

E5AC

OMRON

Digital Controller

EN INSTRUCTION MANUAL

Thank you for purchasing the OMRON E5AC Digital Controller. This manual describes the functions, performance, and application methods needed for optimum use of the product. Please observe the following items when using the product.

- This product is designed for use by qualified personnel with a knowledge of electrical systems.
- Before using the product, thoroughly read and understand this manual to ensure correct use.
- Keep this manual in a safe location so that it is available for reference whenever required.

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Refer to the E5AC Digital Controllers User's Manual (Cat. No. H174) for detailed application procedures.

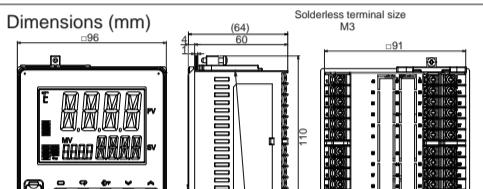
Safety Precautions



Indicates a potentially hazardous situation which, if not avoided, is likely to result in minor or moderate injury or property damage. Read this manual carefully before using the product.

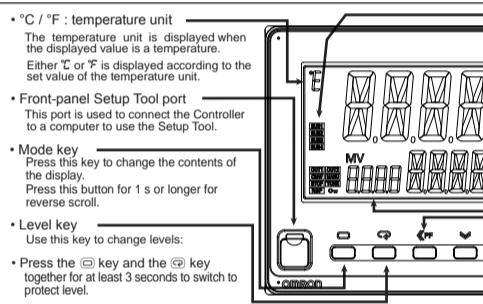
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Wiring Dimensions



- Do not remove the terminal block. Doing so may result in failure or malfunction.
- Setup ports are provided on the top and front panels of the Digital Controller. Use these ports to connect a personal computer to the Digital Controller or to use the Setup Tool cable. The E58-CIFQ2-E USB-Serial Conversion Cable is required to connect to the top-panel port. The E58-CIFQ2-E USB-Serial Conversion Cable is required to connect to the front-panel port. (Do not use the product with the USB-Serial Conversion Cable left permanently connected.)
- If the front-panel port cover is lost or damaged, order it separately. The Waterproof Packing should be periodically replaced because it may deteriorate, shrink, or harden depending on the operating environment.

Names of Parts on Front Panel



- *** °C / °F : temperature unit.**
The temperature unit is displayed when the displayed value is a temperature.
Either °C or °F is displayed according to the set value of the temperature unit.
- **Front-panel Setup Tool port**
This port is used to connect the Controller to a computer to use the Setup Tool.
- **Mode key**
Press this key to change the contents of the display.
Press this button for 1 s or longer for reverse scroll.
- **Level key**
Use this key to change levels:
Press the ⌂ key and the ⌂ key together for at least 3 seconds to switch to protect level.
- **No.1 display**
Process value or set data type.
- **No.2 display**
Set point, set data read-out value or changed input value.
- **No.3 display**
MV, Soak Time Remain, and Multi-SP.
- **Shift key (PF key)**
The default PF Setting parameter is for shifting the digit. This is a function key.
When it is pressed, the function set for the PF Setting parameter will operate.
- **Up and Down keys**
Each press of ⌂ key increments or advances the values displayed on the No.2 display.
Each press of ⌂ key decrements or returns the values displayed on the No.2 display.

CAUTION

Minor injury due to electric shock may occasionally occur. Do not touch the terminals while power is being supplied.
Electric shock, fire, or malfunction may occasionally occur. Do not allow metal objects, conductors, cuttings from installation work, or moisture to enter the Digital Controller, the Setup Tool ports, or between the pins on the connectors on the Setup Tool cable. Attach the cover to the front-panel Setup Tool port whenever you are not using it to prevent foreign objects from entering the port.
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

- This is a product UL listed as Open Type Process Control Equipment. It must be mounted in an enclosure that does not allow fire to escape externally.
- More than one disconnect switch may be required to de-energize the equipment before servicing.
- Signal inputs are SELV, limited energy.
- Caution:** To reduce the risk of fire or electric shock, do not interconnect the outputs of different Class 2 circuits.

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.

Loose screws may occasionally result in fire. Tighten the terminal screws to the specified torque of 0.43 to 0.58 N·m.

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 Digital Controller, take appropriate safety measures, such as installing a monitoring device on a separate line.

Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product.

At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT 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 PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Precautions for Safe Use

Be sure to observe the following precautions to prevent operation failure, malfunction, or adverse affects on the performance and functions of the product. Not doing so may occasionally result in unexpected events. Use the product with sufficient care.

- The product is designed for indoor use only. Do not use the product outdoors. Do not use or store the product in any of the following locations:
 - Places directly subject to heat radiated from heating equipment.
 - Places subject to splashing liquid or oil atmosphere.
 - Places subject to direct sunlight.
 - Places subject to corrosive gas (in particular, sulfide gas and ammonia gas).
 - Places subject to intense temperature change.
 - Places subject to icing and condensation.
 - Places subject to vibration and large shocks.

(2) Use/store within the rated temperature and humidity ranges. Provide forced-cooling if required.

(3) To allow heat to escape, do not block the area around the product.

(4) Do not block the ventilation holes on the product.

(5) Use the specified size of crimped terminals (M3, with 5.8 mm or less) for wiring. To connect bare wires to the terminal block, use copper braided or solid wires with a gauge of AWG24 to AWG18 (equal to a cross-sectional area of 0.205 to 0.8231 mm²). Up to two wires of same size and type, or two crimped terminals can be inserted into a single terminal.

(6) Do not wire the terminals which are not used.

(7) Allow as much space as possible between the controller and devices that generate a powerful high-frequency surge. When connecting the power lines, connect the ground lines first, then the neutral lines, and finally the power lines when you are wiring to the terminals.

(8) Use this product within the rated load and power supply.

(9) Make sure that the rated voltage is attained within two seconds of turning ON the power using a switch or relay contact. If the voltage is applied gradually, the power may not be reset or output malfunctions may occur.

(10) Make sure that the Digital 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.

(11) When performing self-tuning, turn the load and the unit ON simultaneously, or turn the load ON before you turn the controller ON.

(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) Wipe off any dirt from the Digital Controller with a soft dry cloth. Never use thinners, benzine, alcohol, or any cleaners that contain these or other organic solvents. Deformation or discoloration may occur.

(14) Design system (control panel, etc) considering the 2 second of delay that controller's output to be set after performing control.

(15) The number of non-volatile memory write operations is limited. Therefore, use RAM write mode when frequently overwriting data stored in non-volatile memory.

(16) When connecting the Digital Controller to other units, use suitable tools.

(17) Do not connect cables to both the front-panel Setup Tool port and the top-panel Setup Tool port at the same time. The Digital Controller may be damaged or may malfunction.

(18) Do not exceed the communications distance that is given in the specifications and use the specified communication cable. Refer to the E5AC Digital Controllers User's Manual (Cat. No. H174) for the communication distance and cable specifications.

(19) Do not exceed the maximum output current of the Digital Controller.

(20) Do not connect power supply to the Digital Controller ON or OFF while the USB-Serial Conversion Cable is connected. The Digital Controller may be damaged.

(21) The maximum terminal temperature is 75°C. Use wires with heat resistance of 75°C min to wire to the terminals.

Specifications

Power supply voltage	100 to 240 VAC, 50/60 Hz or 24 VAC, 50/60 Hz or 24 VDC, 85 to 110% of the rated voltage
Operating voltage range	7.0 VA max. (100 to 240 VAC) 4.0 VA max. (24 VDC) 3.0 VA max. (24 VAC, 50/60 Hz)
Power consumption	5.6 VA max. (24 VAC) 3.4 W max. (24 VDC)
Option 000	Thermocouple (±0.3 % of indication value or ±1°C, 0 to 1500 m greater) 1 digit max.
All other specifications	Platinum resistance thermometer (±0.2 % of indication value or ±0.8°C, whichever is greater) 1 digit max. Analog input ±0.2 V to ±10 V 1 digit max.
Indication accuracy	Event input Input No-contact input Remote SP input Potentiometer input Control output 1
Ambient temperature	Output approx. 7 mA per contact. ON: 1 KAC max. (0 to 100 min.) OFF: 1 mA per contact (0 to 100 min.) OFF: leakage current 0.1 mA max. 4 to 20 mA DC or 0 to 20 mA DC 0 to 5 V DC or 1 to 5 V DC or 0 to 10 V DC Burst current: 4 to 20 mA DC or 0 to 20 mA DC Burst current: 500 mA max.
Control output 2	Relay output: SPST-NO 250 VAC, 5 A (resistive load)
Control method	Electric life of: 100,000 operations Voltage output (for driving SSR): 12 VDC, 100 mA 24 VDC, 100 mA Control output 2: 20 mA DC or 20 mA DC Control output 3: 20 mA DC or 20 mA DC Control output 4: 20 mA DC or 20 mA DC Control output 5: 20 mA DC or 20 mA DC
Ambient temperature	Control output 6: 20 mA DC or 20 mA DC Control output 7: 20 mA DC or 20 mA DC Control output 8: 20 mA DC or 20 mA DC Control output 9: 20 mA DC or 20 mA DC Control output 10: 20 mA DC or 20 mA DC Control output 11: 20 mA DC or 20 mA DC Control output 12: 20 mA DC or 20 mA DC Control output 13: 20 mA DC or 20 mA DC Control output 14: 20 mA DC or 20 mA DC Control output 15: 20 mA DC or 20 mA DC Control output 16: 20 mA DC or 20 mA DC Control output 17: 20 mA DC or 20 mA DC Control output 18: 20 mA DC or 20 mA DC Control output 19: 20 mA DC or 20 mA DC Control output 20: 20 mA DC or 20 mA DC Control output 21: 20 mA DC or 20 mA DC Control output 22: 20 mA DC or 20 mA DC Control output 23: 20 mA DC or 20 mA DC Control output 24: 20 mA DC or 20 mA DC Control output 25: 20 mA DC or 20 mA DC Control output 26: 20 mA DC or 20 mA DC Control output 27: 20 mA DC or 20 mA DC Control output 28: 20 mA DC or 20 mA DC Control output 29: 20 mA DC or 20 mA DC Control output 30: 20 mA 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