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User manual OMRON ZEN-SOFT01-V4
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Cat. No. Z184-E1-04

ZEN-SOFT01-V4

ZEN Support Software

OPERATION MANUAL

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Manual abstract:

No. @@@@@@@@Before using the ZEN, read this manual carefully so that you can use the ZEN correctly. Keep the manual close at hand so that you can refer to it whenever necessary. Notice (1) All rights reserved. No part of this manual may be reprinted or copied without the prior written permission of OMRON. (2) The specifications and other information in this manual are subject to change without notice for product improvement. (3) Considerable care has been taken in the preparation of this manual; however, OMRON assumes no responsibility or liability for any errors or inaccuracies that may appear. In the event that a problem is discovered, please contact one of the OMRON offices or agents listed at the end of the manual, and provide the catalog number shown on the cover of the manual. iv Warranty and Application Considerations Read and Understand this Manual Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

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When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products. DIMENSIONS AND WEIGHTS Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown. PERFORMANCE DATA Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability. ERRORS AND OMISSIONS The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions. Copyright and Copy Permission Copyright and Copy Permission COPYRIGHT AND COPY PERMISSION This document shall not be copied for sales or promotions without permission. This document is protected by copyright and is intended solely for use in conjunction with the product. Please notify us before copying or reproducing this document in any manner, for any other purpose. If copying or transmitting this document to another, please copy or transmit it in its entirety. vii OMRON Product References 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. OMRON, 2003 viii Software License Agreement Note Read this Agreement prior to using the software. This software (hereafter called the "Software") shall be used only after the user (hereafter called the "User" and referring to either individuals or companies) has agreed to the following conditions for usage (hereafter called the "Agreement").

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3. 4. 5. 6. ix Revision History A manual revision code appears as a suffix to the catalog number on the front cover of the manual. Cat. No. Z184-E1-04 Revision code The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version. Revision code 01 02 Date May 2003 August 2005 Original production Modifications and additions for Version 3.
0 of the ZEN system software and Version 4.0 of the ZEN support software. Applicable models: ZEN-10C3@R-@-V2 Modifications and additions for Version 3.0 of the ZEN system software and Version 4.1 of the ZEN support software including the following: Added 8-digit counters, 8-digit comparators, and event relays.
Added twin timers. Added multiple-day operation and pulse-output operation for weekly timers. Added daylight saving time settings for Australia and New Zealand. Added RS-485 communications settings for models with communications. Deleted contrast control settings.
Modified and added to warranty and safety information. Added Vista for operating system of compatible computers. Revised content 03 January 2006 04 December 2008 x 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 provide 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 the ZEN system settings, how to set passwords to protect the ZEN ladder programs, and how to clear the ZEN memory. Section 5 describes the simulation function, which can be used to simulate ladder program execution without downloading the program to the ZEN. Section 6 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 ZEN Programmable Relays Operation Manual ZEN Programmable Relays Communications Manual ZEN Support Software Operation Manual Contents The ZEN specifications, functions, and operating methods. The ZEN-10C4 communications functions and operation. Installation and operating procedures for the ZEN Support Software Cat. No. V1 or Pre-V1 CPU Units V2 CPU Units Z212 Z183 Z211 Z184 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. xi Visual Aids The following headings appear in the left column of the manual to help you locate different types of information. Note 1,2,3..
. Precaution Indicates information of particular interest for efficient and convenient operation of the product. 1. Indicates lists of one sort or another, such as procedures, checklists, etc. Indicates precautionary information that should be heeded in using the ZEN.
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73 xiv 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. 1 2 3 General Precautions . .
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. . . xvii xv General Precautions 1 1 General Precautions The user must operate the product according to the performance specifications described in the operation manual. 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.

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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.

2 Safety Precautions Confirm safety before attempting any of the following operations. · Transferring the user program · Changing the user program · Changing the operating mode of the ZEN · Turning relays ON or OFF Always perform a program check on any program after writing it and before transferring it to the ZEN. Also confirm the operation of the program completely before using it for actual system operation. Always disconnect the output circuits before performing operating tests on systems in which the loads connected to the output circuits can have a serious effect on human life or property if incorrect operation occurs. xvi Application Precautions 3 3 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 computerspecific utilities or BIOS settings to save power.) · Do not turn OFF the power supply to the ZEN or disconnect the connecting cable while the ZEN Support Software is online with the ZEN. The computer may malfunction.
xvii Application Precautions 3 xviii 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. 1-1 Before Operation . . .

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. . 6 1-2 1-3 1-4 1 Before Operation Section 1-1 1-1 1-1-1 Before Operation Product Contents Check that the package for the ZEN Support Software (ZENSOFT01-V4) contains one CD-ROM setup disk. 1-1-2 Compatible Computers The following table shows the computers that support the ZEN Support Software. Item Conditions Windows 98, 98SE, ME, 2000, XP, NT4.
0 Service Pack 3, or Vista Pentium 133 MHz or faster Pentium 200 MHz or faster recommended. 64 Mbytes or more 40 Mbytes or more of available disk capacity Required 1 serial port (COM port) Required 800 x 600 dots (SVGA) min., 256 colors min. Operating system CPU Memory HDD CD-ROM drive Communications Keyboard and mouse Monitor 2 Installing and Uninstalling the ZEN Support Software Section 1-2 1-2 1-2-1 Installing and Uninstalling the ZEN Support Software Installation 1. Insert the Setup Disk in the CD-ROM drive of the computer. After a short while the Language Selection Screen will be displayed. Select the required language and click the Next Button. 1,2,3...

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. · If a previous version of the ZEN Support Software is already installed, a confirmation dialog box for file deletion will appear when the CD-ROM is inserted. Click the OK Button. The previous version will be deleted and the maintenance completion dialog box will be displayed. Click the Finish Button, insert the CD-ROM again, and install the new version of the ZEN Support Software. 2. The Setup Screen will be displayed. Check the details, enter the required information, and click the Next Button. 3 Installing and Uninstalling the ZEN Support Software 3.
Section 1-2 When the setup operation has been completed, the following screen will be displayed. Click the Finish Button. 1-2-2 Uninstalling the ZEN Support Software Use the following procedure to uninstall the ZEN Support Software from a computer. 1,2,3..
. 1. 2. Select Settings/Control panel from the Windows Start Menu. Select Add or delete applications from the Windows Control Panel and then select and delete OMRON ZEN Support Software.
4 Starting and Quitting Section 1-3 1-3 1-3-1 Starting and Quitting Starting the ZEN Support Software 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. After a moment the initial screen will be displayed. 2. When display of the opening screen is finished, the following screen will be displayed. Select Create a new program and click the OK Button.

Note a) 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 2-6-2 Opening Saved Files for the rest of the procedure for opening existing ladder programs. b) If uploading a program from the ZEN is selected, the following will be performed automatically. · Using the ZEN online function, the contents of the property settings (ZEN model and Expansion I/O Unit configuration) will be read from the ZEN and the settings will be made.

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· The program will be transferred from the ZEN to the computer. · The ladder diagram will be displayed. 5 Screen Configuration 3. Section 1-4 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. Up to 31 characters can be entered. 4. The ZEN Support Software will start. 1-3-2 Quitting the ZEN Support Software Select File(F)/Exit(E) from the Menu Bar to close the ZEN Support Software. 1-4 Screen Configuration The ZEN Support Software allows the display to be set to either a Ladder Diagram Display or an Electric Circuit Display. The functionality of the ZEN Support Software is the same regardless of which display is used. 6 Screen Configuration Ladder Diagram Display Menu bar Toolbars Mouse cursor Section 1-4 Rung comments Ladder view of program Bit information Status bar Electrical Circuit Display Menu bar Toolbars Mouse cursor Rung comments Electrical diagram Bit information Status bar Note To switch between the ladder diagram and electrical diagram displays, either click on the buttons in the Toolbar or else select View(V)/Circuit display method/Ladder rung diagram/ Electrical circuit diagram from the File menu. 7 Screen Configuration Menu Bar File (F) New (N) Open (O) Save (S) Save As (A) Load Symbol Comments Print Setup (R) Print Preview (V) Print (P) Communications Settings (ZEN Computer) Properties Recent File Exit (X) Show Symbol Comments Toolbar Status Bar (S) Grid Edit (E) Section 1-4 Undo (U) Redo (R) Cut (T) Copy (C) Paste (P) Select All (A) Delete Delete Rung Find (F) Find Next Replace Edit (E) Edit Comments Edit Rung Comments Select Objects The Menu Bar functions are listed in the following menu tree. View (V) Standard Ladder ZEN Simulator Insert (I) Circuit display method Zoom Out Zoom In Zoom to Ladder rung diagram Electrical circuit diagram 50% 100% 150% 200% Rung (M) Contact (input bit)/ Coil (output bit) Horizontal (H) Vertical (V) Help (H) ZEN (Z) Go Online/Offline (W) Change operating RUN (R) mode (M) STOP (S) Monitor (O) Start Simulator/Stop Simulator Program Check Display Check Transfer from ZEN (T) Transfer (R) Transfer to ZEN (R) Compare with ZEN (C) Protect (P) Release (L) Set (S) Set/Reset Set Operation (W) Operation Reset Operation (F) Error Clear All Clear Within ZEN Settings (S) Set Protection (E) Time Setting (T) ZEN Information (S) Set Password (P) Contents (N) Find Topics (T) About ZEN (A) Note On the ZEN Support Software displays, bits in the ZEN memory are called "relays," program input bits are called "contacts," and program output bits are called "coils.
" 8 Screen Configuration Toolbars Section 1-4 The following shortcut keys can be used from the Toolbars. Select View(V)/Toolbar from the Menu Bar to display or not display the Toolbars. Standard New Open Save Print Print Preview Cut Copy Paste Delete Undo Redo Find About ZEN Ladder Select objects Insert Contact (input condition) Insert Coil (output) Insert Horizontal Insert Vertical Zoom Out Zoom In Show Grid Show Comments Ladder rung diagram Electrical circuit diagram ZEN Go Online/Offline Toggle Monitoring Transfer to ZEN Transfer from ZEN Compare with ZEN Set Protection Release Protection Simulator RUN STOP ZEN Image Display Present Value List Display Clock Display Start/Exit Simulator Note On the ZEN Support Software displays, bits in the ZEN memory are called "relays," program input bits are called "contacts," and program output bits are called "coils." Mouse Cursors There are two types of cursors used with the ZEN. A right-click menu can be used with either of them. Pencil Cursor Appears when performing ladder program input operations. 9 Screen Configuration Arrow Cursor Section 1-4 Appears when performing operations from the Menu Bar or the Toolbar. Also used for specifying the range when editing ladder programs. Right-click Menu Edit (E) Find (F) Cut (T) Copy (C) Paste (P) Delete (D) Set/Reset (S) Rung (L) Set (W) Reset (F) Insert (W) Remove (R) Bit Information Information on bits is displayed in the Bit Information Area. The bit type is displayed here.

Comments are displayed here. Set values for timers, counters, etc., are displayed here. Input information and present values for timers, counters, etc., are displayed here. Status Bar The Status Bar displays information on the model of the connected ZEN, the connection status, operating status, and comments. 4 1 2 3 4 Connected ZEN model Connection status Operating status Comments 1 2 3 Displays the model of the ZEN selected at startup. Indicates online or offline status. Indicates RUN or STOP (displayed only when online). Displays operation explanations and online errors.
10 SECTION 2 Creating Ladder Programs This section describes how to create, save, edit, and print ladder programs. 2-1 Circuit Diagrams and Ladder Programs . . . .
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. . . 39 2-7 11 Circuit Diagrams and Ladder Programs Section 2-1 2-1 Circuit Diagrams and Ladder Programs In preparation for creating ladder programs, this section describes the relationship between relay circuits and ladder programs.

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2-1-1 Ladder Programs The ZEN uses ladder programs that appear like relay circuit diagrams.
Relay Circuit Ladder Program I0 I1 Q0 SW1 Ry SW2 Ry Q0 2-1-2 Basic Configuration of the 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. 3 inputs 1 output 1st input 2nd input 3rd input Output bit The ladder program inputs and outputs are displayed on the ZEN Support Software screen as shown below. Ladder Diagram Display 1st input 2nd input 3rd input Output bit 3 inputs 1 output 12 Circuit Diagrams and Ladder Programs Electrical Circuit Display Section 2-1 1st input 2nd input 3rd input Output bit 3 inputs 1 output Note On the ZEN Support Software displays, bits in the ZEN memory are called "relays," program input bits are called "contacts," and program output bits are called "coils.
" 2-1-3 Memory Areas The following table shows the memory areas that can be used in the ZEN ladder programs. Symbol I X B Name CPU Unit input bits Expansion I/O Unit input bits Button input bits Analog comparator bits Function Correspond to CPU Unit input terminals. Correspond to Expansion I/O Unit input terminals. Turn ON/OFF when operation buttons are pressed on the CPU Unit during ZEN operation. Compares present analog values to setting values and outputs the compared results for CPU Units with DC power supply inputs. (The analog input terminals correspond to I4 and I5 in 10-point CPU Units, and to Ia and Ib in 20point CPU Units.) Compares timer/counter present values and timer/counter present values and settings and outputs the compared results. Compares 8-digit counter present value to preset value and outputs the compared results. Turns ON/OFF at the specified day/time Usable as input condition Yes Yes Yes Usable as output No No No A Yes No P Timer/counter comparator bits 8-digit comparator bits Weekly timers Yes No G Yes No @ Yes No 13 Circuit Diagrams and Ladder Programs Symbol Name Calendar timers CPU Unit output bits Function Turns ON/OFF between specified dates. Usable as input condition Yes Yes Section 2-1 Usable as output No Yes Q Y Can specify Correspond to CPU Unit output Normal output ([), Set (S)/ terminals.

Reset (R), or Expansion I/O Correspond to Alternate (A) Unit output bits Expansion I/O operation. Unit output terminals. Work bits Bits that can be used in the ladder program. Bits that maintain ON/ OFF status at power interruptions and can be used in the ladder program. Yes Yes M Yes Yes H Holding bits Yes Yes T Timers Yes Timers can be used for ON delay (X), OFF delay (), One-shot pulse (O), Flashing pulse (F), or Twin (W) operation. Timers that maintain the present value at power interruptions. (ON delay operation only.) Incremental or decremental counters Incremental or decremental counter with 8-digit capacity. Display character strings, month/ day, time, timer/counter present value, or analog conversion value on CPU Unit LCD display. Yes Yes # Holding timers Yes C F D Counters 8-digit Counter Display bits Yes Yes No Yes Yes Yes 14 Circuit Diagrams and Ladder Programs Section 2-1 2-1-4 Memory Area Differences between Versions The following table shows the differences between different models and different versions with respect to the memory areas that can be used.
Symbol Name ZEN20C@@@@-V2 Bit number (See note 1.) ZEN10C@@@@-V2 0 to 5 (6 bits) 0 to 3 (4 bits) (See note 5.) ZEN20C@@@@-V1 0 to b (12 bits) 0 to 7 (8 bits) ZEN10C@@@@-V1 0 to 5 (6 bits) 0 to 3 (4 bits) ZEN10C@@@@ 0 to 5 (6 bits) 0 to 3 (4 bits) I Q CPU Unit input bits CPU Unit output bits 0 to b (12 bits) 0 to 7 (8 bits) X Expansion I/O Unit input bits (See note 2.) Expansion I/O Unit output bits (See note 2.) Work bits Holding bits Button input bits (See note 3.
) Analog comparator bits (See note 4.) Timer/counter comparator bits Timers Holding timers Counters 0 to b (12 bits max.) Y 0 to b (12 bits max.) M H B A P T # C 0 to f (16 bits) 0 to f (16 bits) 0 to 7 (8 bits) 0 to 3 (4 bits) 0 to f (16 bits) 0 to f (16 timers) 0 to 7 (8 timers) 0 to f (16 counters) 0 to 7 (8 timers) 0 to 3 (4 timers) 0 to 7 (8 counter s) 0 to 7 (8 timers) 0 to 7 (8 timers) 0 to 7 (8 bits) ----- @ Weekly timers (See note 3.) Calendar timers (See note 3.
) Display bits (See note 3.) 8-digit counter 8-digit comparator bits 0 to f (16 timers) 0 to f (16 timers) 0 to f (16 bits) 0 (1 counter) 0 to 3 (4 bits) D F G 15 Inputting Ladder Programs Note 1. 2. 3. 4. 5. Section 2-2 Bit numbers are specified in hexadecimal (0,1,2,3....

9, a, b,...e, f). The bit numbers that can be used depend on the Expansion I/O Unit connection configuration. Supported only by the LCD-type CPU Unit. Supported only by the CPU Units with a DC power supply. Three bits (0 to 2) for CPU Units with Communications. 2-2 Inputting Ladder Programs This section describes how to input the following simple program using the ZEN Support Software. Example Ladder Program I0 I1 Q0 Q0 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(F)/New(N) from the Menu Bar. 16 Inputting Ladder Programs 2. Section 2-2 The Property Settings Screen will be displayed. Enter the ZEN type, 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. Doubleclick 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 use any of the following methods. · Press the Enter Key. · Double-click. · Click the Insert Input or Insert Output Button on the Toolbar. · Select Insert(I)/Contact (input bit)/Coil (output bit) from the Menu Bar.

· Select Edit(E)/Edit(E) from the Menu Bar. · Right-click and select Edit. 17 Inputting Ladder Programs 4. Section 2-2 The Edit Contact 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 0 (Up to 31 characters can be entered.) Comment color Note Parameter settings for timers and counters are set on the Edit Contact Dialog Box. 5. Double-click the mouse on the next input position. 18 Inputting Ladder Programs 6.
Section 2-2 The Edit Input Dialog Box will be displayed again.

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Specify the bit type, type of input, bit number, and enter a comment if required, just as you did in step 4. Bit name: I Input: Normally closed Bit number: 1 Comment: CPU Unit input 1 (Up to 31 characters can be entered.) Comment color 7. Move the mouse to the output bit position and double-click the mouse. 19 Inputting Ladder Programs 8. Section 2-2 The Edit Output Dialog Box will be displayed. Specify the bit type, function, and bit number, and enter a comment if required. Bit name: Q Normal output ([), Set (S)/Reset (R), or Alternate (A): Normal output ([) Bit number: 0 Comment: CPU Unit output 0 (Up to 31 characters can be entered.) Comment color 9.

Move the mouse to the input position on the next line and doubleclick. 20 Inputting Ladder Programs Section 2-2 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. Bit name: Q Input (Normally Open/Normally Closed): Normally Open Bit number: 0 Comment: CPU Unit output 0 (Up to 31 characters can be entered.) Comment color Note The comment will be automatically displayed for bit types and bit numbers that have comments. 11. Drag the mouse vertically to draw the connecting line. 21 Inputting Ladder Programs Section 2-2 Note a) Horizontal connection lines can be drawn by using the mouse or Cursor Keys to move to the connection line position and then use any of the following methods. · Pressing the - Key.

· Click the Insert/Horizontal Button on the Toolbar. · Select Insert(I)/Horizontal(H) from the Menu Bar. b) Vertical connection lines can also be drawn by using the mouse or Cursor Keys to move to the connection line position and then use any of the following methods: · Press the | Key. · Click the Insert Vertical Button on the Toolbar. · Select Insert(I)/Vertical(V) from the Menu Bar. The vertical line will be drawn down from the cursor position. 12. The ladder program has now been completed. 13. Double-click in the rung comment area to write rung comments for the ladder program.

It is also possible to write comments by first using either the mouse or the cursor keys to move to the rung comment area, and then selecting Edit(E)/Edit rung comments. 22 Checking Ladder Programs Section 2-3 Enter rung comment. Rung comment is displayed. Note Up to 63 characters can be entered for a rung comment. 2-3 2-3-1 Checking Ladder Programs Program Check Select ZEN(Z)/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 For details on error messages during program checking, refer to 6-2 Program Check Errors and Warnings. 2-3-2 Display Check Select ZEN(Z)/Display Check from the Menu Bar, and then use the Display Check Dialog Box to check the display contents for the display bits D0 to Df that are used in the program. The contents of 23 Editing Ladder Programs Section 2-4 each are displayed in different colors, so overlapping displays can be checked. Click to close the Display Check Dialog Box.

Click with the mouse to toggle between displaying or not displaying the display contents for each of the display bits D0 to Df. 2-4 2-4-1 Editing Ladder Programs This section describes how to edit existing ladder programs. Searching for Inputs and Outputs Click the Find Button on the Toolbar or select Edit(E)/Find(F) from the Menu Bar. Finding by Rung Number Rung No. Finding by Bit Type or Bit Number Rung numbers: 0 to 95 Bit type number 2-4-2 Replacing Inputs To replace an input, select Edit(E)/Replace from the Menu Bar. Replace the inputs while doing the search. (As each input is found, confirm whether or not it is to be replaced.) Replace all of the inputs in the ladder program (without confirming them individually). Bit type number 24 Editing Ladder Programs Section 2-4 2-4-3 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 use any of the following methods. · Press the Enter Key.

· Double-click. · Click the Insert Input or Insert Output Button on the Toolbar. · Select Insert(I)/Contact (input bit)/Coil (output bit) from the Menu Bar. · Select Edit(E)/Edit(E) from the Menu Bar. · Right-click and select Edit. 1,2,3... 1. For this example, double-click CPU unit output Q0.

2. The Edit Output Dialog Box will be displayed. 25 Editing Ladder Programs 3. Section 2-4 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. 4.

The output change has now been completed. 2-4-4 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 · Press the Enter Key. · Double-click. · Click the Insert Input Button on the Toolbar. · Select Insert(I)/Contact (input bit)/Coil (output bit) from the Menu Bar.

· Select Edit(E)/Edit(E) from the Menu Bar. · Right-click and select Edit. 26 Editing Ladder Programs 1,2,3... 1. Double-click the ladder program connection line. Section 2-4 2. Use the Edit Input Dialog Box to insert a input at the connection line. 2-4-5 Deleting Inputs and Outputs To delete an input or output, first use the mouse or the cursor keys to highlight the input or output that is to be deleted.

Then use any of the following methods. · Click the Delete Button in the Toolbar. · Select Edit(E)/Delete from the Menu Bar. · Right-click and select Delete(D). · Press the Delete Key on the keyboard. 1,2,3... 1. Move the cursor to the input.

27 Editing Ladder Programs 2. Click the Delete Button on the Toolbar. Section 2-4 3. 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 2-4-8 Copying, Cutting, and Pasting Inputs and Outputs is used.

2-4-6 Inserting Rungs Using either the mouse or cursor keys, highlight the position where the rung is to be inserted, and then use any of the following methods to insert a blank rung. · Select Insert(I)/Rung(M) from the Menu Bar. · Right-click and select Rung(L)/Insert(W). 28 Editing Ladder Programs 1,2,3..

. 1. Section 2-4 Highlight the position and then select Insert(I)/Rung(M) from the Menu Bar. 2. The blank rung will be inserted above the highlighted position. 2-4-7 Editing Connection Lines Use the following procedure to delete connection lines. 1. 2. Drag the mouse along the existing line. Use the mouse or Cursor Keys to move to the connection line and then use any of the following methods.

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· Click the Delete Button on the Toolbar. · Select Edit(E)/Delete from the Menu Bar. · Press the Delete Key on the keyboard. 1,2,3... 29 Editing Ladder Programs Section 2-4 Use the following procedure to create new connection lines. 1,2,3...
1. 2. Drag the mouse from the desired position to create a new line. Use the mouse or Cursor Keys to move to the desired position for the connection line and then use any of the following methods. · Click the Insert Horizontal or Insert Vertical Button on the Toolbar.
· Select Insert(I)/Horizontal(H) or Insert(I)/Vertical(V) from the Menu Bar. · Press the - or I Key on the keyboard. 2-4-8 Copying, Cutting, and Pasting Inputs and Outputs Inputs and outputs within a specified range can be easily copied and moved if the cut, copy, or paste functions are used. Copying, Cutting and Pasting Individual Objects 1,2,3..
. 1. Using the mouse or cursor keys, select the input or output that is to be copied or cut. 2. Use any of the following procedures for copying and moving. 30 Editing Ladder Programs When Copying · Click the Copy Button on the Toolbar. · Select Edit(E)/Copy(C) from the Menu Bar. · Right-click and select Copy. Section 2-4 When Moving · Click the Cut Button on the Toolbar. · Select Edit(E)/Cut(T) from the Menu Bar.

· Right-click and select Cut. 3. Any of the following methods can be used to paste inputs and outputs after moving the cursor to desired position with the mouse or cursor keys. · Click the Paste Button on the Toolbar. · Select Edit(E)/Paste(P) from the Menu Bar. @@@@@@· Click the Cut Button on the Toolbar. · Select Edit(E)/Copy(C) from the Menu Bar. · Right-click and select Copy. · Select Edit(E)/Cut(T) from the Menu Bar. @@· Click the Paste Button on the Toolbar.
· Select Edit(E)/Paste(P) from the Menu Bar. @@Then use any of the following methods to delete the rung. · Select Edit(E)/Delete Rung from the Menu Bar. · Right-click and select Rung(L)/Delete(R). 1.
@@@@@@2. Select File(F)/Save As(A) from the Menu Bar. The Save As Dialog Box will be displayed. @@2. @@2.
@@The Open File Dialog Box will be displayed. @@2. Select File(F)/Print Setup(R) from the Menu Bar. The Print Settings Dialog Box will be displayed. @@@@@@Check this box to print the title. Enter the drawing name. Enter the drawing number. Enter the revision mark. Enter the name of the person who wrote the program. @@@@Click the Cancel Button to discard the settings.

@@@@@@@@2. @@The Print Dialog Box will be displayed. Make settings for each item and click the OK Button. 1,2,3... 39 Printing Ladder Programs Section 2-7 40 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 . . .

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51 Clearing Errors. . . . .
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. . . . . 52 41 Connecting the ZEN and Communications Settings Section 3-1 3-1 3-1-1 Connecting the ZEN and Communications Settings Connecting to the ZEN Use a ZEN-CIF01 Computer Connecting Cable to connect the ZEN and a serial port (COM port) of the computer. ZEN-CIF01 Computer Connecting Cable Note The connector on the computer side of the ZEN-CIF01 Computer Connecting Cable is a 9-pin D-sub connector.

When connecting to a computer that does not have a serial port, connect an RS232C-USB Conversion Cable to the ZEN-CIF01 Computer Connecting Cable. An OMRON CS1W-CIF31 Conversion Cable can be used (cable length: 50 cm). 42 Connecting the ZEN and Communications Settings Section 3-1 3-1-2 Communications Settings for Connecting to the ZEN Communications settings must be made in the ZEN Support Software before commencing communications with the ZEN. 1,2,3... 1. 2. Select File(F)/Communications Settings (Computer ZEN) from the Menu Bar. The Communications Settings Dialog Box will be displayed.
Make the settings for each item. a) When using a -V2 CPU Unit Setting Port name Details Select a COM port that can be connected to the personal computer. Specify the communications monitor time between 1 and 30 s. Default COM 1 Monitor time 2 b) When using a -V1 or earlier CPU Unit. Setting Port name Details Select a COM port that can be connected to the personal computer.
Use 0 for the node number. If the node number is different from the node number of the ZEN, communications will not be possible. Specify the communications monitor time between 1 and 30 s. Default COM 1 Node No. 0 Monitor time 2 43 Connecting Online Section 3-2 Specifications Changes from Version 3.
0 Support Software Modem-related settings (Modem, Local information, Connect to) that could not be used have been deleted. 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 computer to the ZEN and perform the check operation with the project file open. 1,2,3...

1. Select File(F)/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. Turn OFF the ZEN power, connect the ZEN to the computer with the Computer Connecting Cable, then turn ON the ZEN power again. When using a ZEN that supports external communications, a confirmation message that says, "RS-485 will stop. Y/N" will be displayed on the ZEN when you turn ON the power. Select Yes, then click the OK Button Open the project file. Click the Go Online Button on the Toolbar or select ZEN(Z)/Go Online/Offline(W) from the Menu Bar. A confirmation dialog box will be displayed. Click the OK Button. 2.
3. 4. 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.

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Click the Go Online Button on the Toolbar again or select ZEN(Z)/Go Online/Go Offline(W) from the Menu Bar.
The display on the Status Bar will return from Online to Offline. The background color for the ladder view area will change back to white. 44 Transferring Programs to the ZEN Note a) b) Section 3-3 Ladder programs cannot be edited when online. Always go offline before creating or editing ladder programs. Select ZEN/ZEN Information(S) from the Menu Bar while online 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. Precaution 1,2,3... Perform adequate safety checks before transferring the program to the ZEN. 1. Click the Transfer to ZEN Button on the Toolbar or select ZEN(Z)/ Transfer(R)/Transfer to ZEN(T) 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 · Select 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. · Select 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. Do not select this option if no password has been set. Refer to 4-2 Setting a Password for information on setting passwords. Note 1. With version 4.0 or higher, it is possible to transfer programs to the ZEN even if the Expansion I/O Units are not connected, so long 45 Transferring Programs from the ZEN Section 3-4 as the CPU Unit is the same type as that specified in the property settings of the Support Software. When going online, a confirmation message, such as the example shown below, will be displayed. Select "Y" (yes) to connect, and then perform the transfer operation. "ZEN model in properties settings (10C1A-A-V2) does not match model being connected (10C1A*-A-V2+8E1**). Go online? Y/N" 2. Refer to 6-2 Program Check Errors and Warnings 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 the 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(Z)/Transfer(R)/Transfer from ZEN(T) 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 Select The settings are uploaded too in the Transfer From ZEN Dialog Box to upload the ZEN settings at the same time. Note a) If a password has been set for the previously opened project file (see 4-2 Setting a Password), the password will be cleared, and a comfirmation dialog box will be displayed. b) Refer to 6-2 Program Check Errors and Warnings for information on error messages that occur during transfer from the ZEN to the computer. 46 Verifying Programs with the ZEN Section 3-5 3-5 Verifying Programs with the ZEN This section describes how to compare the programs in the ZEN and the 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(Z)/Transfer(R)/Compare with ZEN(C) from the Menu Bar. The Compare With ZEN Dialog Box will be displayed. Click the OK Button to compare the ZEN and the ZEN Support Software programs. Click the Cancel Button to cancel the verification. Settings Details Select The settings are compared too in the Compare With ZEN Dialog Box to compare the ZEN and the 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 6-2 Program Check Errors and Warnings for information on error messages that occur during verification. 47 Operating and Stopping the ZEN Section 3-6 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. Precaution 1,2,3..
. Perform adequate safety checks before changing the operating mode (RUN/STOP). 1. 2. Select ZEN(Z)/Change operating mode(M)/RUN(R) from the Menu Bar.
Check that the Status Bar display changes from STOP to RUN. 3. Select ZEN(Z)/Change operating mode(M)/STOP(S) from the Menu Bar to stop ZEN operation. The Status Bar display will change from RUN to STOP. 3-7 3-7-1 Monitoring Programs Monitor 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 the 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 (page 45), 3-4 Transferring Programs from the ZEN (page 46), and 3-5 Verifying Programs with the ZEN (page 47) to transfer and verify the programs. 1,2,3..

. 1. Use the procedure outlined under 3-6 Operating and Stopping the ZEN (page 48) 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(Z)/Monitor(O) from the Menu Bar. 48 Monitoring Programs 3. Section 3-7 When the mode is changed to MONITOR, the closed circuits of the ZEN ladder program are highlighted in green. 3-7-2 Displaying Present Values Present values, the ON/OFF status of inputs, etc., can be displayed during monitoring of programs being executed by the ZEN.
During monitoring, moving the mouse or cursor to a timer/counter or other output will cause the present value to be displayed in the Status Bar. Present value display 3-7-3 Changing Settings Online Set values can be changed while connected to the ZEN online. 1. While online, use either the mouse or the cursor keys to highlight the output that is to be changed. Then use any of the following methods to change the setting.
· Press the Enter Key or double-click. · Select Edit(E)/Edit(E) from the Menu Bar. 1,2,3...
49 Monitoring Programs · Right-click and select Edit(E). Section 3-7 2. The Edit Dialog Box will be displayed. When the settings are changed and the dialog box closed, the changes will be transferred to the ZEN and reflected there.

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Note The following table shows the settings that can be changed online. Bit type Timer (T) Holding timer (#) Counter (C) 8-digit counter (F) (See note.) Weekly timer (@) Calendar timer (*) Analog comparator (A) Content of change Time setting Time setting Counter setting Counter setting Start/stop day of week, time Pulse output time (See note.) Start/stop months, days Constants, operators Note The 8-digit counters and pulse output time can be used when using a -V2 CPU Unit. 50 Setting and Resetting Inputs Section 3-8 3-8 Setting and Resetting Inputs This section describes how to set (turn ON) and reset (turn OFF) the 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 the 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 (page 45), 3-4 Transferring Programs from the ZEN (page 46), and 3-5 Verifying Programs with the ZEN (page 47) to transfer and verify the programs. Precaution 1,2,3... Confirm safety before turning relays ON or OFF. 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.
3. Use the procedure outlined under 3-7 Monitoring Programs to change to MONITOR mode. Use the mouse or cursor keys to move to the input that is to be set or reset, and then perform either of the following operations: · Select ZEN(Z)/Set/Reset Operation and then either Set Operation(W) or Reset Operation(F) from the Menu Bar. · Right-click and then select Set/Reset Operation and then either Set Operation(W) or Reset Operation(F). Note The following table shows the inputs that can be set or reset.
Bit type CPU Unit input bits (I) CPU Unit output bits (Q) Expansion I/O Unit input bits (X) Expansion I/O Unit output bits (Y) Work bits (M) Holding bits (H) Comments Input terminal ON/OFF status has priority. Set/reset possible for inputs only. (Not possible for outputs.) Input terminal ON/OFF status has priority. Set/reset possible for inputs only.
(Not possible for outputs.) 51 Clearing Errors Section 3-9 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... Note 1. 2. Select ZEN(Z)/Error Clear from the Menu Bar to clear the error. Repeat this step to clear multiple errors.

a) b) Refer to Section 6 Troubleshooting in the ZEN Operation Manual (Z183) for information on ZEN errors. ZEN errors that occur while online will be displayed in the Status Bar. Error display 52 SECTION 4 System Settings This section describes the ZEN system settings, how to set passwords to protect the ZEN ladder programs, and how to clear the ZEN memory. 4-1 ZEN Settings . . . . . .

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. . . . . 60 53 ZEN Settings Section 4-1 4-1 ZEN Settings This section describes how to change the ZEN settings from the ZEN Support Software. 4-1-1 Settings 1. 2.

Select ZEN(Z)/Set Protection(E)/Settings(S) from the Menu Bar. The Settings Dialog Box will be displayed. Make the settings for each item. a) When Using a -V2 CPU Unit 1,2,3... Setting Daylight saving time (See note a.) Display language (See note a.) Backlight control (See note a.) Input filter CPU Unit Details None, manual, EU Type, US Type, AU Type, NZ Type English, Japanese, German, French, Italian, Spanish 2 min, 10 min, 30 min, always OFF: No input filter Default None English 2 min OFF Expansion I/O Unit 1 ON: With input filter (See note b.
) Expansion I/O Unit 2 (See note b.) Expansion I/O Unit 3 (See note b.) Send delay time (See note c.) Initialize modem (See note c.) Send delay time for the initialization command to the modem set in the ZEN Initializes the modem set in the ZEN.
0 --- Note a) The display language and background settings can be used for LCD-type CPU Units. 54 ZEN Settings Section 4-1 b) Input filters can be set only for Expansion I/O Units that exist in the system configuration. c) Do not change these settings. They are for future functional expansions.(These settings are not displayed for models with communications.
) b) When Using a -V1 or Earlier CPU Unit Setting Daylight saving time (See note a.) Display language (See note a.) Contrast control (See note a.) Backlight control (See note a.) Input filter CPU Unit Details None, manually, EU Type, US Type English, Japanese, German, French, Italian, Spanish Light, Medium light, Medium, Medium dark, Dark 2 min, 10 min, 30 min, always OFF: No input filter Default None English 2 min OFF Expansion I/O Unit 1 ON: With input filter (See note b.) Expansion I/O Unit 2 (See note b.) Expansion I/O Unit 3 (See note b.) Send delay time (See note c.) Initialize modem (See note c.) Send delay time for the initialization command to the modem set in the ZEN Initializes the modem set in the ZEN.

0 --- Note a) The display language and background settings can be used for LCD-type CPU Units. b) Input filters can be set only for Expansion I/O Units that exist in the system configuration. c) Do not change these settings. They are for future functional expansions. 55 ZEN Settings 3. Section 4-1 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. Settings can be sent between the ZEN and the ZEN Support Software if the ZEN is 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. 4-1-2 Time Settings With the LCD-type CPU Units, time and date settings are preformed online. 1,2,3..
. 1. 2. Select ZEN(Z)/Set Protection(E)/Time Setting(T) from the Menu Bar. The Time Settings Dialog Box will be displayed.
Set the date and time for the ZEN internal clock. Settings ZEN internal clock PC time Date Time Date Time Details Edit the ZEN date. (Date read from the ZEN at startup or same date as computer) Edit the ZEN time. (Time read from the ZEN at startup or same time as computer) Displays the computer date. Displays the computer time.

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