1. PRODUCT CHECK

| CB100L | ———— | ———— | ———— | ———— | ———— | ———— | ———— | ———— |
| CB900L | ———— | ———— | ———— | ———— | ———— | ———— | ———— | (1) (2) (3) (4) (5) (6) (7) (8) (9) |

(1) Input type, (2) Range code: Refer to 9. INPUT RANGE TABLE.
(3) Limit output
M: Relay contact
(4) Alarm 1 [ALM1], Alarm 2 [ALM2]
N: No alarm
A: Deviation high alarm
B: Deviation low alarm
C: Deviation high/low alarm
D: Band alarm
E: Deviation high alarm with hold action
F: Deviation low alarm with hold action
G: Deviation high/low alarm with hold action
H: Process high alarm
J: Process low alarm
K: Process high alarm with hold action
L: Process low alarm with hold action
(6) Analog output
N: No analog output
7: Current 0 to 20 mA DC
8: Current 4 to 20 mA DC
(7) Communication function
N: No extended function
5: Communication function RS-485 (2-wire system)
D: Contact input
(8) Waterproof/Dustproof
N: No Waterproof/Dustproof
1: Waterproof/Dustproof
(9) Case color
N: White
A: Black

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

<Accessories>
- Mounting frame (CB100L): 1 (KCA100-526)
- Mounting brackets (CB900L): 2 * (KCA400-532)
- Instruction manual (IMCB36-E1): 1
  * For CB900L Waterproof/Dustproof (optional): 4 pieces

2. MOUNTING

2.1 Mounting Cautions
(1) This instrument is intended to be used under the following environmental conditions. ([I/EC61015-1]

- Allowable ambient temperature: 0 to 50 °C
- Allowable ambient humidity: 5 to 95 % RH

(2) Use this instrument within the following environmental conditions:

- Indoor use, Altitude up to 2000 m

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

- 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.
- Exposure to direct sunlight.
- Excessive heat accumulation.

(4) Mount this instrument in the panel considering the following conditions:

- Provide adequate ventilation space so that heat does not build up.
- Do not mount this instrument directly above equipment that generates large amount of heat (heaters, transformers, semi-conductor functional devices, large-wattage resistors.)
- If the ambient temperature rises above 50 °C, cool this instrument with a forced air fan, cooler, etc. Coolid air should not blow directly on this instrument.
- In order to improve safety and the immunity to withstand noise, mount this instrument as far away as possible from high voltage equipment, power lines, and rotating machinery.
- High voltage equipment: Do not mount within the same panel.
  - Power lines: Separate at least 200 mm.
  - Rotating machinery: Separate as far as possible.
- For correct functioning mount this instrument in a horizontal position.

(5) In case this instrument is connected to a supply by means of a permanent connection, a switch or circuit-breaker shall be included in the installation. This shall be in close proximity to the equipment and within easy reach of the operator. It shall be marked as the disconnecting device for the equipment.
2.2 Dimensions

CB100L
(Unit: mm)

CB900L
(Unit: mm)

*2 Up to four mounting brackets can be used.
- For mounting the instrument, panel thickness must be between 1 to 10 mm. (When mounting multiple instruments close together, the panel strength should be checked to ensure proper support.)
- Waterproof and Dustproof are not effective when instruments are closely spaced.

2.3 Mounting Procedures

2.2 Dimensions

<Mounting Procedures>

1. Prepare the panel cutout as specified in 2.2 Dimensions.
2. Insert the instrument through the panel cutout.
3. Insert the mounting frame into the mounting from the rear of the instrument.
4. Push the mounting frame forward until the frame is firmly secured to the panel. (Fig. 1)
5. Fix the instrument to the panel by using the two screws. (Fig. 2)

<Removal Procedures>

1. Turn the power OFF.
2. Remove the wiring.
3. Loosen the screw of the mounting bracket.
4. Hold the mounting bracket by the edge (Fig. 3) and tilt it (Fig. 2) to remove from the case. (Fig. 3)
5. The other mounting bracket should be removed in the same way as described in 3. and 4.
6. Pull out the instrument from the mounting cutout while holding the front panel frame of this instrument. (Fig. 4)

<Removal Procedures>

6. The other mounting bracket should be installed in the same way as described in 3. to 5.

3. WIRING

3.1 Wiring Cautions

- For thermocouple input, use the appropriate compensation wire.
- For RTD input, use low resistance lead wire with no difference in resistance between the three lead wires.
- To avoid noise induction, keep input signal wire away from instrument power line, load lines and power lines of other electric equipment.
- For the current input specification, an external resistor (250 Ω ±0.2 %, 0.25 W or more, ±10 ppm/°C) must be connected between the input terminals. For external resistor (shunt resistor), use the KD100-55: sold separately (RKC product). If this resistor is installed, close horizontal mounting is not possible.
- Signal connected to Voltage input and Current input shall be low voltage defined as “SELV” circuit per IEC 60950-1.
- If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter.
- The optional waterproof/dustproof on the front of the instrument conforms to IP65 and NEMA4 when mounted on the panel. For effective waterproof/dustproof, the gasket must be securely placed between instrument and panel without any gap. At the same time, be sure to keep the inside of the control panel from negative pressure. If the gasket is damaged, please contact RKC sales office or the agent.

<Removal Procedures>

- The optional waterproof/dustproof on the front of the instrument conforms to IP65 and NEMA4 when mounted on the panel. For effective waterproof/dustproof, the gasket must be securely placed between instrument and panel without any gap. At the same time, be sure to keep the inside of the control panel from negative pressure. If the gasket is damaged, please contact RKC sales office or the agent.

*1 Rubber (optional)
*2 Up to four mounting brackets can be used.

IMCB36-E1
### 3.2 Terminal Configuration

**CB100L**

**Power supply:**
- AC L: 24 V
- DC: 24 V
- 100 to 240 V

**Output:**
- 12 volt DC: 4 to 20 mA DC
- 24 V DC

**Input:**
- 1 to 5 V DC
- 0 to 5 V DC
- 1 to 5 V DC

**NO:** Normally open

#### Cautions for Communication terminal wiring

- Make sure that lugs or unshielded cables of the communication terminals are not touched to the screw heads, lugs, or unshielded cables of the power supply terminals to prevent electric shock or instrument failure. Use additional care when two lugs are screwed to one communication terminal.

- It is recommended that the host computer communication line be isolated from the power supply and earth.

**CB900L**

**Power supply:**
- AC L: 24 V
- DC: 24 V
- 100 to 240 V

**Output:**
- 12 volt DC: 4 to 20 mA DC
- 24 V DC

**Input:**
- 1 to 5 V DC
- 0 to 5 V DC
- 1 to 5 V DC

**NO:** Normally open

### Specifications

**Input:**
- Input type:
  - Thermocouple: K, J, R, S, B, E, T, N, PLU, WRe/W26Re, U, L
  - RTD: Pt100, 1000 Ohm, NiCr, Cu50, Cu58
- Voltage: 0 to 5 V DC, 1 to 5 V DC, 2 to 10 V DC
- Current: 0 to 20 mA DC, 4 to 20 mA DC
- Sampling cycle: 0.5 seconds

**Alarm output (Optional):**
- Relay contact output: 250 V AC, 1 A (Resistive load), 1 contact
- Electrical life: 50,000 times or more (Rated load)

**Analog output (Optional):**
- Number of points: 1 point
- Input signal: Current output
- Current output: 4 to 20 mA DC, 0 to 20 mA DC
- Allowable load resistance: 600 Ohm or less
- Output type: Measured value
- Accuracy: ±0.3 % of span
- Resolution: More than 10 bits

**Contact input (Optional):**
- Number of points: 1 point
- Input method: Non-voltage contact input
- Resistance at OPEN: 500 kΩ or more
- Resistance at CLOSE: 10 Ohm or less
- Function: Reset function is executed when the alarm mode is changed from OPEN to CLOSE.

**Performance:**
- Display accuracy:
  - (at the ambient temperature 23 °C ± 2 °C):
    - Thermocouple: ± (0.3 % of display value + 1 digit) or ± 2 °C (at 4 °F) Whichever is greater
    - R, S and B input: 0 to 399 °C (0 to 799 °F)
    - Accuracy is not guaranteed
    - T and U input: ±199.9 to ±100.0 °C
    - Accuracy is not guaranteed
    - RTD: ± (0.3 % of display value + 1 digit) or ± 0.8 °C (1.6 °F) Whichever is greater
    - Voltage/Current: ± (0.3 % of display value + 1 digit)

**Memory backup:**
- Backed up by Nonvolatile Memory
- Number of write times: Approx. 1,000,000 times
- Data storage period: Approx. 10 years

**Power:**
- Power supply voltage:
  - 85 to 264 V AC (Power supply voltage range), 50/60 Hz
  - 216 to 284 V AC (Power supply voltage range), 50/60 Hz
  - 24 V AC
- Rating: 160 mA max. (at 24 V DC)
- Power consumption:
  - 7 VA max. (at 100 V AC), 10 VA max. (at 240 V AC)
  - 5 VA max. (at 24 V AC)
- Weight:
  - CB100L: Approx. 170 g
  - CB900L: Approx. 340 g

### 4. PARTS DESCRIPTION

#### CB100L/900L

1. Measured value (PV) display [Green]
   - Displays PV or various parameter symbols.
2. Set value (SV) display [Orange]
   - Displays Limit set value (SV) and various set values.
3. Indication lamps
   - EXCD lamp [Red]
   - Lights while a Measured value (PV) exceeds the Set value (SV).
   - OUT lamp [Limit output lamp] [Red]
   - Lights when limit output is turned on.
   - ALM1: Lights when alarm 1 output is turned on.
   - ALM2: Lights when alarm 2 output is turned on.
4. SET (Set key)
   - Used for parameter calling up and set value registration.
5. RST (Shift & Reset key)
   - Shift digits when settings are changed.
   - The limit output is released (reset).
   - Reset can occur after momentarily pressing <RST key or by pressing for one or more seconds as determined by SL9.
6. DOWN key
   - Decrease numerals.
7. UP key
   - Increase numerals.

To avoid damage to the instrument, never use a sharp object to press keys.
5. SETTING

5.1 Operation Menu

Input type and input range display

This instrument immediately confirms the input type symbol and input range following power ON.

Example: When sensor type of input is K thermocouple.

PV/SV display mode *

Press and hold the SET key for more than 2 seconds.

Press the <RST key while pressing the SET key.

Parameter setting mode

Communication setting mode

Press and hold the SET key for more than 2 seconds.

Press the <RST key while pressing the SET key.

5.2 Detail of Each Mode

PV/SV display mode

Displays a Measured value (PV) on the PV display unit and the Limit set value (SV), on the SV display unit. In addition, the Limit set value (SV) can be set, and the peak hold value and time exceeding the time limit can be checked. Every time, the SET key is pressed, the set and displayed items are changed.

Symbol | Name | Setting (display) range | Description | Factory set value
--- | --- | --- | --- | ---
 PV/SV display | Within input range | [Display only] | Displays a Measured value (PV) on the PV display unit and the Limit set value (SV), on the SV display unit. | ---
 SV setting | Within input range | | Sets the Limit set value (SV). | 0
 PHLd (PHLd) | Peak hold value | Within input range | Displays the maximum Measured value (PV) while a Measured value (PV) exceeds the Limit set value (SV). | ---
 TIME (TIME) | Over time | 0.00 to 99.59 [0:00 to 99:59 (min.: sec)] 100 to 999.5 [100:0 to 999:59 (min.: sec)] | The total time when a Measured value (PV) exceeded the Limit set value (SV) is integrated, then displayed. | ---

1 Pressing the <RST key resets the peak hold value. At this time, the display unit shows "----".
2 The display unit shows "----" if time exceeds 1000 minutes. In addition, pressing the <RST key resets the time exceeding the time limit. At this time, the display unit shows "0.00".

Parameter setting mode

This is the mode used to set the various parameters such as alarms, differential gap, etc. The following parameter symbols are displayed one by one every time the SET key is pressed.

Symbol | Name | Setting range | Description | Factory set value
--- | --- | --- | --- | ---
 AL1 (AL1) | Alarm 1 setting | Process alarm: Within input range Deviation alarm: –Input span to +Input span However, TC/RTD inputs: –1999 (-199.9) to +9999 (+999.9)°C [°F] | Sets the alarm 1 set value and alarm 2 set value. Alarm differential gap: TC/RTD inputs: 2 (2.0) °C [°F] Voltage/Current inputs: 0.2 % of Input span | TC/RTD inputs: 50 (50.0) °C Voltage/Current inputs: 5.0
 AL2 (AL2) | Alarm 2 setting | | | TC/RTD inputs: 2 (2.0) °C Voltage/Current inputs: 0.2
 OH (OH) | Limit action differential gap | TC/RTD inputs: 0 (0.0) to 100 (100.0)°C [°F] Voltage/Current inputs: 0.0 to 10.0 % of Input span | Set the differential gap during limit action. | TC/RTD inputs: 2 (2.0) °C Voltage/Current inputs: 0.2
 DF (df) | Digital filter | 0 to 100 seconds (0: Digital filter OFF) | Sets the digital filter. | 1
 Pb (Pb) | PV bias | –Input span to +Input span However, TC/RTD inputs: –1999 (-199.9) to +9999 (+999.9)°C [°F] | Sensor correction is made by adding bias value to Measured value (PV). | 0 (0.0)

1 Not displayed when there is no alarm 1 [ALM1].
2 Not displayed when there is no alarm 2 [ALM2].

* Input Type Symbol Table

Symbol | PV | SV | PV | SV
--- | --- | --- | --- | ---
 Unit for input and SV display (Celsius: °C, Fahrenheit: °F, Voltage/Current inputs: no character shown)

* Pressing the <RST key (1 second or more) in PV/SV display mode resets the peak hold value or time exceeding the time limit. Reset can occur after momentarily pressing <RST key or by pressing for one or more seconds as determined by SL9. However, the instrument cannot be reset while a Measured value (PV) exceeds the Limit set value (SV) [while the EXCD lamp lights]. This instrument returns to the PV/SV display mode if no key operation is performed within 1 minute.
5.3 Changing Parameter Settings

Procedures to change parameter settings are shown below.

To store a new value for the parameter, always press the SET key. The display changes to the next parameter and the new value will be stored.

- A new value will not be stored without pressing SET key after the new value is displayed on the display.
- After a new value has been displayed by using the UP and DOWN keys, the SET key must be pressed within 1 minute, or the new value is not stored and the display will return to the PV/SV monitor screen.

Change the Limit set value (SV)
Change the Limit set value (SV) from 0 °C to 200 °C

1. Select the SV setting mode
Press the SET key at PV/SV monitor screen until SV setting screen is displayed.

2. Shift the high-lighted digit
Press the <RST key to high-light the hundreds digit. The high-lighted digit indicates which digit can be set.

3. Change the set value
Press the UP key to change the number to 2.

4. Store the set value
Press the SET key to store the new set value. The display goes to the next parameter.

Change parameters other than the Limit set value (SV)
The changing procedures are the same as those of example 2 to 4 in the above “Change the Limit set value (SV).” Pressing the SET key after the setting ends shifts to the next parameter. When no parameter setting is required, return the instrument to the PV/SV display mode.

6. OPERATIONS

CAUTIONS

- All mounting and wiring must be completed before the power is turned on. If the input signal wiring is disconnected or short-circuited (RTD input only), the instrument determines that burnout has occurred.
  - Displays:
    - Upscale: Thermocouple input (specify when ordering), RTD input (when input break)
    - Downscale: Thermocouple input (specify when ordering), RTD input (short-circuited), Voltage input (1 to 5 V DC), Current input (4 to 20 mA DC)
  - For the voltage (0 to 5 V DC, 0 to 10 V DC) or current (0 to 20 mA DC) input, the display becomes infinite (display of about zero value).
  - Z-1010 specification
  - Outputs:
    - Limit output: OFF
    - Alarm output: Both of the Alarm 1 and Alarm 2 outputs of this instrument are turned on when burnout occurs regardless of any of the following actions taken (High alarm, low alarm, etc.). In addition, when used for any purposes other than these alarms (event, etc.), specify the Z-124 specification (not to be forcibly turned on).
  - A power failure of 20 ms or less will not affect the control action. When a power failure of more than 20 ms occurs, the instrument assumes that the power has been turned off. When power returns, the controller will retain the conditions that existed prior to shut down.
  - The alarm hold action is activated when not only the power is turned on, but also the SV is changed.

6.1 Operation Procedures

1. Prior to starting operation, check that the mounting and wiring have been finished, and that the Limit set value (SV) and various parameters have been set.
2. This instrument does not have a power supply switch.
3. If the power is turned ON, the limit signal continues to be output until the <RST key is pressed regardless of a measured value. First, press the <RST key briefly for one or more seconds depending on the setting in SL9, then start operation.
6.2 Set Data Lock (LCK) Function
The set data lock restricts parameter setting changes by key operation. This function prevents the operator from making errors during operation. There are 8 set data lock levels.

Parameters protected by Set data lock function are still displayed for monitoring.

7. INITIAL SETTING

**WARNING**
Parameters in the Initialization mode should be set according to the application before setting any parameter related to operation. Once the Parameters in the Initialization mode are set correctly, no further changes need to be made to parameters for the same application under normal conditions. If they are changed unnecessarily, it may result in malfunction or failure of the instrument. RKC will not bear any responsibility for malfunction or failure as a result of improper changes in the Initialization mode.

7.1 Go to Initialization Mode
1. Turn on the power to this controller. The instrument goes to the PV/SV display after confirming input type symbol and input range.
2. Press and hold the SET key for 2 seconds to go to the Parameter Setting Mode from the PV/SV display.
3. Press the SET key until “LCK” (Set Data Lock display) will be displayed.
4. The high-lighted digit indicates which digit can be set. Press <RST key to high-light the thousands digit. (The section in each image of the controller shows the digits which are not high-lighted.)
5. Press the UP key to change 0 to 1.

6. Press the SET key to store the new set value. The display goes to the next parameter.

7. Press the <RST key for 2 seconds while pressing the SET key to go to the Initialization Mode. When the controller goes to the Initialization Mode, “Cod” will be displayed.

7.2 Exit Initialization Mode
When any parameter setting is changed in the Initialization mode, check all parameter set values in SV setting mode and Parameter setting mode.
1. Press the <RST key for 2 seconds while pressing the SET key from any display in the Initialization mode. The controller goes back to the operation mode and the PV/SV display will be displayed.
2. Press and hold the SET key for 2 seconds in the PV/SV display.
3. Press the SET key until “LCK” (Set Data Lock display) will be displayed.
4. The high-lighted digit indicates which digit can be set. Press <RST key to high-light the thousands digit.
5. Press the DOWN key to change 1 to 0.
6. Press the SET key to store the new set value. The display goes to the next parameter, and the Initialization mode is locked. (The parameter displayed varies on the instrument specification.)

7.3 Initial Setting Menu
The “Cod” display will be displayed when the controller goes to the Initialization mode.

Do not change to any parameter in the Initialization mode which is not described in the initial setting menu above. It may result in malfunction or failure of the instrument.

7.4 Input Type Selection (SL1)
When any parameter setting is changed in the Initialization mode, check all parameter set values in SV setting mode and Parameter setting mode.

Factory set value varies depending on the input type.

<table>
<thead>
<tr>
<th>Set value</th>
<th>Description</th>
<th>Set value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>K</td>
<td>0100</td>
<td>°C</td>
</tr>
<tr>
<td>0001</td>
<td>J</td>
<td>0110</td>
<td>°F</td>
</tr>
<tr>
<td>0100</td>
<td>E</td>
<td>1110</td>
<td>0 to 10 V DC</td>
</tr>
<tr>
<td>0110</td>
<td>N</td>
<td>1111</td>
<td>0 to 5 V DC</td>
</tr>
<tr>
<td>1000</td>
<td>S</td>
<td>1112</td>
<td>0 to 20 mA DC</td>
</tr>
<tr>
<td>1001</td>
<td>B</td>
<td>1113</td>
<td>4 to 20 mA DC</td>
</tr>
<tr>
<td>1010</td>
<td>W3942/W26Re</td>
<td>1114</td>
<td>Current 1</td>
</tr>
<tr>
<td>1111</td>
<td>PL 9</td>
<td>1115</td>
<td>Current 2</td>
</tr>
</tbody>
</table>

Any input change in TC&RTD group is possible. Any input change in Voltage & Current group except for 0 to 10 V DC input is possible. No input change between TC&RTD group and Voltage & Current group is possible.

The input type of Z-1010 specification is fixed to 0 to 10 V DC due to the hardware difference.

For the current input specification, a resistor of 250Ω must be connected between the input terminals.

### Change Settings
Example: Change the input type from “K (0001)” to “J (0000)"
1. Set “Cod” to 0000, and press the SET key. The display will go to SL1.
2. Press the UP key to change the number to 1.
3. Press the SET key to store the new set value. The display goes to the next parameter.

7.5 Temperature Unit Selection (SL2)
Inappropriate settings may result in malfunction.

Factory set value varies depending on the instrument specification.

<table>
<thead>
<tr>
<th>Set value</th>
<th>Description</th>
<th>Set value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>°C</td>
<td>0001</td>
<td>°F</td>
</tr>
</tbody>
</table>

### Change Settings
Example: Change the temperature unit from “°C (0000)” to “°F (0001)”
1. Press the SET key until SL2 is displayed.
2. Press the UP key to change the number to 1.
3. Press the SET key to store the new set value. The display goes to the next parameter.
7.6 Alarm 1 [ALM1] Type Selection (SL4)  
Alarm 2 [ALM2] Type Selection (SL5)  
If the alarm function is not provided with the instrument when shipped from the factory, no alarm output is available by changing SL4 and/or SL5.

- SL4 is set to 0000 in the following cases.  
  - When the instrument does not have ALM1 output  
  - SL5 is set to 0000 in the following cases.  
  - When the instrument does not have ALM2 output

Factory set value varies depending on the instrument specification.

<table>
<thead>
<tr>
<th>Set value</th>
<th>Details of setting</th>
<th>Set value</th>
<th>Details of setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>No alarm</td>
<td>0001</td>
<td>Deviation high alarm</td>
</tr>
<tr>
<td>0002</td>
<td>Deviation low alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0003</td>
<td>Off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0010</td>
<td>Deviation high/low alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0110</td>
<td>Band alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1111</td>
<td>Process low alarm with hold action</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Hold action:  
  - When Hold action is ON, the alarm suppression at start-up or the limit set value change until the measured value enters the non-alarm range.

 Alarm action type  
Both of the Alarm 1 and Alarm 2 outputs of this instrument are turned on when burnout occurs regardless of any of the following actions taken (High alarm, low alarm, etc.). In addition, when used for any purposes other than these alarms (event, etc.), specify the Z-124 specification (not to be forcibly turned on).

<table>
<thead>
<tr>
<th>Description</th>
<th>Input range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deviation high alarm</td>
<td>PV to 600.0</td>
</tr>
<tr>
<td>Deviation low alarm</td>
<td>PV to 600.0</td>
</tr>
<tr>
<td>Deviation high/low alarm</td>
<td>PV to 600.0</td>
</tr>
<tr>
<td>Process high alarm</td>
<td>PV to 600.0</td>
</tr>
<tr>
<td>Process low alarm</td>
<td>PV to 600.0</td>
</tr>
</tbody>
</table>

7.7 Limit Action Type Selection (SL6)  
Select the limit action type and hold action.

- The units digit is not used. As malfunction may result, do not change this digit.

Factory set value '0000'

<table>
<thead>
<tr>
<th>Set value</th>
<th>Details of setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>Fixed (Do not change this one.)</td>
</tr>
<tr>
<td>0101</td>
<td>Limit action output turned ON at the time of power ON</td>
</tr>
<tr>
<td>0102</td>
<td>Limit action output turned OFF at the time of power ON</td>
</tr>
<tr>
<td>0110</td>
<td>Limit action (high)</td>
</tr>
<tr>
<td>0111</td>
<td>Limit action (low)</td>
</tr>
<tr>
<td>0000</td>
<td>Without alarm hold action</td>
</tr>
<tr>
<td>1001</td>
<td>With alarm hold action</td>
</tr>
</tbody>
</table>

7.8 Reset Action Selection (SL9)  
Select the <RST key operation for reset.

Factory set value varies depending on the instrument specification.

<table>
<thead>
<tr>
<th>Set value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>Press for 1 second.</td>
</tr>
<tr>
<td>0001</td>
<td>Press once. [Factory set value for ZK-1152 spec.]</td>
</tr>
</tbody>
</table>

7.9 Setting Limiter High (SLH)  
Setting Limiter Low (SLL)  
For voltage or current input, set scaling within the input range.

When the Setting limiter (SLH, SLL) is changed:
- SLH ≥ Limit set value (SV) ≥ SLL  
- SLH ≥ Analog output scale (AHS) ≥ Analog output scale (AHL) ≥ SLL

7.10 Decimal Point Position (PGdP)  
Use to select a Decimal point position of the input range (voltage input and current input). PGdP is displayed only for voltage or current input.  
Inappropriate settings may result in malfunction.

Factory set value varies depending on the instrument specification.

<table>
<thead>
<tr>
<th>Set value</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>No decimal place</td>
<td>0000</td>
</tr>
<tr>
<td>0001</td>
<td>One decimal place</td>
<td>0001</td>
</tr>
<tr>
<td>0002</td>
<td>Two decimal places</td>
<td>0002</td>
</tr>
<tr>
<td>0003</td>
<td>Three decimal places</td>
<td>0003</td>
</tr>
</tbody>
</table>

Change Settings  
Example: Change the <RST key operation type from “0000” to “0001”

1. Press the SET key eight times at SLH until SL9 is displayed.
2. Press the UP key to change the number to 0.
3. Press the SET key to store the new set value. The display goes to the next parameter.

Change Settings  
Example: Change the Decimal point position from “One decimal place (0001)” to “No decimal place (0000)”

1. Press the SET key two times at SLH until PGdP is displayed.
2. Press the DOWN key to change the number to 0.
3. Press the SET key to store the new set value. The display goes to the next parameter.
8. ERROR DISPLAYS

- **Error display**
  - **Err**
    - **RAM failure (Incorrect set data write, etc.)**
    - **Turn off the power at once. If an error occurs after the power is turned on again, please contact RKC sales office or the agent.**

- **Over-scale and Underscale**
  - **Measured value (PV)**
    - **[Flashing]**
    - PV is outside of input range.
  - **[Flashing]**
    - Over-scale: PV is above the high input display range limit.
  - **[Flashing]**
    - Underscale: PV is below the low input display range limit.

**WARNING**

To prevent electric shock, always turn off the power before replacing the sensor.

Check Input type, Input range and connecting state of sensor. Confirm that the sensor or wire is not broken.

To prevent injury or instrument failure, do not touch the internal printed wiring board.

9. INPUT RANGE TABLE

<table>
<thead>
<tr>
<th>Input type</th>
<th>Model Code</th>
<th>Input type</th>
<th>Model Code</th>
<th>Input type</th>
<th>Model Code</th>
<th>Input type</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 200 °C</td>
<td>K 01</td>
<td>J 0 to 800 °F</td>
<td>J A1</td>
<td>N 0 to 1200 °C</td>
<td>N 01</td>
<td>U *2</td>
<td>199.9 to +100.0 °C</td>
</tr>
<tr>
<td>0 to 400 °C</td>
<td>K 02</td>
<td>0 to 1600 °F</td>
<td>J A2</td>
<td>0 to 1300 °C</td>
<td>N 02</td>
<td>0.0 to 400.0 °C</td>
<td>U 03</td>
</tr>
<tr>
<td>0 to 600 °C</td>
<td>K 03</td>
<td>0 to 2192 °F</td>
<td>J A3</td>
<td>0 to 2300 °C</td>
<td>N A1</td>
<td>199.9 to -999.9 °C</td>
<td>A1</td>
</tr>
<tr>
<td>0 to 800 °C</td>
<td>K 04</td>
<td>0 to 400 °F</td>
<td>J A4</td>
<td>0 to 2372 °F</td>
<td>N A2</td>
<td>100.0 to +200.0 °C</td>
<td>A2</td>
</tr>
<tr>
<td>0 to 1000 °C</td>
<td>K 05</td>
<td>0 to 300 °F</td>
<td>J A7</td>
<td>199.9 to +400.0 °C</td>
<td>T 01</td>
<td>0.0 to 999.9 °C</td>
<td>U A3</td>
</tr>
<tr>
<td>0 to 1200 °C</td>
<td>K 06</td>
<td>*1 0 to 1600 °R</td>
<td>R 01</td>
<td>*1 199.9</td>
<td>+100.0 °C</td>
<td>T 02</td>
<td>0.0 to 400.0 °C</td>
</tr>
<tr>
<td>0 to 1372 °C</td>
<td>K 07</td>
<td>*1 0 to 1769 °R</td>
<td>R 02</td>
<td>-100.0 to +200.0 °C</td>
<td>T 03</td>
<td>0.0 to 400.0 °C</td>
<td>L 02</td>
</tr>
<tr>
<td>0 to 100 °C</td>
<td>K 13</td>
<td>*1 0 to 1350 °R</td>
<td>R 04</td>
<td>0.0 to 350.0 °C</td>
<td>T 04</td>
<td>199.9 to +200.0 °C</td>
<td>T 02</td>
</tr>
<tr>
<td>0 to 300 °C</td>
<td>K 14</td>
<td>*1 0 to 3260 °R</td>
<td>R A1</td>
<td>*1 199.9 to +720.0 °F</td>
<td>T A1</td>
<td>0.0 to 1600 °L</td>
<td>L A2</td>
</tr>
<tr>
<td>0 to 450 °C</td>
<td>K 17</td>
<td>*1 0 to 3216 °F</td>
<td>R A2</td>
<td>*1 199.9 to +100.0 °C</td>
<td>T A2</td>
<td>199.9 to +649.0 °C</td>
<td>D A1</td>
</tr>
<tr>
<td>0 to 500 °C</td>
<td>K 20</td>
<td>*1 0 to 1600 °S</td>
<td>S 01</td>
<td>*1 199.9 to +400.0 °F</td>
<td>T A3</td>
<td>199.9 to +200.0 °C</td>
<td>D A2</td>
</tr>
<tr>
<td>0 to 800 °C</td>
<td>K 21</td>
<td>*1 0 to 1769 °S</td>
<td>S 02</td>
<td>0.0 to 400.0 °F</td>
<td>T A4</td>
<td>100.0 to -550.0 °C</td>
<td>U 03</td>
</tr>
<tr>
<td>0 to 1600 °F</td>
<td>K 22</td>
<td>*1 0 to 3200 °F</td>
<td>S A1</td>
<td>0.0 to 752.0 °F</td>
<td>T A5</td>
<td>100.0 to +100.0 °C</td>
<td>D A3</td>
</tr>
<tr>
<td>0 to 2502 °F</td>
<td>K 23</td>
<td>*1 0 to 3216 °F</td>
<td>S A2</td>
<td>0.0 to 150.0 °C</td>
<td>T A6</td>
<td>100.0 to +200.0 °C</td>
<td>D A4</td>
</tr>
<tr>
<td>20 to 70 °C</td>
<td>K 99</td>
<td>*1 400 to 1800 °B</td>
<td>B 01</td>
<td>0.0 to 2320 °W</td>
<td>W 02</td>
<td>0.0 to 50.0 °C</td>
<td>U 06</td>
</tr>
<tr>
<td>0 to 200 °C</td>
<td>J 01</td>
<td>*1 0 to 1820 °B</td>
<td>B A1</td>
<td>0.0 to 400.0 °F</td>
<td>W A1</td>
<td>0.0 to 100.0 °C</td>
<td>U 07</td>
</tr>
<tr>
<td>0 to 400 °C</td>
<td>J 02</td>
<td>*1 800 to 3200 °B</td>
<td>B A1</td>
<td>0.0 to 1300 °C</td>
<td>A 01</td>
<td>0.0 to 200.0 °C</td>
<td>U 08</td>
</tr>
<tr>
<td>0 to 600 °C</td>
<td>J 03</td>
<td>*1 800 to 3308 °B</td>
<td>B A2</td>
<td>0.0 to 1300 °C</td>
<td>A 02</td>
<td>0.0 to 300.0 °C</td>
<td>U 09</td>
</tr>
<tr>
<td>0 to 800 °C</td>
<td>J 04</td>
<td>*1 0 to 800 °E</td>
<td>E 01</td>
<td>0.0 to 1200 °C</td>
<td>D 03</td>
<td>10 to 5 V DC</td>
<td>U 10</td>
</tr>
<tr>
<td>0 to 1000 °C</td>
<td>J 05</td>
<td>*1 0 to 1000 °E</td>
<td>E 02</td>
<td>0.0 to 2400 °F</td>
<td>A 01</td>
<td>15 to 20 mA DC</td>
<td>U 11</td>
</tr>
<tr>
<td>0 to 1200 °C</td>
<td>J 06</td>
<td>*1 0 to 1600 °E</td>
<td>E A1</td>
<td>199.9 to +999.9 °F</td>
<td>A 01</td>
<td>199.9 to +400.0 °F</td>
<td>A 02</td>
</tr>
<tr>
<td>0 to 450 °C</td>
<td>J 10</td>
<td>*1 0 to 1832 °E</td>
<td>E A2</td>
<td>*2 199.9 to +600.0 °C</td>
<td>U 03</td>
<td>*2 199.9 to +200.0 °F</td>
<td>D A5</td>
</tr>
</tbody>
</table>

*1 0 to 350 °C *2 0 to 150 °C *3 0 to 100 °C *4 0 to 50 °C *5 0 to 10 °C

**K**

- **Input type**
- **Model Code**

**J**

- **Input type**
- **Model Code**

**U**

- **Input type**
- **Model Code**

10. REMOVING THE INTERNAL ASSEMBLY

Usually, this instrument is not necessary to remove the internal assembly from the case. When removing the internal assembly without disconnecting the external wiring, take the following steps.

- **WARNING**

- To prevent electric shock or instrument failure, only qualified personnel should be allowed to pull out the internal assembly.
- To prevent electric shock or instrument failure, always turn off the power before pulling out the internal assembly.
- To prevent injury or instrument failure, do not touch the internal printed wiring board.

Apply pressure very carefully when removing internal assembly to avoid damage to the frame.

To conform to IEC61010-1 requirements for protection from electric shock, the internal assembly of this instrument can only be removed with an appropriate tool.

Unlocking points (marked with “*”) depend on the model as follows:

- **CB900L**

---

**IBM 36-E1**

**RKC INSTRUMENT INC.**

**HEADQUARTERS: 16-6, KUGAHARA 5-COMME, OHTA-KU TOKYO 146-8515 JAPAN**

**PHONE: 3-3751-9799 (+81 3 3751 9799)**

**E-mail: info@rkcinst.co.jp**

**FAX: 3-3751-8585 (+81 3 3751 8585)**

**DEC. 2012**

**The first edition: DEC. 2012 [IM200]**