Thank you for purchasing the REX—AD410B. This manual describes how to use "REX—AD410B". Prior to using the indicator, please carefully read this manual and fully understand the contents. Keep this manual safely for future reference as required.

- The contents of this manual may be subject to change without prior notice.
- The contents of this manual are copyrighted; all rights are reserved by RKC INSTRUMENT INC. It is prohibited to reprint or reproduce the whole or a part of this manual without the prior of RKC INSTRUMENT INC.
- "REX—AD410B" and this manual are manufactured and prepared under strict quality control before delivery. However, if any problems arise, please contact us directly or your nearest sales agent.
- RKC assumes no responsibility for any of the following damages which the user or third party may suffer. 
  ① Damage incurred as a result of using this product.
  ② Damage caused by product failure which cannot be predicted by RKC.
  ③ Other indirect damages.

⚠️ WARNINGS ⚠️

- Wiring precautions
  If failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
  In order to prevent instrument damage or failure, protect the power line and the input/output lines from high currents by using fuses with appropriate ratings.
- Power supply
  In order to prevent instrument damage or failure, power of the specified rating.
  In order to prevent electric shock or instrument failure, do not turn on the power supply until all of the wiring is completed.
- Never use the instrument near inflammable gases.
  In order to prevent fire, explosion or instrument damage, never use this instrument at a location where inflammable or explosive gases or vapour exist.
- Never touch the inside of the instrument.
  In order to prevent electric shock or burns, never touch the inside of the instrument.
  Only RKC service engineers can touch the inside of the instrument to check the circuit or to replace parts. High voltage and high temperature sections inside the instrument are extremely dangerous.
- Never modify the instrument.
  In order to prevent accident or instrument failure, never modify the instrument.
- Maintenance
  In order to prevent electric shock, burns or instrument failure, only RKC service engineers may replace parts.
  In order to use this instrument continuously and safely, conduct periodic maintenance. Some parts used in this instrument have a limited service life and may deteriorate with time.

▶ INSTRUMENT SAFETY CAUTIONS ◀

- This instrument is designed to be mounted on instrumentation panels. It is therefore manufactured as part of the final product to facilitate wiring. This means that unauthorized personnel can easily access the high-voltage sections in this instrument such as power terminals, etc.
  Therefore, when this instrument is installed on the final product, the user should take the necessary measures for the final product to ensure that unauthorized personnel cannot access the high-voltage sections, etc.
- In order to use this instrument correctly and safely, always observe the cautions described in this manual when performing operations and maintenance.
  RKC assumes no responsibility for any injury or accident resulting from not following these cautions.
- This instrument is intended to be used under the following environmental conditions (IEC1010) [OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2]
- To the instrument with power supply of 24V, please be sure to supply the power from SELV circuit.
- The cleaning shall be done after the confirmation that the power supply to the instrument is off.
- The stains on the surface of the display shall be wiped off by a soft cloth or tissue paper.

CE CONFORMED INSTRUMENT CAUTIONS

- This instrument is protected from electric shock by reinforced insulation. So please arrange reinforced insulation to the wire for input signal against the wires for instrument power supply, source of power and loads as far as possible.
- EN55022, EN50082-2 and EN61010-1 are applicable to this instrument.

⚠️ WARNING ⚠️

This is a Class A (EN55022) instrument. In a domestic environment this product may cause radio interference, in which case the user is required to take adequate measures.
MARKING CAUTIONS

For safe operation of "REX-AD410B", the following "Signal Words and Symbol Marks" are used in this manual.

(Signal Words)

[WARNING]
Where there are possible dangers such as electric shock, fire (burns), etc. which could cause loss of life or injury, precautions to avoid such dangers are described.

[CAUTION]
These describe precautions to be taken if unit damage may result if operating procedures are not strictly followed.

[NOTE]
Extra notes or precautions are added to operating procedures and explanations.

1. PRODUCT CHECK

Check whether the delivered product is as specified by referring to the following model code list.

Model code

REX-AD410B - □ * □ - □ - □ - □ / C E

1 Power Supply
3: 24 V AC/DC
4: 100 to 240 V AC/DC

2 Output
N: No output
1: With output 1-point
2: With output 2-point
3: With output 3-point
4: With output 4-point

3 Contact Input
N: No contact input
1: With contact input 1-point
2: With contact input 2-point
*If "With contact input 2-point" is selected, the communication function becomes RS-485.

4 Analog Output
N: No output
1: 0 to 10 mV DC
2: 0 to 100 mV DC
3: 0 to 1 V DC
4: 0 to 5 V DC
5: 0 to 10 V DC
6: 1 to 5 V DC
7: 0 to 20 mA DC
8: 4 to 20 mA DC

5 Communication function
N: No function
5: RS-485 (2-wire system)
4: RS-422A (4-wire system)

Confirm that the power voltage is also the same as that specified when ordering.

Accessories
- Mounting brackets (2 pieces)
- Instruction manual [IM41AD02-E2] (1 copy)

Option
- External resistor (One piece)
  Shunt resistor for current input: 250 Ω (± 0.02 % ± 10 ppm, 0.25 W or more)
2. MOUNTING

⚠️ WARNING

In order to prevent electric shock and instrument failure, do not turn on the power supply until all of the wiring is completed.

■ Cautions for mounting ⚠️

Avoid the following when selecting the mounting location.

- Ambient temperature of less than 0 °C (32 °F) or more than 50 °C (122 °F).
- Ambient humidity of less than 45 % or more than 85 % RH.
- Rapid changes in ambient temperature which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.

- Water, oil, chemicals, vapor or steam splashes.
- Excessive dust, salt or iron particles.
- Excessive induction noise, static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Should be used indoors where the system is not exposed to direct sunlight.
- Heat to be accumulated radiation heat.

■ Dimensions

![Dimensions Diagram]

Unit: mm

Panel cutout

■ Mounting procedures

① Make a rectangular cutout corresponding to the number of indicators to be mounted on panel by referring to the panel cutout dimensions.

② Insert the indicators into the panel from the panel front.

③ Insert an upper mounting bracket along the bracket insertion groove from the back, and then engage a projection at the bracket end with a recess at the groove front and also insert metal fitting legs into slots.

④ Tighten a bracket setscrew from the rear of the bracket with Phillips screwdriver. Do not overtighten the bracket setscrew.

Recommended tighten torque: 0.3 N·m or less (3 kgf·cm or less)

⑤ Set the other mounting bracket in the same way as in ③ and ④.

*This indicator is provided with a waterproof and dustproof rubber packing. For details of replacing the packing due to deterioration, see “9. Replacing the waterproof and dust-proof rubber packing”.

![Mounting Diagram]

NOTE

The front of this indicator conforms to IP54 with the indicator mounted on a control panel.
3. WIRING

⚠️ WARNING

- In order to prevent electric shock and instrument failure, do not turn on the power supply until all of the wiring is completed.
- In failure or error of this instrument could result in a critical accident of the system, install an external protection circuit to prevent such an accident.
- In order to prevent instrument damage or failure, protect power line and input/output lines from high currents by using fuses with appropriate ratings.

■ Cautions for wiring ⚠️

1. For thermocouple input, use the specified compensation wire.
2. For RTD input, use leads with low resistance and having no resistance differences among the 3 leads.
3. Conduct input signal wiring away from instrument power, electric equipment power and load lines possible to avoid noise induction.
4. Conduct instrument power wiring so as not to be influenced by noise from the electric equipment power. If it is assumed that a noise generation source is located near the controller and the controller is influenced by noise, use a noise filter.
   ① To obtain a satisfactory noise filter effect, select the most suitable type after due consideration of instrument power supply voltage and filter frequency characteristics.
   ② Shorten the distance between twisted power supply wire pitches. The shorter the distance between the pitches, the more effective for noise reduction.
   ③ Install the noise filter on the panel which is always grounded and minimize the wiring distance between the noise filter output side and the instrument power terminals.
   ④ Do not install fuses and/or switches on the filter output signal since this may lessen filter effect.
5. For wiring, use wires conforming to the domestic standard of each country.
6. About 5 to 6 sec. are required as the preparation time of contact output during power—ON.
   Use a delay relay when the output line, is used for an external interlock circuit.
7. When connecting wires, note that the power, input/MCU and output circuits are isolated independently, while the inside of the input and output circuits are not isolated.
8. This instrument has no power supply switch nor fuses. Therefore, install them separately close to the instrument, if required.
   [Recommended fuse rating : Rated voltage ; 250 V  Rated current ; 1 A  Type ; Time—lag fuse]
9. This instrument is intended to be used under the following environmental conditions. (IEC1010) [OVERVOLTAGE CATEGORY II , POLLUTION DEGREE 2]
### Terminal configuration

- **Output rated (Relay contact output)**
  250 V AC, 3 A (Resistive load)

- **Alarm output rated (Relay contact output)**
  250 V AC, 0.5 A (Resistive load)

- **Analog output**
  0 to 10 mV DC (Load resistance 20 kΩ or more)
  0 to 100 mV DC (Load resistance 20 kΩ or more)
  0 to 1 V DC (Load resistance 1 kΩ or more)
  0 to 5 V DC (Load resistance 1 kΩ or more)
  0 to 10 V DC (Load resistance 1 kΩ or more)
  0 to 5 V DC (Load resistance 1 kΩ or more)
  0 to 20 mA DC (Load resistance 600 Ω or less)
  4 to 20 mA DC (Load resistance 600 Ω or less)

- **Solderless terminal**
  Therefore, use the solderless terminal suitable for a screw of M3.

  ![Solderless terminal diagram]

  6.2 mm or less

- **Recommended tighten torque**: 0.4 N·m (4 kgf·cm)

  ![Screw diagram]

  Maximum allowance tighten torque: 1.0 N·m (10 kgf·cm)

**NOTE**
Terminals which are not used according to the model type are all removed.

### Wiring example

![Wiring diagram]

4. NAME OF PARTS

1. Exceed [EXCD] indicator lamp (Green)
2. Output [OUT] indicator lamp (Red)
3. Alarm [ALM] indicator lamp (Red)
4. MONI/MODE key
5. DOWN key
6. UP key
7. SEL key
8. Measured value (PV) display unit (Red)
5. OPERATION

5.1 Calling procedure in each mode

Broadly, the following six statuses are available for this instrument.
- **PV display mode**: Displays measured value (PV)
- **SETUP set mode**: Mode to select input or output function
- **Operator mode**: Mode to confirm peak hold value, bottom hold value and duration time
- **Operator set mode**: Mode to reset, to release interlock or to change alarm set value
- **Engineer mode**: Mode to lock setting
- **Engineer set mode**: Mode to set or confirm various parameters

```
Power-ON

Input type display

Display changes automatically

PV display
- Displays the measured value (PV).

Operator mode
- Display of peak hold value/bottom hold value
- Display of duration time

Operator set mode
- Initialize of each action
- Changing the set values

SETUP set mode
- Changing other settings in the specification

Engineer mode
- Set data lock execution

Engineer set mode
- Setting and confirmation of each parameter group (PG1 to PG9)
```

- Press the MONI/MODE key.
- Press the SEL key.
- Press the MONI/MODE and SEL keys simultaneously.

* The SETUP set mode accesses parameters which are not usually changed.

⚠️ Key operational cautions

- For this instrument, even if the setting is changed, it is not registered. Pressing the SEL key after the setting is changed registers the setting approx. 2 sec later.
- This instrument returns to the PV display value if key operation is not performed for more than 1 minute.

### Input type display

For this instrument, the input type can be confirmed just after the power is turned on.

**a: Unit**

<table>
<thead>
<tr>
<th>Display</th>
<th>°C</th>
<th>°F</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>°C</td>
<td>℉</td>
<td>%</td>
</tr>
</tbody>
</table>

**b: Input type**

<table>
<thead>
<tr>
<th>Display</th>
<th>L, E, m</th>
<th>TC</th>
<th>RTD</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Voltage</th>
</tr>
</thead>
</table>
**5.2 SETUP set mode**

Always set the input type.

**1** Always set the input type (lnP).

*B: Decimal point position*

0: No digit below decimal point
1: 1 digit below decimal point
2: 2 digit below decimal point
3: 3 digit below decimal point

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Setting range</th>
<th>Description</th>
<th>Initial value prior to shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{lnP} ) (lnP)</td>
<td>Input type selection</td>
<td>0 to 37 See &quot;A&quot;.</td>
<td>Selects the input type. If the input type is changed, all the data is defaulted.</td>
<td>0</td>
</tr>
<tr>
<td>SCh</td>
<td>Scaling high limit setting</td>
<td>Scaling low limit to 9999</td>
<td>Sets the high limit of input scaling.</td>
<td>999.9</td>
</tr>
<tr>
<td>SCl</td>
<td>Scaling low limit setting</td>
<td>-1999 to Scaling high limit</td>
<td>Sets the low limit of input scaling.</td>
<td>-999.9</td>
</tr>
<tr>
<td>PGdP</td>
<td>Decimal point position selection</td>
<td>0 to 3 See &quot;B&quot;.</td>
<td>Sets the decimal point position on the voltage/current input scale. Display only for voltage input.</td>
<td>1</td>
</tr>
<tr>
<td>Add</td>
<td>Device address setting</td>
<td>0 to 99</td>
<td>Sets the communication device address of this instrument. Displayed when the instrument has the communication function.</td>
<td>0</td>
</tr>
<tr>
<td>TMS</td>
<td>Duration time setting</td>
<td>0: Hour/Min. 1: Min./Sec</td>
<td>Setting to select the time unit for duration time display.</td>
<td>0</td>
</tr>
</tbody>
</table>

**A:**

<table>
<thead>
<tr>
<th>Group</th>
<th>Input type</th>
<th>Input select</th>
</tr>
</thead>
<tbody>
<tr>
<td>K (( ^\circ)C)</td>
<td>-199.9 to +999.9 °C</td>
<td>0</td>
</tr>
<tr>
<td>J (( ^\circ)C)</td>
<td>-199.9 to +999.9 °C</td>
<td>2</td>
</tr>
<tr>
<td>T (( ^\circ)F)</td>
<td>-199.9 to +999.9 °C</td>
<td>4</td>
</tr>
<tr>
<td>R (( ^\circ)F)</td>
<td>0 to 1769 °C</td>
<td>5</td>
</tr>
<tr>
<td>S (( ^\circ)F)</td>
<td>0 to 1769 °C</td>
<td>6</td>
</tr>
<tr>
<td>B (( ^\circ)F)</td>
<td>0 to 1820 °C</td>
<td>7</td>
</tr>
<tr>
<td>E (( ^\circ)F)</td>
<td>-199.9 to +1820 °C</td>
<td>8</td>
</tr>
<tr>
<td>N (( ^\circ)F)</td>
<td>0 to 1300 °C</td>
<td>9</td>
</tr>
<tr>
<td>PPl (( ^\circ)F)</td>
<td>0 to 1300 °C</td>
<td>10</td>
</tr>
<tr>
<td>WSR/WS26Re (( ^\circ)F)</td>
<td>0 to 2320 °C</td>
<td>11</td>
</tr>
<tr>
<td>U (( ^\circ)F)</td>
<td>0 to 600 °C</td>
<td>12</td>
</tr>
<tr>
<td>L (( ^\circ)F)</td>
<td>0 to 900 °C</td>
<td>13</td>
</tr>
<tr>
<td>K (( ^\circ)F)</td>
<td>-199.9 to +999.9 °F</td>
<td>14</td>
</tr>
<tr>
<td>J (( ^\circ)F)</td>
<td>-199.9 to +999.9 °F</td>
<td>16</td>
</tr>
<tr>
<td>T (( ^\circ)F)</td>
<td>-199.9 to +752.0 °F</td>
<td>18</td>
</tr>
<tr>
<td>R (( ^\circ)F)</td>
<td>0 to 3216 °F</td>
<td>19</td>
</tr>
<tr>
<td>S (( ^\circ)F)</td>
<td>0 to 3216 °F</td>
<td>20</td>
</tr>
<tr>
<td>B (( ^\circ)F)</td>
<td>0 to 3308 °F</td>
<td>21</td>
</tr>
<tr>
<td>E (( ^\circ)F)</td>
<td>-199.9 to +1832 °F</td>
<td>22</td>
</tr>
<tr>
<td>N (( ^\circ)F)</td>
<td>0 to 2372 °F</td>
<td>23</td>
</tr>
<tr>
<td>PPl (( ^\circ)F)</td>
<td>0 to 2372 °F</td>
<td>24</td>
</tr>
<tr>
<td>WSR/WS26Re (( ^\circ)F)</td>
<td>0 to 4208 °F</td>
<td>25</td>
</tr>
<tr>
<td>U (( ^\circ)F)</td>
<td>0 to 1100 °F</td>
<td>26</td>
</tr>
<tr>
<td>L (( ^\circ)F)</td>
<td>0 to 1600 °F</td>
<td>27</td>
</tr>
</tbody>
</table>

**1** Accuracy in the range of 0 to 400 °C (0 to 800 °F): Not guaranteed.

**2** Temperature below 32 °F for the thermocouple type of N, P, L; WSR/WS26Re: Accuracy not warranted.

---

*For TC (thermocouple), RTD (resistance temperature detector), voltage (low) input*

**Switch selection**

Always turn OFF the power, then pull out the internal chassis.
5.3 Operator mode

**Peak hold value (PHLd) display**
Displays the maximum input value.
Display range: \(-1999\) to \(+9999\)

**Bottom hold value (bHLd) display**
Displays the minimum input value.
Display range: \(-1999\) to \(+9999\)

**Duration time monitored value (TIME) display**
Displays the time during which the input value exceeds the output set value.
Display range: \(0.00\) to \(99.59\)

5.4 Operator set mode

*1 Displayed when "Interlock function provided" is selected for the first to fourth alarm.
*2 Displayed when any item other than "No alarm provided" is selected for the first alarm action.
*3 Displayed when any item other than "No alarm provided" is selected for the second alarm action.
*4 Displayed when any item other than "No alarm provided" is selected for the third alarm action.
*5 Displayed when any item other than "No alarm provided" is selected for the fourth alarm action.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Setting range</th>
<th>Description</th>
<th>Initial value prior to shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>rSER</td>
<td>Reset</td>
<td>Scaling limit</td>
<td>In this state, the reset characters are displayed. &quot;Output hold release&quot;, &quot;Hold value reset&quot; or &quot;Duration time&quot; can be performed by simultaneously pressing the UP and DOWN keys.</td>
<td>Scaling high limit</td>
</tr>
<tr>
<td>rILr</td>
<td>Interlock release</td>
<td>*1</td>
<td>Simultaneously pressing the UP and DOWN keys while the alarm interlock release characters are displayed releases the output interlock function.</td>
<td></td>
</tr>
<tr>
<td>SY</td>
<td>Output set value</td>
<td>Scaling low limit to scaling high limit</td>
<td>Sets the output set value. See &quot;A&quot;.</td>
<td>Scaling high limit</td>
</tr>
<tr>
<td>AL1</td>
<td>First alarm set value</td>
<td>*2</td>
<td>Process alarm. Scaling low limit to scaling high limit</td>
<td>Scaling high limit</td>
</tr>
<tr>
<td>AL2</td>
<td>Second alarm set value</td>
<td>*3</td>
<td>Sets the alarm set value of the second alarm. See &quot;A&quot;.</td>
<td>Scaling low limit</td>
</tr>
<tr>
<td>AL3</td>
<td>Third alarm set value</td>
<td>*4</td>
<td>Deviation alarm. (-1999) to (+9999) (See &quot;B&quot;.)</td>
<td>Scaling high limit</td>
</tr>
<tr>
<td>AL4</td>
<td>Fourth alarm set value</td>
<td>*5</td>
<td>Sets the alarm set value of the fourth alarm. See &quot;A&quot;.</td>
<td>Scaling low limit</td>
</tr>
</tbody>
</table>

*A Pressing the SEL key after the set value is changed by pressing the UP or DOWN key establishes the set value.
*B The decimal point position is the same as that of PV.
5.5 Engineer mode

Set data unlock (Unck)/lock (LCK) transfer
Select whether the set data lock function is invalid (unlock) or valid.

*Any mode other than PV display, engineer mode is not displayed when the set data is locked. In addition, after locking the set data, only the engineer mode can be changed.

5.6 Engineer set mode

This setting item is not displayed.
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Setting range</th>
<th>Description</th>
<th>Initial value prior to shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>$PG1$ (PG 1)</td>
<td>Parameter group 1</td>
<td></td>
<td>The first characters of parameter group (PG 1). They are also displayed first when the instrument is set to engineer set mode.</td>
<td></td>
</tr>
<tr>
<td>$PB$ (Pb)</td>
<td>PV bias</td>
<td>See &quot;*1&quot;.</td>
<td>Sensor correction is made by adding bias value to measured value (PV).</td>
<td>0.0</td>
</tr>
<tr>
<td>$dF$ (dF)</td>
<td>Digital filter</td>
<td>0:OFF 1 to 100 sec</td>
<td>This is first order lag digital filter by software to reduce noise in measured value (PV).</td>
<td>0</td>
</tr>
<tr>
<td>$PG2$ (PG 2)</td>
<td>Parameter group 2</td>
<td></td>
<td>The first characters of parameter group (PG 2).</td>
<td></td>
</tr>
<tr>
<td>$oS$ (oS)</td>
<td>Output action selection</td>
<td>0:High limit output 1:Low limit output</td>
<td>Selects output action.</td>
<td>1</td>
</tr>
<tr>
<td>$oH$ (oH)</td>
<td>Output differential gap</td>
<td>See &quot;*2&quot;.</td>
<td>Sets output differential gap.</td>
<td>2.0</td>
</tr>
<tr>
<td>$PG3$ (PG 3)</td>
<td>Parameter group 3</td>
<td></td>
<td>The first characters of parameter group (PG 3). *This setting item is not displayed.</td>
<td></td>
</tr>
<tr>
<td>$PG4$ (PG 4)</td>
<td>Parameter group 4</td>
<td></td>
<td>The first characters of parameter group (PG 4).</td>
<td></td>
</tr>
<tr>
<td>$RS1$ (AS1) *6</td>
<td>First alarm action selection</td>
<td>See &quot;*3&quot;.</td>
<td>Selects first alarm action.</td>
<td>1</td>
</tr>
<tr>
<td>$ILS1$ (ILS1) *6</td>
<td>First alarm interlock</td>
<td>0:Not provided 1:Provided</td>
<td>Sets the presence or absence of the interlock function.</td>
<td>0</td>
</tr>
<tr>
<td>$EXC1$ (EXC1) *6</td>
<td>First alarm energized/de-energized</td>
<td>0:Energized action 1:De- energized action</td>
<td>Selects whether first alarm is set to energized or de- energized.</td>
<td>0</td>
</tr>
<tr>
<td>$RH1$ (AH1) *6</td>
<td>First alarm differential gap</td>
<td>See &quot;*2&quot;.</td>
<td>Sets first alarm differential gap.</td>
<td>2.0</td>
</tr>
<tr>
<td>$ALT1$ (ALT1) *6</td>
<td>First alarm timer setting</td>
<td>0 to 600 sec</td>
<td>Sets time until alarm is turned ON after measured value (PV) enters first alarm area.</td>
<td>0</td>
</tr>
<tr>
<td>$PG5$ (PG 5)</td>
<td>Parameter group 5</td>
<td></td>
<td>The first characters of parameter group (PG 5).</td>
<td></td>
</tr>
<tr>
<td>$RS2$ (AS2) *7</td>
<td>Second alarm action selection</td>
<td>See &quot;*3&quot;.</td>
<td>Selects second alarm action.</td>
<td>2</td>
</tr>
<tr>
<td>$ILS2$ (ILS2) *7</td>
<td>Second alarm interlock</td>
<td>0:Not provided 1:Provided</td>
<td>Sets the presence or absence of the interlock function.</td>
<td>0</td>
</tr>
<tr>
<td>$EXC2$ (EXC2) *7</td>
<td>Second alarm energized/de-energized</td>
<td>0:Energized action 1:De- energized action</td>
<td>Selects whether second alarm is set to energized or de- energized.</td>
<td>0</td>
</tr>
</tbody>
</table>

(Continued on the next page.)
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Setting range</th>
<th>Description</th>
<th>Initial value prior to shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RH2</td>
<td>Second alarm differential gap</td>
<td>See &quot;2&quot;.</td>
<td>Sets second alarm differential gap.</td>
<td>2.0</td>
</tr>
<tr>
<td>ALF2</td>
<td>Second alarm timer setting</td>
<td>0 to 600 sec</td>
<td>Sets time until alarm is turned ON after measured value (PV) enters second alarm area.</td>
<td>0</td>
</tr>
<tr>
<td>PG6</td>
<td>Parameter group 6</td>
<td></td>
<td>The first characters of parameter group (PG 6).</td>
<td></td>
</tr>
<tr>
<td>AS3</td>
<td>Third alarm action selection</td>
<td>See &quot;3&quot;.</td>
<td>Selects third alarm action.</td>
<td>1</td>
</tr>
<tr>
<td>ILS3</td>
<td>Third alarm interlock</td>
<td>0:Not provided 1:Provided</td>
<td>Sets the presence or absence of the interlock function.</td>
<td>0</td>
</tr>
<tr>
<td>EXC3</td>
<td>Third alarm energized/de-energized</td>
<td>0:Energized action 1:De- energized action</td>
<td>Selects whether third alarm is set to energized or de-energized.</td>
<td>0</td>
</tr>
<tr>
<td>RH3</td>
<td>Third alarm differential gap</td>
<td>See &quot;2&quot;.</td>
<td>Sets third alarm differential gap.</td>
<td>2.0</td>
</tr>
<tr>
<td>ALF3</td>
<td>Third alarm timer setting</td>
<td>0 to 600 sec</td>
<td>Sets time until alarm is turned ON after measured value (PV) enters third alarm area.</td>
<td>0</td>
</tr>
<tr>
<td>PG7</td>
<td>Parameter group 7</td>
<td></td>
<td>The first characters of parameter group (PG 7).</td>
<td></td>
</tr>
<tr>
<td>AS4</td>
<td>Fourth alarm action selection</td>
<td>See &quot;3&quot;.</td>
<td>Selects fourth alarm action.</td>
<td>2</td>
</tr>
<tr>
<td>ILS4</td>
<td>Fourth alarm interlock</td>
<td>0:Not provided 1:Provided</td>
<td>Sets the presence or absence of the interlock function.</td>
<td>0</td>
</tr>
<tr>
<td>EXC4</td>
<td>Fourth alarm energized/de-energized</td>
<td>0:Energized action 1:De- energized action</td>
<td>Selects whether fourth alarm is set to energized or de-energized.</td>
<td>0</td>
</tr>
<tr>
<td>RH4</td>
<td>Fourth alarm differential gap</td>
<td>See &quot;2&quot;.</td>
<td>Sets fourth alarm differential gap.</td>
<td>2.0</td>
</tr>
<tr>
<td>ALF4</td>
<td>Fourth alarm timer setting</td>
<td>0 to 600 sec</td>
<td>Sets time until alarm is turned ON after measured value (PV) enters fourth alarm area.</td>
<td>0</td>
</tr>
<tr>
<td>PG8</td>
<td>Parameter group 8</td>
<td></td>
<td>The first characters of parameter group (PG 8).</td>
<td></td>
</tr>
<tr>
<td>AHS</td>
<td>High limit AO scaling set value</td>
<td>AO scaling (low limit) to scaling high limit</td>
<td>Sets high limit of the analog output range.</td>
<td>999.9</td>
</tr>
<tr>
<td>ALS</td>
<td>Low limit AO scaling set value</td>
<td>Scaling low limit to AO scaling (high limit)</td>
<td>Sets low limit of the analog output range.</td>
<td>-199.9</td>
</tr>
<tr>
<td>PG9</td>
<td>Parameter group 9</td>
<td></td>
<td>The first characters of parameter group (PG 9).</td>
<td></td>
</tr>
<tr>
<td>bPS</td>
<td>Communication speed</td>
<td>See &quot;4&quot;.</td>
<td>Selects communication speed.</td>
<td>3</td>
</tr>
<tr>
<td>bIF</td>
<td>Communication bit</td>
<td>See &quot;5&quot;.</td>
<td>Selects data bit configuration during communication.</td>
<td>0</td>
</tr>
</tbody>
</table>

AO = Analog output

(Continued on the next page.)
*1 Temperature input: −199.9 (−1999) to +999.9 (+9999) °C [°F]
   Voltage input: −1999 to +9999 (The decimal point position is the same as that of PV.)

*2 Temperature input: 0 (0.0) to 100 (100.0) °C [°F]
   Voltage input: 0.0 to 10.0 % of span

*3 0: Alarm OFF
   1: Process high alarm
   2: Process low alarm
   3: Process high alarm **
   4: Process low alarm **
   5: Deviation high alarm
   6: Deviation low alarm
   7: Deviation high/low alarm (Absolute value setting)
   8: Band alarm (Absolute value setting)
   9: Deviation high alarm **
   10: Deviation low alarm **
   11: Deviation high/low alarm (Absolute value setting) **
   12: Band alarm (Absolute value setting) **

**: With hold function

*4 0: 1200 bps  1: 2400 bps  2: 4800 bps  3: 9600 bps  4: 19200 bps

*5 Setting | Parity bit | Data bit (bit) | Stop bit (bit) |
-----------|------------|---------------|---------------|
 0         | None       | 8             | 1             |
 1         | None       | 8             | 2             |
 2         | Even       | 7             | 1             |
 3         | Even       | 7             | 2             |
 4         | Odd        | 7             | 1             |
 5         | Odd        | 7             | 2             |

*6 Not displayed when there is no first alarm.
*7 Not displayed when there is no second alarm.
*8 Not displayed when there is no third alarm.

*9 Not displayed when there is no fourth alarm.
*10 Not displayed when there is no analog output.
*11 Not displayed when there is no communication function.

6. OPERATING PRECAUTIONS

● Turn on the power after connecting all of the input signal wires, otherwise the instrument judges that an input wire break has occurred.
   • Thermocouple input ........................................... Upscale or Downsca (To be specified when ordering)
   • Resistance temperature detector input ................. Upscale
   • Voltage (low) input ........................................... Upscale or Downsca (To be specified when ordering)
   • Voltage (high) input ......................................... Downsca
   • Current input .................................................. Downsca

● No influence is exerted upon the instrument for power failure of 20 ms or less.

7. DESCRIPTION OF EACH FUNCTIONS

■ Hold function

● Peak hold
   This function is used to hold the maximum measured value when the measured value exceeds the high limit set value.
   However, the output action is displayed when the high limit action is being taken.

● Bottom hold
   This function is used to hold the minimum measured value when the measured value falls below the low limit set value.
   However, the output action is displayed when the low limit action is being taken.

* The hold reset function can be executed by contact input (terminal Nos. 15 and 16).

■ Duration time function

This function is used to measure the duration time while the measured value exceeds the high limit (or low limit) set value. "---" flashes when the measured value exceeds the display range.

*Display range selection:
   0 hour: 0 min. to 99 hours: 59 min., or
   0 min.: 0 sec to 99 min.: 59 sec

*The duration time can be reset by the contact input (terminal Nos. 15 and 16).

■ Alarm timer function

This function is used to set the time until the alarm is turned on after the measured value enters the alarm zone.


### Alarm (ALM) function

Each alarm action is as follows.

<table>
<thead>
<tr>
<th>Process alarm</th>
<th>(Δ : Alarm setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High alarm</td>
<td>OFF △ ON</td>
</tr>
<tr>
<td>Low alarm</td>
<td>ON △ OFF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deviation alarm</th>
<th>(Δ : Alarm setting, ▲ SV setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High alarm</td>
<td>OFF △ ON</td>
</tr>
<tr>
<td>Low alarm</td>
<td>ON △ OFF</td>
</tr>
<tr>
<td>High alarm</td>
<td>OFF △ ON</td>
</tr>
<tr>
<td>Low alarm</td>
<td>ON △ OFF</td>
</tr>
</tbody>
</table>

| Band alarm      | OFF △ ON △ OFF                  |
| High/Low alarm  | ON △ OFF △ ON                   |

*1 Alarms status where the alarm set value is set to plus.
*2 Alarms status where the alarm set value is set to minus.
*3 Status where alarm is activated at 2 equal deviation points from the SV with the alarm set value (absolute deviation) is set.

### Alarm differential gap

This function can be used to set the alarm differential gap.

<table>
<thead>
<tr>
<th>Differential gap</th>
<th>Differential gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON △ OFF</td>
<td>ON △ ON</td>
</tr>
</tbody>
</table>

Low output set value High output set value

### Alarm hold action

This hold action is used to make alarm invalid until the input value exits once from the output region by ignoring the alarm state even if the input value is in the alarm state when the power is turned on.

### Set data lock function

This instrument is provided with the set data lock function to prevent the set value from being changed by the front key. Use this function to prevent the operator from mis-operation after completing the settings.

*Keeping the MONI/MODE key pressed for 2sec moves the instrument to engineer mode. In this mode, press the UP or DOWN key to select the lock/unlock state.

### External contact input

• Reset

"Output hold release", "Hold value reset" or "Duration time reset" can be performed with the reset contact input (terminal Nos. 15 and 16) turn on.

• Interlock release

The alarm interlock state can be released by turning on the interlock release contact input (terminal Nos. 15 and 17).

### 8. DISPLAY AT ERROR OCCURRENCE

#### Overscale & Underscale

<table>
<thead>
<tr>
<th>Measured value (PV)</th>
<th>Measured value exceeds the input range.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Overscale (Measured value exceeds the high input display range limit)</td>
</tr>
<tr>
<td>Off</td>
<td>Underscale (Measured value below the low input display range limit)</td>
</tr>
</tbody>
</table>

**WARNING**

In order to prevent electric shock, prior to replacing the sensor, always turn OFF the power.

Check input type, range, sensor and sensor connection.

#### Self-diagnostic function

If an error is detected during self-diagnosis, "E r r" and the details of the error are displayed alternately on the display unit.

#### Error code

<table>
<thead>
<tr>
<th>Error code</th>
<th>Details</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adjusted data destroyed</td>
<td>Turn OFF the power once.</td>
</tr>
<tr>
<td>2 or 4</td>
<td>RAM error</td>
<td>If error occurs after the power is turned ON again, contact your nearest RKC sale office or agent from which you bought the instrument.</td>
</tr>
<tr>
<td>12B</td>
<td>Input error</td>
<td></td>
</tr>
</tbody>
</table>

**[Example]**

If the adjusted data is destroyed and an input error occurs simultaneously.

Blinking "E r r" and "129" display alternately on the PV display unit.

"129": No. obtained by adding No. corresponding to 1 (adjusted data destroyed) to 12B (input error).
9. REPLACING THE WATERPROOF AND DUSTPROOF RUBBER PACKING

⚠️ WARNING ⚠️

- In order to prevent electric shock and instrument failure, always turn off the power supply before replacing the rubber packing.
- In order to prevent electric shock and instrument failure, always turn off the power supply before pulling out the internal chassis.
- In order to prevent injury or instrument failure, do not touch the internal printed circuit board.

If the waterproof and dustproof rubber packing deteriorates, contact your nearest RKC sales office or agent from which you bought the instrument.

<table>
<thead>
<tr>
<th>Type</th>
<th>Parts code</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>REX - AD410B</td>
<td>KF400N - 32</td>
<td>For the board</td>
</tr>
<tr>
<td></td>
<td>KD400 - 35</td>
<td>For the case</td>
</tr>
</tbody>
</table>

Replacement of dustproof and waterproof rubber packing

⚠️ CAUTION ⚠️

Prior to replacing the rubber packing, first confirm that no water remains, then turn on the power supply. If the water remains, shorting may result.

[ For the board ]

1. Pull the internal assembly out of the case, then remove the old rubber packing.

2. Replace the old rubber packing with a new one, then put the internal chassis in the case.

* Firmly push the rubber packing in the board until it also contacts the hook.
[For the case]

① Disconnect the wiring from the rear terminal board and also remove the mounting bracket from the instrument case, then remove the instrument from the panel.

② Remove the old packing from this instrument.

③ Firmly push the new rubber packing into the instrument, then re-mount the instrument in the panel.
10. CURRENT INPUT SETTING PROCEDURE (OPTION)

⚠️ WARNING

- In order to prevent electric shock and instrument failure, always turn off the power supply before pulling out the internal chassis.
- In order to prevent injury or instrument failure, do not touch the internal printed circuit board.

10.1 Prior to connecting external resistor (shunt resistor for current input)

If the current input specification is selected, it becomes necessary to change voltage input and also to connect an external resistor (shunt resistor for current input [250 Ω ± 0.02% ± 10 ppm, 0.25 W or more]). If a current input of 0 to 20 mA is used, select a voltage (high) input of 0 to 5 V, or if a current input of 4 to 20 mA is used, select a voltage (high) input of 1 to 5 V.

In either case, connect an external resistor (shunt resistor for current input [250 Ω ± 0.02% ± 10 ppm, 0.25 W or more]) between the input terminals at the rear of the case.

The setting procedure for current input is described in the following.

10.2 Setting procedure

[Example] When changing to a current input of 0 to 20 mA

(1) In order to prevent electric shock, always turn off the power supply.△
   
   Next, connect the external resistor between the Nos. 10 and 11 input terminals at the rear of the case.
   (Recommended tighten torque : 0.3 N·m or less [3 kgl·cm or less])

(2) Remove the internal assembly from the case by pressing the latch located as the left of the front panel and pulling it forward.
(3) Change voltage (low) input to voltage (high) input by the internal switch.

(4) Put the internal chassis into the case, then turn ON the power. As a result, the input type and range are displayed. (See "5.OPERATION" on page 6.)

(5) Next, simultaneously press the MONI/MODE and SEL keys to call up SETUP set mode. First, "Input type selection (I \( \rightarrow P \))" is displayed.

(6) Press the UP or DOWN key to set the instrument to the input type state.

(7) Press the UP key to set a voltage input (high) of 0 to 5 V (input selection : 35). For details on input selection, see page 7. Keeping pressing the UP key to increase the numeric value displayed on the display unit.

(8) After the numeric value is set, this setting becomes valid if SEL key is pressed. *Input type selection (I \( \rightarrow P \))" is displayed.

(9) After the setting is finished, press the MONI/MODE key to set the instrument to the PV display state.