Limit Controller

SA100L Quick Operation Manual

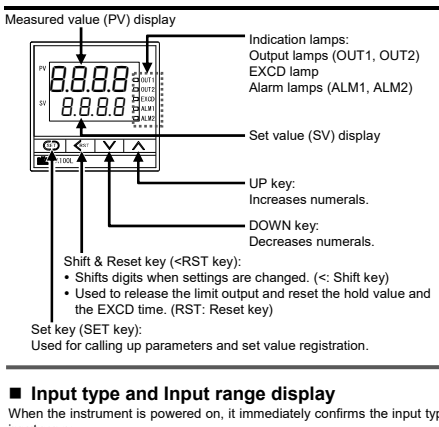
IMR01J14-E1

Thank you for purchasing this RKC product. This manual descries basic key operations of the SA100L. In order to achieve maximum performance and ensure proper operation of the instrument, carefully read all the instructions in this manual. Please place the manual in a convenient location for easy reference.

For detailed handling procedures and key operations, refer to separate **SA100L Instruction Manual (IMR01J15-E□)**. If you purchased a product with Z-number (Z-□□□□) specifications, please also download the Z-number specification manual.

The manual can be downloaded from the official RKC website:
https://www.rkcinst.co.jp/english/download-center/

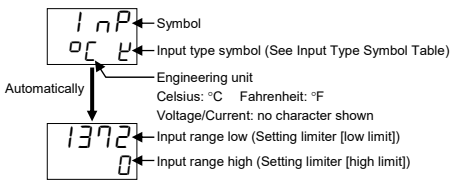
1. FRONT KEY DESCRIPTION



■ Input type and Input range display

When the instrument is powered on, it immediately confirms the input type and input range.

Example: Input type: Thermocouple K, Input range: 0 to 1372 °C



Input Type Symbol Table

Symbol														
	Thermocouple (TC)											RTD		
Input type	K	J	R	S	B	E	T	N	PL II	C (W5Re/W26Re)	U	L	JPt 100	Pt 100	Voltage (Current)

■ Monitor & SV Setting Mode

After powered up, following the self-diagnosis, the instrument enters this mode. The following operations are available in this mode.

- The Limit set values (SV) can be set. The blinking digit on the SV display indicates which digit can be set.
  Setting range: Within input range (Setting limiter [low limit] to Setting limiter [high limit])
  Factory set value: TC/RTD input: 0 (0.0) Voltage/Current input: 0.0
- The following parameters can be monitored.
  Measured value (PV) Peak hold value EXCD time
  Limit set value (SV) Bottom hold value
- The Alarm interlock can be released.

■ Parameter Setting Mode

This is the mode used to set various parameters such as alarms, transmission outputs and Set data lock.

■ Communication Setting Mode

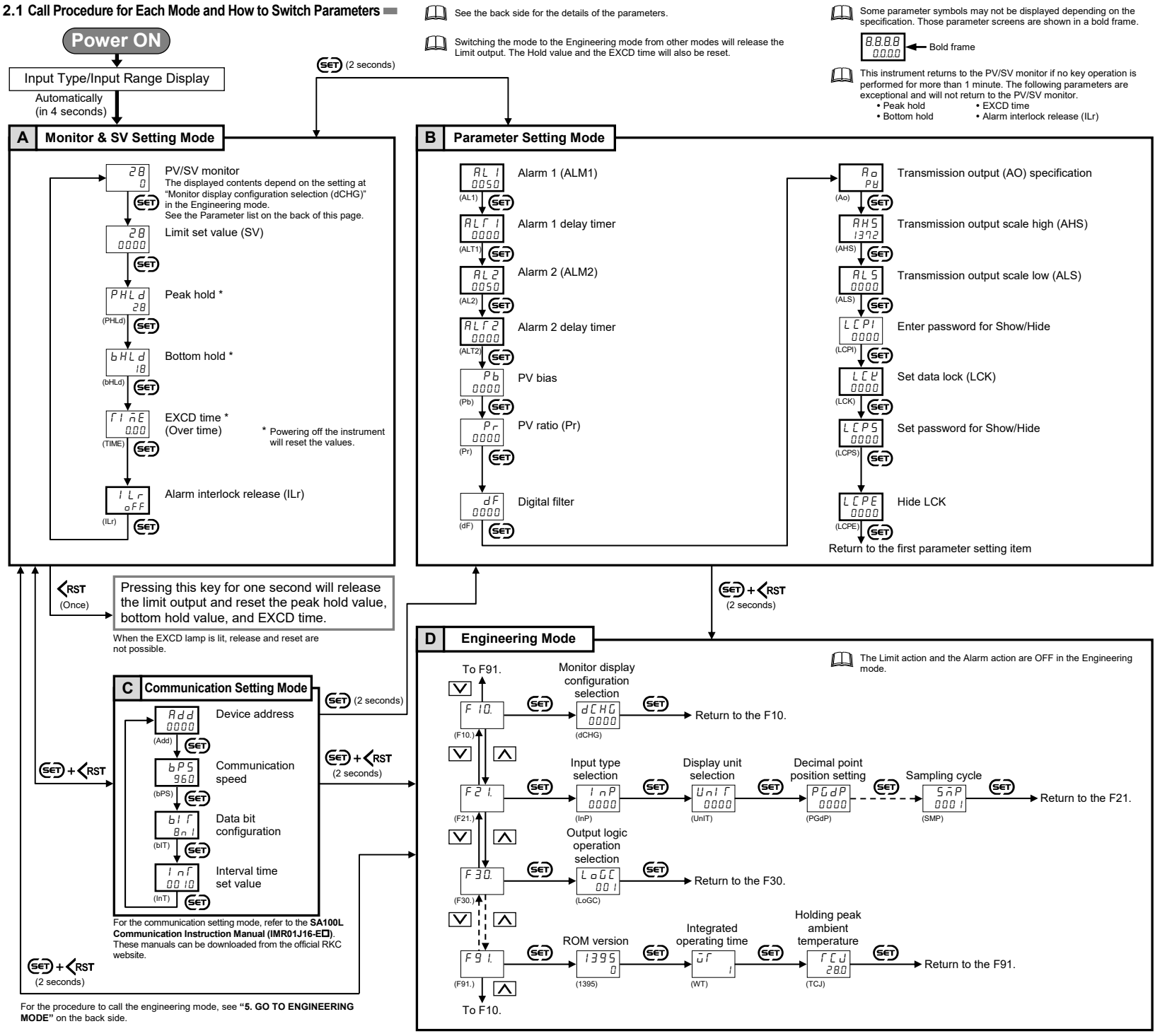
This is a mode to set various parameters for the communication function. This mode is displayed when the instrument has the communication function.

■ Engineering Mode

This is a mode to set various parameters related to the product specifications. No change is required under normal operation.

2. OPERATION

2.1 Call Procedure for Each Mode and How to Switch Parameters



See the back side for the details of the parameters.

Switching the mode to the Engineering mode from other modes will release the Limit output. The Hold value and the EXCD time will also be reset.

Some parameter symbols may not be displayed depending on the specification. Those parameter screens are shown in a bold frame.

This instrument returns to the PV/SV monitor if no key operation is performed for more than 1 minute. The following parameters are exceptional and will not return to the PV/SV monitor.
- Peak hold
- Bottom hold
- EXCD time
- Alarm interlock release (ILr)

The Limit action and the Alarm action are OFF in the Engineering mode.

For the procedure to call the engineering mode, see **"5. GO TO ENGINEERING MODE"** on the back side.

2.2 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 the 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 one minute, or the new value is not stored and the display will return to the PV/SV monitor.

When the set data is locked, the digits on the SV display are brightly lit and the set value cannot be changed. The locked parameters can be released by "Enter password for Shoe/Hide" and "Set data lock (LCK)" in the Parameter select mode. (See 3.3, 3.4)

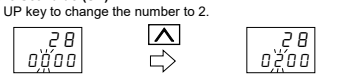
■ Change the Limit set value (SV)

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

1. **Select the Limit set value (SV)**
Press the SET key in the PV/SV monitor until the Limit set value (SV) is displayed.

2. **Shift the blinking digit**
Press the <RST key to blink the hundreds digit. The blinking digit indicates which digit can be set.

3. **Change the Set value (SV)**
Press the UP key to change the number to 2.



4. **Store the Set value (SV)**
Press the SET key to store the new set value. The display changes to the next parameter.

■ Change the Alarm set value

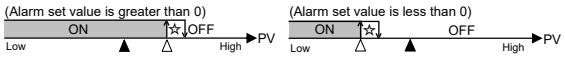
● Alarm type

Diagrams of each alarm operation are shown below:

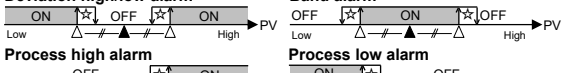
(▲: Limit set value (SV) △: Alarm set value ☆: Alarm differential gap)

Deviation high alarm

Deviation low alarm

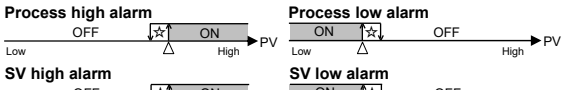


Deviation high/low alarm



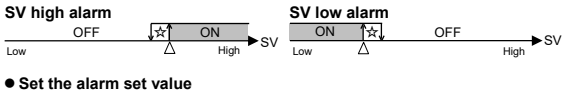
Band alarm

Process high alarm



Process low alarm

SV high alarm



SV low alarm

● Set the alarm set value

Example: Change the Alarm 1 (ALM1) from 50 °C to 100 °C

1. **Select the Parameter setting mode**
Press and hold the SET key for 2 seconds in the Monitor & SV setting mode to enter to Parameter setting mode.

Parameters displayed in the Parameter setting mode depend on the product specifications. For example, when the Alarm 1 is not supplied, the parameter AL1 for "Alarm 1 (ALM1)" will not be displayed.

2. **Shift the blinking digit**
Press the <RST key to blink the tens digit. The blinking digit indicates which digit can be set.

3. **Change the Alarm set value**
Press the UP key to change the number to "0." The digit is shifted to the higher digit and the number at the hundreds digit becomes "1."

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

■ Change parameters other than the Limit set value (SV) and Alarm set value

The changing procedures are the same as those of examples ***2.*** to ***4.*** in the "**■ Change the Limit set value (SV)**." Pressing the SET key after the setting end shifts to the next parameter. When no parameter setting is required, return the instrument to the Monitor & SV setting mode.

3. OPERATION

3.1 Operating Precautions

(1) All mounting and wiring must be completed before the power is turned on.
(2) The settings for the Limit set value (SV) and all parameters should be appropriate for the monitored object.
(3) This instrument has no power switch. When the power of this instrument is turned on, the limit output is turned on regardless of the measured value (PV).[1]
The Limit output ON state is retained until the Reset action is performed. First, press the <RST key once (or more than 1 second [2]) to release the limit output, then start operating the equipment.

[1] You can also prevent the limit output from turning on. It can be changed by setting "Limit action at the time of power ON" and "Limit action hold action selection."
[2] Key operation differs depending on the setting in "<RST" (Reset) key operation time selection.

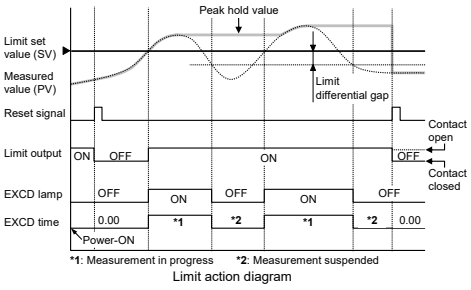
NOTE
Connect the input signal wiring and turn the power on. If the input signal wiring is not complete prior to turning the power on, the instrument determines that burnout has occurred.

A power failure of 20 ms or less will not affect the 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 shutdown.

The alarm hold action is activated when the power is turned on or when the Limit set value (SV) is changed. (It varies with the setting of the Hold action selection)

■ Limit action

The Limit output turns on when the measured value (PV) exceeds (or falls below) the Limit set value (SV). When the limit output turns on, the OUT1 (or OUT2) lamp and the EXCD lamp will turn on. The Output ON state of the Limit output will be maintained until the Reset operation is performed.



Limit action diagram

3.2 Limit Output Release Operation

There are three ways to release the limit output as shown below.
- By key operation
- By communication (optional)
- By contact input (optional)

While the EXCD lamp stays ON, the Limit output cannot be released.

Releasing the Limit output will also reset the hold value and the EXCD time.

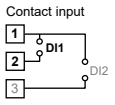
■ Limit output release by key operation

Press the <RST key once (or more than 1 second*) in the Monitor and SV setting mode to release the limit output. When the limit output is released, the OUT1 (or OUT2) lamp will turn off.

* Key operation differs depending on the setting in "<RST" (Reset) key operation time selection.

■ Limit output release by contact input (optional)

Limit output can be released according to the open or closed state of the connector pin numbers 1 and 2 (DI1).



Pin No.	Release operation
1, 2	Contact closed (Rising edge)

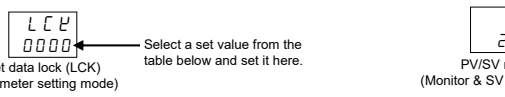
■ Limit output release via communication (optional)

The limit output can be released via communication data "Limit action release (identifier: HR/address: 0009H)."

Refer to the **SA100L Communication Instruction Manual (IMR01J16-E□)** for "Limit action release (identifier: HR/address: 0009H)."

3.3 Set Data Lock (LCK)

The set data lock restricts parameter setting changes by key operation. This function prevents accidental changes of settings. The contents of the parameters to be locked can be set at "Set data lock (LCK)" in the Parameter setting mode.



Set value	Parameters which can be changed
0000	All parameters [Factory set value] *
0001	Limit set value (SV), Alarm1 (ALM1), Alarm 2 (ALM2), Alarm 1 delay timer, Alarm 2 delay timer
0010	All parameters except for Alarm1 (ALM1), Alarm 2 (ALM2), Alarm 1 delay timer and Alarm 2 delay timer *
0100	All parameters except for Limit set value (SV) *
0011	Limit set value (SV)
0101	Alarm1 (ALM1), Alarm 2 (ALM2), Alarm 1 delay timer, Alarm 2 delay timer
0110	All parameters except the following. * Limit set value (SV), Alarm1 (ALM1), Alarm 2 (ALM2), Alarm 1 delay timer, Alarm 2 delay timer
0111	No parameters (All locked)

* However, the parameters of the Engineering mode cannot be changed.

The following parameters are not covered by the Set data lock.
- Enter password for Show/Hide
- Hide LCK
- Set data lock (LCK)
- Set password for Show/Hide
- Parameter in the Communication setting mode

3.4 Hide LCK (Set data lock) Function

If you don't want the locked data to be unlocked, you can use the "Hide LCK (Set data lock)" function to hide the "Set data lock (LCK)." The "Set data lock (LCK)" can be hidden by registering a desired password and perform the hide operation.

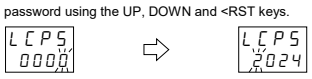
(1) Register the password

1. **Select the Parameter setting mode**
Press and hold the SET key for 2 seconds in the Monitor & SV setting mode to enter to Parameter setting mode.

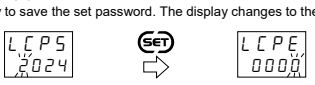
The parameter displayed after the SET key is pressed depends on the product specifications.

2. **Select the "Set password for Show/Hide"**
Press the SET key several times until "Set password for Show/Hide" is displayed.

3. **Enter password**
Enter your desired password using the UP, DOWN and <RST keys.

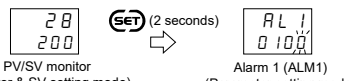


4. **Register the password**
Press the SET key to save the set password. The display changes to the next parameter.



(2) Hiding the Set data lock (LCK)

1. **Select the Parameter setting mode**
Press and hold the SET key for 2 seconds in the Monitor & SV setting mode to enter to Parameter setting mode.



The parameter displayed after the SET key is pressed depends on the product specifications.

2. **Select the "Hide LCK"**
Press the SET key several times until "Hide LCK" is displayed.

3. **Change to "1: Lock"**
Press the UP key to change the number to 1.

4. **Hide the parameter**
Press the SET key to hide the "Set data lock (LCK)." The "Set password for Show/Hide" and "Hide LCK" will also be hidden. The display changes to the next parameter.

The parameter displayed after the SET key is pressed depends on the product specifications.

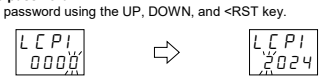
(3) Show LCK (Set data lock) again

1. **Select the Parameter setting mode**
Press and hold the SET key for 2 seconds in the Monitor & SV setting mode to enter to Parameter setting mode.

The parameter displayed after the SET key is pressed depends on the product specifications.

2. **Select the "Enter password for Show/Hide"**
Press the SET key several times until "Enter password for Show/Hide" is displayed.

3. **Enter the password**
Enter the password using the UP, DOWN, and <RST key.



4. **Show the parameter**
Press the SET key to show the "Set data lock (LCK)." The "Set password for Show/Hide" and "Hide LCK" will be also shown. The display changes to the next parameter.

The password you entered at "Enter password for Show/Hide" will be reset to "0000" when you press the SET key to shift to the next set item.

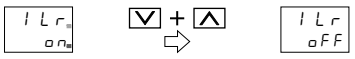
3.5 Alarm Interlock Release Operation

There are three ways to release the alarm interlock as shown below.
- By key operation
- By communication (optional)
- By contact input (optional)

NOTE
Release the alarm interlock when the Alarm is off.

■ Alarm interlock release by key operation

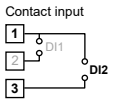
Press the DOWN key while pressing and holding the UP key at "Alarm interlock release (ILr)" in the Monitor & SV setting mode. This will release the Alarm interlock. The Output lamp (OUT1 or OUT2) and the Alarm lamp (ALM1 or ALM2) will go off when the Alarm interlock is released.



Alarm interlock release (ILr)
(Monitor & SV setting mode)

■ Alarm interlock release by contact input (optional)

The Alarm interlock can be released by the contact closure status of the connector pin numbers 1 and 3 (DI2).



Pin No.	Release operation
1, 3	Contact closed (Rising edge)

■ Alarm interlock release via communication (optional)

The alarm interlock can be released by the "Alarm Interlock release (identifier: IR/address: 000AH)" of the communication data.

For the "Alarm Interlock release (identifier: IR/address: 000AH)" of the communication data, refer to **SA100L Communication Instruction Manual (IMR01J16-E□)**.

3. **Shift the blinking digit**
Press the <RST key to blink the thousands digit. The blinking digit indicates which digit can be set.

4. **Change the set value**
Press the UP key to change the number to 1.

5. **Store the set value**
Press the SET key to store the new set value. The display goes to the next parameter, and the Engineering mode is unlocked.

6. **Select the Engineering mode**
Press and hold the <RST key for 2 seconds while pressing the SET key to go to the Engineering mode. Thus, the symbol "F10." for function block is displayed first.

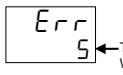
Function block 10
(Engineering mode)

4. ERROR DISPLAYS

■ Self-diagnostic error

Error code	Description	Operation at error	Solution
1	Adjustment data error	Display: Error display (Err) Limit output: All outputs are OFF Alarm output: All outputs are OFF	Turn off the power once. If an error occurs after the power is turned on again, please contact RKC sales office or the agent.
2	EEPROM error		
4	A/D conversion error		
8	RAM check error		
128	Watchdog timer error		

Example: When the adjustment data error (1) and A/D conversion error (4) occurs simultaneously

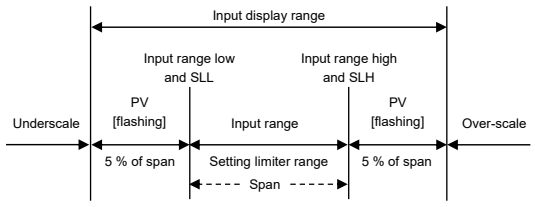


The error codes are shown in the SV display.
When two or more errors occur simultaneously, the total summation of these error codes is displayed.

When a power supply voltage error occurs, nothing will be displayed on the screen. The Limit output and Alarm output will all go off.

■ Over-scale and Underscale

Display	Description	Solution
Measured value (PV) is flashing	PV is outside of input range.	**⚠ 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.
oooo flashing 	Over-scale: PV is above the high input display range limit.	
uuuu flashing 	Underscale: PV is below the low input display range limit.	



SLH: Setting limiter [high limit]
SLL: Setting limiter [low limit]

5. GO TO ENGINEERING MODE

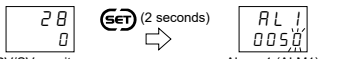
⚠ WARNING
Parameters in the Engineering mode should be set according to the application before setting any parameter related to operation. Once the parameters in the Engineering mode are set correctly, no further changes need to be made to parameters for the same application under normal conditions. 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 Engineering mode.

To switch the mode to the Engineering mode, have the "Set data lock (LCK)" displayed on the screen.

To display the "Set data lock (LCK)," see "(3) Show LCK (Set data lock) again" on the front page.

■ Procedures

***1.* Select the Parameter setting mode**
Press and hold the SET key for 2 seconds in the Monitor & SV setting mode state to transfer to Parameter setting mode.



PV/SV monitor
(Monitor & SV setting mode)

Alarm 1 (ALM1)
(Parameter setting mode)

The parameter displayed after the SET key is pressed depends on the product specifications.

***2.* Select the Set data lock (LCK) display**
Press the SET key several times until Set data lock (LCK) display is displayed.

Set data lock (LCK)

6. PARAMETER LIST

Some parameters may not be displayed depending on the conditions. These parameters are displayed when you specify them when ordering or when you have made settings to use the function. Parameters with "♣" in the name will be displayed only when all the display conditions are satisfied.

A. Monitor & SV Setting Mode (SET)

No.	Symbol	Name	Display or data range	Factory set value
1	—	PV/SV monitor [1]	Measured value (PV) and Limit set value (SV) are displayed. Measured value (PV) display: Within input range. [2, 3] Set value (SV) display: Within input range. [2, 4]	—
	—	PV/SV monitor [1]	Only measured value (PV) is displayed. Measured value (PV) display: Within input range. [2, 3] Set value (SV) display: No display	—
	SV (SV)	PV/SV monitor [1]	Limit set value (SV) and Parameter symbol are displayed. Measured value (PV) display: Within input range. [2, 4] Limit set value (SV) is displayed. Set value (SV) display: "SV" is displayed.	—
2	—	Limit set value (SV)	Within input range. [2, 4]	TC/RTD inputs: 0 (0.0) Voltage/Current inputs: 0.0
3	PHLd (PHLd)	Peak hold	Within input range [2, 4]	—
4	bHLd (bHLd)	Bottom hold	Within input range [2, 4]	—
5	TIME (TIME)	EXCD time [5] (Over time)	0.00 to 99.59 (0 min 00 sec to 99 min 59 sec) 100.0 to 999.5 (100 min 0 sec to 999 min 59 sec)	—

[1] Depending on the setting of "Monitor display configuration selection," one of these screens will be displayed.
[2] Varies with the setting of the Decimal point position.
[3] Setting limiter [low limit] – (5 % of span) to Setting limiter [high limit] + (5 % of span)
[4] Setting limiter [low limit] to Setting limiter [high limit]
[5] The display unit shows "- - - -" if time exceeds 1000 minutes.

B. Parameter Setting Mode (SET) (2 seconds)

No.	Symbol	Name	Data range	Factory set value
7	AL 1 (AL1)	Alarm 1 (ALM1) ♣	Process alarm, SV alarm: Same as input range. [1, 2] Deviation alarm: –Span to +Span [1] (However, within –1999 to +9999 digits)	TC/RTD inputs: 50 (50.0) Voltage/Current inputs: 5.0
8	ALT 1 (ALT1)	Alarm 1 delay timer ♣	0 to 9999 seconds [3]	0
9	AL2 (AL2)	Alarm 2 (ALM2) ♣	Process alarm, SV alarm: Same as input range. [1, 2] Deviation alarm: –Span to +Span [1] (However, within –1999 to +9999 digits)	TC/RTD inputs: 50 (50.0) Voltage/Current inputs: 5.0
10	ALT2 (ALT2)	Alarm 2 delay timer ♣	0 to 9999 seconds [3]	0
11	Pb (Pb)	PV bias	–Span to +Span [1] (However, within –1999 to +9999 digits)	TC/RTD inputs: 0 (0.0) Voltage/Current inputs: 0.0
12	Pr (Pr)	PV ratio (Pr)	0.500 to 1.500 times	1.000
13	dF (dF)	Digital filter	0 to 100 seconds (0: Digital filter OFF)	0
14	Ao (Ao)	Transmission output (AO) specification ♣	PV: Measured value (PV) SV: Limit set value (SV) dEV: Deviation (DEV)	PV

[1] Varies with the setting of the Decimal point position.
[2] Setting limiter [low limit] to Setting limiter [high limit]
[3] The actual delay time is the value obtained by multiplying the delay timer value and the delay timer unit value.
Example: Alarm 1 delay timer (10 sec.) multiplied by (Alarm 1 delay timer unit) (30 sec.) = 300 sec.
These parameters will not be displayed when either "Alarm 1 delay timer unit" or "Alarm 2 delay timer unit" is zero.

C: Communication Setting Mode (SET) + (RST)

No.	Symbol	Name	Data range	Factory set value
21	Add (Add)	Device address ♣	0 to 99	0
22	bPS (bPS)	Communication speed ♣	240: 2400 bps 480: 4800 bps 960: 9600 bps 1920: 19200 bps 3840: 38400 bps 5760: 57600 bps	960
23	bIT (bIT)	Data bit configuration ♣	See the following **Data bit configuration table**.	8n1
24	Int (InT)	Interval time set value ♣	0 to 250 ms	10

Data bit configuration table

Set value	Data bit	Parity bit	Stop bit
7n1 (7n1)	7	None	1
7n2 (7n2)	7	None	2
7E1 (7E1)	7	Even	1
7E2 (7E2)	7	Even	2
7o1 (7o1)	7	Odd	1
7o2 (7o2)	7	Odd	2
8n1 (8n1)	8	None	1
8n2 (8n2)	8	None	2
8E1 (8E1)	8	Even	1
8E2 (8E2)	8	Even	2
8o1 (8o1)	8	Odd	1
8o2 (8o2)	8	Odd	2

: Not settable for Modbus

D. Engineering Mode (SET) + (RST) (2 seconds)

No.	Symbol	Name	Data range	Factory set value
25	F 10. (F10.)	Function block 10	This is the first parameter symbol of Function block 10.	—
26	dCHG (dCHG)	Monitor display configuration selection	0: PV/SV display 1: Only PV display 2: Only SV display	0

No.	Symbol	Name	Data range	Factory set value
27	F21. (F21.)	Function block 21	This is the first parameter symbol of Function block 21.	—
28	InP (InP)	Input type selection	0: Thermocouple K [1] 1: Thermocouple J [1] 2: Thermocouple R [1] 3: Thermocouple S [1] 4: Thermocouple B [1] 5: Thermocouple E [1] 6: Thermocouple N [1] 7: Thermocouple T [1] 8: Thermocouple C (W5Re/W26Re) [1] 9: Thermocouple PL II [1] 10: Thermocouple U [1] 11: Thermocouple L [1] 12: RTD Pt100 [1] 13: RTD JPt100 [1] 14: 0 to 5 V DC or 0 to 20 mA DC [1, 2] 15: 1 to 5 V DC or 4 to 20 mA DC [1, 2] 16: 0 to 10 V DC [1]	Factory set value varies depending on the instrument specification.
29	UnIT (UnIT)	Display unit selection	0: °C 1: °F	0
30	PGdP (PGdP)	Decimal point position setting	0: No digit below decimal point 1: 1 digit below decimal point 2: 2 digits below decimal point 3: 3 digits below decimal point	Factory set value varies depending on the instrument specification.

[1] Input type (TC/RTD to voltage/current inputs or voltage/current inputs to TC/RTD) cannot be changed because the hardware is different.
[2] For the current input specification, a resistor of 250 Ω must be connected between the input terminals.

Function block 21

No.	Symbol	Name	Data range	Factory set value
31	SLH (SLH)	Setting limiter [high limit]	–1999 to +9999 Set the Setting limiter by referring to the input range code table in the **SA100L Installation Manual (IMR01J13-X□)**.	Factory set value varies depending on the instrument specification.
32	SLL (SLL)	Setting limiter [low limit]	This instrument sets the input range with the Setting limiter. Please note that changing the Setting limiter will also change the input range.	Factory set value varies depending on the instrument specification.
33	SMP (SMP)	Sampling cycle	0: 250 ms (0.25 seconds) 1: 500 ms (0.5 seconds)	1

No.	Symbol	Name	Data range	Factory set value
34	F30. (F30.)	Function block 30	This is the first parameter symbol of Function block 30.	—
35	LoGC (LoGC)	Output logic operation selection	001: OUT1: Limit output (De-energized) OUT2: *OR* output of Alarm 1 and Alarm 2 (Energized) 002: OUT1: Limit output (De-energized) OUT2: *AND* output of Alarm 1 and Alarm 2 (Energized) 003: OUT1: Limit output (De-energized) OUT2: Alarm 1 output (Energized) 004: OUT1: Limit output (De-energized) OUT2: *OR* output of Alarm 1 and Alarm 2 (De-energized) 005: OUT1: Limit output (De-energized) OUT2: *AND* output of Alarm 1 and Alarm 2 (De-energized) 006: OUT1: Limit output (De-energized) OUT2: Alarm 1 output (De-energized) 007: OUT1: Limit output (De-energized) OUT2: Not output (The Alarm state can be checked via communication or by lamp lighting) 008: OUT1: Limit output (Energized) OUT2: *OR* output of Alarm 1 and Alarm 2 (Energized) 009: OUT1: Limit output (Energized) OUT2: *AND* output of Alarm 1 and Alarm 2 (Energized) 010: OUT1: Limit output (Energized) OUT2: Alarm 1 output (Energized) 011: OUT1: Limit output (Energized) OUT2: *OR* output of Alarm 1 and Alarm 2 (De-energized) 012: OUT1: Limit output (Energized) OUT2: *AND* output of Alarm 1 and Alarm 2 (De-energized) 013: OUT1: Limit output (Energized) OUT2: Alarm 1 output (De-energized) 014: OUT1: Limit output (Energized) OUT2: Not output (The Alarm state can be checked via communication or by lamp lighting) 015: OUT1: Transmission output OUT2: Limit output (De-energized) 016: OUT1: Transmission output OUT2: Limit output (Energized)	Factory set value varies depending on the instrument specification.

A. Monitor & SV Setting Mode

No.	Symbol	Name	Display or data range	Factory set value
6	ILr (ILr)	Alarm interlock release (ILr) ♣	on: Alarm interlock state oFF: Alarm interlock release	—

No.	Symbol	Name	Data range	Factory set value
36	F41. (F41.)	Function block 41	This is the first parameter symbol of Function block 41.	—
37	AS1 (AS1)	Alarm 1 type selection	0: Alarm not provided 1: SV high alarm 2: SV low alarm 3: Process high alarm 4: Process low alarm 5: Deviation high alarm 6: Deviation low alarm 7: Deviation high/low alarm 8: Band alarm	Factory set value varies depending on the instrument specification
38	AHo1 (AHo1)	Alarm 1 hold action selection	0: Without alarm hold action 1: Effective • When the power is turned on. • When the mode is switched from the Engineering mode to other modes. 2: Effective • When the power is turned on. • When the mode is switched from the Engineering mode to other modes. • When the Limit set value (SV) is changed.	Factory set value varies depending on the instrument specification
39	AH1 (AH1)	Alarm 1 differential gap setting	0 (0.0) to Span [1] (However, 9999 digits or less)	TC/RTD inputs: 2 (2.0) Voltage/Current inputs: 0.2
40	AEo1 (AEo1)	Alarm 1 process abnormality action selection	0: Normal processing 1: Forcibly turned on when abnormal	Alarm 1 not provided: 0 Alarm 1 provided: 1
41	ILS1 (ILS1)	Alarm 1 interlock function selection	0: Disable Alarm 1 interlock function 1: Enable Alarm 1 interlock function	0
42	ATS1 (ATS1)	Alarm 1 delay timer unit	0 to 60 seconds 0: Alarm 1 delay timer function OFF	0

[1] Varies with the setting of the Decimal point position.

No.	Symbol	Name	Data range	Factory set value
43	F42. (F42.)	Function block 42	This is the first parameter symbol of Function block 42.	—
44	AS2 (AS2)	Alarm 2 type selection	0: Alarm not provided 1: SV high alarm 2: SV low alarm 3: Process high alarm 4: Process low alarm 5: Deviation high alarm 6: Deviation low alarm 7: Deviation high/low alarm 8: Band alarm	Factory set value varies depending on the instrument specification.
45	AHo2 (AHo2)	Alarm 2 hold action selection	0: Without alarm hold action 1: Effective • When the power is turned on. • When the mode is switched from the Engineering mode to other modes. 2: Effective • When the power is turned on. • When the mode is switched from the Engineering mode to other modes. • When the Limit set value (SV) is changed.	Factory set value varies depending on the instrument specification
46	AH2 (AH2)	Alarm 2 differential gap setting	0 (0.0) to Span [1] (However, 9999 digits or less)	TC/RTD inputs: 2 (2.0) Voltage/Current inputs: 0.2
47	AEo2 (AEo2)	Alarm 2 process abnormality action selection	0: Normal processing 1: Forcibly turned on when abnormal	Alarm 2 not provided: 0 Alarm 2 provided: 1
48	ILS2 (ILS2)	Alarm 2 interlock function selection	0: Disable Alarm 2 interlock function 1: Enable Alarm 2 interlock function	0
49	ATS2 (ATS2)	Alarm 2 delay timer unit	0 to 60 seconds 0: Alarm 2 delay timer function OFF	0

[1] Varies with the setting of the Decimal point position.

B. Parameter Setting Mode

No.	Symbol	Name	Data range	Factory set value
15	AHS (AHS)	Transmission output scale high (AHS) ♣	Measured value (PV): Same as input range [1, 2] Limit set value (SV): Same as input range [1, 2] Deviation (DEV): –Span to +Span [1, 3] (However, within –1999 to +9999 digits)	TC/RTD inputs: Input range high or +Span Voltage/Current inputs: 100.0
16	ALS (ALS)	Transmission output scale low (ALS) ♣	Measured value (PV): Same as input range [1, 4] Limit set value (SV): Same as input range [1, 4] Deviation (DEV): –Span to +Span [1, 5] (However, within –1999 to +9999 digits)	TC/RTD inputs: Input range low or –Span Voltage/Current inputs: 0.0
17	LCPI (LCPI)	Enter password for Show/Hide	0000 to 9999 [6]	0000
18	LCY (LCK)	Set data lock (LCK)	See **"3.3 Set data lock (LCK)"** for set values and locked parameters.	0000
19	LCPS (LCPS)	Set password for Show/Hide	0000 to 9999	0000
20	LCPE (LCPE)	Hide LCK	0: Unlock 1: Lock	0

[1] Varies with the setting of the Decimal point position.
[2] Transmission output scale low to Setting limiter [high limit]
[3] Transmission output scale low to +Span
[4] Setting limiter [low limit] to Transmission output scale high
[5] –Span to Transmission output scale high
[6] The entered password will be reset to "0000" by pressing the SET key.

No.	Symbol	Name	Data range	Factory set value
50	F51. (F51.)	Function block 51	This is the first parameter symbol of Function block 51.	—
51	oS (oS)	Limit action type selection	0: Limit action (high limit) 1: Limit action (low limit)	0
52	oH (oH)	Limit action differential gap	0 (0.0) to Span [1] (However, 9999 digits or less)	TC/RTD inputs: 2 (2.0) Voltage/Current inputs: 0.2
53	LHo (LHo)	Limit action hold action selection	0: Without hold action 1: Effective • When the power is turned on. • When the mode is switched from the Engineering mode to other modes.	0
54	LEo (LEo)	Limit action process abnormality action selection	0: Normal processing 1: Forced ON at input error	0
55	LPoU (LPoW)	Limit action at the time of power ON	0: Normal processing 1: Forced ON at power-on	1
56	rTIM (rTIM)	"<RST" (Reset) key operation time selection	0: Press and hold (for one second) 1: Press once	1
57	rSEL (rSEL)	Reset action selection	0: All data is reset on each monitoring screen [2] 1: Each data is reset on each monitoring screen [2]	0

[1] Varies with the setting of the Decimal point position.
[2] "All data" described in the Data range mean Peak hold value, Bottom hold value, and EXCD time. Parameters cleared in each screen are as follows.

When the set value of the Reset action selection is set to "0."

Screen	Parameters cleared by Reset operation
PV/SV monitor	Limit output, Peak hold value, Bottom hold value, EXCD time
Peak hold	
Bottom hold	
EXCD time	

When the set value of the Reset action selection is set to "1."

Screen	Parameters cleared by Reset operation
PV/SV monitor	Limit output
Peak hold	Limit output, Peak hold value, Bottom hold value
Bottom hold	
EXCD time	Limit output, EXCD time

No.	Symbol	Name	Data range	Factory set value
58	F61. (F61.)	Function block 61	This is the first parameter symbol of Function block 61.	—
59	CMPS (CMPS)	Communication protocol selection ♣	0: RKC standard protocol 1: Modbus protocol	Factory set value varies depending on the instrument specification.

No.	Symbol	Name	Data range	Factory set value
60	F91. (F91.)	Function block 91	This is the first parameter symbol of Function block 91.	—
61	1395 (1395)	ROM version	Display the version of loading software.	—
62	WT (WT)	Integrated operating time	0 to 99999 hours	—
63	TCJ (TCJ)	Holding peak ambient temperature	–256.0 to +256.0 °C	—

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