1. MOUNTING

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

Mounting Environment

(1) This instrument is intended to be used under the following environmental conditions.

- E402-HW11 (ELEVATION CATEGORY & POLLUTION DEGREE 2)
- Ambient temperature less than -10°C or more than +50°C.
- Ambient humidity, 5% or more, 95% or less.
- Rapid changes in ambient temperature which may cause condensation.
- Corrosive gases, such as hydrogen sulfide, carbon disulfide, sulfuric gas or any gases that may damage paint, rubber, plastic or the instrument.
- Static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Direct heat accumulation.

(2) Avoid the following conditions when selecting the mounting location:

- Ambient temperature less than -10°C or more than +50°C.
- Ambient humidity, 5% or more, 95% or less.
- Rapid changes in ambient temperature which may cause condensation.
- Direct vibration or shock to the mainframe.
- Water, oil, dust, etc. entry.
- Excessive dust, salt or iron particles.
- Excessive surface, static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Direct heat accumulation.

2. SPECIFICATIONS

Power supply voltage: 90 to 264 V AC [Power supply voltage range]: 50/60 Hz (Ratings: 100 to 240 V AC)
21.6 to 26.4 V DC [Power supply voltage range]: 50/60 Hz (Ratings: 24 V AC)
21.6 to 26.4 V DC [Power supply voltage range]: 50/60 Hz (Ratings: 24 V DC)

Power consumption:

HA00/HA90/HA01: 12 VA max. (at 100 V AC) 17 VA max. (at 240 V AC)

HA00/HA90/HA01: 11 VA max. (at 24 V AC) 270mA max. (at 24 V DC)

HA00/HA90/HA01: 19 VA max. (at 100 V AC) 300 mA max. (at 24 V DC)

Measuring input voltage range:

TC: Input range: Rated current 0.4 A

Output range: 250 V AC, 1 A (Resistive load), 1 A contact

Weight:

Electrical life 300,000 times or more (Rated load)

Explain the above figure, the same measuring principles apply to inductive sensors.

When mounting the instrument, always mount with secure brackets either top and bottom.

In addition to mounting assembly also include two screws which can be used with the brackets to secure the instrument to the panel. See Fig. 3.

When the instrument is mounted, make sure the brackets are tightly secured to the panel.

The water intrusion test is performed in accordance with IP65 when mounted on the panel. For effective waterproofing in the test, the gasket should be securely placed between the instrument and panel with any gap. If gasket is damaged, please contact RKC sales office or agent.

1. Measuring Environment

This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take adequate measures.

This instrument is protected from electric shock by reinforced insulation. Provide reinforced insulation between the wire for the input signal and the wires for instrument power supply, source of power and loads.

Be sure to provide an adequate surge control circuit respectively for the following:

- If input/output signal lines within the building are longer than 30 meters.
- If input/output signal lines leave the building, regardless the length.

This instrument is designed for installation in an enclosed enclosure panel. All high-voltage connections such as power supply terminals must be enclosed in the instrumentation panel to avoid electric shock by operating personnel.

All precautions described in this manual should be taken to avoid damage to the instrument or personnel.

All wiring must be in accordance with local codes and regulations.

To prevent instrument damage or failure, protect the power line and the input/output lines from high currents with a protection device such as fuse, circuit breaker, etc.

Prevent metal fragments or lead wire scraps from falling inside instrument cases to avoid electric shock, fire or malfunction.

Tighten each terminal to the specific torque found in the manual to avoid electric shock, fire or malfunction.

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

Do not connect wires to unused terminals as this will interfere with proper operation of 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. Deformation or discoloration will occur. Use a soft, dry cloth to remove stains from the instrument.

To avoid damage to instrument display, do not rub with an abrasive material or push front panel with a hard object.

NOTICE

This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications. The figures shown in this manual are only for purposes of illustration.

RKC is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.

Periodic maintenance is required for safe and proper operation of this instrument. Some components have a limited service life, which can change over time.

Every effort has been made to ensure accuracy of all information contained herein. RKC makes no warranty expressed or implied, with respect to the accuracy of the information. The information in this manual is subject to change without prior written notice.

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3. PARTS DESCRIPTION

4. OPERATION FLOW OF EACH MODE

In order to make this instrument operate after being mounted on equipment and then reset, it needs to be set with operating conditions such as the set value (SV), input/output function, control function, etc. specific to each customer. Therefore, the following operational flowchart illustrates key operation in each mode or each setting item. When actually setting these operating conditions specific to the customer, see the HAA00H4AD01/HAA00H4AH01 Operation Manual (MRN102E2).

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**SV Setting & Monitor Mode**

In this mode, it is possible to set SV which is the desired value for control and also to monitor PV, SV, MV, etc.

- **PV/1SV Monitor**
  - Set the PV/1SV monitoring value.
  - Set the set value (SV).
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **PV/2SV Monitor**
  - Set the PV/2SV monitoring value.
  - Set the set value (SV).
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Input 1, 2 SV Setting**
  - Input 1, 2 SV setting.
  - Set the set value (SV).
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Event Monitor**
  - Event monitor.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **SV Range**
  - SV range.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

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**Parameter Setting Mode**

In this mode, it is possible to set parameters relating to control such as PID constants, event set values, etc. Setting items belonging to this mode can be stored up to 16 memories corresponding to the memory function.

- **Event 1 set value**
  - Event 1 set value.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Event 2 set value**
  - Event 2 set value.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Event 3 set value**
  - Event 3 set value.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **LB1 time**
  - LB1 time.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **LB2 time**
  - LB2 time.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **LB2 deadband**
  - LB2 deadband.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **LB2 control parameter**
  - LB2 control parameter.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Set value display**
  - Set value display.
  - Display the measured value (PV).
  - Scale in the scale range.

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**Setup Setting Mode**

In this mode, it is possible to set setting items not corresponding to the memory area, setting lock levels, etc.

- **Input 1 digital filter**
  - Input 1 digital filter.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Input 2 digital filter**
  - Input 2 digital filter.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Device address 2**
  - Device address 2.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Communication speed 2**
  - Communication speed 2.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

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**Operation Mode**

- **Input 1, 2 PT/RTD transfer**
  - Input 1, 2 PT/RTD transfer.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Input 1, 2 Auto Manual**
  - Input 1, 2 Auto Manual.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **Remote, Local transfer**
  - Remote, Local transfer.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

- **RUN/STOP transfer**
  - RUN/STOP transfer.
  - Set the feedback resistance.
  - Adjust the set value monitoring limit range display.

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**Engineering Mode**

- If the key is not pressed for more than one minute, the display will automatically return to the PV/1SV monitor of SV setting mode.
- The parameter of the item that does not exist in specification is not displayed.
  - (Except engineering mode)

  - **Self-diagnostic error and scaler error**
    - Adjusted data error
    - EEPROM error
    - A/D conversion error
    - RAM check error
    - Hardware configuration error
    - Software configuration error
    - Watch dog timer error
    - Program busy
    - Measured value [PV] display
    - Input error
    - Overscale
    - Input error determination point (high or low limit) display range limit (100%) to (0%)
    - Input range determination (high or low input) input scale high (5% of span) input scale low (5% of span)

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**Operation of various functions**

- For the operation of various functions, see the HAA00H4AD01/HAA00H4AH01 Operation Manual (MRN102E2).
- For the communication function, see the HAA00H4AD01/HAA00H4AH01 Communication Instruction Manual (RKC communication model E2000) (MRN102E2).

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