

INSTRUCTION MANUAL

LCD ALARM SETTER

SDLC-105A

Introduction

Thank you for your purchase of our product.

Read this instruction manual carefully before installation, wiring, and using this product.

Keep this instruction manual handy for reference at any time.

Have a contact with us or sales agent in case that this instruction manual is lost or damaged.


<Caution>


Have a contact with us when you have any questions or are aware of missing article.


Safety precaution

Important contents are mentioned in this instruction manual to prevent any damage/use this product appropriately.

Keep the following safety precaution in mind after understanding each sign.

 **DANGER** Improper use may lead to death or severe injury.

 **WARNING** Improper use may possibly lead to death or severe injury.

 **ATTENTION** Improper use may lead to medium injury.

We are not responsible for the damage caused by following condition(earthquake/fire which is not caused by us, action by third party, other accident, damage caused by our customer, misuse, product usage under abnormal condition).

We are not responsible for secondary damage caused by product use/product malfunction (loss of profit, halt of business operation). We are also not responsible for damage caused by false operation in combination with connecting equipment which is beyond our control.

DANGER

- Do not disassemble, remodel and repair this product.
Have a contact with us or sales agent when product failure happens to prevent fire/electric shock/injury.
- Do not get this product wet to prevent heat generation/ignition/product failure. When this product gets wet, stop using it.
- Do not connect metal excepting wiring to terminal in order to prevent heat generation/ignition.
- Do not get this product near the inflammables/combustible chemicals/gas to prevent fire.

WARNING

- Connect specified power supply.
Connecting power supply beyond specification causes fire/product failure.
- When dust is on the terminal, wipe it off after power is OFF to prevent fire.
- Follow the below-mentioned procedure when abnormality (fuming/bad odor) happens.
 - (1) Stop using after power and input are OFF.
 - (2) Have a contact with us or sales agent.

ATTENTION

- Do not use this product in a environment of high temperature/high humidity to prevent any damage.
- Do not touch the terminal during operation to prevent electric shock.
- Do not pull/bend connecting cable with force. Cable damage causes heat generation/burn and contact failure leads to equipment damage.
- Do not connect/inspect with wet hands to prevent electric shock.

Other precaution

Don't mount or store this unit in the following environment.

Places where corrosive gas (SO₂ / H₂S / etc.)⁽¹⁾ is generated.

Places where dust is generated.

Places with much vibration and shock.

Places with influence of external magnetic field ⁽²⁾.

Note ⁽¹⁾ Corrosive gas = Sulfur dioxide SO₂ / Hydrogen sulfide H₂S / etc.

Note ⁽²⁾ Large current bus / saturable reactor / etc.

Wipe off dirt on the surface with dry cloth softly. Keep in mind that strong rubbing of nameplate leads to character disappearance. Organic solvent is not appropriate for cleaning.

Mercury component, Nickel-cadmium battery are not used in this product.

This product is disposed as an industrial waste (Non-inflammable).

This product is not dust-proof structure and not waterproof structure. In using by the outdoor panel, please avoid the place, which dust causes. And, please install in the place that requires neither rain nor waterdrop.

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1. Explanation of product

1.1 Product outline

This product is the alarm setter of the plug-in structure which considers a DC voltage (or DC current) signal as an input, and outputs the relay contact signal of four points (maximum) as compared with the set-up operation set value.

This product is the type corresponding to the software that has a LCD function and a scale can set up arbitrarily according to the amount of processes. The real scale display function of an input, the dead band setting function, the contact delay setting function, and the starting delay setting function are built-in. It can correspond to various process instrumentation flexibly.

1.2 Features of product

- Setting accuracy is $\pm 0.1\%$ (% for input span). Display accuracy is $\pm 0.1\% \pm 1$ digit (% for input span).
- Between input, output, auxiliary supply and cases, withstand voltage is AC2000V design.
- The display of real scale by LCD. And, setting can carry out freely by the front button switch. It can correspond to scaling change etc.
- Nonvolatile RAM offers the power failure guarantee of the set value.
- Sufficient derating of uses parts, and reduction of inside generation of heat improves reliability.
- The back light is turned on at the case of key operation. 30 seconds after key operation is completed, the back light puts out the light.
- By the pre-alarm function, the efflux in contact delay time is displayed by blinking of a monitor lamp. (ON/OFF of prealarm can be selected by setting.)

1.3 Composition of type and specification code

Type		Specification code	
SDLC-105A-		①	② ③
		① Input (Input resistance)	② Output contact composition
		③ Auxiliary supply	
A3 : DC0 - 60mV	(About 1M Ω)	1 : Two alarm outputs (c contact)	F : AC·DC 80 - 264V 3.6VA (Rated voltage AC100/110V, 50/60Hz AC200/220V, 50/60Hz DC100/110V)
A5 : DC0 - 1V	(About 1M Ω)	2 : Three alarm outputs (a contact)	
A6 : DC0 - 5V	(About 1M Ω)	3 : Three alarm outputs (b contact)	
A7 : DC0 - 10V	(About 1M Ω)	4 : Four alarm outputs (a contact)	
A8 : DC1 - 5V	(About 1M Ω)	5 : Four alarm outputs (b contact)	
B3 : DC \pm 60mV	(About 1M Ω)	0 : Other	
B5 : DC \pm 1V	(About 1M Ω)		5 : DC19 - 29V 2.5W (Rated voltage DC24V)
B6 : DC \pm 5V	(About 1M Ω)		
B7 : DC \pm 10V	(About 1M Ω)		
C3 : DC0 - 1mA	(About 100 Ω)		
C4 : DC0 - 5mA	(About 100 Ω)		
C5 : DC0 - 10mA	(About 100 Ω)		
C6 : DC0 - 16mA	(About 100 Ω)		
C7 : DC4 - 20mA	(About 100 Ω)		
00 : Other			
		(Production range Voltage input : 60mV to 60V Current input : 1mA to 50mA)	

2. Specification and performance

2.1 Specification of alarm output

Item	Specification	
Output contact points	2 contact outputs, 3 contact outputs, 4 contact outputs	
Contact composition	2 contact outputs : Each 1c contact 3 contact outputs : Each 1a contact or each 1b contact 4 contact outputs : Each 1a contact (Two-points of one side is common.) or Each 1b contact (Two-points of one side is common.)	
Contact capacity	Maximum switching load	AC120V 1A (COS ϕ =1) , DC30V 1A (Resistance load) or DC125V 150mA (Resistance load)
	Minimum switching load	DC5V 10mA
Electric life	500,000 times or more (Switching frequency, 30 times/minute)	
Output mode	Setting in five kinds of modes as follows is possible for operation of detection. ① High limit setting (H), Operation of detection : Relay excitation ② High limit setting (H), Operation of detection : Relay non-excitation ③ Low limit setting (L) , Operation of detection : Relay excitation ④ Low limit setting (L) , Operation of detection : Relay non-excitation ⑤ OFF , It is always relay non-excitation.	
Relay excitation status display	In 4 contacts (maximum) of each, It is monitor lamp turn on the light at the case of relay excitation. It is blinking among delay time at the case of the prealarm setting ON.	
Relay and monitor lamp operation	At the auxiliary supply OFF, or at the relay non-excitation.	Relay b contact "ON", Monitor lamp "OFF".
	At the relay excitation	Relay a contact "ON", Monitor lamp "ON".
	Output mode	Reference to "2.2 Operation of alarm output".
Relay contact status	Reference to "2.2 Operation of alarm output".	

2.2 Operation of alarm output

- ① At the auxiliary supply OFF, or at the relay non-excitation : Relay b contact "ON", Monitor lamp "OFF".
② At the relay excitation : Relay a contact "ON", Monitor lamp "ON".

Output mode		Relay and monitor lamp operating state			
		▽ Operation value setting. Input →			
Excitation	H	Monitor lamp	Turn off the light ○	● Turn on the light	● : Turn on the light ○ : Turn off the light
		Relay	Non-excitation	Excitation	
	L	Monitor lamp	Turn on the light ●	○ Turn off the light	
		Relay	Excitation	Non-excitation	
Non-excitation	H	Monitor lamp	Turn on the light ●	○ Turn off the light	
		Relay	Excitation	Non-excitation	
OFF (Excitation • Non-excitation)	L	Monitor lamp	Turn off the light ○	● Turn on the light	
		Relay	Non-excitation	Excitation	
		Monitor lamp	Turn off the light ○	○ Turn off the light	
		Relay	Non-excitation	Non-excitation	

● Relay contact status

Status	4 contact outputs : Each 1a contact	4 contact outputs : Each 1b contact
Auxiliary supply OFF or relay non-excitation	<p>Terminal No. 9 10 11 1 2 3</p>	<p>Terminal No. 9 10 11 1 2 3</p>
Relay excitation	<p>Terminal No. 9 10 11 1 2 3</p>	<p>Terminal No. 9 10 11 1 2 3</p>

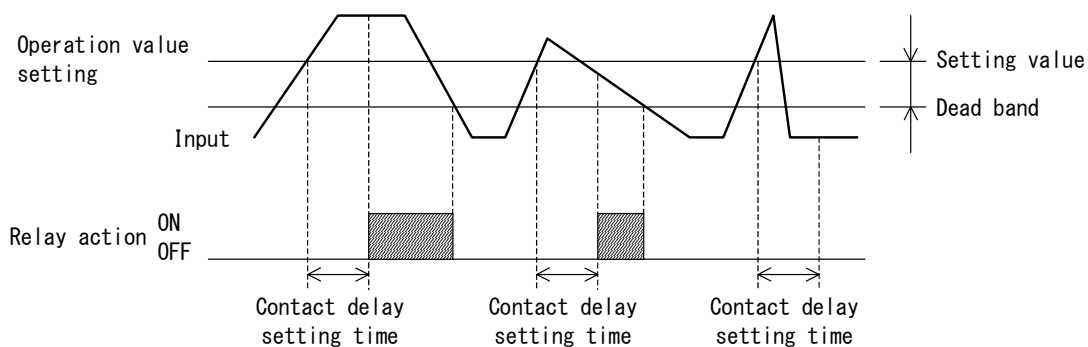
Status	3 contact outputs : Each 1a contact	3 contact outputs : Each 1b contact
Auxiliary supply OFF or relay non-excitation	<p>Terminal No. 9 10 11 1 2 3</p>	<p>Terminal No. 9 10 11 1 2 3</p>
Relay excitation	<p>Terminal No. 9 10 11 1 2 3</p>	<p>Terminal No. 9 10 11 1 2 3</p>

Status	2 contact outputs : Each 1c contact
Auxiliary supply OFF or relay non-excitation	<p>Terminal No. 9 10 11 1 2 3</p>
Relay excitation	<p>Terminal No. 9 10 11 1 2 3</p>

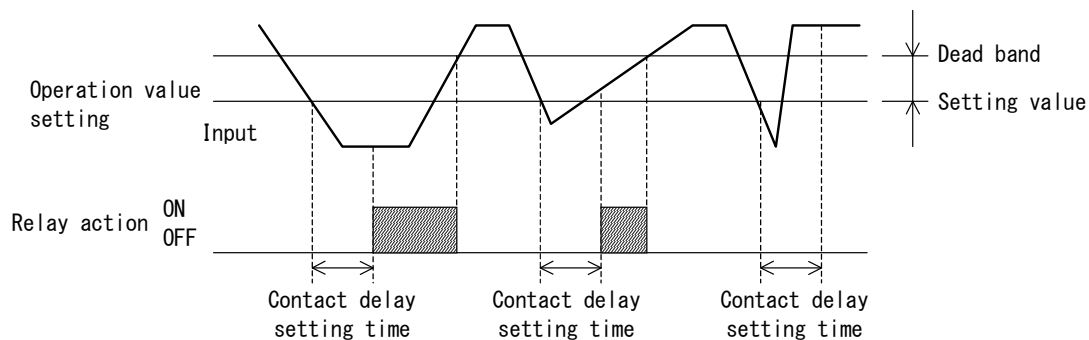
2.3 Relay operation

■ Contact delay function

Relay operation in over-input detection. (Output mode : Excitation, H ⁽³⁾)

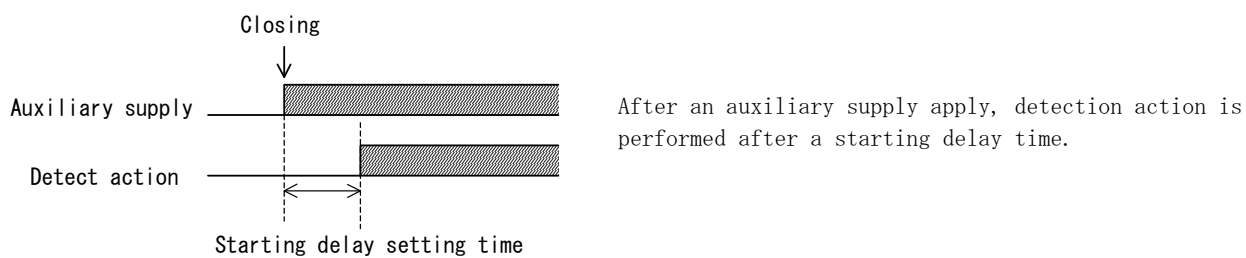


Relay operation in shortage-input detection. (Output mode : Excitation, L ⁽³⁾)



Note⁽³⁾ In case of non-excitation for relay excitation operation setting, action of relay becomes reverse.

■ Starting delay function



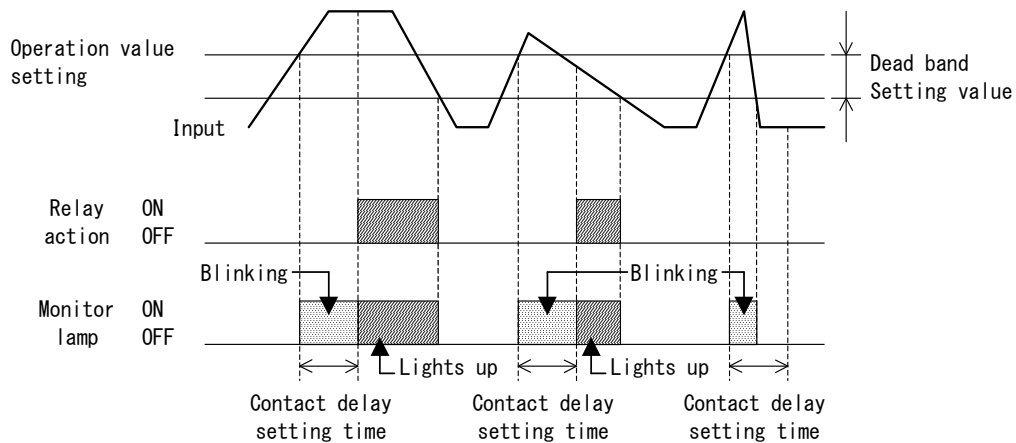
2.4 Prealarm function

A monitor lamp is blinked among contact delay time until excitation of a relay after operation value detection. Blinking of a monitor lamp will be gradually fast, and when the point of contact delay time passes, a monitor lamp is lights up.

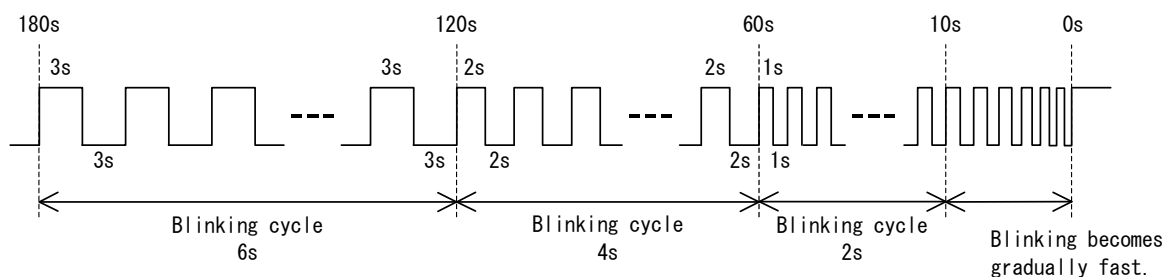
If contact delay time setting is made into 0 second, a prealarm function constitutes OFF.

- Relay action and pre-alarm in over-input detection.

(Output mode setting : Excitation H, Pre-alarm setting : ON)



- Action of the prealarm in contact delay time (blinking)



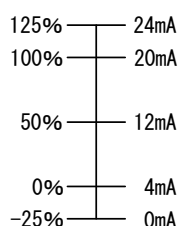
2.5 Setting value

No.	Contents	Mark	Initial value			Setting range	
			2 contact outputs	3 contact outputs	4 contact outputs		
1	Unit display	UNIT	%			%, m, °C, m ³ /h, ppm, pH, TPm, ×10kg, Ω, kW	
2	Minimum value scaling	MIN	0.0			-9999 to 9999 -9.99 to 99.99	
3	Maximum value scaling	MAX	100.0			-99.9 to 999.9 0.000 to 9.999	
4	AL1	Output mode	ALMD1	High	High	High	High : H operation, Low : L operation, OFF : With no operation
5		Operation value	COMP1	70.0	80.0	80.0	It sets in the measurement display range of -25 to +125%, and is a real scale.
6		Dead band	D. B. 1	3.0			0.5 to 50.0%
7		Excitation mode	EXMD1	ON			ON : Excitation, OFF : Non-excitation
8		Contact delay time (CD)	C. D. 1	0			0 to 180s
9	AL2	Output mode	ALMD2	Low	High	High	High : H operation, Low : L operation, OFF : With no operation
10		Operation value	COMP2	30.0	70.0	70.0	It sets in the measurement display range of -25 to +125%, and is a real scale
11		Dead band	D. B. 2	3.0			0.5 to 50.0%
12		Excitation mode	EXMD2	ON			ON : Excitation, OFF : Non-excitation
13		Contact delay time (CD)	C. D. 2	0			0 to 180s
14	AL3	Output mode	ALMD3	—	Low	Low	High : H operation, Low : L operation, OFF : With no operation
15		Operation value	COMP3	—	30.0	30.0	It sets in the measurement display range of -25 to +125%, and is a real scale
16		Dead band	D. B. 3	—	3.0		0.5 to 50.0%
17		Excitation mode	EXMD3	—	ON		ON : Excitation, OFF : Non-excitation
18		Contact delay time (CD)	C. D. 3	—	0		0 to 180s
19	AL4	Output mode	ALMD4	—		Low	High : H operation, Low : L operation, OFF : With no operation
20		Operation value	COMP4	—		20.0	It sets in the measurement display range of -25 to +125%, and is a real scale
21		Dead band	D. B. 4	—	3.0		0.5 to 50.0%
22		Excitation mode	EXMD4	—	ON		ON : Excitation, OFF : Non-excitation
23		Contact delay time (CD)	C. D. 4	—	0		0 to 180s
24	Starting delay time (SD)	S. D.	5			1 to 180s	
25	Bias point calibration	CBIAS	0.00			-9.99 to 9.99% (% for input span)	
26	Span point calibration	CSPAN	0.00			-9.99 to 9.99% (% for input span)	
27	Average number	AVE	1			1, 4, 8, 16, 32	
28	Prealarm	PREAL	OFF			ON : Prealarm ON, OFF : Prealarm OFF	

< Notes of setting >

- The decimal point position change of scaling is made by the minimum value scaling.
If the decimal point position is changed, the decimal point position of maximum value scaling and operation values 1 to 4 will also change. If the decimal point position is changed, please be sure to check the set value of a maximum value scaling and an operation value.
- An operation value can be set up in -25 to +125% of the measurement display range (minimum value scaling to maximum value scaling).

(Example) Input 4 to 20mA, Operation value -25.0, Output mode is "Low" setting.



It becomes L detection in 0mA of inputs, it is also possible to use it as disconnection detection.

- After setting change, in case a set value combination error occurs, it becomes a setting error display.

Please push the ENT key and set up the right set value (in set value change mode).

2.6 Performance

Item	Specification	
Setting accuracy ⁽⁴⁾	$\pm 0.1\%$ (% for input span)	
Display accuracy ⁽⁵⁾ ⁽⁶⁾	$\pm 0.1\%$ (% for input span) ± 1 digit	
Reproducibility of the operating point ⁽⁴⁾	$\pm 0.1\%$ (% for input span)	
Operating time accuracy	± 0.25 seconds of contact delay time set value (However, in case of set value = 0 second. 0.5 ± 0.25 seconds)	
Reset time	Less than 0.5 seconds	
Starting delay time accuracy	± 0.25 seconds of starting delay time set value	
Influence of temperature	0.2% (For input span) / $23 \pm 10^\circ\text{C}$	
Influence of auxiliary supply voltage variation	0.1% (For input span) /Within variation range	
Operation period	About 0.1 second	
Response time	About 0.5 second (In case 90 to 110% of step variation of operation value setting is given, in CD=0 second)	
Overload capacity	Voltage input	2 times 10 seconds and 1.5 times continuation of rated voltage.
	Current input	10 times 5 seconds and 1.5 times continuation of rated current.
	Aux. supply	1.5 times 10 seconds of rated voltage. And upper limit of the variation range is continued.
Insulation resistance	Between electric circuit and case.	Above $50\text{M}\Omega$ at DC500V.
	Between input, output terminals and auxiliary supply terminals.	
	Between input terminals and output terminals.	
	Between AL1 output terminals and AL2 output terminals. (Only two alarm contact output specification)	
	Between AL1 output terminals and AL2 output terminals and AL3 output terminals. (Only three alarm contact output specification)	
Power frequency withstand voltage	Between electric circuit and case.	AC2000V (50/60Hz) 1 minute. There must not be malfunction.
	Between input, output terminals and auxiliary supply terminals.	
	Between input terminals and output terminals.	
	Between AL1 output terminals and AL2 output terminals. (Only two alarm contact output specification)	
	Between AL1 output terminals and AL2 output terminals and AL3 output terminals. (Only three alarm contact output specification)	
Impulse withstand voltage	Between electric circuit and case.	5kV 1.2/50 μs . Positive and negative polarity for each 3 times. There must not be malfunction.
Vibration	Vibration of vibration frequency 16.7Hz, Double amplitude 1mm. In the direction of X Y Z for each 10 minutes. There must not be malfunction.	
Shock	Error : 98m/s^2 , X, Y, Z direction for each 3 times. Duration : 294m/s^2 , X, Y, Z direction for each 3 times.	
Power failure guarantee	Each set value is data-saved by non-volatilized memory.	
Material of case	Case : Flame resisting ABS resin , Name plate : Polyester film , Socket : Glass filled PBT resin	
Appearance color	Case, Socket : Munsell N1.5 (Black) , Name-plate : Gray	
Operating temperature and humidity limits	-10 to $+55^\circ\text{C}$, 5 to 90%RH (Non condensing)	
Storage temperature limits	-25 to $+70^\circ\text{C}$	
Mass	Approx. 350g	
Accessories	Socket, Unit symbol sheet, Instruction manual	

Note⁽⁴⁾ Input is DC60mV to less than 1V, DC $\pm 60\text{mV}$ to less than $\pm 1\text{V}$. $\pm 0.2\%$ (% for input span)

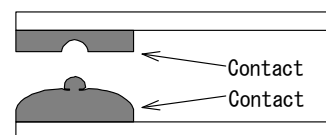
Note⁽⁵⁾ Input is DC60mV to less than 1V, DC $\pm 60\text{mV}$ to less than $\pm 1\text{V}$. $\pm 0.2\%$ (% for input span) ± 1 digit.

note⁽⁶⁾ In more than 10000 (5 digits except decimal point), a measurement display span constitutes $\pm 0.1\%$ (% for input span) ± 2 digit. And, if input is less than 1V and measurement display span is 10000 or more. $\pm 0.2\%$ (% for input span) ± 2 digit.

● About transition of a contact

In DC load switching, transition of a contact may start and a contact may not return by uneven connection.

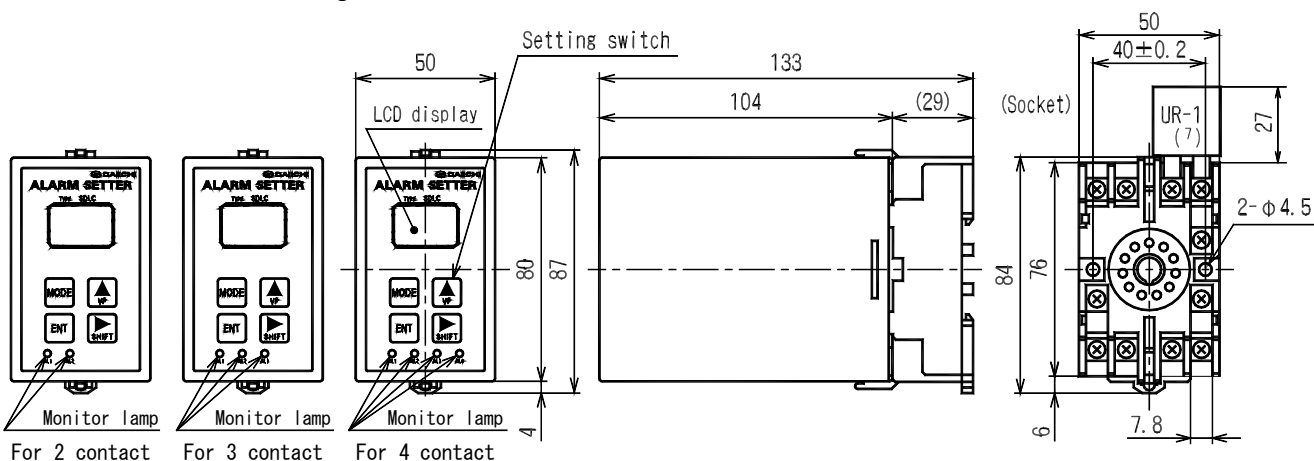
A contact evaporates locally with arc heat, what carried out contact evaporation to + polarity → - polarity carries out the adhesion deposition of this, and a single-sided convex opposite side serves as a concave.



(Measure) Be sure to use each relay within a rated load.

3. Installation

3.1 Outline dimension drawing (Unit mm)



Note⁽⁷⁾ Please use UR-1 combining the alarm setter of voltage input.

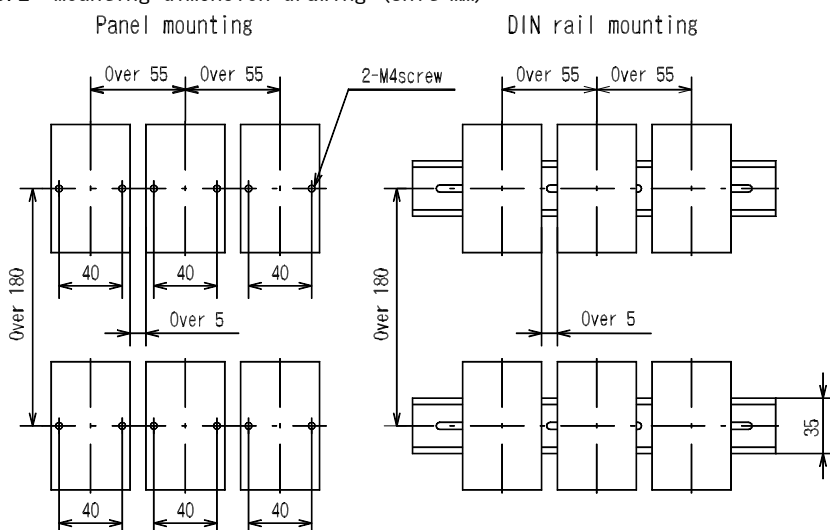
If an open measure is required in case the alarm setter of a current input is exchanged in the state of a hot line, please use UR-1 for a socket, connecting (converting into a voltage signal).

(UR-1, resistance designation, Option)

Resistance in input signal

Input Resistance	DC0 - 1mA	DC0 - 10mA	DC0 - 16mA	DC0 - 20mA	DC2 - 10mA	DC4 - 20mA	DC10 - 50mA
10 Ω	—	DC0 - 100mV	DC0 - 160mV	DC0 - 200mV	DC20 - 100mV	DC40 - 200mV	DC100 - 500mV
50 Ω	—	—	—	DC0 - 1V	DC100 - 500mV	DC0.2 - 1V	DC0.5 - 2.5V
62.5 Ω	—	—	DC0 - 1V	—	—	DC0.25 - 1.25V	—
100 Ω	DC0 - 100mV	DC0 - 1V	—	—	—	DC0.4 - 2V	DC1 - 5V
250 Ω	—	—	—	DC0 - 5V	—	DC1 - 5V	—
500 Ω	—	DC0 - 5V	—	DC0 - 10V	DC1 - 5V	—	—
1k Ω	DC0 - 1V	DC0 - 10V	—	—	—	—	—

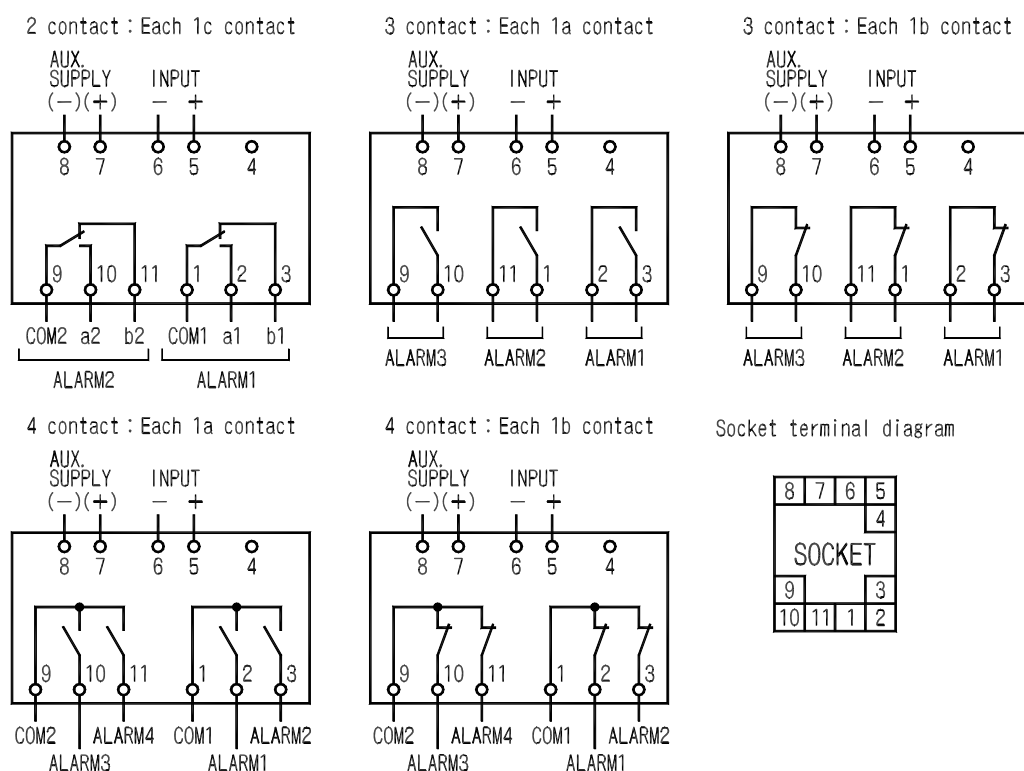
3.2 Mounting dimension drawing (Unit mm)



- The tightening torque of mounting screw.
M4 : 1.08 to 1.47N·m (11 to 15kg·cm)
- Please prepare the installation interval more than the above in consideration of radiation by the natural convection of air.
- If the duct for wiring is used, please detach 20mm or more from the upper surface and the undersurface of a body.
- If it mount in a DIN rail, please use the DIN rail of 35mm width.

3.3 Connection

■ Connection diagram



Please refer to the connection diagram for wiring.

The polarity of () is the case where a control power supply is DC.

The tightening torque of mounting screw. M3.5 : 0.7 to 0.9N·m (7.1 to 9.2kg·cm)

< Caution >

- Please do not make a wiring change of the input and auxiliary supply in an energization. Please be sure to work after intercepting a source.
- Please do not touch a terminal etc. at the case of cleaning and check.
- A fire-damaged accident may be caused by the wiring difference in auxiliary supply or input. Please be careful of wiring enough. And, check in the place which has combustibles, an inflammable medicine, inflammable gas, etc. in environment is also dangerous.
- When inductive loads (electromagnetic relay, etc.) are connected to output contact, It recommends attaching diode (or surge killer) etc. near the load.

3.4 Cautions on mounting

- State of mounting

There is no limit of mounting position. Mounting instruction can select 35mm width DIN rail mounting and screw mounting. In screw mounting, please mount with M4 screw. (However, the screw is not attached. And, please give the mounting torque of a screw as 1.08 to 1.47N·m (11 to 15kg·cm)). Should establish of side-by-side mutual mount space 5mm over up. A vertical interval should prepare space 90mm or more in consideration of radiation and a wiring space.
- State of wiring

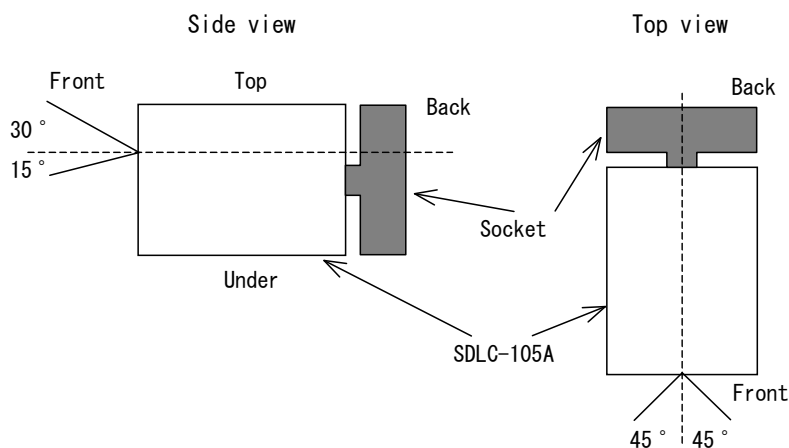
Please separate wiring of input and output and perform consideration to noise. And, please separate from a line with the power line used as the source of a noise and steep voltage, and current as much as possible. Please use shielding wire for the bottom of the remarkable environment of a noise.
- Conditions of environment
 - (1) The range of the temperature and humidity of environment.

Please give temperature and humidity as a next range from operation of each device.
Temperature : -10 to +55°C, Humidity : 5 to 90%RH (Non condensing)
 - (2) Environment atmosphere

The case has sealing construction. However, be careful of employment under environment with much dust. Please consult on the occasion of the employment under corrosive gas environment, such as hydrogen sulfide gas (H₂S) and chlorine gas (Cl).

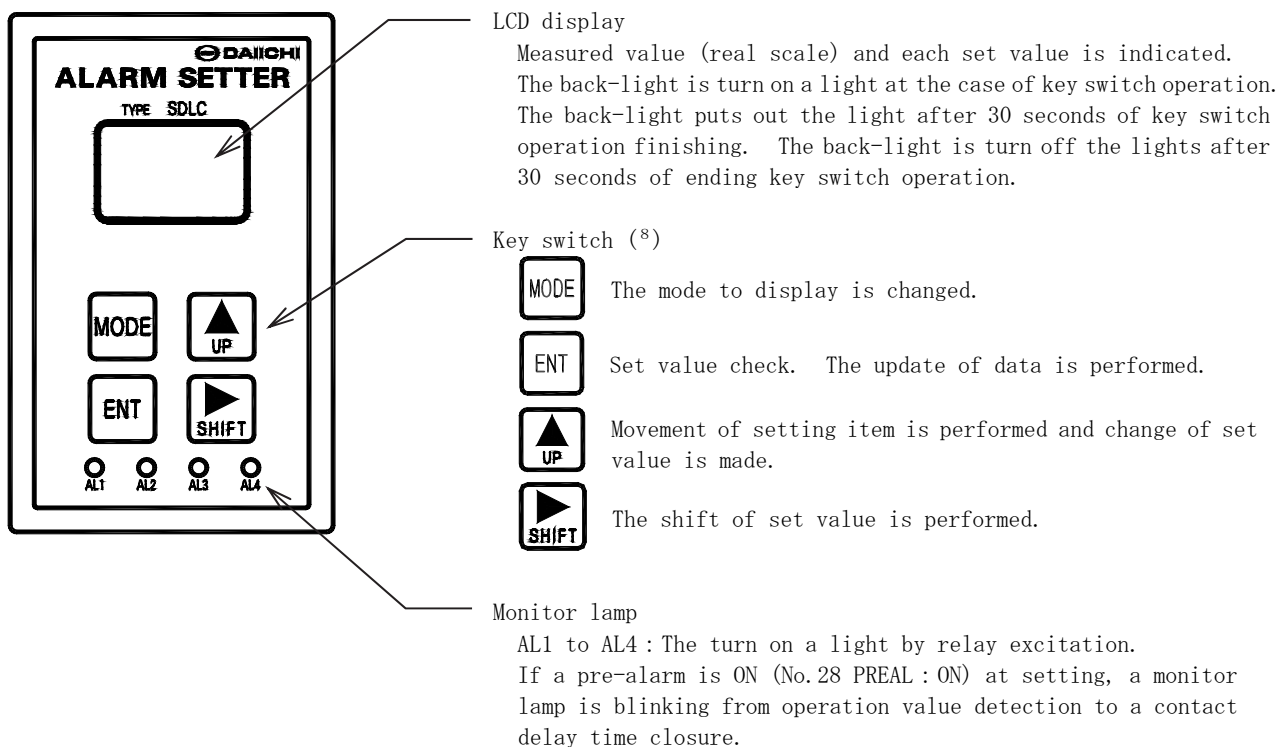
3.5 LCD viewing angle

Mount the LCD to obtain an optimum angle, since the contrast changes according to the monitoring angle.



4. Operation method

4.1 The name and function of each part

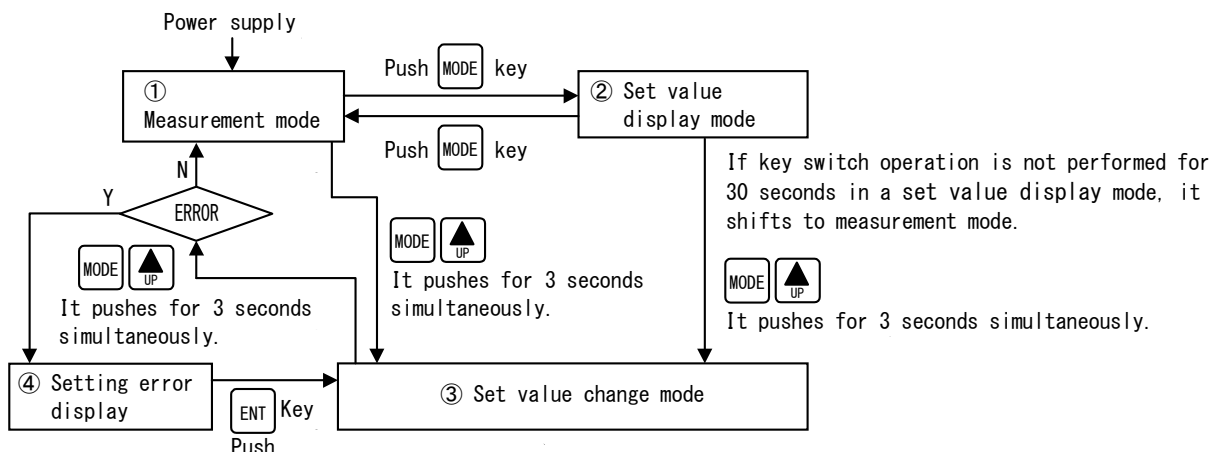


Note (8) Please operate at a moderate force without applying excessive force to the key switch. If you press the key switch in excessive force, there is a possibility that affect the display becomes a stress on the front plate.

4.2 Each display mode and operation

Shift in each mode

A display mode shifts to each mode by those with four type, and the following switch operations.

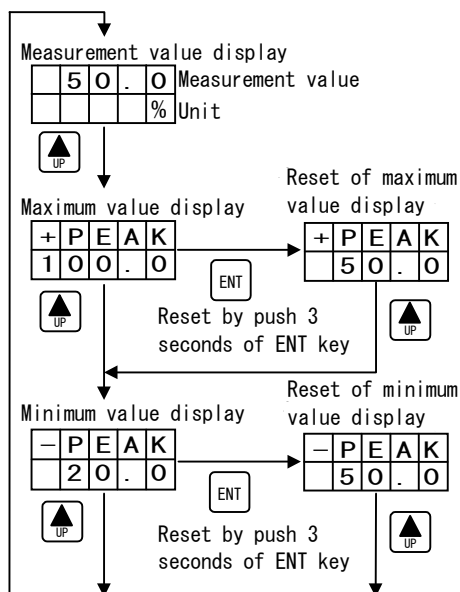


- ① Measurement mode
Measurement value, maximum value, and minimum value are displayed.
- ② Set value display mode
A setting item is displayed in order and the check of set value can be performed.
Change of set value cannot be performed.
- ③ Set value change mode
A setting item is displayed in order and change of set value can be performed.
Please perform the check of set value with a set value display mode.
- ④ Setting error display
An error code is displayed after setting change in set value change mode at the case of combination error occurrence.

No.	Contents of error	Measures
ERROR 0	Scaling combination error	In order that it may become MAX>MIN, it sets up again.
ERROR 1	COMP1 setting range outside error	In order that the measurement display range may become -25 to +125%, it sets up again.
ERROR 2	COMP2 setting range outside error	
ERROR 3	COMP3 setting range outside error	
ERROR 4	COMP4 setting range outside error	

4.3 Measurement mode

It becomes measurement mode in after the power supply. Whenever it pushes the UP key, a display changes. An measurement value display, maximum value display, and minimum value display can be checked.



● Explanation of a key switch

- Mode (Measurement ⇔ set value display) change
- Reset of maximum value and minimum value.
- Display change
- Not use

< Notes of maximum value and minimum value >

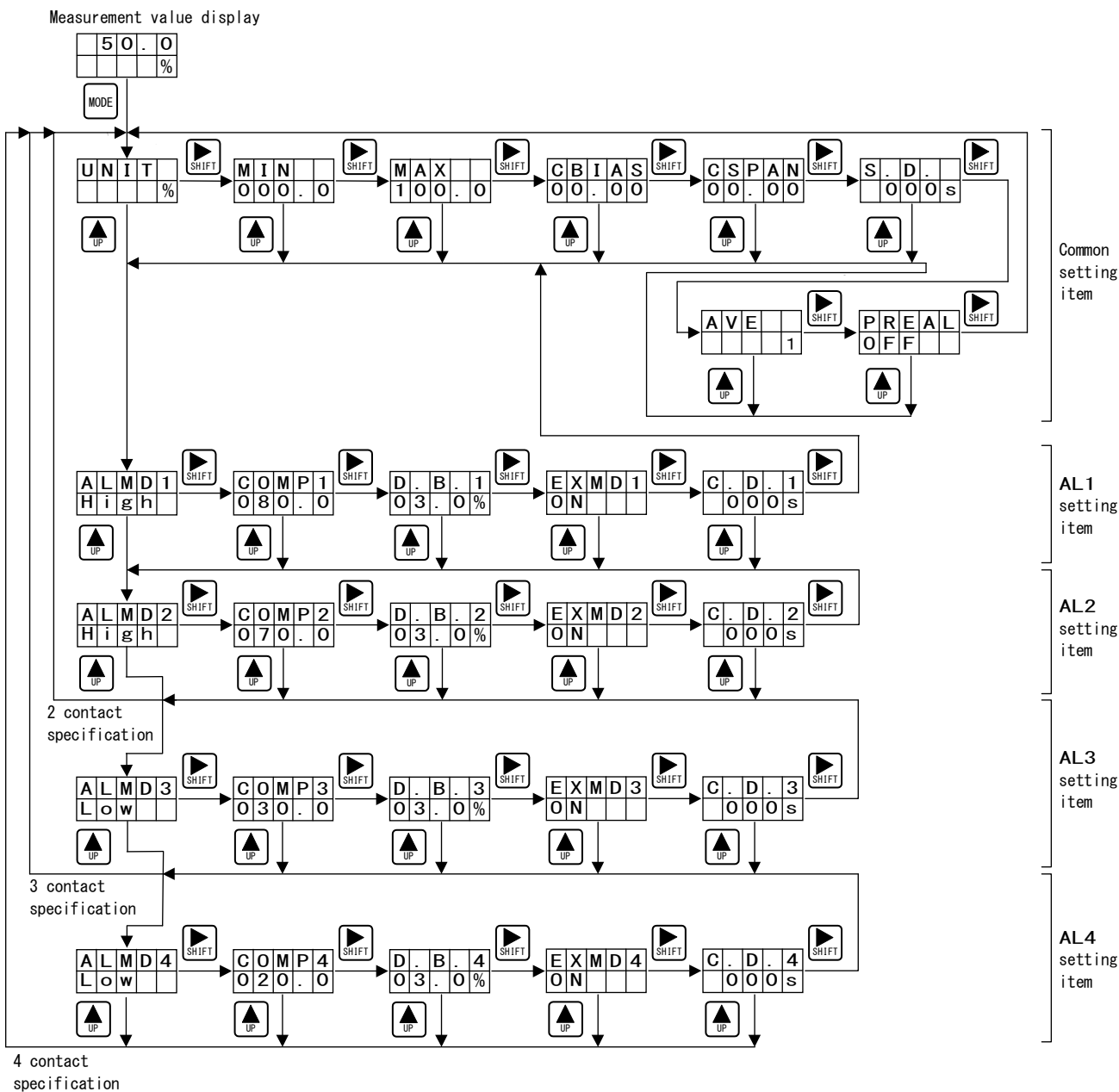
After set value change, please reset a maximum value display and a minimum value display.

4.4 Set value display mode

A setting item is displayed in order and the set value check of all items can be performed.

Once it pushes the MODE key, it will change to a set value display mode.

An common item (AL1 to AL4) is changed by the UP key. Each setting item is displayed as the SHIFT key.



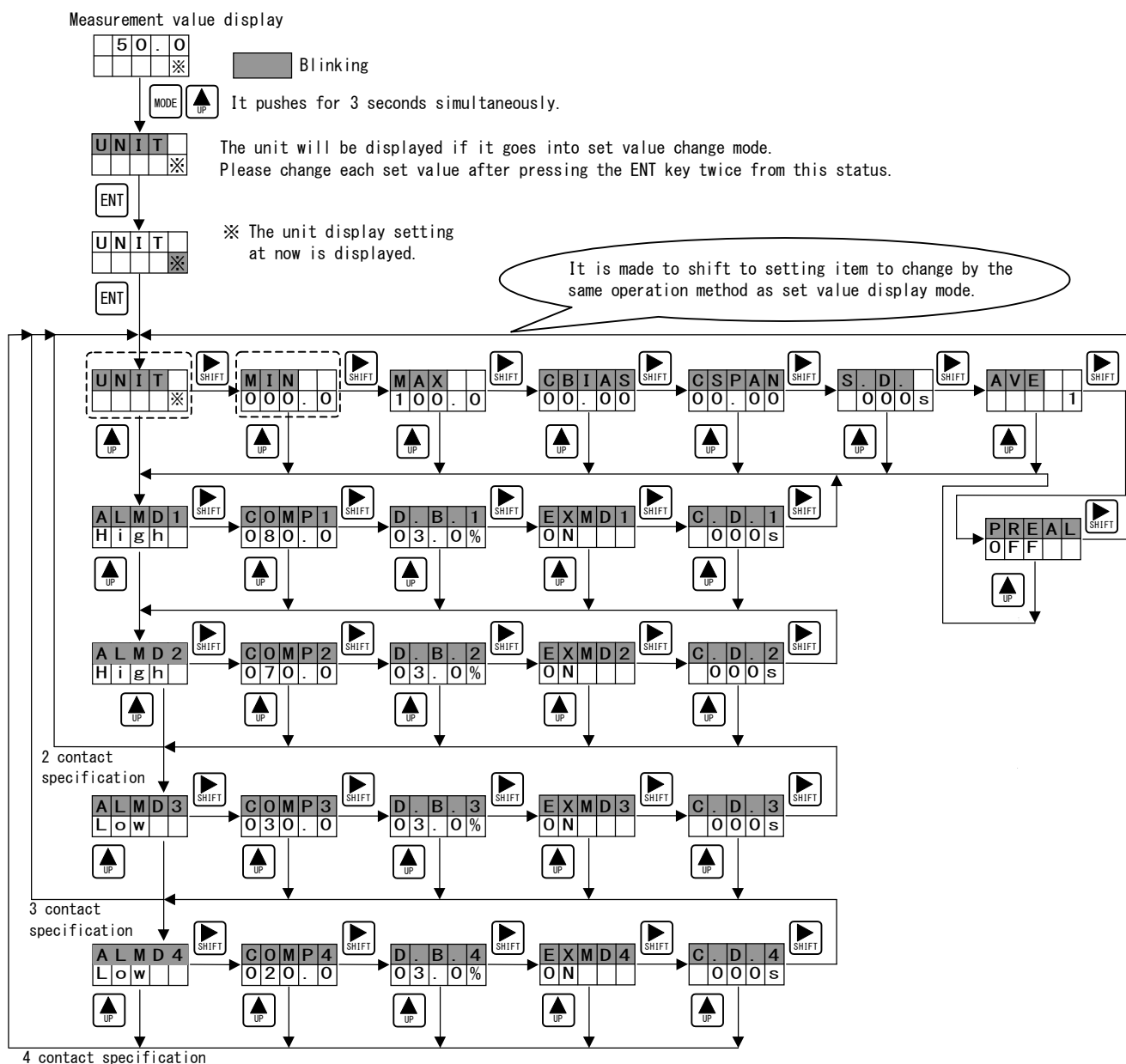
- Explanation of key switch
- MODE** Mode (Measurement ⇔ set value display) change.
- ENT** Not use.
- ▲ UP** Common item (AL1 to AL4) is changed.
- ▶ SHIFT** Each setting item is changed.

4.5 Set value change mode

Change of each set value is possible. If the MODE+UP key is pushed 3 seconds or more simultaneously, it will change to set value change mode.

By the same operation as a set value display mode, a setting item is shifted and it displays.

The ENT key is pushed by the item to make a setting change, and setting is changed.



● Operation in set value change mode

In set value change mode, a setting item or set value is blinking.
 In set value change mode, the back light is always turn on a light.
 After a set value change mode is ended, it restarts.

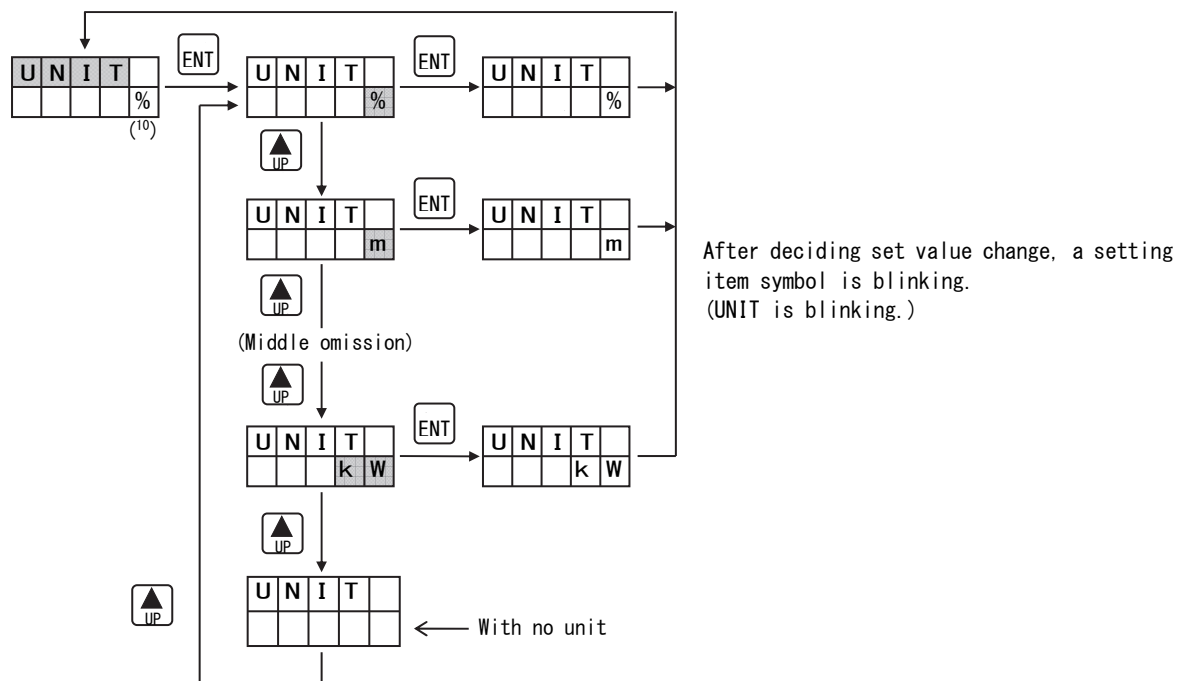
● Explanation of key switch

- It is not used if independent.
 MODE+UP key is pushed 3 seconds or more simultaneously. Mode (Measurement ⇔ set value change) change.
- Set value decision (Update of data)
 Determination of setting item (Blinking is upper section ⇔ lower section)
- Setting item movement and change of set value.
 MODE+UP key is pushed 3 seconds or more simultaneously. Mode (Measurement ⇔ set value change) change.
- Movement of the setting item of AL1 to AL4, and the shift of set value.

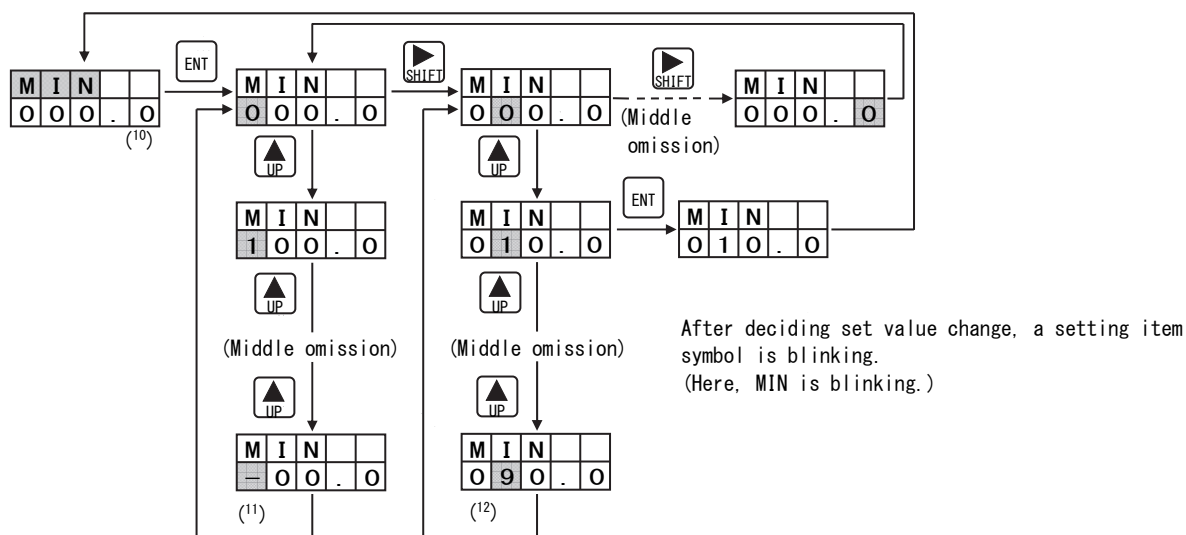
● Notes after a setting change end

After setting change is completed, please check that set value has been changed with a set value display mode. After confirming the changed set value when being different from the established set value, please establish it once again.

● If a unit display (UNIT) is set up. (9)



● If a minimum value scaling (MIN) is set up.



Note(9) If you do not have the unit you wish to use, please use a combination of "no unit" setting and seal (accessory).

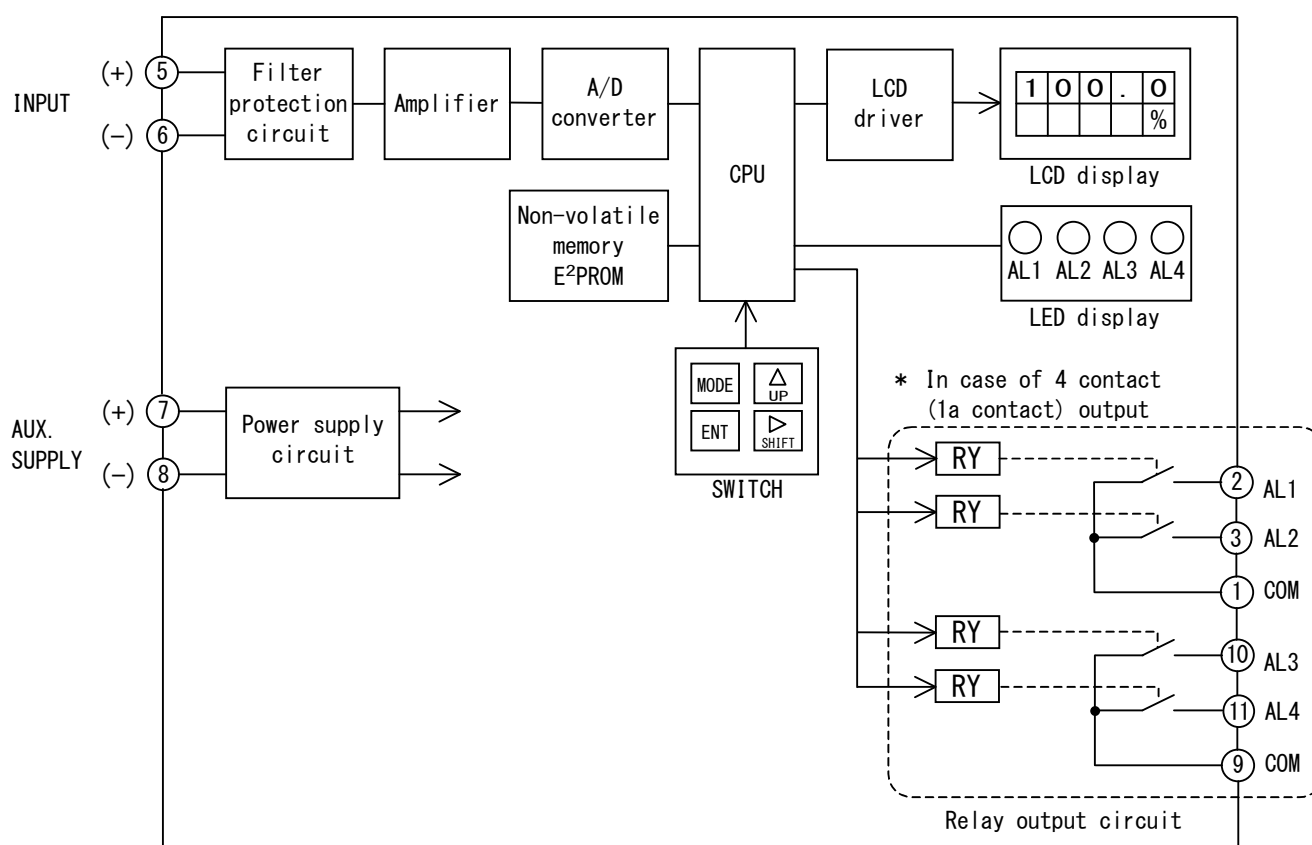
Note(10) After set value changed, displays the change set value.

Note(11) The number of the top digit becomes "-" (minus) after 0 to 9.

Note(12) The number of digits other than the top digit becomes "." (decimal point) after 0 to 9. However, if decimal point is in other digits, decimal point does not display.

5. Block-diagram and principle of operation

5.1 Block-diagram



5.2 Principle of operation

- (1) The inputted voltage or current passes along a filter protection circuit, and becomes the DC voltage below constant voltage. This voltage goes into an amplifier.
- (2) The input is converted into the suitable voltage range in an amplifier. This voltage constitutes an input of an A/D converter.
- (3) The data converted into digital one by the A/D converter are sent to CPU. A/D converter has 16-bit resolution and performs operation and conversion with 1MHz clock. Based on the scaling range that had this data set up, it calculates within CPU. And the measurement value scaling by the LCD is displayed.
- (4) The operation value and measurement value, which was set up beforehand, are compared, and the relay and LED are operated.
- (5) The front pushbutton switch makes each setting change.
- (6) The value set up by the switch is saved at non-volatile memory (E²PROM). ROM has the capacity of 128×16 bits.

6. Inspection

6.1 Receiving inspection

In case you inspect at the time of receiving, please perform after reference the following.

(1) Structure

Inspection of an outline dimension, mounting dimension, and appearance. : Please perform with reference to dimensional outline drawing.

(2) Performance

Please do a reserve energization (warm-up) for 15 minutes after a power supply apply. After that, please conduct performance inspection. Performance inspection is performed with reference to 7.2 "calibration method".

6.2 Periodic inspection

Please perform the following item if needed.

(1) Please check each set value.

(2) The accuracy test of indicated value.

An input tests indicated value as two to five points.

(3) Alarm output operation and setting accuracy.

The check with normal ON/OFF operation. The accuracy of operation value and reset value (dead band) is tested.

7. Check, calibration and maintenance

7.1 Check

It is not necessary to check especially every day. Please be periodically careful of the next item.

(1) It is checked whether a body and socket combination are normal (is a lock a totality?).

(2) It checks for the slack of wiring, and the slack of a captive screw.

(3) It will remove, if dust has adhered to the case.

7.2 Calibration

Calibration is performed in the calibration circuit of the right figure.

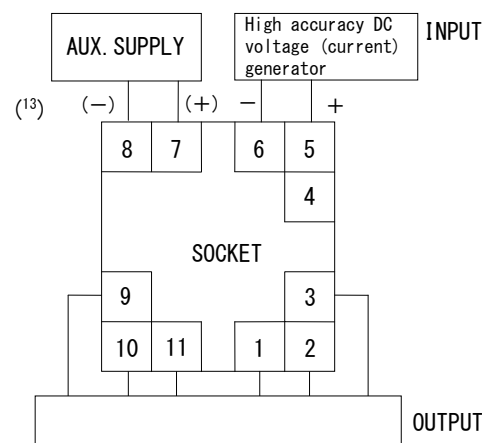
(1) Please do a reserve energization (warm-up) for 15 minutes after a power supply apply.

(2) When the input equivalent to the minimum display is applied, in order that it may become the minimum display, set value CBIAS is set up.

Next, when the input equivalent to the maximum display is applied, in order that it may become the maximum display, it sets up by set value CSPAN.

Calibration is finishing, if the above is checked again and the display is correct. In addition, please refer to the 4.5 section "set value change mode" about setting of set value CBIAS and CSPAN.

(3) Please perform the check of an operation value, a reset value, and a dead band.



Note⁽¹³⁾ It is the polarity of () at the DC power supply case.

7.3 Trouble shooting

Abnormal phenomenon	Cause of estimated	Method of settlement
It does not output.	The power supply input is not applied	Please power supply-input-check and apply.
	An alarm setter trouble	Repair of alarm setter
	The input is not connected	Please confirm connection of input.
	Abnormal of input	Please confirm measurement value.
	The error of setting	Please confirm set value.
	The output is not connected.	Please confirm connection of output.
	Power-supply voltage is low.	Please confirm power-supply voltage.
Display is abnormal. (Large error)	Power-supply voltage is not regulation range.	Please check power-supply voltage and give as regulation range.
	The input is abnormal.	Please give a measurement value as a check and a normal input.
	The error of set value	Please confirm set value.
	An alarm setter trouble	Repair of alarm setter
Display error (Small error)	Secular change of input measurement	Display is proofread again. (Reference of instruction manual 7.2 section)
Set value cannot be changed.	The error of the setting method	Please check setting method. (Reference of instruction manual 4.5 section.)
	An alarm setter trouble	Repair of alarm setter
An error is displayed.	ROM SUM value error	Repair of alarm setter 〔 At the time of an EEP error, if the ENT key is pressed, it will become set value change mode. 〕 〔 Please confirm set value. 〕
	RAM READ/WRITE error	
	EEP Saving value error	
	A/D A/D conversion error	

7.4 Countermeasures against troubles

As our principle, we recall product in question and repair it. If judged as product failure, have a contact with us or sales agent for repairing work (Also have a contact with us or sales agent for specification change). Product failure which we are not responsible for (When responsibility in manufacturing process is not recognized, when product is disassembled/remodeled, in case of false operation by customer, etc.) is beyond our warranty.

8. About unit symbol seal

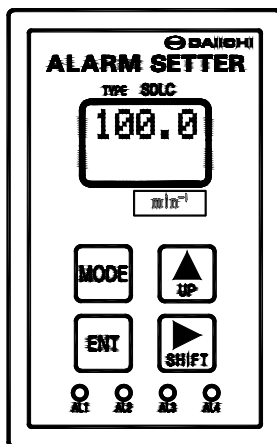
If there is no unit to be desired, set the unit display to "no unit" in the setting change mode and use the seal (accessory) in combination.

- Unit symbol sheet (Accessory)

A	Hz	LEAD	m ³ /min	N·m	μS	kW	x10
mA	J	m	m ³ /h	Pa	S/m	MW	x100
kA	kJ	μm	m ³ /d	hPa	μS/cm	W·h	x1000
cosφ	MJ	mm	DLM	kPa	t	kWh	x10000
cosθ	L	cm	ELm	MPa	t/h	%	n
g	mL	m ³	APm	PaG	t/min	%RH	μ
mg	kL	m/s	OPm	pH	V	°C	m
kg	L/s	m/h	SPm	ppb	mV	°	e
g/L	L/min	mm/h	TPm	ppm	kV	φ	h
mg/L	mL/min	m/min	YPm	rpm	var	Ω	k
mg/h	L/h	mm/min	min	s	kvar	[normal]	M
kg/h	kL/h	m/s ²	min ⁻¹	s ⁻¹	Mvar	(ntp)	G
kg/min	LAG	m ³ /s	N	S	W		K

If there is no unit symbol you want to use in the above sheet, by specifying the unit symbol at the time of ordering, we will paste the desired unit symbol sticker on the product and ship it. (option)

- Example of sticking a seal



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Revision C, DATE : October 19, 2016