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You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON E5CN. You'll find the answers to all your questions on the OMRON E5CN in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual OMRON E5CN
User guide OMRON E5CN
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The image shows the cover of the OMRON E5CN Digital Temperature Controllers User's Manual Basic Type. The cover is blue and features the OMRON logo at the top right. Below the logo, there is a white line graph showing a temperature curve. To the right of the graph, the model numbers E5CN, E5AN, E5EN, and E5GN are listed in a bold, white font. Below the model numbers, the text "Digital Temperature Controllers" is written in white. At the bottom of the cover, there are four images of the temperature controllers, showing their digital displays and control buttons. The text "User's Manual Basic Type" is written in white at the bottom center. At the bottom left, there is a small white box with the text "Cat. No. H156-E1-03".



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Manual abstract:

@@@The main functions and characteristics of these Digital Temperature Controllers are as follows: · Any of the following types of input can be used: thermocouple, platinum resistance thermometer, infrared sensor, analog voltage, or analog current. · Either standard or heating/cooling control can be performed. · Both auto-tuning and self-tuning are supported. · Event inputs can be used to switch set points (multi-SP function), switch between RUN and STOP status, switch between automatic and manual operation, start/reset the simple program function, and perform other operations. (Event inputs are not applicable to the E5CN-U.) · Heater burnout detection, heater short (HS) alarms, and heater overcurrent (OC) functions are supported. (Applicable to E5CN, E5AN, E5EN, and E5GN models with heater burnout detection function.) · Communications are supported. (Applicable to E5CN, E5AN, E5EN, and E5GN models with communications.) · User calibration of the sensor input is supported.

· The structure is waterproof (IP66). (Not applicable to the E5CN-U.) · Conforms to UL, CSA, and IEC safety standards and EMC Directive. · The PV display color can be switched to make process status easy to understand at a glance. This manual describes the E5CN, E5CN-U, E5AN, E5EN, and E5GN. Read this manual thoroughly and be sure you understand it before attempting to use the Digital Temperature Controller and use the Digital Temperature Controller correctly according to the information provided. Keep this manual in a safe place for easy reference. Refer to the following manual for further information on communications: E5CN/E5AN/E5EN/E5GN Digital Temperature Controllers Communications Manual Basic Type (Cat. No. H158). Refer to the following manual for information on the Advanced Type Controllers: E5CN/E5AN/E5EN-H Digital Temperature Controllers User's Manual Advanced Type (Cat. No. H157). 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, checklists, etc.

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This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products: · Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual. · Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations. · Systems, machines, and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to the products. NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM. PROGRAMMABLE PRODUCTS OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof. vii Disclaimers CHANGE IN SPECIFICATIONS Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. 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.



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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 manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions. **viii Safety Precautions Definition of Precautionary Information** The following notation is used in this manual to provide precautions required to ensure safe usage of the product. The safety precautions that are provided are extremely important to safety. Always read and heed the information provided in all safety precautions. The following notation is used.

Indicates a potentially hazardous situation which, if not avoided, is likely to result in minor or moderate injury or in property damage. **CAUTION Symbols**
Symbol Meaning General Caution Indicates non-specific general cautions, warnings, and dangers. Caution Electrical Shock Caution Indicates possibility of electric shock under specific conditions. Prohibition General Prohibition Indicates non-specific general prohibitions. General Caution Indicates non-specific general cautions, warnings, and dangers.

Mandatory Caution ix Safety Precautions CAUTION Do not touch the terminals while power is being supplied. Doing so may occasionally result in minor injury due to electric shock. Do not allow pieces of metal, wire clippings, or fine metallic shavings or filings from installation to enter the product. Doing so may occasionally result in electric shock, fire, or malfunction. Do not use the product where subject to flammable or explosive gas.

Otherwise, minor injury from explosion may occasionally occur. Never disassemble, modify, or repair the product or touch any of the internal parts. Minor electric shock, fire, or malfunction may occasionally occur. **CAUTION - Risk of Fire and Electric Shock** a) This product is UL listed as Open Type Process Control Equipment. It must be mounted in an enclosure that does not allow fire to escape externally. b) More than one disconnect switch may be required to deenergize the equipment before servicing the product. c) Signal inputs are SELV, limited energy. *1 d) Caution: To reduce the risk of fire or electric shock, do not interconnect the outputs of different Class 2 circuits.*2 If the output relays are used past their life expectancy, contact fusing or burning may occasionally occur. Always consider the application conditions and use the output relays within their rated load and electrical life expectancy.

The life expectancy of output relays varies considerably with the output load and switching conditions. *1 A SELV circuit is one separated from the power supply with double insulation or reinforced insulation, that does not exceed 30 V r.m.s. and 42.4 V peak or 60 VDC. A class 2 power supply is one tested and certified by UL as having the current and voltage of the secondary output restricted to specific levels. *2 x **CAUTION** Tighten the terminal screws to between 0.74 and 0.90 N-m.

Loose screws may occasionally result in fire. *3 Set the parameters of the product so that they are suitable for the system being controlled. If they are not suitable, unexpected operation may occasionally result in property damage or accidents. A malfunction in the Temperature Controller may occasionally make control operations impossible or prevent alarm outputs, resulting in property damage. To maintain safety in the event of malfunction of the Temperature Controller, take appropriate safety measures, such as installing a monitoring device on a separate line.

A semiconductor is used in the output section of long-life relays. If excessive noise or surge is impressed on the output terminals, a short-circuit failure is likely to occur. If the output remains shorted, fire will occur due to overheating of the heater or other cause. Take measures in the overall system to prevent excessive temperature increase and to prevent fire from spreading. When inserting the body of the Temperature Controller into the case, confirm that the hooks on the top and bottom are securely engaged with the case.

If the body of the Temperature Controller is not inserted properly, faulty contact in the terminal section or reduced water resistance may occasionally result in fire or malfunction. *3 The tightening torque is 0.5 N-m for the E5CN-U and 0.43 to 0.58 N-m for the E5GN. The terminal torque is 0.5 to 0.6 N-m for auxiliary output 2 on the E5GN. xi **Precautions for Safe Use** Be sure to observe the following precautions to prevent operation failure, malfunction, or adverse effects on the performance and functions of the product. Not doing so may occasionally result in unexpected events.

Use the product with the actual control operations to ensure the correct temperature display. 11) When executing self-tuning, turn ON power for the load (e.g., heater) at the same time as or before supplying power to the Digital Temperature Controller. If power is turned ON for the Digital Temperature Controller before turning ON power for the load, self-tuning will not be performed properly and optimum control will not be achieved. 12) A switch or circuit breaker should be provided close to this unit. The switch or circuit breaker should be within easy reach of the operator, and must be marked as a disconnecting means for this unit. 13) Always turn OFF the power supply before removing the body of the E5CN, E5AN, or E5EN from the case, and never touch nor apply shock to the terminals or electronic components. When inserting the interior of the product, do not allow the electronic components to touch the case. Always turn OFF the power supply before removing the terminal block from the E5GN, and never touch nor apply shock to the terminals or electronic components.

14) Do not use paint thinner or similar chemical to clean with. Use standard grade alcohol. 15) Design system (control panel, etc.) considering the 2 second of delay that the controller's output is set after power ON. 16) The output may turn OFF when shifting to certain levels.

Take this into consideration when performing control. 17) The number of EEPROM write operations is limited. Therefore, use RAM write mode when frequently overwriting data during communications or other operations. 18) Always touch a grounded piece of metal before touching the Digital Temperature Controller to discharge static electricity from your body. 19) Do not remove the terminal block from the E5CN, E5AN, or E5EN.

Doing so may result in failure or malfunction. 20) Control outputs that are voltage outputs are not isolated from the internal circuits. When using a grounded thermocouple, do not connect any of the control output terminals to ground.



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(Doing so may result in an unwanted circuit path, causing error in the measured temperature.) 21) When replacing the body of the E5CN, E5AN, or E5EN, check the condition of the terminals. If corroded terminals are used, contact failure in the terminals may cause the temperature inside the E5CN, E5AN, or E5EN to increase, possibly resulting in fire. If the terminals are corroded, replace the case as well. When removing the terminal block of the E5GN to replace the Digital Temperature Controller, check the condition of the terminals. If corroded terminals are used, contact failure in the terminals may cause the temperature inside the Digital Temperature Controller to increase, possibly resulting in fire. If the terminals are corroded, replace the terminal block as well.

22) Use suitable tools when taking the Digital Temperature Controller apart for disposal. Sharp parts inside the Digital Temperature Controller may cause injury. 23) When applying Lloyd's standards, install the Digital Temperature Controller according to the requirements given in Shipping Standards. 24) Do not use the Temperature Controller if the front sheet is peeling off or torn. Service Life Use the Temperature Controller within the following temperature and humidity ranges: Temperature: -10 to 55°C (with no icing or condensation), Humidity: 25% to 85% If the Controller is installed inside a control board, the ambient temperature must be kept to under 55°C, including the temperature around the Controller. The service life of electronic devices like Temperature Controllers is determined not only by the number of times the relay is switched but also by the service life of internal electronic components. Component service life is affected by the ambient temperature: the higher the temperature, the shorter the service life and, the lower the temperature, the longer the service life. Therefore, the service life can be extended by lowering the temperature of the Temperature Controller. xiii When two or more Temperature Controllers are mounted horizontally close to each other or vertically next to one another, the internal temperature will increase due to heat radiated by the Temperature Controllers and the service life will decrease. In such a case, use forced cooling by fans or other means of air ventilation to cool down the Temperature Controllers.

When providing forced cooling, however, be careful not to cool down the terminals sections alone to avoid measurement errors. Ambient Noise To avoid inductive noise, keep the wiring for the Digital Temperature Controller's terminal block wiring away from power cables carrying high voltages or large currents. Also, do not wire power lines together with or parallel to Digital Temperature Controller wiring. Using shielded cables and using separate conduits or ducts is recommended. Attach a surge suppressor or noise filter to peripheral devices that generate noise (in particular, motors, transformers, solenoids, magnetic coils or other equipment that have an inductance component).

When a noise filter is used at the power supply, first check the voltage or current, and attach the noise filter as close as possible to the Temperature Controller. Allow as much space as possible between the Digital Temperature Controller and devices that generate powerful high frequencies (high-frequency welders, high-frequency sewing machines, etc.) or surge. Ensuring Measurement Accuracy When extending or connecting the thermocouple lead wire, be sure to use compensating wires that match the thermocouple types. When extending or connecting the lead wire of the platinum resistance thermometer, be sure to use wires that have low resistance and keep the resistance of the three lead wires the same.

Mount the Temperature Controller so that it is horizontally level. If the measurement accuracy is low, check to see if input shift has been set correctly.

Waterproofing The degree of protection is as shown below. Sections without any specification on their degree of protection or those with IP@0 are not waterproof. Front panel: IP66 Rear case: IP20, Terminal section: IP00 (E5CN-U: Front panel: IP50, rear case: IP20, terminals: IP00) xiv Precautions for Operation 1) It takes approximately two seconds for the outputs to turn ON from after the power supply is turned ON. Due consideration must be given to this time when incorporating Temperature Controllers into a control panel or similar device. Make sure that the Temperature Controller has 30 minutes or more to warm up after turning ON the power before starting actual control operations to ensure the correct temperature display. When executing self-tuning, turn ON power for the load (e.g., heater) at the same time as or before supplying power to the Temperature Controller.

If power is turned ON for the Temperature Controller before turning ON power for the load, self-tuning will not be performed properly and optimum control will not be achieved. When starting operation after the Temperature Controller has warmed up, turn OFF the power and then turn it ON again at the same time as turning ON power for the load. (Instead of turning the Temperature Controller OFF and ON again, switching from STOP mode to RUN mode can also be used.) Avoid using the Controller in places near a radio, television set, or wireless installing. The Controller may cause radio disturbance for these devices. 2) 3) 4) Shipping Standards The E5CN, E5CN-H, E5AN, E5AN-H, E5EN, and E5EN-H comply with Lloyd's standards. When applying the standards, the following installation and wiring requirements must be met in the application. Application Conditions 1) Installation Location The E5CN, E5CN-H, E5AN, E5AN-H, E5EN, and E5EN-H comply with installation category ENV1 and ENV2 of Lloyd's standards. Therefore, they must be installed in a location equipped with air conditioning. They must therefore be installed in a location equipped with air conditioning.

They cannot be used on the bridge or decks, or in a location subject to strong vibration. 2) Wiring Conditions Install the recommended ferrite core and wrap the line around it three turns for the applicable lines (e.g., power supply cable line and signal lines) of the models listed in the following table. (See illustrations.)

) Install the ferrite cores as close to the terminal block of the E5@N as possible. (As a guideline, the ferrite core should be within 10 cm of the terminal block.) Lines Requiring Ferrite Cores Model E5CN, E5CN-U, or E5CN-H E5EN, E5AN, E5EN-H, or E5AN-H Signal and power lines provided with ferrite cores Input power supply Input power supply and I/O lines (control outputs (1 and 2), communications, event inputs (1 to 4), transfer output, and external power supply (Advanced Type models do not have an external power supply.)) Recommended Ferrite Core Manufacturer Model Seiwa Electric Mfg. Co., Ltd. E04RA310190100 xv Ferrite Core Connection Examples 1. E5CN/E5CN-H + Control output 1 Auxiliary outputs (relay outputs) 1 2 3 4 5 11 12 13 14 15 6 Auxiliary output 2 + mA - DO NOT USE - V - DO NOT A USE - 7 8 9 10 Auxiliary output 1 B B Power supply Input power supply DO NOT USE Analog input + + 3 turns AC/DC TC/Pt universal input 2.



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E5AN/E5EN/E5AN-H/E5EN-H Power supply AC/DC 3 turns Input power supply Event Inputs 1 2 3 4 5 Auxiliary output 3 21 22 23 24 25 26 27 28 29 30 11 12 13 14 15 16 17 18 19 20 EV2 EV1 Control CT1/CT2 Output 2 + Control CT1 Output 2 - CT2 DO NOT USE DO NOT USE DO NOT USE - A B B + DO NOT USE - + mA - DO NOT USE 3 turns External Power Supply + External power supply 12 VDC, 20 mA - DO NOT USE Connected to communications or event inputs 1 and 2. + Connected to control output 1. Control output 1 3 turns - 3 turns 6 7 Auxiliary output 2 Connected to control output 2 or external power supply. 8 9 Auxiliary output 1 V + 10 TC/Pt universal input Analog input Communications 21 22 EV3 23 RS-232C 11 12 RS-485 11 12 13 21 22 SD RD SG DO NOT USE DO NOT USE B (+) A (-) DO NOT USE B (+) A (-) Connected to event inputs 3 and 4. 13 3 turns 24 EV4 25 DO NOT USE + 26 27 28 29 30 4 to 20 mA DC (Load: 600 max.) 21 22 Connected to transfer output. 3 turns Transfer output - DO NOT USE DO NOT USE xvi Preparations for Use Be sure to thoroughly read and understand the manual provided with the product, and check the following points.

Timing Check point Purchasing the prod- Product appearance uct Details After purchase, check that the product and packaging are not dented or otherwise damaged. Damaged internal parts may prevent optimum control. Product model and speci- Make sure that the purchased product meets the required specifications. Product installation loca- Provide sufficient space around the product for heat dissipation. Do not block the vents on the product. Terminal wiring Do not subject the terminal screws to excessive stress (force) when tightening them. Make sure that there are no loose screws after tightening terminal screws to the specified torque of 0.74 to 0.90 N·m (see note). Be sure to confirm the polarity for each terminal before wiring the terminal block and connectors.

Power supply inputs Wire the power supply inputs correctly. Incorrect wiring will result in damage to the internal circuits. Ambient temperature The ambient operating temperature for the product is -10 to 55°C (with no condensation or icing). To extend the service life of the product, install it in a location with an ambient temperature as low as possible. In locations exposed to high temperatures, if necessary, cool the products using a fan or other cooling method. **Vibration and shock** Check whether the standards related to shock and vibration are satisfied at the installation environment. (Install the product in locations where the conductors will not be subject to vibration or shock.) Foreign particles Install the product in a location that is not subject to liquid or foreign particles entering the product. **Setting the Unit Wiring Operating environment Note** The tightening torque is 0.5 N·m for the E5CN-U and 0.43 to 0.58 N·m for the E5GN. The terminal torque is 0.5 to 0.6 N·m for auxiliary output 2 on the E5GN. xvii **Upgraded Functions** The functionality of the E5CN, E5CN-U, E5AN, and E5EN was improved starting from December 2007 production. The functionality of the E5GN was improved starting from August 2009 production. The design of the front panel can be used to differentiate between the previous and upgraded models. E5CN/CN-U The upgraded Controllers are basically compatible with the previous Controllers. Terminal arrangements, terminal sizes, and panel mounting depth have not been changed.

E5AN/EN Although the upgraded Controllers are compatible with the previous Controllers, terminal arrangements have been changed. Terminal sizes and panel mounting depth have not been changed. E5GN Model numbers have changed accompanying the introduction of universal input capability. The default setting of the input type parameter of the E5GN-@@@P (models with resistance thermometers) has been changed from a Pt100 resistance thermometer to a K thermocouple. Make sure the setting of the input type parameter agrees with the temperature sensor that is being used. The terminal block has also been changed, which means the wiring methods and terminal arrangement are different. Other changes outlined in the following tables. Refer to relevant pages in the manual for details. Previous models E5CN/CN-U Upgraded models · ALM indicator was changed to SUB indicator. E5AN · Number of displays: 2 (PV and SV) · Number of displays: 3 (PV, SV, and MV) * · ALM indicator was changed to SUB indicator. xviii Previous models E5EN Upgraded models · Number of displays: 2 (PV and SV) E5GN · Number of displays: 3 (PV, SV, and MV) * · ALM indicator was changed to SUB indicator. · Display Segments PV: 7 segments, SV: 7 segments · Character Heights PV: 7 mm, SV: 3.5 mm · Display Segments PV: 11 segments, SV: 11 segments · Character Heights PV: 7.5 mm, SV: 3.6 mm · Changes to Display Contents "AL" LED indicator eliminated, LED indicators added, and key indicator added.

* A 2-level display is set when shipped from the factory. A 3-level display is activated if parameters are initialized. xix **Terminal Arrangements E5AN/EN** Previous models Terminals 16 through 20 were changed. Terminals 1 through 15 were not changed. Voltage output 14 15 16 17 18 19 Long-life relay output 14 15 Control Output 2 250 VAC, 3 A Upgraded models One CT Two CTs External power Control Output 2 supply + CT1 + External power supply 12 VDC, 20 mA Control Output 2 12 VDC, 21 mA + External power One CT supply for ES1B Two CTs 14 14 14 15 CT2 Control Output 2 + - - DO NOT USE - - 12 VDC, 20 mA CT1 (Resistive load) 15 15 CT2 16 17 18 19 20 DO NOT USE DO NOT USE DO NOT USE A + - V mA - + A B B B - 19 DO NOT USE + mA - + - V - DO NOT USE + TC/Pt universal input Analog input + TC/Pt universal input Analog input E5GN Previous models Number of terminals: 9 (1 to 9) Input terminals: 7 to 9 RS-485 communications terminals: 5 and 6 Upgraded models Number of terminals: 14 (1 to 14) Input terminals: 10 to 12 RS-485 communications terminals: 7 and 8 + B(+) RS-485 communications RS-232C communications CT input SD RD DO NOT USE mA DO NOT USE SG DO NOT USE DO NOT USE Analog input Control - B(+) A(-) Input output 1 power Communications supply 12 VDC 21 mA 100 to 240 VAC or 24 VAC/DC (no polarity) Relay output Alarm output 1, (OUT1) control output 2, or input error alarm I/output 1 (ALM1/OUT1) + + - Analog input + 7 8 9 10 11 12 1 Input power supply 2 3 4 Control output 1 5 Auxiliary output 1 6 + A xx - TC B B PT CT A Event input EV1 EV2 DO NOT USE B + B Universal TC/Pt input V 13 14 Auxiliary output 2 + · 100 to 240 VAC · 24 VAC/DC (no polarity) Body Drawout Previous models E5AN/EN · Using Screws · Using Hooks Upgraded models Dimensions Previous models E5GN 3 100 Upgraded models · Models with Screw Terminal Blocks Bezel thickness: 2 mm Depth: 99 mm Shape of slits changed 22 2 99 Bezel thickness: 3 mm Depth: 100 mm 35 35 · Models with Screwless Clamp Terminal Blocks Bezel thickness: 2 mm Shape of slits changed 2 100 35 22 22 xxi **Terminal Block Configuration E5GN** Previous models · Models with Screw Terminal Blocks Terminals 1 to 6: M2.



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6 screw terminals Terminals 7 to 9: M2 screw terminals Upgraded models · Models with Screw Terminal Blocks Terminals 1 to 12: M3 screw terminals · Models with Screwless Clamp Terminal Blocks Terminals 1 to 12: None xxii Wire Connections E5GN Previous models · Wire connection direction: Perpendicular to back surface Upgraded models · Models with Screw Terminal Blocks Wire connection direction: Horizontal from the top and bottom of back surface · Models with Screwless Clamp Terminal Blocks Wire connection direction: Perpendicular to back surface xxiii Wiring Terminals Previous models E5GN · Models with Screw Terminal Blocks Terminals Terminals 1 to 6 Terminals 7 to 9 Wire gauge AWG24 to AWG14 AWG28 to AWG22 Ferrules 2.1 mm dia. max. 1.3 mm dia. max. Upgraded models · Models with Screw Terminal Blocks Changed from ferrules to crimp terminals for M3 screws. Tightening torque: 0.5 N·m 5.8 mm max.

5.8 mm max. 5 to 6 mm Wires 5 to 6 mm Ferrules · Models with Screwless Clamp Terminal Blocks Wires: Changed to 10 mm from 5 to 6 mm. Ferrules: Changed to 8 to 12 mm from 5 to 6 mm. 0.8 to 1.4 mm 10 mm Terminals Terminals 1 to 6 Terminals 7 to 9 Screws M2.6 M2 Tightening torque 0.23 to 0.25 N·m 8 to 12 mm Ferrules 0.

12 to 0.14 N·m Wires Removing the Terminal Block E5GN Previous models Upgraded models Press firmly in on both sides of the terminal block to Insert a tool into the tool holes (one on the top and release the lock and then pull up on the terminal one on the bottom) to release the hooks and pull out block. the terminal block. Terminal hole Note The method for removing the terminal block is the same for both screw terminal blocks and screwless clamp terminal blocks. xxiv Ratings Previous models Input sensor types for thermocouple inputs --Input range for E thermocouple: 0 to 600°C Input accuracy (There are no changes in thermocouple specifications for E5CN-U.

) Upgraded models The following types of thermocouple input were added: W and PLII. Input range increased for E thermocouple: -200 to 600°C Influence of signal source resistance Current outputs Auxiliary outputs (alarm outputs) Input sampling cycle · Thermocouple: ($\pm 0.5\%$ PV or $\pm 1^\circ\text{C}$, whichever is greater) ± 1 digit ever is greater) ± 1 digit · Platinum resistance thermometer: · Platinum resistance thermometer: ($\pm 0.2\%$ ($\pm 0.5\%$ PV or $\pm 1^\circ\text{C}$, whichever is greater) PV or $\pm 0.8^\circ\text{C}$, whichever is greater) ± 1 digit ± 1 digit · Analog input: $\pm 0.5\%$ FS ± 1 digit · Analog input: $\pm 0.2\%$ FS ± 1 digit · Thermocouple: $0.1^\circ\text{C}/$ (except B, R, S), · Thermocouple: $0.1^\circ\text{C}/$ (for all specifications) $0.2^\circ\text{C}/$ (B, R, S) tions) · Platinum resistance thermometer: $0.4^\circ\text{C}/$ · Platinum resistance thermometer: $0.1^\circ\text{C}/$ Current output resolution: Approx. 2,700 Current output resolution: Approx.

10,000 E5CN/E5CN-U/E5GN E5CN/E5CN-U E5GN 250 VAC, 1 A 250 VAC, 3 A 250 VAC, 2 A E5GN E5GN 500 ms 250 ms Characteristics Previous models Model numbers for the E5CN Models with 24-VAC/VDC power supply specifications Example: E5CN-R2MT-500 (24 VAC/VDC) Model numbers for the E5AN/EN Example: E5AN-R3MT-500 (100 to 240 VAC) Example: E5AN-R3MT-500 (24 VAC/VDC) Upgraded models A "D" was added to the model numbers for models with 24-VAC/VDC power supply specifications. Example: E5CN-R2MTD-500 (24 VAC/VDC) "-N" was added to all model numbers A "D" was added to the model numbers for models with 24-VAC/VDC power supply specifications. Example: · E5AN-R3MT-500-N (100 to 240 VAC) · E5AN-R3MTD-500-N (24 VAC/VDC) · Model numbers have changed accompanying the introduction of universal input capability. · A "D" was added to the model numbers for models with 24-VAC/VDC power supply specifications. Example: E5GN-RT (100 to 240 VAC) E5GN-RTD (24 VAC/VDC) PV status display and SV status display PF Key added (E5AN/EN only). Model numbers for the E5GN Examples: E5GN-RTC (100 to 240 VAC) E5GN-RP (100 to 240 VAC) 24-VAC/DC Specification Example: E5GN-RTC (24 VAC/DC) Front panel --- --- PV/SP display selection for three-level display (E5AN/EN only) * xxv Previous models Inputs Outputs Controls ----- Alarms Other Upgraded models Square root extraction (for models with analog inputs) Control output ON/OFF count alarm MV change rate limiter 40% AT Automatic cooling coefficient adjustment for heating/cooling control PV rate of change alarm OC alarm (only for models with heater burnout detection) Logic operations Inverting direct/reverse operation using event inputs or communications commands * A 2-level display is set when shipped from the factory. A 3-level display is activated if parameters are initialized. xxvi Communications Characteristics Communications access size CompoWay/F services Previous models Double word access only --Upgraded models Word access and double word access Composite Read from Variable Area and Composite Write to Variable Area 217 bytes Communications buffer 40 bytes size Baud rate 38.4 kbps max. External communications E5GN: 19.

2k max. 57.6 kbps max. Setup Tool Cable Communications: 38.4k (fixed) RS-485/RS-232C external communications RS-485/RS-232C external communications and and Setup Tool communications cannot be Setup Tool communications can be used at the used at the same time. Other Upgrades Previous models Mounting Bracket (E5AN/EN only) Upgraded models Modified section Mounting Bracket for upgraded models Mounting Bracket for previous models Packing case (E5AN/EN only) · Previous ID code: N5 TYPE E5AN-R3MT-500 TYPE E5CN T TEMPERATURE CONTROLLER TEMP. TEMP. Note The Mounting Bracket for the previous models cannot be used for upgraded models. · New ID code: N6 TYPE E5AN-R3MT-500-N TYPE E5CN - R2T TEMPERATURE CONTROLLER TEMP. TEMP. MULTI-RANGE MULTIRANGE VOLTS VOLTS MULTI-RANGE MULT-IRANGE VOLTS VOLTS N5 LOT No. **** QYT.1 N5 LOT No. QYT.1 OMRON Corporation MADE IN CHINA 100-240 VAC 100 240 VAC - LOT No. **** QYT.1 N6 LOT No. QYT.1 OMRON Corporation MADE IN CHINA OMRON Corporation MADE IN CHIN 100-240 VAC 100 240VAC - Terminal Cover (sold separately) for E5CN · E53-COV10 (for E5CN only) · E53-COV17 (for E5CN only) Note The Terminal Cover for the previous models cannot be used for improved models.

xxvii Previous models Terminal Cover (sold · E53-COV11 separately) for E5AN/EN Upgraded models · E53-COV16 Note The Terminal Cover for the previous models cannot be used for improved models. Front Panel Labels (E5GN) · Display area dimensions: 36.1 × 9.8 mm (W × H) · The design has been changed.



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· Added characters: MANU, SUB1, SUB2, and HA · Display area dimensions: 36.8 × 10.1 mm (W × H) xxviii Previous models Body Labels (E5GN) 1. 2. 3. Body labels: 3 1.

Model number: Refer to the model number legend. 2. Upgraded models Body labels: All labels combined into one label. Model number: Refer to the model number legend. Lot No.

: Year of manufacture (last digit of 3. Lot No.: Year of manufacture (last two digits year of year) @@@@ @@@@ @@@@ 1, 2: Manufacture day: 01 to 31 1, 2: Manufacture day: 01 to 31 3: Manufacture month: 1 to 9, X, Y, and Z (January to December) 3: Manufacture month: 1 to 9, X, Y, and Z (January to December) 4: Last digit of year. 4, 5: Year of manufacture (last two digits of year) 5, 6: Manufacturing factory code 6, 7: Manufacturing factory code Top of Controller Bottom of Controller Top of Controller Box Labels (E5GN) No ID number "N6" has been added to identify the new models. RTC RT Ro Ro xxix Conventions Used in This Manual Model Notation The E5CN-@@@, E5CN-@@@U, E5AN-@@@, E5EN-@@@, and E5GN-@@@ are given as the E5CN, E5CN-U, E5AN, E5EN, and E5GN when they share functionality.

The following notation is used when specifying differences in functionality. Notation E5@N-@@@B E5@N-@@@03 E5@N-@@@H E5@N-@@@HH E5@N-@@@Q E5@N-@@@P E5@N-@@@01 E5@N-@@@F Options Two event inputs RS-485 communications One of HB, HS, and heater overcurrent detection Two of HB, HS, and heater overcurrent detection (See note 1.) Control output 2 (voltage output) (See note 1.) External power supply to ES1B (See note 1.) RS-232C communications (See note 2.) Transfer output (See note 3.) Note: (1) Excluding the E5GN. (2) Excluding the E5CN. (3) The E5AN and E5EN only. Meanings of Abbreviations The following abbreviations are used in parameter names, figures and in text explanations.

These abbreviations mean the following: Symbol PV SP SV AT ST HB HS OC LBA EU Term Process value Set point Set value Auto-tuning Self-tuning Heater burnout Heater short (See note 1.) Heater overcurrent Loop burnout alarm Engineering unit (See note 2.) Note: (1) A heater short indicates that the heater remains ON even when the control output from the Temperature Controller is OFF because the SSR has failed or for any other reason. (2) "EU" stands for Engineering Unit. EU is used as the minimum unit for engineering units such as °C, m, and g. The size of EU varies according to the input type. For example, when the input temperature setting range is 200 to +1300°C, 1 EU is 1°C, and when the input temperature setting range is 20.0 to +500.0°C, 1 EU is 0.1°C. For analog inputs, the size of EU varies according to the decimal point position of the scaling setting, and 1 EU becomes the minimum scaling unit. xxx How to Read Display Symbols The following tables show the correspondence between the symbols displayed on the displays and alphabet characters. The default is for 11-segment displays. abcdefghijklm ABCDEFGH I JKLM nopqrstuvwxyz NOPQRSTUVWXYZ The Character Select parameter in the advanced function setting level can be turned OFF to display the following 7-segment characters. (Refer to page 243.

) ABCDEFGH I JKLM NOPQRSTUVWXYZ xxxi xxxii TABLE OF CONTENTS SECTION 1 Introduction.

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Please read this manual carefully and be sure you understand the information provided before attempting to set up or operate an E5CN/CN-U/AN/EN Digital Temperature Controller. · Overview Section 1 introduces the features, components, and main specifications of the E5CN/CN-U/AN/EN/ GN Digital Temperature Controllers. · Setup Section 2 describes the work required to prepare the E5CN/CN-U/AN/EN/ GN Digital Temperature Controllers for operation, including installation and wiring. · Basic Operations Section 3 describes the basic operation of the E5CN/CN-U/AN/EN/ GN Digital Temperature Controllers, including key operations to set parameters and descriptions of display elements based on specific control examples. Section 5 describes the individual parameters used to setup, control, and monitor operation. · Operations for Applications Section 4 describes scaling, the SP ramp function, and other special functions that can be used to make the most of the functionality of the E5CN/CN-U/AN/EN/ GN Digital Temperature Controllers. Section 5 describes the individual parameters used to setup, control, and monitor operation. · User Calibration Section 6 describes how the user can calibrate the E5CN/CN-U/AN/EN/ GN Digital Temperature Controllers. · Appendix The Appendix provides information for easy reference, including lists of parameters and settings. !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. xxxv xxxvi SECTION 1 Introduction This section introduces the features, components, and main specifications of the E5CN, and E5AN, and E5EN Digital Temperature Controllers. 1-1 Names of Parts

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..... 1 Names of Parts Section 1-1 1-1 1-1-1 Names of Parts Front Panel The front panel is the same for the E5CN and E5CN-U. Temperature unit E5CN/CN-U No. 1 display Operation indicators No. 2 display Up Key Level Key Mode Key Down Key E5AN Temperature unit SUB1 SUB2 SUB3 PV No. 1 display Operation indicators HA SV OUT1 OUT2 STOP CMW MANU No. 2 display MV No. 3 display Function Key/ Auto/Manual Key PF A/M Up Key E5AN Down Key Level Key Mode Key 2 Names of Parts E5EN Section 1-1 Operation indicators SUB1 SUB2 HA SUB3 Temperature unit PV No.1 display SV No.2 display OUT1 STOP Operation indicators MV OUT2 CMW MANU No. 3 display Mode Key Level Key Up Key PF A/M Function Key/ Auto/Manual Key E5EN Down Key E5GN No. 1 display Temperature unit Operation indicators Operation indicators Level Key No. 2 display Mode Key Down Key Up Key 3 Names of Parts Section 1-1 1-1-2 Explanation of Indicators Displays the process value or parameter name. Lights for approximately one second during startup. Displays the set point, parameter operation read value, or the variable input value. Lights for approximately one second during startup. The set point will flash during autotuning. No. 1 Display No. 2 Display No. 3 Display (E5AN/EN Only) Displays MV, soak time remaining, or multi SP. Lights for approximately one second during startup. A 2-level display is set when shipped from the factory. A 3-level display is activated if parameters are initialized. Operation Indicators 1,2,3.

.. 1. SUB1 (Sub 1) Lights when the function set for the Auxiliary Output 1 Assignment parameter is ON. SUB2 (Sub 2) Lights when the function set for the Auxiliary Output 2 Assignment parameter is ON. SUB3 (Sub 3) (E5AN/EN Only) Lights when the function set for the Auxiliary Output 3 Assignment parameter is ON. 2. HA (Heater Burnout, Heater Short Alarm, Heater Overcurrent Detection Output Display) Lights when a heater burnout, heater short alarm, or heater overcurrent occurs. 3. OUT1 (Control Output 1) Lights when the control output function assigned to control output 1 turns ON. For a current output, however, OFF for a 0% output only. OUT2 (Control Output 2) (Excluding the E5GN) Lights when the control output function assigned to control output 2 turns ON.



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For a current output, however, OFF for a 0% output only. 4. STOP Lights when operation is stopped.

During operation, this indicator lights when operation is stopped by an event or by key input using the RUN/STOP function. 5. CMW (Communications Writing) Lights when communications writing is enabled and is not lit when it is disabled. 6. MANU (Manual Mode) Lights when the auto/manual mode is set to manual mode.

7. (Key) Lights when settings change protect is ON (i.e., when the U and D Keys are disabled by protected status.) Temperature Unit The temperature unit is displayed when parameters are set to display a temperature. The display is determined by the currently set value of the Temperature Unit parameter. °C indicates °C and °F indicates °F. This indicator flashes during ST operation. It is OFF on models with linear inputs. 4 Names of Parts Section 1-1 1-1-3 Using the Keys This section describes the basic functions of the front panel keys.

This is a function key. When it is pressed for at least 1 second, the function set in the PF Setting parameter will operate. Example: When A-M (auto/manual) is selected in the PF Setting parameter (initial value: A-M), the key operates as an auto/manual switch, switching between Auto Mode and Manual Mode. If the key is pressed for more than 1 second (regardless of key release timing), the mode will switch. Press this key to move between setting levels. The setting level is selected in the following order: operation level: adjustment level, initial setting level, communications setting level. Press this key to change parameters within a setting level. The parameters can be reversed by holding down the key (moving one per second in reverse order). PF (Function (Auto/ Manual)) Key (E5AN/EN Only) O Key M Key U Key D Key O + M Keys Each press of this key increments the value displayed on the No. 2 display or advances the setting. Holding the key down speeds up the incrementation. Each press of this key decrements values displayed on the No. 2 display or reverses the setting. Holding the key down speeds up the incrementation. Press these keys to change to the protect level.

For details on operations involving holding these keys down simultaneously, refer to 1-3 Setting Level Configuration and Key Operations. For details on the protect level, refer to SECTION 5 Parameters. To restrict set value changes (in order to prevent accidental or incorrect operations), these key operations require simultaneously pressing the O key along with U or D key. This applies only to the parameter for the password to move to protect level. (Refer to page 162.

) O + U Keys O + D Keys 5 I/O Configuration and Main Functions Section 1-2 1-2 1-2-1 E5CN I/O Configuration and Main Functions I/O Configuration Control section Control output (heating) Control output (cooling) Temperature input or analog input Control output 1 Control output 2 Heating/cooling External power supply for ES1B (See note.) (See note.) Alarm 3 CT1 input Alarm 2 Alarm 1 CT2 input Auxiliary output 2 HB alarm HS alarm Event inputs 2 channels Auxiliary output 1 OC alarm Input error Program end output Communications function Note: Press one of these keys, depending on the model. Note Functions can be assigned individually for each output by changing the set values for the Control Output 1 Assignment, the Control Output 2 Assignment, the Auxiliary Output 1 Assignment, and the Auxiliary Output 2 Assignment parameters in the advanced function setting level. 6 I/O Configuration and Main Functions E5CN-U Temperature input or analog input Control section Control output (heating) Control output (cooling) Section 1-2 Control output 1 Heating/cooling Auxiliary output 2 Standard Alarm 3 Alarm 2 Alarm 1 Auxiliary output 1 Input error Program end output Note Functions can be assigned individually for each output by changing the set values for the Control Output 1 Assignment, the Auxiliary Output 1 Assignment, and the Auxiliary Output 2 Assignment parameters in the advanced function setting level. 7 I/O Configuration and Main Functions Model Number Structure Model Number Legend Controllers Option Units Section 1-2 E5CN-@@M@@@-500 12345 6 7 E53-CN@@@ 1 234 1. Control Output 1 R: Relay output Q: Voltage output (for driving SSR) C: Current output Y: Long-life relay output (hybrid) *1 2. Auxiliary Outputs *2 Blank: None 2: Two outputs 3. Option M: Option Unit can be mounted. 4.

Input Type T: Universal thermocouple/platinum resistance thermometer L: Analog current/voltage input 5. Power Supply Voltage Blank: 100 to 240 VAC D: 24 VAC/VDC 6. Case Color Blank: Black W: Silver 7. Terminal Cover -500: With terminal cover 1. Applicable Controller CN: E5CN or E5CN-H 2. Function 1 Blank: None Q: Control output 2 (voltage for driving SSR) P: Power supply for sensor 3. Function 2 Blank: None H: Heater burnout/SSR failure/Heater overcurrent detection (CT1) HH: Heater burnout/SSR failure/ Heater overcurrent detection (CT2) B: Two event inputs 03: RS-485 communications H03: Heater burnout/SSR failure/ Heater overcurrent detection (CT1) + RS-485 communications HB: Heater burnout/SSR failure/ Heater overcurrent detection (CT1) + Two event inputs HH03: Heater burnout/SSR failure/ Heater overcurrent detection (CT2) + RS-485 communications 4. Version N2: Applicable only to models released after January 2008 E5CN-@@@U 1234 1. Output Type R: Relay output Q: Voltage output (for driving SSR) C: Current output 2. Number of Alarms Blank: No alarm 1: One alarm 2: Two alarms 3.

Input Type T: Universal thermocouple/platinum resistance thermometer L: Analog Input 4. Plug-in type U: Plug-in type Note Not all combinations of function 1 and function 2 specifications are possible for Option Units (E53-@@@). *1 Always connect an AC load to a long-life relay output. The output will not turn OFF if a DC load is connected because a triac is used for switching the circuit. For details, check the conditions in Ratings.

*2 Auxiliary outputs are contact outputs that can be used to output alarms or results of logic operations. 8 I/O Configuration and Main Functions E5AN/EN Temperature input or analog input Section 1-2 Control section Control output (heating) Control output (cooling) Control output 1 Heating/cooling Control output 2 External power supply for ES1B (See note.) (See note.) Alarm 3 CT1 input Alarm 2 Alarm output 3 Alarm output 2 Alarm 1 CT2 input HB alarm Event inputs 1 and 2 (2 channels) HS alarm OC alarm Alarm output 1 Input error Program end output Communications function Note: Press one of these keys, depending on the model. Note Functions can be assigned individually to each output by changing the set values for the Control Output 1 Assignment, Control Output 2 Assignment, Auxiliary Output 1 Assignment, Auxiliary Output 2 Assignment, and Auxiliary Output 3 Assignment parameters in the advanced function setting level.



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E5AN/EN-@3@M@-@-500-N 123 4 5 6 7 8 9 E53-@ 1 1. Control Output 1 R: Relay output Q: Voltage output (for driving SSR) C: Current output 2. Auxiliary Outputs 3: Three outputs 3. Heater Burnout/Heater Short, Control Output 2, or External Power Supply for ES1B Blank: None Q: Control output 2 (voltage output for driving SSR) Y: Long-life relay output (hybrid) H: Heater burnout/Heater short/Heater overcurrent detection (CT1) HH: Heater burnout/Heater short/Heater overcurrent detection (CT2) P: Power supply for sensor 4. Option M: Option Unit can be mounted. 5. Input Type T: Universal thermocouple/platinum resistance thermometer input L: Analog current/voltage input 6. Power Supply Voltage Blank: 100 to 240 VAC D: 24 VAC/VDC 7. Case Color Blank: Black W: Silver 8. Terminal Cover 500: With terminal cover 9.

Version N: Available only to models released after January 2008. 1. Function EN01: RS-232C communications EN03: RS-485 communications AKB: Event input 10 I/O Configuration and Main Functions E5GN Temperature input or analog input Section 1-2 Control section Control output (heating) Control output (cooling) Control output 1 Heating/cooling Auxiliary output 1 Standard Alarm 1 CT1 input HB alarm HS alarm OC alarm Input error Event inputs 2 channels Alarm 2 Auxiliary output 2 Alarm 3 Program end output Communications function Note Functions can be assigned individually for each output by changing the set values for the Control Output 1 Assignment, the Auxiliary Output 1 Assignment, and the Auxiliary Output 2 Assignment parameters in the advanced function setting level. 11 I/O Configuration and Main Functions Model Number Structure Model Number Legends Controllers Section 1-2 E5GN-@@@@@-@-@-@ 12345 6 7 8 1. Control Output 1 R: Relay output Q: Voltage output (for driving SSR) C: Current output 2. Auxiliary Outputs Blank: None 1: One outputs 2: Two outputs 3. Option Blank: None 01: RS-232C communications 03: RS-485 communications B: Two event inputs H: Heater burnout/Heater short/Heater overcurrent detection (CT1) 4. Input Type T: Universal thermocouple/platinum resistance thermometer input L: Analog current/voltage input 5. Power Supply Voltage Blank: 100 to 240 VAC D: 24 VAC/VDC 6. Terminal Type Blank: Models with Screw Terminal Blocks C: Models with Screwless Clamp Terminal Blocks 7.

Case Color Blank: Black W: Silver 8. Communications Protocol Blank: None FLK: CompoWay/F communications Note Silver is available by special order only. 1-2-2 Main Functions This section introduces the main E5CN/CN-U/AN/EN/GN functions. For details on particular functions and how to use them, refer to SECTION 3 Basic Operation and following sections. Input Sensor Types · The following input sensors can be connected for temperature input (i. e., E5_N-@@@T): Thermocouple: K, J, T, E, L, U, N, R, S, B, W, PLII Infrared temperature sensor: ES1B 10 to 70°C, 60 to 120°C, 115 to 165°C, 140 to 260°C Platinum resistance thermometer: Pt100, JPt100 Analog input: 0 to 50 mV 12 I/O Configuration and Main Functions Section 1-2 · Inputs with the following specifications can be connected for analog input (i. e., E5_N-@@@L): Current input: 4 to 20 mA DC, 0 to 20 mA DC Voltage input: 1 to 5 VDC, 0 to 5 V DC, 0 to 10 V DC Control Outputs · A control output can be a relay, voltage (for driving SSR), or current output, depending on the model. · Long-life relay outputs (see note) use semiconductors for switching when closing and opening the circuit, thereby reducing chattering and arcing and improving durability.

However, if high levels of noise or surge are imposed between the output terminals, short-circuit faults may occasionally occur. If the output becomes permanently shorted, there is the danger of fire due to overheating of the heater. Design safety into the system, including measures to prevent excessive temperature rise and spreading of fire. Take countermeasures such as installing a surge absorber. As an additional safety measure, provide error detection in the control loop. (Use the Loop Burnout Alarm (LBA) and HS alarm that are provided for the E5@N.) Long-life relay output 1 Varistor 2 Varistor Inductive load Select a surge absorber that satisfies the following conditions. Voltage used 100 to 120 VAC 200 to 240 VAC Varistor voltage 240 to 270 V 440 to 470 V Surge resistance 1,000 A min. · Always connect an AC load to a long-life relay output (see note). The output will not turn OFF if a DC load is connected.

Note Alarms Long-life relay outputs are not supported for the E5GN. · Set the alarm type and alarm value or the alarm value upper and lower limits. · If necessary, a more comprehensive alarm function can be achieved by setting a standby sequence, alarm hysteresis, auxiliary output close in alarm/open in alarm, alarm latch, alarm ON delay, and alarm OFF delay. · If the Input Error Output parameter is set to ON, the output assigned to alarm 1 function will turn ON when an input error occurs. Control Adjustment Event Inputs · Optimum PID constants can be set easily by performing AT (auto-tuning) or ST (self-tuning). · With the E53-CN@B@N2 for the E5CN or the E5AN/EN-@M@-500-N with the E53-AKB for the E5AN/EN, the following functions can be executed using event inputs: switching set points (multi-SP, 4 points max.), switching RUN/STOP, switching between automatic and manual operation, starting/resetting the program, inverting direct/reverse operation, 100% AT execute/cancel, 40% AT execute/cancel, setting change enable/disable, and canceling the alarm latch. · With the E53-CN@H@N2 or E53-CN@HH@N2 for the E5CN, or the E5AN/EN-@@H@-500-N or E5AN/EN-@@HH@-500-N, the heater burnout detection function, HS alarm function, and heater overcurrent detection function can be used. Heater Burnout, HS Alarm, and Heater Overcurrent 13 I/O Configuration and Main Functions Communications Functions Section 1-2 · Communications functions utilizing CompoWay/F (See note 1.), SYSWAY (See note 2.

), or Modbus (See note 3.) can be used. RS-485 Interface Use the E53-CN@03N2 for the E5CN or the E53-EN03 for the E5AN/EN. RS-232C Interface Use the E53-EN01 for the E5AN/EN. Note (1) CompoWay/F is an integrated general-purpose serial communications protocol developed by OMRON. It uses commands compliant with the well-established FINS, together with a consistent frame format on OMRON Programmable Controllers to facilitate communications between personal computers and components. (2) SYSWAY communications do not support alarm 3. (3) Modbus is a communications control method conforming to the RTU Mode of Modbus Protocol. Modbus is a registered trademark of Schneider Electric. (4) The E5CN and E5CN-U do not support the RS-232C interface.

External Power Supply for ES1B Note Transfer Output The E5AN-@P@-N or E5EN-@P@-N with the E53-CN@P@N2 can be used as the power supply for ES1B Infrared Temperature Sensors.



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