OP10 Installation Manual

Compact display unit

The OP10 is a compact setting display unit that connects to our controller and is used to monitor and set parameters.

The OP10 is connected to a 2.7/10-W module with a 2.0-W module connected. However, it cannot be used to set or display data of the 2.0-W module.

The maximum number of display channels: 16 channels.

Available connectors

1. MOUNTING

To prevent electric shock or instrument failure, always turn off the power before mounting or removing the instrument.

1.1 Mounting Cautions

1.1.1. This instrument is intended to be used under the following environmental conditions

![ECER101-11] (OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2)

1.1.2. Use the instrument within the following environment conditions:

- Approve ambient humidity: Max. W. C 93 g/m3 dry air at 101.3 kPa
- Ambient temperature: 0 to 50 °C
- Relative humidity: 45 to 85 %RH
- Altitude: Max. 2000 m
- Power lines: Separate at least 200 mm.
- Seamless air to ASTRO (in the equipment)
- Exposure to direct sunlight.
- Water oil, chemical vapor or steam splashes.
- Excessive induction noise, static electric noise, electric fields or noise.
- Do not use solvents such as paint thinner to clean the instrument. Deformation or discoloration will occur. Use a soft, dry cloth to remove stains from the instrument.
- Turn off the power supply before cleaning the instrument.
- Do not use a volatile solvent such as paint thinner to clean the instrument.

1.1.3. For proper operation of this instrument, provide adequate ventilation for heat dissipation.

1.1.4. Do not connect wires to unused terminals as this will interfere with proper operation of the instrument.

1.2 Dimensions

- External dimensions

![Dimensions of OP10](image_url)

1.3 Mounting Procedures

1.3.1. Mounting panel thickness:

- DIN rail mounting frame: 12.5 mm
- DIN rail mounting frame: 25 mm
- DIN rail mounting frame: 45 mm

2. WIRING

To prevent electric shock or instrument failure, do not turn on the power until all wiring is completed. Make sure that the wiring is correct before applying power to the instrument.

2.1 Wiring Cautions

- To avoid noise induction, keep communication signal wire away from instrument power lines, line taps and power lines of other equipment.
- If there is electrical noise in the vicinity of the instrument, the safety transformer could affect operation. Use a noise filter.

- The instrument has a basic insulation between the power supply and inputs/outputs. Additional supplementary insulation is required between the main supply and the mains connections on the OP10 (input) using a separable safety transformer, providing at least a supplementary insulation for 240V AC in accordance with IEC/UL/CSA-61010-1.

- Power supply wiring must be twisted and have a low voltage drop.

- This instrument with 24 V power supply is not provided with an overcurrent protection device. For safety install an overcurrent protection device (such as fuse) with adequate breaking capacity close to the instrument.

- Fuse type: Time-lag fuse (Approved fuse according IEC61010-1 and/or UL248-14)

- A suitable power supply should be considered in end-use equipment. The power supply must be in compliance with a limited-energy circuits (maximum available current of 8 A).

- When connecting the wire to the power supply terminals, use the specified safety rating. Only these specified safety ratings can be used, otherwise the instrument may be damaged or the operator may be injured.

- Excessive dust, salt or iron particles.
- Corrosive or inflammable gases.
- Excessive induction noise, static electric noise, electric fields or noise.
- Do not connect modular connectors to telephone line.
- Do not store, process or retrieve through any mechanical, electronic, optical or other means without prior written approval from RKC.
2.3 Connection to Controllers

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the Z-TIO-C module.

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the Z-COM-A module.

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the H-PCP-J module.

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the H-PCP-J module.

- Connect to the RS-485 port of the controller.

2.4 Connection to RS-232, RS-422A, and RS-485

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the V-TIO-E/F module.

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the V-TIO-E/F module.

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the V-TIO-E/F module.

- Use communication cable (W-BO-04 or W-BO-05) to connect the OP10 and the V-TIO-E/F module.

- Connect to the RS-242A port of the controller.

Wiring contents (Modular connector)

- The pin layout is common to Z-COM-A type and HPCP-J module.

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3. PARTS DESCRIPTION

- LCD display upper section: Displays measured value (PV) or various parameter values of setting items. Set value (SV) or parameter value set by “PARAMETER MODE” (Modular connector).

- LCD display lower section: Displays set value (SV) or parameter value set by “PARAMETER MODE” (Modular connector).

4. SPECIFICATIONS

- Display:
  - Display method: LCD display.
  - Display digits: Upper section: 4 digits (Green); Lower section: 4 digits (Orange).

- Communication:
  - Interface: Based on RS-485, EIA standard.
  - Connection method: 2-wire system; half-duplex multi-drop connection.
  - Synchronous method: No synchronization.
  - Communication speed: 4800 bps, 9600 bps, 19200 bps, 38400 bps.
  - Data bit configuration: Start bit: 1; Data bit: 8; Parity: None; Stop bit: 1.
  - Protocol: Modbus RTU.
  - Z-COM-A module: 16 modules (However, up to 99 channels).
  - V-TIO-E/F module: 16 modules (However, up to 99 channels).
  - H-PCP-J module: 16 modules (However, up to 99 channels).

- Self-diagnostic function:
  - Error code: 00 to 99, 128.
  - Diagnostic code: 1 to 255.

- Power supply voltage: 88 to 264 V AC (Including power supply voltage variation), 50/60 Hz Rating: 100 to 240 V AC 21.6 to 26.4 V AC (Including power supply voltage variation), 50/60 Hz Rating: 24 V AC 21.6 to 26.4 V AC (Including power supply voltage variation), 50/60 Hz Rating: 24 V AC

5. ERROR DISPLAYS

- Self-diagnostic error in an error detected by the self-diagnostic function, the LCD display upper section shows “Err,” and the LCD display lower section shows the error code. When two or more errors occur simultaneously, the error code numbers are totaled and displayed as one number.

- Over-scale and Underscale

- Power supply voltage: 88 to 264 V AC (Including power supply voltage variation), 50/60 Hz Rating: 100 to 240 V AC 21.6 to 26.4 V AC (Including power supply voltage variation), 50/60 Hz Rating: 24 V AC 21.6 to 26.4 V AC (Including power supply voltage variation), 50/60 Hz Rating: 24 V AC

- Current consumption: 4 VA max. (at 100 V AC) 7 VA max. (at 240 V AC) 4 VA max. (at 24 V AC) 100 mA max. (at 24 V DC)

- Standard:
  - Safety standard: UL: UL 61010-1 DOL: CAN/CSA-C22.2 No. 61010-1
  - CE marking: LVD: EN61010-1 "OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2" EMC: EN61326-1
  - RCM: EN61010-1

6. GENERAL SPECIFICATIONS

- Insulation resistance: Between unused terminals (No. 1, 2) and grounding: 20 MΩ or more at 500 V DC Between supply terminals and grounding: 20 MΩ or more at 500 V DC

- Withstand voltage:
  - 1 min.: 1000 V AC
  - 1 min.: 1500 V AC

- Power failure: A power supply of 20 ms or less will not affect the control action.

- Memory backup: Backed up by non-volatile memory (EEPROM). Number of writing: Approx. 100,000 times.

- Data storage period: Approx. 10 years.

- Allowable ambient temperature: 0 to 50 °C

- Allowable ambient humidity: 40 to 85 %RH

- Mounting method: DIN rail mounting or Panel mounting

- Weight: Approx. 120 g