Operating Manual

Differential Pressure Manometer
MODEL   KS3200

1. Out Line

The KS3200 is a very small sized digital difference pressure indicator which incorporates a mono-
lithic silicon semiconductor pressure sensor.
It is the best solution to very low pressure measurement.
KS3200 is designed for the application of the semiconductor device equipment such as Coetar Developer,
Cleaning and Furnace etc and has two transistor output(NPN or PNP) and Relay output, analog output 4-20mA or
1-5V.
Connector type XH connector (JST)

2. Handling Note

Recheck the following items before turning on the power.
Input and output wires, If the output terminal is connected to the power the interior circuit will be damaged.
Power voltage : Pressure range : Begin actual operation after the heat line is activated for over five minutes
after the power is turned on.

Excessive pressure.
Please do not apply pressure exceeding the maximum pressure as shown in the specification on catalogues.
The excessive pressure may affect the sensor characteristics and may make accurate measurement impossible.

Insert and contact of foreign matter.
A pressure sensor chip is placed inside the pressure port. If foreign matter such as wire inserts through
the pressure port, damage could be occur.
This must be absolutely avoided.

• On this manual

This Manual serves to illustrate the capabilities and appropriate use of the Pressure Controller KS3200.
Inappropriate use or improper handling can lead to potential hazards for persons and intrinsic values.
Therefore, any person entrusted with working with the device must be instructed and aware of the potential risks.
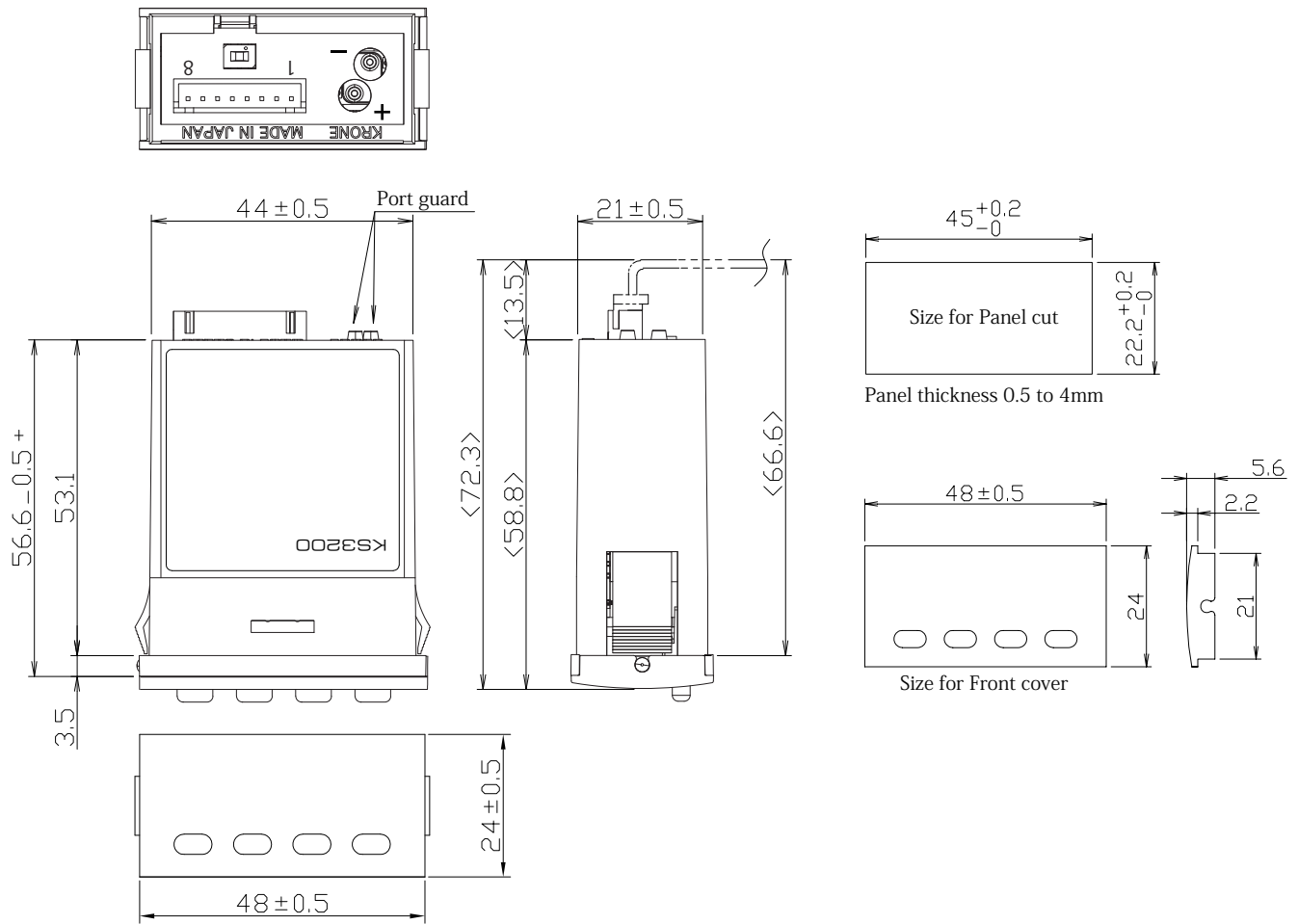This manual and its safety notices in particular must be addressed to with care.
If any doubts occur concerning the proper understanding of any paragraph of this manual, please consult the
manufacturing company.
  • If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment
    may be impaired.
  • Do not close the pressure input ports when shipping, as changes in barometric pressure could damage instruments
    with low measuring ranges.
  • Only technical personnel who are appropriately trained and authorized by the operator of the facility may assemble
    the instrument and set up its electrical connections.
  • The instrument may only be operated by appropriately trained individuals who have been authorized by the opera
    tor of the facility.
  • Measurement errors may occur if the instrument is not kept protected from sunlight.
  • Altitude up to 2000 m;
  • Applicable POLLUTION DEGREE of the intended environment (POLLUTION DEGREE 2).
  • Please do not apply power when connect the connector.
  • Please do not apply leteral stress on the ports in order not to break the ports.
  • Do not operate the switches on the back. If you move it by mistake, move it to the G side and then turn the power
    back on.

3. Size

3-1 B8B-XH-A (8pins connector)

Dimensions : mm

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8   1

Port guard

44 ± 0.5

21 ± 0.5

$\langle 13.5 \rangle$

$\langle 72.3 \rangle$

$\langle 58.8 \rangle$

$\langle 66.6 \rangle$

$56.6 {}^{+}_{-0.5}$

53.1

KS3200

3.5

24 ± 0.5

48 ± 0.5

$45 {}^{+0.2}_{-0}$

$22.2 {}^{+0.2}_{-0}$

Size for Panel cut

Panel thickness 0.5 to 4mm

48 ± 0.5

5.6

2.2

24

21

Size for Front cover

4. Specification

Model	KS3200
Method of pressure	Differential
Sensor	Semi conductor piezoresistors wheatstone bridge
Pressure range	0-100〜5000Pa、±100〜±5000Pa
Display accuracy (*1)	±1%FS ±1digit,（More than 500Pa）
	100Pa=±3%FS ±1digit
	200Pa=±2%FS ±1digit
	300Pa=±1.5%FS ±1digit
Temperature drift	Max ±0.1%F.S./℃（0〜50℃）
Medium	Air, non-corrosive dry gasses (dust is not permitted)
Element	Semi conductor silicon
Over pressure / Burst pressure	0-100〜1000、±100〜±1000：50kPa/80kPa
	0-2000〜5000、±2000〜±5000：80kPa/550kPa
Power supply	24VDC(±10%) NEC(National Electrical Code) Class2 or LPS(Limited Power Source)
Current consumption	53 mA (within 20mA-Aout,Backlight:on, without PNP output current)

Comparator	Setting method	Digital setting by front panel
	Pressure setting range	Hi and Lo 0-100%F.S（min:1Pa）
	Switching hysteresis	0-100%（min:1Pa）
	Comparator output	Hi, Go, Lo output
	Output	[NPN open corrector] 　Sink Current:100mA less/ Resistive load(Vsat:1.35V) 　Maximum applying voltage:24VDC [PNP transistor output] 　Output voltage follows power source 　Source current:80mA less (Voltage drops:2V) 　Maximum applying voltage:24VDC [Relay output]* 　Contact: Normally open N.O (1-Form-A) 　On-resistance: 0.25Ω (max) 　Dielectric strength voltage: 3750 Vrms (min) 　On-current: 0.9 A (max) resistiv load. 　Maximum applied voltage: 24 VDC
Display	Output display	7 segment LCD (with Backlight)
	Display rate	Selectable from 0.1/0.5/1/2/5/10/20/30/60/180/300/600/1800/3600 sec.
	Over flow display	Display Blink at pressure in ≧110%F.S.
Analog output	Analog output	4-20mA or 1-5V
	Accuracy (*1)	±1.0%F.S〜
	Load resistance	standerd=250Ω, Max：350Ω
	Resolution	4μA

*SSR(Solid State Relay) UL508

Item		Specification
environment	Operating temperature range	0-50 ℃（Not be freeze）
	Humidity Limits	35-85%
	Storage temperature range	−20℃～+70℃
	Operating environment	Indoor
	Altitude	up to 2000 m
	POLLUTION DEGREE	POLLUTION DEGREE 2
	Protection standard	IP40 (Front panel only)
	Warming up time	Not lower than 5 minute
Sampling rate		0.1 sec
Insulation resistance		Not lower than 100MΩ（Across the panel and terminals、DC500Ｖ）
withstand voltage		500VAC（Across the panel and terminals、50/60Hz 1 minute)
Pressure port		max φ3.0mm (heat resistant polyamide)×2
Electric connection		(8pins connector) JST：B8B-XH-A
Material		ABS(Case)
Dimensions		24(H) x 48(W) x 70(D)mm
Mounting		Panel mount
Mountng error		None
Weight		Approx.48 g
Tests / Admissions		UL : E361798
		CE : EN61326-1-2021
		RoHS

Option Pressure Range and accuracy

Pressure Range	Display accuracy	Analog output accuracy
0-100 Pa	±3 %FS ±1digit	±3 %FS
0-200 Pa	±2 %FS ±1digit	±2 %FS
0-300 Pa	±1.5 %FS ±1digit	±1.5 %FS
0-500 Pa	±1 %FS ±1digit	±1 %FS
0-1000 Pa	±1 %FS ±1digit	±1 %FS
0-2000 Pa	±1 %FS ±1digit	±1 %FS
0-2500 Pa	±1 %FS ±1digit	±1 %FS
0-5000 Pa	±1 %FS ±1digit	±1 %FS
±100 Pa	±2 %FS ±1digit	±2 %FS
±200 Pa	±1.5 %FS ±1digit	±1.5 %FS
±300 Pa	±1 %FS ±1digit	±1 %FS
±500 Pa	±1 %FS ±1digit	±1 %FS
±1000 Pa	±1 %FS ±1digit	±1 %FS
±2000 Pa	±1 %FS ±1digit	±1 %FS
±2500 Pa	±1 %FS ±1digit	±1 %FS
±5000 Pa	±1 %FS ±1digit	±1 %FS

FS : Full Scal

5.Terminal description

B8B-XH-A (8pins connector)
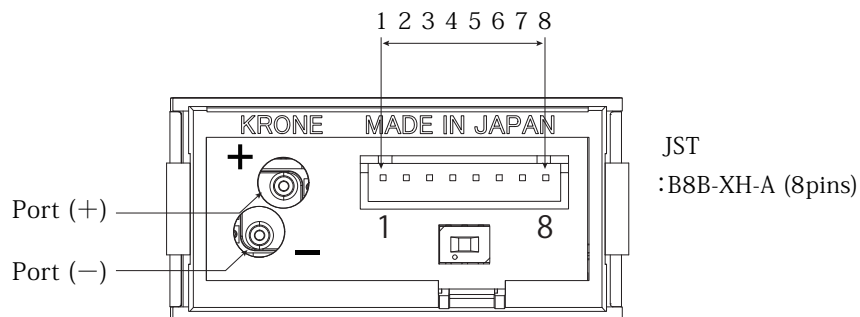
| Pin number	Terminal name	Function contents
Pin 1	Hi	Hi Alarm output NPN open corrector output, PNP transistor output Relay output
Pin 2	Go (Good)	Go signal output NPN open corrector output, PNP transistor output Relay output
Pin 3	Lo	Lo Alarm output NPN open corrector output, PNP transistor output Relay output
Pin 4	GND (COM)	Power (common = GND)
Pin 5	A COM (-)	Analog output (common)
Pin 6	A OUT (+)	Analog output (out)
Pin 7	GND (COM)	Power (common = GND)
Pin 8	V (+)	Power supply (DC24V)

6. Application Schematic

B8B-XH-A (8pins connector)

● NPN open corrector output
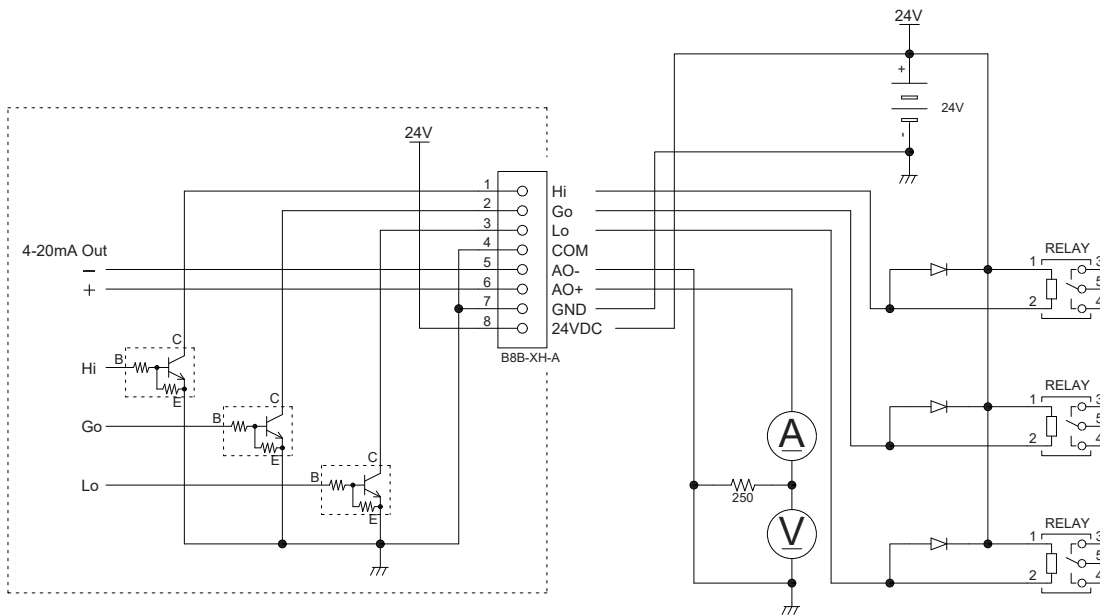
● PNP transistor output (option)
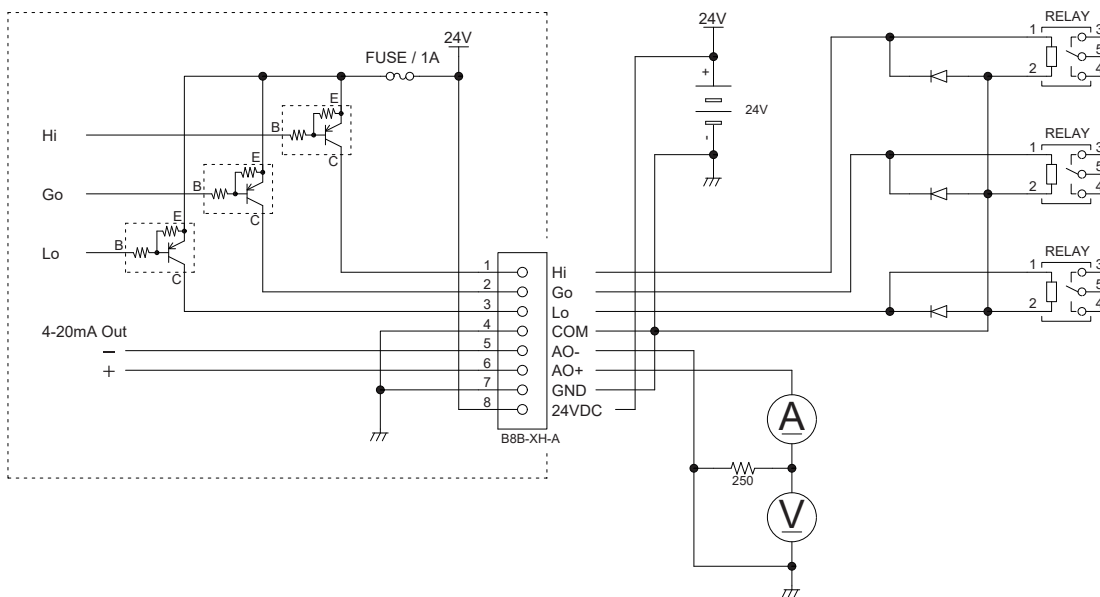
*Analog output Recommendation Termination resistance
4-20mA : 250Ω (max. : 350Ω)
1-5V   :10kΩ (min. : 1kΩ)
*P1 : connector cable= Option

6. Application Schematic

B8B-XH-A (8pins connector)

● Relay output (+ common)

*Analog output Recommendation Termination resistance
4-20mA : 250Ω (max. : 350Ω)
1-5V :10kΩ (min. : 1kΩ)
*P1 : connector cable= Option

● Relay output (– common)

*Analog output Recommendation Termination resistance
4-20mA : 250Ω (max. : 350Ω)
1-5V :10kΩ (min. : 1kΩ)
*P1 : connector cable= Option
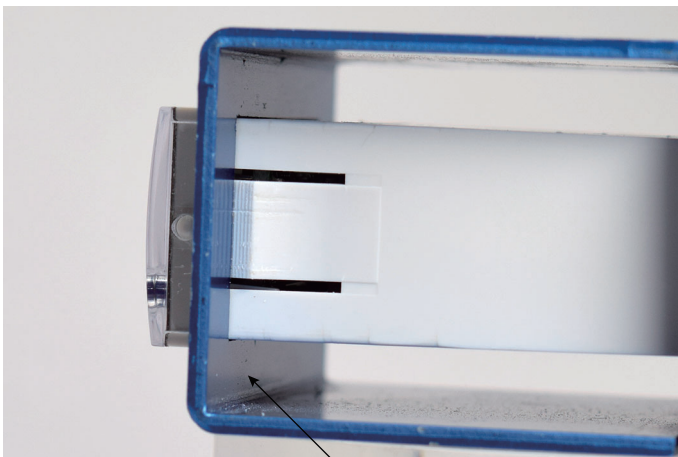
7. Panel Mount

Installation

<Front view>

<Side view>

Place the main body into the panel cut hole.
Mounting panel thickness is ....
Min. 0.5mm to Max. 4.0mm.

Mounting panel

<Top view>

KS2900 to stick to panel through force of pressure.

8. Order code selection table

```
KS3200  –  [1]  –  [2]  –  [3]  –  [4]  –  [5]  –  [6]
(ex. KS3200  – 500 Pa–  I  –  N  –  N  –  C  –  N )
```

[1] : Pressure Range
        100 Pa, 200 Pa, 300 Pa, 500 Pa, 1000 Pa, 2000 Pa, 2500 Pa, 5000 Pa
        ±100 Pa, ±200 Pa, ±300 Pa, ±500 Pa, ±1000 Pa, ±2000 Pa, ±2500 Pa, ±5000 Pa
        , other

[2] : Analog output
        I = 4-20mA output
        V = 1-5V output

[3] : Output connector
        N = B8B-XH-A(JST)

[4] : Alarm output (Hi, Lo , Go output)
        N = NPN transistor output
        P = PNP transistor output
        R = Relay output

[5] : Connector Cable
        N = non
        C = With Connector Cable(XH-8pins and cable, L=1m)

[6] : Option
        Standard : N = non
        Option   : G = With Port Guard
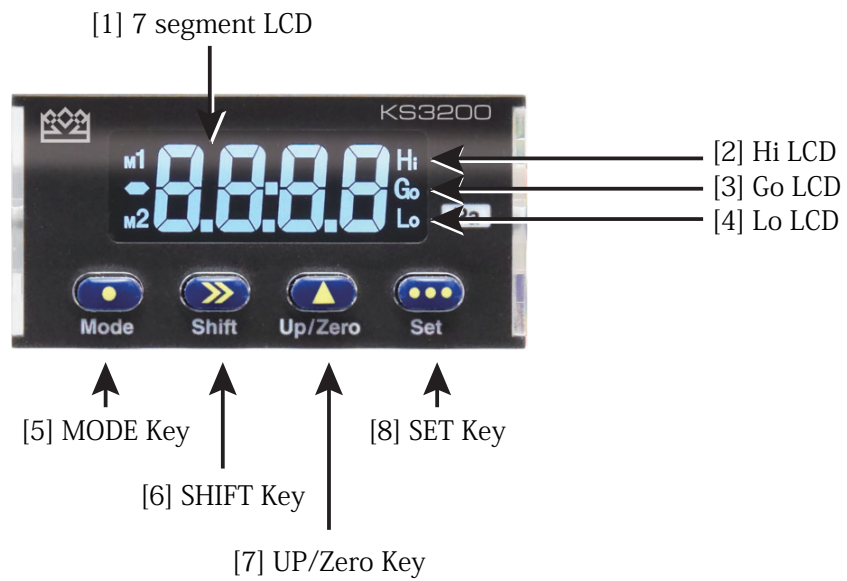
9. Accessories

B8B-XH-A (8pins connector)

JST XH connector (8pins) UL Recongnized : E60389
Wire : L = 1m, UL2651 AWG#28, (8pins)

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*Please do not use it other than an attention designation article.

10. Operaing components

10-1 Display

[1] 7 segment LCD

[2] Hi LCD
[3] Go LCD
[4] Lo LCD

[5] MODE Key

[8] SET Key

[6] SHIFT Key

[7] UP/Zero Key

10-2 Key functions (basic)

Mode	Back to measurement mode
Shift	Shift
Up/Zero	Change the value
Set	Return key
Up/Zero (Over 5 sec.) → Set	Zero adjustment

Eg.

Measure Display	→	Hi set Display Hi Blink	→	Lo set Display Lo Blink

1min. 1min.

Mode + SET Key

SET Key

SET Key
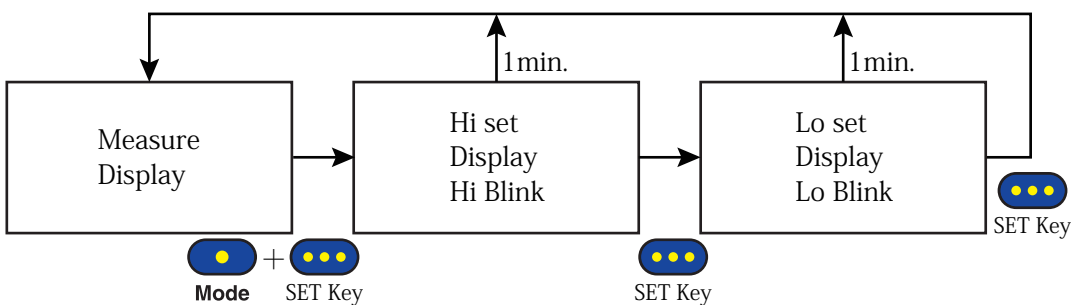
During operation, display returns to measuring mode after 1 min. if no Key operation done.
During Hi or Lo setting mode, measuring function is going on.

11. Setting menu

Menu Display	Description
ЃоɼР	Indicates " Alarm setting mode"
Ѓ l_Н Ѓ l_Ł	To set alarm point for Hi 1 __Hindicates Hi setting, 1 __ L indicates Low setting. Alarm condition of 1 __Hor 1 __ L is to be selected in the Condition setting mode. Figure shifted by 》 and set by ▲ key. Value can be set within range of －9 9 9 9～＋9 9 9 9 digits. During setting operation, Hi LCD display lighting.
Ѓ2_Н Ѓ2_Ł	To set alarm point for Lo 2 __Hindicates Hi setting, 2 __ L indicates Low setting. Alarm condition of 2 __Hor 2 __ L is to be selected in the Condition setting mode. Figure shifted by 》 and set by ▲ key. Value can be set within range of －9 9 9 9～＋9 9 9 9 digits. During setting operation, Lo LCD display lighting.
ЃРЃо	Indicates " Alarm condition setting mode"
l_НŁ	To set alarm condition for Hi. Set by ▲ key. 1 __H：to set Hi alarm point. 1 __ L：to set Low alarm point. During setting operation, Hi LCD display lighting.
l.НЧ5	To set hysteresis for Hi output to return from On to Off. Figure shifted by 》 key and set by ▲ key. During setting operation Hi LCD display lighting.
lŁоЃ	Mode change for Positive Logic or Negative Logic. In the case of relay output, the output is normally open when it is 1_1, and the output is normally closed when it is 1_0.
2_НŁ	To set alarm condition for Lo. Set by ▲ key. 2 __H：to set Hi alarm point. 2 __ L：to set Low alarm point.
2.НЧ5	To set hysteresis for Lo output to return from On to Off. Figure shifted by 》 key and set by ▲ key. During setting operation Lo LCD display lighting.
2ŁоЃ	Mode change for Positive Logic or Negative Logic. In the case of relay output, the output is normally open when it is 1_1, and the output is normally closed when it is 1_0.
Ѓ.ŁоЃ	Mode change for Positive Logic or Negative Logic. In the case of relay output, the output is normally open when it is 1_1, and the output is normally closed when it is 1_0.
Ѓ.dŁЧ	To set delay time for Hi and Lo output to move from Off to On or On to Off. o n . d ：To set delay time to move from Off to On. o F F . d：To set delay time to move from On to Off. Set by ▲ key. Delay time can be set within range of 0～9 9 9 9 sec. Figure shifted by 》 key and set by ▲ key.
RŁ.оŁ	Alarm active or non active mode
bŁ.оŁ	Backlight blink or not when alarm value on the display

12. Command

oP.Co	Indicates〝Operation Condition setting mode〞
FoC.O	Manual ZERO setting　ON / OFF mode（ ▲ key）
L.CUt	ZERO display under 5% FS (Adjustable)
SPL.r	Sampling rate 0.1sec.
dSP.r	Display rate selectable from 0.1/0.2/0.5/1/2/5/10/20/30/60/180/300/600/1800/3600 sec.（ ▲ key）
O.SUP	ZERO suppress ON / OFF
LSd.F	Smallest digit ZERO ON / OFF（ ▲ key）
Prot	Mode protection ON / OFF
A.oUt	Active or non active for Analog output.
ot.t.G	Analog output mode 　S A P L：Outputs a raw value every 0.1 seconds. 　d i S P：Outputs the average value moved in synchronization with the refresh setting. 　A S P L：Outputs the moving average value every 0.1 seconds.
CA.oF	Disconnection detection function
CA.on	By turning on the function, you can detect whether a device is connected to the Aout or Acom terminal. If it is not connected, "i.Err" will be displayed on the screen.
м1	Mode + Set (and over 3sec.)
AU.r.G	Sampling average mode Display showing result of setting average.

13. Parameter table

Default
Selectable

Mesurment

Mode + Set（>2 sec）

Display M1

Set

*) Set value must Hi point ＞ Lo point

Comparison Value Set **CoñP** — Set

Hi point set *) **C1_H** — Set
0300 / X X X X — Set for Shift/Up key

Lo point set *) **C2_L** — Set
0100 / X X X X — Set for Shift/Up key

rUn *) / **ESP** — Set

*) run saves the settings and applies them to the CoMP menu
ESP saves the setting value and transitions to measurement mode.

Mode

Comparison Condition set **CP.Co** — Set

Hi Direction **1_H.L** — Set
1_H / **1_L** — Select for Up key

Hi Hysteresis **1.HYS** — Set
0005 / X X X X — Set for Shift/Up key

Hi Output Logic **1.LoG** — Set
1_1 / **1_0** — Set *) 1__1= normal open
1__0 = normal close
Select for Up key

Lo Direction **2_H.L** — Set
2_L / **2_H** — Select for Up key

Lo Hysteresis **2.HYS** — Set
0005 / X X X X — Set for Shift/Up key

Lo Output Logic **2.LoG** — Set
2_1 / **2_0** — Set *) 2__1= normal open
2__0 = normal close
Select for Up key

Go Output Logic **G.LoG** — Set
G_0 / **G_1** — Select for Up key
*) G__1= normal open
G__0 = normal close

Delay Time **C.dLY** — Set
on.d *) / **oFF.d** — Select for Up key — Set
0000 / X X X X *) — Set
*) oFF.d : Reactive time after less than set value.
on.d : Reactive time after more than set value.

Output Select **AL.ot** — Set
AL.on / **AL.oF** — Select for Up key

Blink **bL.ot** — Set
bL.oF / **bL.on** — Select for Up key — Set

Mode

Operation Condition Set **oP.Co** — Set

Zero adjust **FoC.O** — Set
0.on / **0.oFF** — Select for Up key

Low Cutting Rate **L.CUt** — Set
0.0(%) / X . X — Set for Shift/Up key
*) 0.0 to 5.0% max.

Sampling Rate **SPL.r** — Set
0.1(sec) — Select for Up key

Display Rate **dSP.r** — Set
0.5(sec) / 0. 1 ~ 3600 — Select for Up key — Set

Zero Suppress **0.SUP** — Set
S.on / **S.oFF** — Select for Up key

Last Digit Fix **LSd.F** — Set
F.oFF / **F.on** — Select for Up key

Protection **Prot** — Set
P.oFF / **P.on** — Select for Up key — Set

Mode

Analog Output Select **A.oUt** — Set
A.oFF / **A.on** — Select for Up key — Set
CA.oF *) / **CA.on** — Select for Up key — Set
*) The disconnection detection setting menu is displayed only for current output type.
Ca.oF: Operates without displaying "I.err" when load disconnection occurs.
Ca.on: Display "I.err" when load disconnection occurs.

Mode

Moving Average Cycle **AUrG** — Set
005 / 0 ~ 2 5 5 *) — Set for Shift/Up key — Set
*) Set for 001~255 cycle.(001 means without moving average.)

Mode

Output timing **ot.tG** — Set
SAPL *) / **diSP** / **ASPL** — Select for Up key — Set
*) SAPL：Output raw values at SPL.r timing
diSP：Averaging is also reflected and output at the display timing.
ASPL：Averaging is also reflected and output at SPL timing.

Mode

Mesurment

14. Warranty

KRONE warrants the Products to be free of defects in materials and workmanship for a period of one year from the date of shipment.

If any models or samples were shown to Buyer, such models or samples were used merely to illustrate the general type and quality of the Products and not to represent that the Products would necessarily conform to said models or samples.

Any Products found to be defective must be shipped to KRONE with all shipping costs paid by Buyer or offered to KRONE for inspection and examination.

Upon examination by KRONE, at its sole option, will refund the purchase price of, or repair or replace at no charge any Products found to be defective.

This warranty does not apply to any defects resulting from any action of Buyer, including but not limited to improper installation, improper interfacing, improper repair, unauthorized modification, misapplication and mishandling, such as exposure to excessive current, heat, coldness, moisture, vibration or outdoors air.

Components which wear are not warranted. Pressure port portion is thinner. Please be aware of the damage caused by overload.

KRONE is pleased to offer suggestions on the use of its various Products.

They are only suggestions, and it is Buyer's responsibility to ascertain the fitness of the Products for Buyer's intended use.

KRONE will not be responsible for any damages that may result from the use of the Products.