Limit Controller

CB100L/CB900L

Initial Setting Manual

RKC® RKC INSTRUMENT INC.

IMCB10-E1

CAUTIONS

- This manual is subject to change without prior notice.
- Examples of figures, diagrams and numeric values used in this manual are for a better understanding of the text, but not for assuring the resultant operation.
- This manual may not be reproduced or copied in whole or in part without RKC's prior consent.
- This instrument and manual are manufactured, prepared, then shipped under strict quality control. However, if any defect is found, please contact your nearest RKC sales office or agent from which you bought the system.
- RKC assumes no responsibility for any of the following damage 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 damage.

INTRODUCTION

Before using this instrument, please carefully read this manual for its correct use. In addition, after reading the manual keep it available easily anytime.

USERS OF THIS MANUAL

This manual is written mainly for personnel who have a fundamental knowledge of electricity as well as control. This manual is also written for RKC service engineers or qualified technicians.

⚠ WARNING

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, supply 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 FLAMMABLE GASES.

In order to prevent fire, explosion or instrument damage, never use this instrument at a location where flammable or explosive gases or vapor 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 over 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.

NOTES ON INDICATIONS

The following indications are used in this manual to ensure the safe, correct use of the **CB100L/CB900L.**

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

CAUTION : These describe precautions to be taken in case unit damage may result if operating procedures are not strictly followed.

NOTE : Extra noted or precautions are added to operating procedures and explanations.

SYMBOL MARKS

⚠ : This mark is used when great care is needed especially for safety.

✻ : This mark is used to add extra notes, precautions or supplementary explanations to table and figures.

CAUTIONS PRIOR TO USE

- 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.
- Before cleaning the instrument, check that the power is turned off.
- Remove stains on the display unit using a soft cloth or tissue paper.
- As the display unit is easily scratched, do not scrub or touch it with a hard object.
- The stains on the housing shall be wiped off by the cloth which is dipped into the neutral cleanser diluted by water and wrung tightly, and finish it by a dried cloth.

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 instrument may cause radio interference, in which case the user is required to take adequate measures.

Name and number of this instruction manual :

Name : **Limit Controller CB100L/CB900L Initial Setting Manual**

Manual number : **IMCB10-E1**

■ **Revisions**

Date of revision	Manual number	Reason for revision
October 5, 1998	IMCB10-E1	The first edition issue

CONTENTS

1. TRANSFER TO MODE

Initialization is to set parameters relating to instrument specifications (input type, input range, alarm type, etc.) and those relating to instrument characteristics (setting limiter, alarm differential gap, etc.).

1.1 Transfer to initialization mode

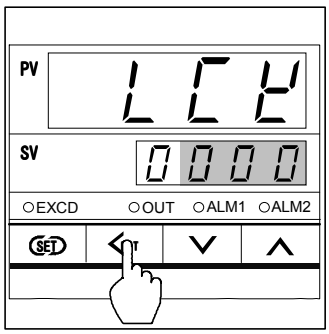
① Turn on the power to this instrument. Thus, the input type, input range and PV/SV display mode (PV/SV display) change in this order.

② Press the SET key for 2 sec with the instrument set to PV/SV display mode to change the instrument to parameter setting mode.
*For details on parameter setting mode, see the CB100L/CB900L Instruction Manual. [IMCB08-E□]

③ Press the SET key to change to the set data lock function display screen.

④ Press the <RST key to light brightly the thousands digit on the set value (SV) display unit.

Set data lock function



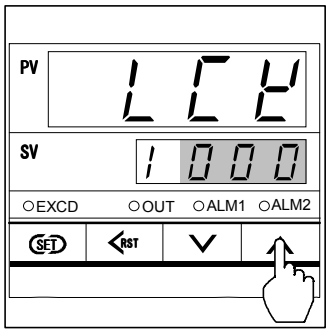
As the units digit light brightly first, press the <RST key to light brightly the thousands digit.

Bright lighting : □

Dim lighting : ■

⑤ Press the UP key to change "0" to "1" in the thousands digit.

Set data lock function

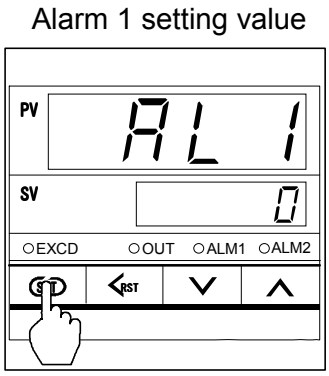


Set value
0 : Initialization mode locked
1 : Initialization mode unlocked

Bright lighting : □

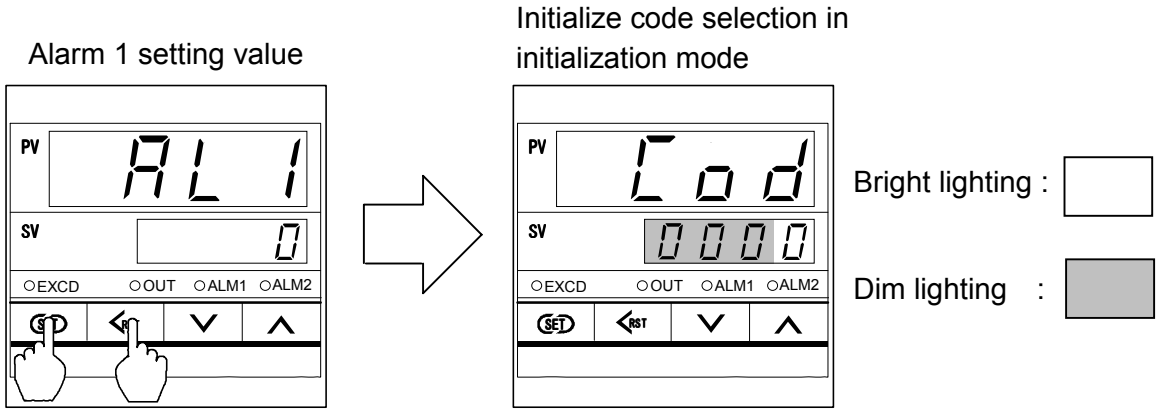
Dim lighting : ■

⑥ Press the SET key to change to the next parameter. Thus, the data in initialization mode is unlocked.



*In the above figure, the alarm 1 (ALM1) setting value is displayed. However, the parameter to be displayed varies depending on the specification.

⑦ Keep pressing both the SET and <RST keys for 2 sec to change the instrument to initialization mode. Thus, the symbol (Cod) for initialize code selection is displayed first.



NOTES

- The initialization mode can be selected anytime when PV/SV, SV setting, peak hold value, or over time is displayed.
- If the controller is change to initialization mode, both limit and alarm outputs contact are set to the open state, and the analog output, to -5 %.

1.2 End of initialization mode

① Transfer to "initialize code selection" after each parameter is set.

② Simultaneously keep pressing both the SET and <RST keys for 2 sec in the "Initialize code selection" state to transfer to "PV/SV display mode."

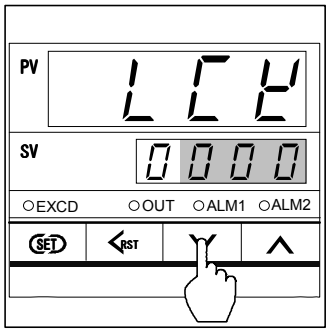
③ Press the SET key for 2 sec in the "PV/SV display mode" state to transfer to parameter setting mode.

④ Press the SET key to transfer to the set data lock function display.

⑤ Press the <RST key to brightly light the thousands digit on the set value (SV) display unit.
(See ④ on P.1)

⑥ Press the DOWN key to set the numeric value corresponding to the thousands digit to "0" from "1."

Set data lock function



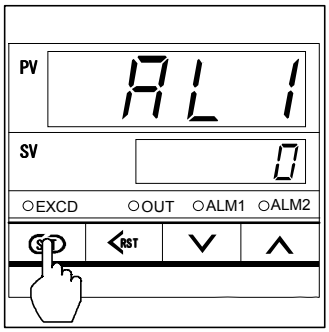
Set value
0 : Initialization mode locked
1 : Initialization mode unlocked

Bright lighting :

Dim lighting :

⑦ Press the SET key to transfer to the next parameter. As a result, the "Initialization mode lock state" setting becomes effective.

Alarm 1 setting value



*In the left figure, the alarm 1 setting value is displayed. However, the parameter to be displayed varies depending on the specification.

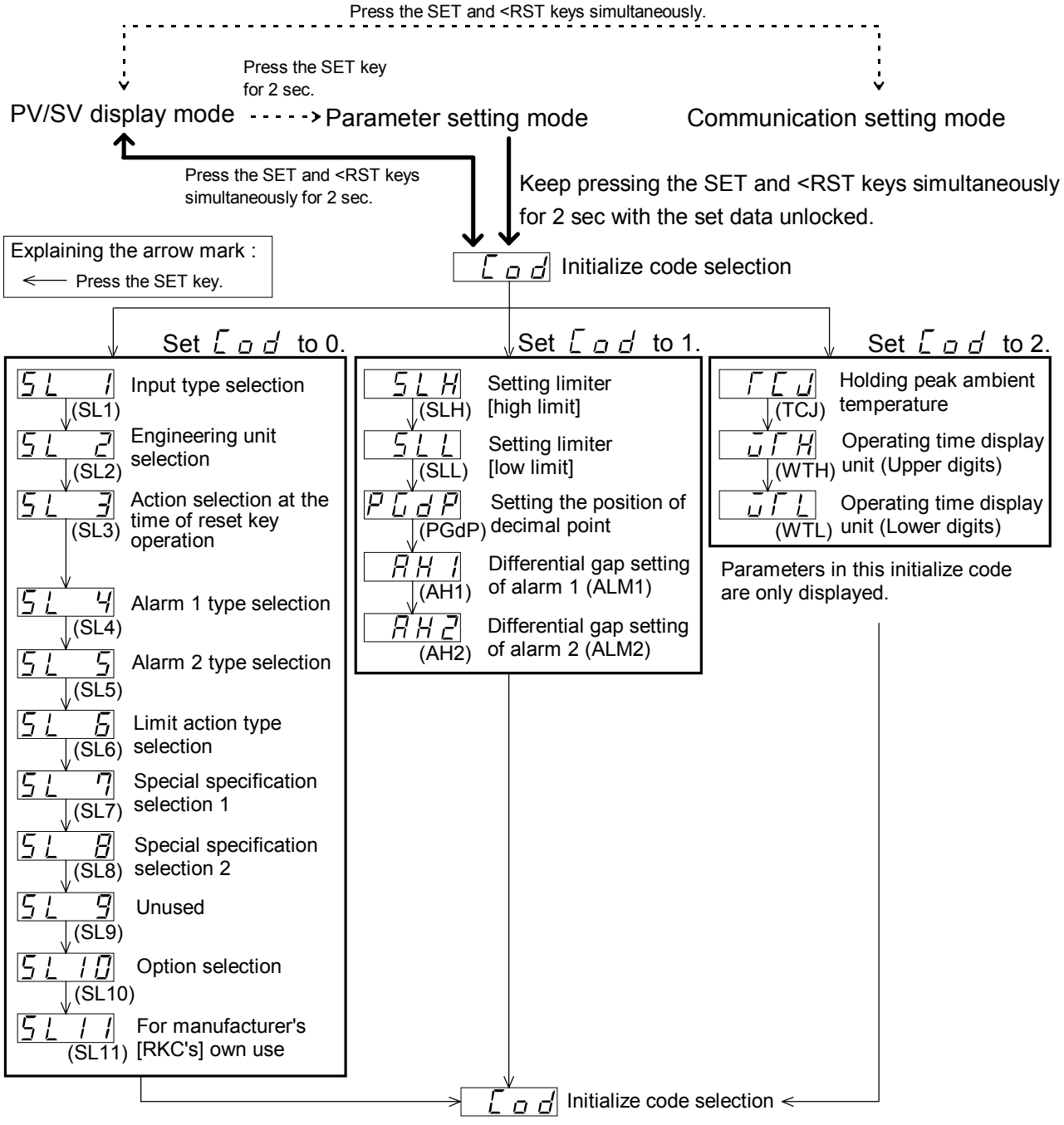
NOTE After the controller terminates the initialization mode, the limit action output is set to the ON state in the same way as at the time of power ON.

2. PROCEDURE FOR SETTING

If the instrument is changed to initialization mode, the symbol (Cod) for selecting the initialize code is displayed first. (Initializing items are classified into 3 initialize code groups in initialization mode.) Enter the initialize code corresponding to the parameter to be chanted, and then select the parameter to be changed by pressing the SET key. The measured value (PV) display unit shows the characters corresponding to the parameter, and the set value (SV) display unit shows the value corresponding to that parameter. Display flowcharts in initialization mode are shown in the following.

2.1 Display flowcharts in initialization mode

CAUTION There are parameters which are not displayed depending on the specification.



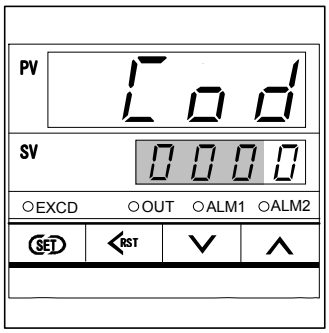
2.2 Procedure for setting each parameter

[Example of changing the setting]

When the display unit shows "Limit action type selection (SL6)" in initialize code "0", the following procedure is for changing the limit action type from "high limit action" to "low limit action."

① Change the instrument to the initialize code selection display.
(See "**1.1 Transfer to initialization mode**" on P. 1.)

Initialize code selection

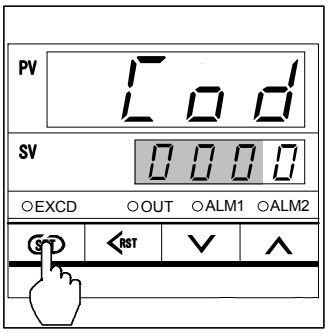


Bright lighting :

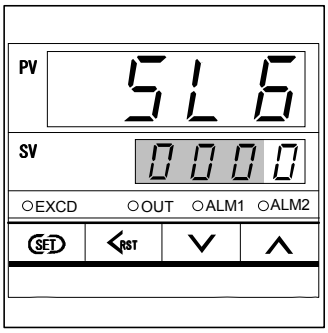
Dim lighting :

② As "Limit action type selection (SL6)" belongs to the group of initialize code "0", do not change the initialize code (the units digit) but press the SET key to change to "SL6."

Initialize code selection



Limit action type selection



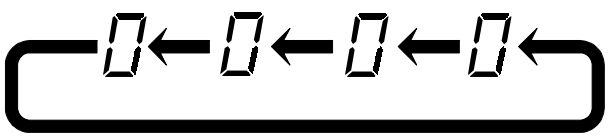
Bright lighting :

Dim lighting :

NOTE Please read this NOTE without fail.

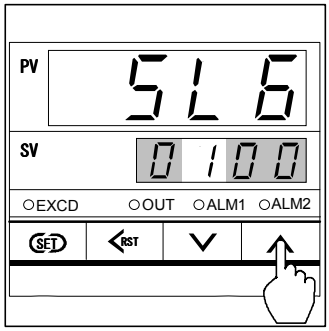
When the initialize code is set to "1" or "2", enter "1" or "2" in the units digit of the set value (SV) display unit by pressing the UP or DOWN key.

③ Press the <RST key to move the brightly lit digit of the set value (SV) display unit to the hundreds digit. The brightly lit digit moves as follows every time the <RST key is pressed.



④ Press the UP key to enter "1" in the hundreds digit of the set value (SV) display unit.

Limit action type selection



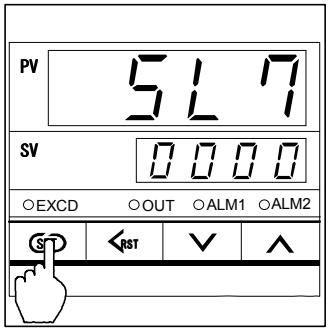
Set value
0 : Limit action (high limit)
1 : Limit action (low limit)

Bright lighting :

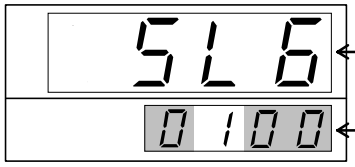
Dim lighting :

⑤ Press the SET key to change to the next parameter. Thus, the set value is registered.

Special specification selection 1



Parameter display position



Measured value (PV) display unit shows parameter No. (character).

Input the numerical value in the set value (SV) display unit.

*Note that the relevant digit used differs depending on the parameter.

Set value	
0	
1	

The figure at the above is for selects the "Limit action (low limit)" in "SL6 (Limit action type selection)."

The details of parameters in each initialize code group are described in the following.

2.3 Details of parameters in initialize code 0 (Cod=0)

(1) SL1 (Input type selection)

CAUTION

Conduct the setting so that it matches the instrument specification (input type). If the setting is changed, always re-set the setting limits (SLH and SLL). (See P.12, 13)

Factory set value varies depending on the input type.

Set value				Input type	
0	0	0	0	K	Thermocouple input (TC)
0	0	0	1	J	
0	0	1	0	L	
0	0	1	1	E	
0	1	0	0	N	
0	1	1	1	R	
1	0	0	0	S	
1	0	0	1	B	
1	0	1	0	W5Re/W26Re	
1	0	1	1	PL II	
0	1	0	1	T	
0	1	1	0	U	
1	1	0	0	Pt100 Ω (JIS/IEC)	RTD input
1	1	0	1	JPt100 Ω (JIS)	
1	1	1	0	0 to 5V DC	Voltage input
1	1	1	0	0 to 10V DC *1	
1	1	1	1	1 to 5V DC	
1	1	1	0	0 to 20 mA DC	Current input *2
1	1	1	1	4 to 20 mA DC	

*1 To be fixed to "1110" for the 0 to 10 V DC (Z-1010 specification). No input type cannot be changed as the hardware differs.

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

SL2 (Engineering unit selection)

CAUTIONS

- For the input type of "Voltage/current input," even if the unit is set, it is ineffective.
- Any digits other than the units digit are not used. As malfunction may result, do not change any of these digits.

Factory set value : "0000"

Set value				Description	
			0	°C	Engineering unit selection
			1	°F	
0	0	0		Fixed	

(3) SL3 (Action selection at the time of reset key operation)

CAUTIONS

- When the reset action is taken by communication or contact input, all data items (peak hold value and over time) are cleared.
- Key operation is effective only when PV, peak hold value or over time is displayed.
- Any digits other than the units and tens digits are not used. As malfunction may result, do not change any of these digits.

Factory set value : "0000"

Set value				Description		
		0	0	Reset action taken and all data items cleared	*1	Selects the action on each screen at the of reset key
		0	1	Reset action taken and each data items cleared	*2	
		1	0	Reset action taken and each data items cleared	*3	
		1	1	Reset action taken and each data items cleared	*4	
0	0			Fixed		

All data items : Peak hold value and over time

*1 : Possible in any case where PV, peak hold value, or over time is displayed.

*2 : The reset action can be taken only when PV or over time is displayed. The peak hold value can be cleared only when it is displayed.

*3 : The reset actin can be taken only when PV or peak hold value is displayed. Over time can be cleared only when it is displayed.

*4 : The reset action can be taken only when PV is displayed. The peak hold value can be cleared only when it is displayed. Over time can be cleared only when it is displayed.

(4) SL4 (Alarm 1 type selection)

CAUTION

Instrument without the alarm 1 (ALM1) is set to "0000."

Factory set value varies depending on the instrument specification.

Set value				Description	
	0	0	0	Alarm 1 (ALM1) not provided	Alarm 1 (ALM1) type selection
	0	0	1	Deviation high alarm	
	0	1	0	Deviation high/low alarm	
	0	1	1	Process high alarm	
	1	0	1	Deviation low alarm	
	1	1	0	Band alarm	
	1	1	1	Process low alarm	
0				Without alarm hold action	Alarm 1 (ALM1) with hold action selection
1				With alarm hold action	

(5) SL5 (Alarm 2 type selection)

CAUTION

Instrument without the alarm 2 (ALM2) is set to "0000."

Factory set value varies depending on the instrument specification.

Set value				Description	
	0	0	0	Alarm 2 (ALM2) not provided	Alarm 2 (ALM2) type selection
	0	0	1	Deviation high alarm	
	0	1	0	Deviation high/low alarm	
	0	1	1	Process high alarm	
	1	0	1	Deviation low alarm	
	1	1	0	Band alarm	
	1	1	1	Process low alarm	
0				Without alarm hold action	Alarm 2 (ALM2) with hold action selection
1				With alarm hold action	

(6) SL6 (Limit action type selection)

CAUTION

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

Factory set value : "0000"

Set value				Description	
			0	Fixed	
		0		Limit action output turned ON at the time of power	Selects the limit action type and hold action
		1		Limit actin output turned OFF at the time of power ON	
	0			Limit action (high limit)	
	1			Limit action (low limit)	
0				Without alarm hold action	
1				With alarm hold action	

(7) SL7 (Special specification selection 1)

CAUTION

Instrument without the alarm 1 (ALM1) and alarm 2 (ALM2) is set to "0000".

- Instrument without the alarm 1 (ALM1). [SL4 setting details : For "0000"]
- Instrument without the alarm 2 (ALM2). [SL5 setting details : For "0000"]

Factory set value : "1100"

Set value				Description		
			0	Energize alarm		Energize alarm/de-energize selection (Alarm 1 side)
			1	De-energize alarm		
		0		Energize alarm		Energize alarm/de-energize selection (Alarm 2 side)
		1		De-energize alarm		
	0			Z-124 specification not provided	*1	Special specification selection (Alarm 1 side)
	1			Z-124 specification provided	*2	
0				Z-124 specification not provided	*1	Special specification selection (Alarm 2 side)
1				Z-124 specification provided	*2	

*1 : The alarm output is forcibly turned ON when the burnout function is activated.

*2 : No alarm action is taken by the burnout function. (Same as the normal alarm action)

(8) SL8 (Special specification selection 2)

CAUTION

The thousands and hundreds digits are not used. As malfunction may result, do not change these digits.

Factory set value : "0011"

Set value				Description	
			0	Limit action output (Energized output)	Selects limit action output energized/de-energized.
			1	Limit action output (De-energized output)	
		0		See *1	
		1		See *2	
0	0			Fixed	

*1 : The limit action output is forcibly turned ON when the burnout function is activated.
*2 : The limit action output is normally energized even when the burnout function is activated.

(9) SL9 (Unused)

SL9 is not used. (Only displayed)
Displayed value : "0000" fixed

(10) SL10 (Option selection)

CAUTION

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

Factory set value varies depending on the instrument specification.

Set value				Description	
			0	Analog output not provided	Selection of analog output function
			1	Analog output provided	
		0		Contact input not provided	Selection of contact input function
		1		Contact input provided	
	0			Communication function not provided	Selection of communication function
	1			Communication function provided	
0				Fixed	

*When "Communication function provided" and "Contact input provided" are simultaneously selected, this is judged to be "Contact input not provided."

(11) SL11 (For manufacturer's [RKC's] own use)

CAUTION

Do not change it, as it is used to adjust the instrument.

2.4 Details of parameters in initialize code 1 (Cod=1)

(1) SLH (Setting limiter [high limit])

CAUTIONS

- Set the limiter by referring to "Input range table" (P.15)
- Limiter setting becomes SLH ≧ SLL.

■ Setting method

Press the <RST key to move the digit, then enter the high limit value of input range by pressing the UP or DOWN key. The set value (SV) display unit shows the numeric value.

Factory set value varies depending on the instrument specification.

Input type			Setting range
Thermocouple input (TC)	K		0 to 1372 °C (0 to 2502 °F)
	J		0 to 1200 °C (0 to 2192 °F)
	R		0 to 1769 °C (0 to 3216 °F)
	S		0 to 1769 °C (0 to 3216 °F)
	B		0 to 1820 °C (0 to 3308 °F)
	E		0 to 1000 °C (0 to 1832 °F)
	N		0 to 1300 °C (0 to 2372 °F)
	T		-199.9 to +400.0 °C (-199.9 to +752.0 °F)
	W5Re/W26Re		0 to 2320 °C (0 to 4208 °F)
	PL II		0 to 1390 °C (0 to 2534 °F)
	U		-199.9 to +600.0 °C (-199.9 to +999.9 °F)
	L		0 to 900 °C (0 to 1652 °F)
RTD input	Pt100 Ω (JIS/IEC)	*1	-199.9 to +649.0 °C (-199.9 to +999.9 °F)
	JPt100 Ω (JIS)		-199.9 to +649.0 °C (-199.9 to +999.9 °F)
Voltage input	0 to 5 V DC		-1999 to +9999 (programmable scale)
	0 to 10 V DC	*2	
	1 to 5V DC		
Current input	0 to 20 mA DC	*3	-1999 to +9999 (programmable scale)
	4 to 20 mA DC	*3	

*1 : IEC (International Electrotechnical Commission) is equivalent to JIS, DIN and ANSI.

*2 : For the 0 to 10 V DC (Z-1010 specification), no input type cannot be changed as the hardware differs.

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

(2) SLL (Setting limiter [low limit])

CAUTIONS

- Set the limiter by referring to "Input range table." (P.15)
- Limiter setting becomes SLH ≧ SLL.

■ Setting method

Press the <RST key to move the digit, then enter the low limit value of input range by pressing the UP or DOWN key.
The set value (SV) display unit shows the numeric value.

Factory set value varies depending on the instrument specification.

Input type			Setting range
Thermocouple input (TC)	K		0 to 1372 °C (0 to 2502 °F)
	J		0 to 1200 °C (0 to 2192 °F)
	R		0 to 1769 °C (0 to 3216 °F)
	S		0 to 1769 °C (0 to 3216 °F)
	B		0 to 1820 °C (0 to 3308 °F)
	E		0 to 1000 °C (0 to 1832 °F)
	N		0 to 1300 °C (0 to 2372 °F)
	T		-199.9 to +400.0 °C (-199.9 to +752.0 °F)
	W5Re/W26Re		0 to 2320 °C (0 to 4208 °F)
	PL II		0 to 1390 °C (0 to 2534 °F)
	U		-199.9 to +600.0 °C (-199.9 to +999.9 °F)
	L		0 to 900 °C (0 to 1652 °F)
RTD input	Pt100 Ω (JIS/IEC)	*1	-199.9 to +649.0 °C (-199.9 to +999.9 °F)
	JPt100 Ω (JIS)		-199.9 to +649.0 °C (-199.9 to +999.9 °F)
Voltage input	0 to 5 V DC		-1999 to +9999 (programmable scale)
	0 to 10 V DC	*2	
	1 to 5 V DC		
Current input	0 to 20 mA DC	*3	-1999 to +9999 (programmable scale)
	4 to 20 mA DC	*3	

*1 : IEC (International Electrotechnical Commission) is equivalent to JIS, DIN and ANSI.
*2 : For the 0 to 10 V DC (Z-1010 specification), no input type cannot be changed as the hardware differs.
*3 : For the current input specification, a resistor of 250 Ω must be connected between the input terminals.

■ Input range table

①Thermocouple input

Type	Input range	Type	Input range
K	0 to 200 °C	B	400 to 1800 °C
K	0 to 400 °C	B *1	0 to 1820 °C
K	0 to 600 °C	B	800 to 3200 °F
K	0 to 800 °C	B *1	0 to 3308 °F
K	0 to 1000 °C	E	0 to 800 °C
K	0 to 1200 °C	E	0 to 1000 °C
K	0 to 1372 °C	E	0 to 1600 °F
K	0 to 100 °C	E	0 to 1832 °F
K	0 to 300 °C	N	0 to 1200 °C
K	0 to 450 °C	N	0 to 1300 °C
K	0 to 500 °C	N	0 to 2300 °F
K	0 to 800 °F	N	0 to 2372 °F
K	0 to 1600 °F	T *2	-199.9 to +400.0 °C
K	0 to 2502 °F	T *2	-199.9 to +100.0 °C
K	20 to 70 °F	T	-100.0 to +200.0 °C
J	0 to 200 °C	T	0.0 to 350.0 °C
J	0 to 400 °C	T *2	-199.9 to +752.0 °F
J	0 to 600 °C	T	-100.0 to +200.0 °F
J	0 to 800 °C	T	-100.0 to +400.0 °F
J	0 to 1000 °C	T	0.0 to 450.0 °F
J	0 to 1200 °C	T	0.0 to 752.0 °F
J	0 to 450 °C	W5Re/W26Re	0 to 2000 °C
J	0 to 800 °F	W5Re/W26Re	0 to 2320 °C
J	0 to 1600 °F	W5Re/W26Re	0 to 4000 °F
J	0 to 2192 °F	PL II	0 to 1300 °C
J	0 to 400 °F	PL II	0 to 1390 °C
J	0 to 300 °F	PL II	0 to 1200 °C
R *1	0 to 1600 °C	PL II	0 to 2400 °F
R *1	0 to 1769 °C	PL II	0 to 2534 °F
R *1	0 to 1350 °C	U *2	-199.9 to +600.0 °C
R *1	0 to 3200 °F	U *2	-199.9 to +100.0 °C
R *1	0 to 3216 °F	U *2	0.0 to 400.0 °C
S *1	0 to 1600 °C	U *2	-199.9 to +999.9 °F
S *1	0 to 1769 °C	U *2	-100.0 to +200.0°F
S *1	0 to 3200 °F	U	0.0 to 999.9 °F
S *1	0 to 3216 °F	Continued on the following page.	

Type	Input range
L	0 to 400 °C
L	0 to 800 °C
L	0 to 800 °F
L	0 to 1600 °F

*1 ···· 0 to 399 °C/0 to 799 °F : Accuracy is not guaranteed.

*2 ···· -199.9 to -100.0 °C/-199.9 to -158.0 °F : Accuracy is not guaranteed.

②RTD input

Type	Input range
Pt100 (JIS/IEC)	-199.9 to +649.0 °C
Pt100 (JIS/IEC)	-199.9 to +200.0 °C
Pt100 (JIS/IEC)	-100.0 to +50.0 °C
Pt100 (JIS/IEC)	-100.0 to +100.0 °C
Pt100 (JIS/IEC)	-100.0 to +200.0 °C
Pt100 (JIS/IEC)	0.0 to 50.0 °C
Pt100 (JIS/IEC)	0.0 to 100.0 °C
Pt100 (JIS/IEC)	0.0 to 200.0 °C
Pt100 (JIS/IEC)	0.0 to 300.0 °C
Pt100 (JIS/IEC)	0.0 to 500.0 °C
Pt100 (JIS/IEC)	-199.9 to +999.9 °F
Pt100 (JIS/IEC)	-199.9 to +400.0 °F
Pt100 (JIS/IEC)	-199.9 to +200.0 °F
Pt100 (JIS/IEC)	-100.0 to +100.0 °F
Pt100 (JIS/IEC)	-100.0 to +300.0 °F
Pt100 (JIS/IEC)	0.0 to 100.0 °F
Pt100 (JIS/IEC)	0.0 to 200.0 °F
Pt100 (JIS/IEC)	0.0 to 400.0 °F
Pt100 (JIS/IEC)	0.0 to 500.0 °F
JPt100 (JIS)	-199.9 to +649.0 °C
JPt100 (JIS)	-199.9 to +200.0 °C
JPt100 (JIS)	-100.0 to +50.0 °C
JPt100 (JIS)	-100.0 to +100.0 °C
JPt100 (JIS)	-100.0 to +200.0 °C
JPt100 (JIS)	0.0 to 50.0 °C
JPt100 (JIS)	0.0 to 100.0 °C
JPt100 (JIS)	0.0 to 200.0 °C
JPt100 (JIS)	0.0 to 300.0 °C
JPt100 (JIS)	0.0 to 500.0 °C

③Voltage input

Type	Input range
0 to 5 V DC	0.0 to 100.0 %
0 to 10 V DC*	
1 to 5 V DC	

*For the 0 to 10 V DC (Z-1010 specification), no input type cannot be changed as the hardware differs.

④Current input

Type	Input range
0 to 20 mA DC	0.0 to 100.0 %
4 to 20 mA DC	

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

(3) PGdP (Setting the position of decimal point)

CAUTIONS

- The set position of the decimal point is displayed only for current or voltage input.
- Any digits other than the units digit are not used. As malfunction may result, do not change any of these digits.

Factory set value : "0001"

Set value				Description	
			0	No digit below decimal point	Setting the position of decimal point
			1	1 digit below decimal point	
			2	2 digit below decimal point	
			3	3 digit below decimal point	
0	0	0		Fixed	

(4) AH1 (Differential gap setting of alarm 1 [ALM1])

CAUTION

Not displayed when there is no alarm 1 (ALM1). ("SL4" setting : "0000")

[Setting range]

① TC and RTD inputs : 0 to 100 or 0.0 to 100.0
② Voltage and current inputs : 0.0 to 10.0 of span

[Factory set value]

① TC and RTD inputs : 2 or 2.0
② Voltage and current inputs : 0.2

(5) AH2 (Differential gap setting of alarm 2 [ALM2])

CAUTION

Not displayed when there is no alarm 2 (ALM2). ("SL5" setting : "0000")

[Setting range]

① TC and RTD inputs : 0 to 100 or 0.0 to 100.0
② Voltage and current inputs : 0.0 to 10.0 of span

[Factory set value]

① TC and RTD inputs : 2 or 2.0
② Voltage and current inputs : 0.2

2.5 Details of parameters in initialize code 2 (Cod=2)

Parameters in initialize code 2 are only displayed.

(1) TCJ (Holding peak ambient temperature)

The maximum ambient temperature on the rear terminal board of the instrument is stored and displayed on the set value (SV) display unit.

Display range : -10.0 to +100 °C
Display resolution : 1 °C

(2) WTH (Operating time display unit [Upper digits])

The integrated value (upper 2 digits) of power ON time is shown on the set value (SV) display unit.
If the total operating time exceeds 100,000 hours, the integrated operating time is reset.

Display range : 0000 to 0010 (Operating time from 0 to 100,000 hours can be displayed for both the upper and lower digits.)
Display resolution : 10,000 hours

(3) WTL (Operating time display unit [Lower digits])

The integrated value (lower 4 digits) of power ON time is shown on the set value (SV) display unit.
If the total operating time exceeds 9,999 hours, these digits move to the operating time display unit [Upper digits] (WTH).

Display range : 0000 to 9999
Display resolution : 1 hours

■ Example : When the integrated value of operating time equals to 100,000 hours.
The upper 2 digits of 100,000 hours are shown on the operating time display unit [upper digits] (WTH) and the lower 4 digits are shown on the operating time display unit [lower digits].

Operating time display unit (Upper digits)

Operating time display unit (Lower digits)

3. COMMUNICATION INITIALIZE IDENTIFIER

■ List of communication initialize identifiers

NOTES

- Note that there are identifiers which cannot be communicated depending n the specification. For details on the structure of communication data, see the CB100L/CB900L Communication Instruction Manual. [IMCB09-E□]
- The number of digits is 6 for all data.
- Identifiers with "★," can be written only when "Initialization mode selection (IO)" is set to "1."

(RO : Read only R/W : Read/write)

Name	ID	Data range	#	R/W
Initialization mode selection	IO	0 : RO 1 : R/W (Initialize set mode)	0	R/W
Setting necessary code [Cod]★	IP	0 to 2	0	R/W
Input type selection [SL1]★	XI	0 to 15 See *1	According to input type	R/W
Engineering unit selection [SL2]★	XQ	0 : °C 1 : °F	0	R/W
Action selection at the time of reset key operation [SL3]★	LV	0 to 3 See *2	0	R/W
Alarm 1 (ALM1) type selection [SL4]★	XA	0 to 15 See *3	1	R/W
Alarm 2 (ALM2) type selection [SL5]★	XB			
Limit action type selection [SL6]★	CA	0 to 14 See *4	0	R/W
Special specification selection 1 [SL7]★	Z1	0 to 15 See *5	0	R/W
Special specification selection 2 [SL8]★	Z2	0 to 3 See *6	3	R/W
Option selection [SL10]★	DH	0 : None 1 : Analog output provided 2 : Contact input provided 3 : Contact input/analog output provided 4 : Communication function provided 5 : Communication function/ analog output provided	0	R/W
For manufacturer's [RKC's] own use ★	XC	"0" fixed	0	R/W

ID : Identifier

: Factory set value

Continued on the following page.

Name	ID	Data range	#	R/W
Setting limiter (high limit) [SLH]★	XV	See "**Input range table**" (P.14, 15, 16)	To vary depending on the shipment	R/W
Setting limiter (low limit) [SLL]★	XW			
Setting the position of decimal point [PGdP]★	XU	0 : No digit below decimal point 1 : 1 digit below decimal point 2 : 2 digits below decimal point 3 : 3 digits below decimal point	1	R/W
Differential gap setting of alarm 1 (ALM1) [AH1]★	HA	Temperature input : 0 to 100 or 0.0 to 100.0 °C [°F] Voltage/current input : 0.0 to 10.0 % of span	See *7	R/W
Differential gap setting of alarm 2 (ALM2) [AH2]★	HB			
Holding peak ambient temperature [TCJ]	Hp	-10 to +100 °C	0	RO
Operating time display unit (Upper digits) [WTH]	UT	0 to 10	0	RO
Operating time display unit (Lower digits) [WTL]	UU	0 to 9999	0	RO

ID : Identifier
: Factory set value

*1 ···· List of input type selection

Input type		Setting range	Set value
Thermocouple input (TC)	K	0 to 1372 °C (0 to 2502 °F)	0
	J	0 to 1200 °C (0 to 2192 °F)	1
	L	0 to 900 °C (0 to 1652 °F)	2
	E	0 to 1000 °C (0 to 1832 °F)	3
	N	0 to 1300 °C (0 to 2372 °F)	4
	T	-199.9 to +400.0 °C (-199.9 to +752.0 °F)	5
	U	-199.9 to +600.0 °C (-199.9 to +999.9 °F)	6
	R	0 to 1769 °C (0 to 3216 °F)	7
	S	0 to 1769 °C (0 to 3216 °F)	8
	B	0 to 1820 °C (0 to 3308 °F)	9
	W5Re/W26Re	0 to 2320 °C (0 to 4208 °F)	10
	PL II	0 to 1390 °C (0 to 2534 °F)	11

Continued on the following page.

Input type		Setting range	Set value
RTD input (RTD)	Pt100 Ω (JIS/IEC)	-199.9 to +649.0 °C (-199.9 to +99.9 °F)	12
	JPt100 Ω (JIS)	-199.9 to +649.0 °C (-199.9 to +999.9 °F)	13
Voltage input	0 to 5V DC	0.0 to 100.0 %	14
	1 to 5V DC	0.0 to 100.0 %	15
Current input	0 to 20 mA DC	0.0 to 100.0 %	14

*2 ···· 0 : The reset action can be taken and all data items can be cleared in any case where PV, peak hold value, or over time is displayed.
1 : The reset action can be taken and over time can be cleared only when PV or over time is displayed. The peak hold value can be cleared only when it is displayed.
2 : The reset action can be taken and peak hold can be cleared only when PV or peak hold is displayed. Over time can be cleared only when it is displayed.
3 : The reset action can be taken only when PV is displayed. The peak hold value can be cleared only when it is displayed. Over time can be cleared only when it is displayed.

*3 ···· 0 : No alarm
1 : Deviation high alarm
2 : Deviation high/low alarm
3 : Process high alarm
5 : Deviation low alarm
6 : Band alarm
7 : Process low alarm
9 : Deviation high alarm with hold action
10 : Deviation high/low alarm with hold action
11 : Process high alarm with hold action
13 : Deviation low alarm with hold action
15 : Process low alarm with hold action
*Do not set 4, 8, 12 or 14. Malfunction may result.

*4 ···· 0 : Limit action [high limit] (Limit action output turned ON at the time of power ON)
2 : Limit action [high limit] (Limit action output turned ON at the time of power OFF)
4 : Limit action [low limit] (Limit action output turned ON at the time of power ON)
6 : Limit action [low limit] (Limit action output turned ON at the time of power OFF)
8 : Limit action [high limit] with hold action
(Limit action output turned ON at the time of power ON)
10 : Limit action [high limit] with hold action
(Limit action output turned ON at the time of power OFF)
12 : Limit action [low limit] with hold action
(Limit action output turned ON at the time of power ON)
14 : Limit action [low limit] with hold action
(Limit action output turned ON at the time of power OFF)
*Do not set 1, 3, 5, 7, 9,11 or 13. Malfunction may result.

*5 ···· 0 : Alarm 1 (Energized alarm), Alarm 2 (Energized alarm)
1 : Alarm 1 (De-energized alarm), Alarm 2 (Energized alarm)
2 : Alarm 1 (Energized alarm), Alarm 2 (De-energized alarm)
3 : Alarm 1 (De-energized alarm), Alarm 2 (De-energized alarm)
4 : Alarm 1 (Energized alarm, Z-124 specification provided), Alarm 2 (Energized alarm)
5 : Alarm 1 (De-energized alarm, Z-124 specification provided), Alarm 2 (Energized alarm)
6 : Alarm 1 (Energized alarm, Z-124 specification provided), Alarm 2 (De-energized alarm)
7 : Alarm 1 (De-energized alarm, Z-124 specification provided), Alarm 2 (De-energized alarm)
8 : Alarm 1 (Energized alarm), Alarm 2 (Energized alarm, Z-124 specification provided)
9 : Alarm 1 (De-energized alarm), Alarm 2 (Energized alarm, Z-124 specification provided)
10 : Alarm 1 (Energized alarm), Alarm 2 (De-energized alarm, Z-124 specification provided)
11 : Alarm 1 (De-energized alarm), Alarm 2 (De-energized alarm, Z-124 specification provided)
12 : Alarm 1 (Energized alarm, Z-124 specification provided),
Alarm 2 (Energized alarm, Z-124 specification provided)
13 : Alarm 1 (De-energized alarm, Z-124 specification provided),
Alarm 2 (Energized alarm, Z-124 specification provided)
14 : Alarm 1 (Energized alarm, Z-124 specification provided),
Alarm 2 (De-energized alarm, Z-124 specification provided)
15 : Alarm 1 (De-energized alarm, Z-124 specification provided),
Alarm 2 (De-energized alarm Z-124 specification provided)

*6 ···· 0 : Limit action [Energized action]
(The limit action is forcibly ON when the burnout function is activated.)
1 : Limit action [De-energized alarm]
(The limit action is forcibly ON when the burnout function is activated.)
2 : Limit action [Energized action]
(No limit action is taken by the burnout function. Same as the normal limit action.)
3 : Limit action [De-energized alarm]
(No limit action is taken by the burnout function. Same as the normal limit action.)

*7 ···· TC, RTD input : 2 or 2.0
Voltage, current input : 0.2

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