,2,3... 1. Use the procedure outlined under *3-6 Operating and Stopping the ZEN* to start ZEN operation. Check that the Status Bar display changes from *STOP* to *RUN*.



2. Use the procedure outlined under *3-7 Monitoring Programs* to change to MONITOR mode.

- 3. Use the mouse or Cursor Keys to move to the input to be set or reset and right-click the mouse to select **Set/Reset Operation/ Set operation** or **Set/Reset Operation/Reset operation** or select **ZEN/Set/Reset Operation/Set operation** or **ZEN/Set/Reset Operation/Reset operation** from the Menu Bar.

Note

- a) The set and reset operations cannot be performed for Analog comparator bits (A), Timer/counter comparator bits (P), Weekly timers (@), Calendar timers (*), Timers (T), Holding timers (#), Counters (C), Display (D), or output bits.
- b) The ON/OFF status of input terminals and operation buttons are given priority for CPU Unit input bits (I), Expansion I/O Unit input bits (X), and Button switches (B).

3-9 Clearing Errors

If an error occurs, use the following procedure to clear the error and then remove the cause of the error.

The ZEN must be connected and online for this operation.

1,2,3...

- 1. Select **ZEN/Error Clear** from the Menu Bar to clear the error.
- 2. Repeat this step to clear multiple errors.

Note

- a) Refer to *Section 6 Troubleshooting* in the *ZEN Operation Manual (W385)* for information on ZEN errors.
- b) ZEN errors that occur while online will be displayed in the Status Bar.



Error display

SECTION 4

System Settings

This section describes ZEN system settings, how to set passwords to protect ZEN ladder programs, and how to clear the ZEN memory.

- 4-1 ZEN Settings 42
 - 4-1-1 Settings..... 42
 - 4-1-2 Time Settings 43
- 4-2 Setting a Password 44
- 4-3 Protecting Programs..... 45
 - 4-3-1 Setting Program Protection 45
 - 4-3-2 Removing Program Protection..... 45
- 4-4 Clearing ZEN Memory 46

4-1 ZEN Settings

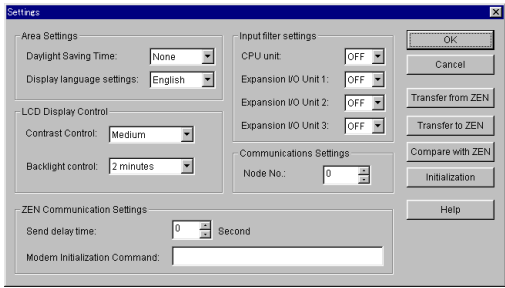
This section describes how to change ZEN settings from the ZEN Support Software.

4-1-1 Settings

- 1,2,3...
1.

Select **ZEN/Set Protection/Settings** from the Menu Bar.
2.

The Settings Dialog Box will be displayed. Make the settings for each item.



Setting		Details	Default
Daylight saving time (See note a.)		None, manually, EU Type, US Type	None
Display language		English, Japanese, German, French, Italian, Spanish	English
Contrast control (See note b.)		Light, Slightly light, Medium, Slightly shaded, Shaded	Medium
Backlight control (See note b.)		2 min, 10 min, 30 min, always	2 min
Input filter	CPU Unit	OFF: No input filter ON: With input filter	OFF
	Expansion I/O Unit 1 (See note c.)		
	Expansion I/O Unit 2 (See note c.)		
	Expansion I/O Unit 3 (See note c.)		
Node No.		Specify a node number between 0 and 9.	0
Send delay time (See note d.)		This is the delay time for sending the initialization command to the modem set on the ZEN side.	0
Modem initialization command (See note d.)		Initialization of the modem connected to the ZEN.	None

- Note
- a) Daylight saving can be used for CPU Units that have built-in calendar and clock functions (ZEN-10C1AR-A and ZEN-10C1DR-D ZENs).
 - b) Contrast and backlight control can be used for LCD-type CPU Units (ZEN-10C1AR-A and ZEN-10C1DR-D).
 - c) Input filters can be set for Expansion I/O Units only when Expansion I/O Units are connected.
 - d) Do not make any setting for send delay time or modem initialization command. These options are for future function expansion.
- 3. Click the **OK** Button to save the settings.
Click the **Cancel** Button to discard the settings.
Click the **Initialization** Button to return to the default settings.
 - 4. Settings can be sent between the ZEN and the ZEN Support Software if the ZEN is connected and online.
Click the **Transfer to ZEN** Button to transfer the settings to the ZEN or the **Transfer from ZEN** Button to transfer the settings from the ZEN to the ZEN Support Software.
Press the **Compare with ZEN** Button to compare the settings on the computer and the ZEN.

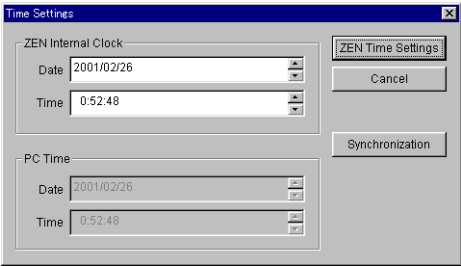
4-1-2 Time Settings

Use the following procedure for ZEN-10C1AR-A and ZEN-10C1DR-D ZEN, which have time functions, to set the date and time.

The ZEN must be connected and online to set the date and time.

1,2,3...

- 1. Select **ZEN/Set Protection/Time Setting** from the Menu Bar.
- 2. The Time Settings Dialog Box will be displayed. Set the date and time for the internal ZEN clock.



Settings		Details
ZEN internal clock	Date	Edit the ZEN date. (Date read from ZEN at start-up or same date as computer)
	Time	Edit the ZEN time. (Time read from ZEN at start-up or same time as computer)

Settings		Details
PC time	Date	Displays the computer date.
	Time	Displays the computer time.

- 3. Click the **OK** Button to send the settings to the ZEN. Click the **Cancel** Button to discard the settings. Click the **Synchronization** Button to use the computer date and time as the ZEN date and time. When the Synchronization Button is clicked, the computer date and time will be shown under the ZEN date and time on the screen, but these settings will not be sent to the ZEN.

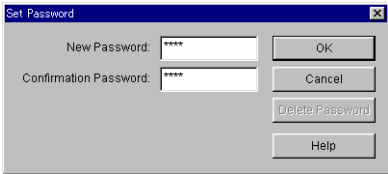
4-2 Setting a Password

This section describes how to set a password for the ZEN Support Software. This password is used to set and clear protection for ZEN programs.

Note Refer to *4-3 Protecting Programs* for information on how to set and clear ZEN program protection.

1,2,3...

- 1. Select **ZEN/Set Protection/Set Password** from the Menu Bar.
- 2. The Set Password Dialog Box will be displayed. Enter the password and confirm the password.



- 3. Click the **OK** Button to set the password as entered. Click the **Cancel** Button to clear the entered password. Click the **Delete Password** Button to delete an existing password.

4-3 Protecting Programs

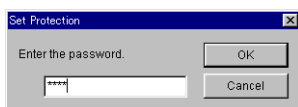
This section describes how to protect ZEN programs from intentional or unintentional alteration by other users. Protected ZEN programs cannot be altered until the protection is removed and the protection can only be removed if the password is input correctly. For these reasons, care must be taken when using program protection.

The ZEN must be connected and online before program protection can be executed.

Note Refer to *4-2 Setting a Password* for information on how to set and change passwords.

4-3-1 Setting Program Protection

- 1,2,3...**
1. Click the **Set Protection** Button on the Toolbar or select **ZEN/Protect/Set** from the Menu Bar. The Set Protection Dialog Box will be displayed.
 2. Enter the 4-digit password set under the password settings.



Once the above procedure has been completed, programs cannot be transferred to or from the ZEN or compared with the ZEN until the protection is removed.

4-3-2 Removing Program Protection

- 1,2,3...**
1. Click the **Release Protection** Button on the Toolbar or select **ZEN/Protect/Release** from the Menu Bar. The Release Protection Dialog Box will be displayed.
 2. Enter the 4-digit password set under the password settings.



Programs can now be transferred to or from the ZEN or compared with the ZEN.

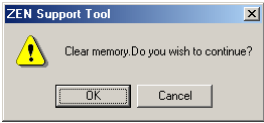
Note Refer to *5-2 Program Check Errors* for information on any error messages that appear during setting or removal of program protection.

4-4 Clearing ZEN Memory

This section describes how to clear ZEN memory from the ZEN Support Software. The ZEN must be connected and online to perform this operation.

ZEN memory data	Status after memory cleared
Ladder programs (including parameter settings information)	Ladder program code is completely cleared. No ladder programming will remain.
Password settings	The password will be cleared and program protection removed.
I/O bits	All inputs will be reset (turned OFF) and holding timer and counter present values cleared to 0.

- 1,2,3...
1. Select **ZEN/All Clear within ZEN** from the Menu Bar.



2. Click the **OK** Button to clear all memory in the ZEN. Click the **Cancel** Button to cancel the all clear operation.

SECTION 5

Troubleshooting

This section describes errors that may occur while using the ZEN Support Software and possible countermeasures.

5-1	Online Errors	48
5-2	Program Check Errors	49
5-3	Protect Setting and Clearing Errors	49

5-1 Online Errors

Error message	Probable cause	Countermeasure
Communications Error has occurred.	No response to a command from the ZEN Support Software. Communications timed out.	Check that the Computer Connecting Cable is connected properly to the ZEN and the computer serial port. Check that the communications settings match the connection configuration of the ZEN.
Failed to connect to ZEN. ZEN type (model) is invalid.	Online connection attempted while the ZEN system configuration and the ZEN model in the ZEN Support Software property settings and Expansion I/O Unit settings are not the same.	Change the ZEN model in the property settings and the Expansion I/O Unit settings to match the system configuration of the ZEN to be connected online.
Operation failed since ZEN is in RUN mode. STOP ZEN running.	Command executed from ZEN Support Software while ZEN in RUN mode.	Change the ZEN to STOP mode and re-execute the command.
Operation failed since ZEN is protected. Release the protection.	Command executed from ZEN Support Software while ZEN protected.	Remove the protection from the ZEN and re-execute the command.
Operation failed since LCD is operating. Restore the main screen of LCD.	Command executed from ZEN Support Software while LCD operations being performed on the ZEN.	Return the LCD operations to the Main Screen and re-execute the command.

5-2 Program Check Errors

Error message	Probable cause	Countermeasure
A bit ("relay") type unsupported by the system is used. Check the ladder program.	Bit type used in ladder program that cannot be used with the system configuration set under property settings.	<p>Revise the system configuration set under property settings or change the bit type that cannot be used.</p> <p>The following bit types cannot be used with the following ZEN models:</p> <p>ZEN-10C2□□-□</p> <p>Weekly timers (@)</p> <p>Calendar timers (*)</p> <p>Display bits (D)</p> <p>ZEN-10C□□□-A:</p> <p>Analog comparator bits (A)</p> <p>Analog comparators (A) cannot be designated for display bits (D).</p> <p>The following bit types cannot be used when no Expansion I/O Units are connected:</p> <p>Expansion I/O Unit input bits (X)</p> <p>Expansion I/O Unit output bits (Y)</p> <p>Also, the bit addresses that can be used depend on the configuration of Expansion I/O Units.</p>
No contact or coil (input or output) is connected, or a connection line is disconnected.	Ladder program input, output, or connection line not connected.	Check the horizontal connections for inputs and outputs and the vertical and horizontal connections for connection lines in ladder programs. Correct any breakages.

5-3 Protect Setting and Clearing Errors

Error message	Probable cause	Countermeasure
No password is set. Set a password, and try again.	The ZEN protect operation has been attempted while no password has been set.	Enter and reconfirm a password under the password settings and re-execute the protect operation.
The password is different.	<p>A different password has been entered to the password set under the password settings or protect settings.</p> <p>The password and the reconfirmation of the password differ or more or less than 4 digits were input as the password.</p>	<p>Re-enter the correct 4 digits set under the password settings or protect settings.</p> <p>Enter the same 4 digits in both the password and password confirmation text boxes.</p>

Revision History

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1	March 2001	Original production

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