

■ Functions

■ Alarm [RL-1, RL-2, RL-3, RL-4]

This product has 2 or 4 alarms to operate individually when the value is too high or low. Alarm function is set by the combination of alarm operation and alarm option.

To clear alarm, use digital input function (setting $dI - t$, $dI - b$ as $bLrE$) or turn the power OFF and ON.

※ For the model (KN-10□□B) without alarm output, these parameters are not displayed.

AL

Alarm option
Alarm operation

○ Alarm operation

Mode	Name	Operation	Descriptions
AL_0	—	—	No alarm operation
AL_1	High limit alarm	OFF $\downarrow H \uparrow ON$ High limit alarm value: 800°C PV	PV ≥ alarm temperature, alarm is ON
AL_2	Low limit alarm	ON $\downarrow H \uparrow$ OFF Low limit alarm value: 200°C PV	PV ≤ alarm temperature, alarm is ON
SLR	Sensor break alarm	—	It will be ON when it detects sensor disconnection. Sensor break alarm does not have alarm option.

※ H: Alarm output hysteresis

○ Alarm option

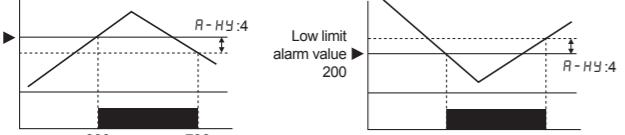
Option	Name	Descriptions
RL_{aA}	Standard alarm	If it is an alarm condition, alarm output is ON. Unless an alarm condition, alarm output is OFF.
RL_{aL}	Alarm latch	If it is an alarm condition, alarm output is ON. Before clearing the alarm, an ON condition is latched. (Holding the alarm output)
RL_{aS}	Standby sequence	First alarm condition is ignored. From the second alarm condition, standard alarm operates. When power is ON and it is an alarm condition, it is ignored. From the second alarm condition, standard alarm operates.
RL_{aLd}	Alarm latch and standby sequence	If it is an alarm condition, it operates both alarm latch and standby sequence. When power is ON and it is an alarm condition, it is ignored. From the second alarm condition, alarm latch operates.

■ Alarm output hysteresis [Program mode: R-HY]

Set the interval of ON/OFF alarm output.

The set hysteresis is applied to AL1 to AL4 and it is as below.

※ Ex) R-HY: 4, high limit alarm value: 800, low limit alarm value: 200



■ High/Low peak monitoring [Monitoring mode: HPEU, LPEU]

This function is to save high/low peak to check the invisible abnormal condition of system at [HPEU] or [LPEU] in monitoring mode.

When the high/low peak is out of the temperature range, it displays HHHH or LLLL.

To initialize high/low peak, press the H , L keys at the same time for 3 sec at [HPEU] or [LPEU]. In this case, peak value is the present input value.

■ Error

Display	Descriptions	Troubleshooting
LLL	Flashes when measured sensor input is lower than the temperature range.	When input is moved within the temperature range, it is cleared.
HHH	Flashes when measured sensor input is higher than the temperature range.	Check temperature sensor connection.
bUr	Flashes when the sensor is break or not connected.	Check set conditions and re-set it.
Err	Flashes when there is error to SV	Press the $M + \text{H}$ keys at the same time. Supply the power. CLR M H Completes initialization.

■ Parameter initialization

To initialize all parameter as factory default, supply the power to the product with pressing the M and H keys at the same time and it enters initialization parameter.

AL

Alarm option
Alarm operation

■ Decimal point [Program mode: dP]

It is able to change decimal point position for high/low limit scale value.

It changes decimal point position of display value.

■ Transmission output scale [Program mode: LoUt, HoUt]

For 4-20mA current output, this function is to set the display value for 4mA [$LoUt$] and the display value for 20mA [$HoUt$].

The interval between $LoUt$ and $HoUt$ is 10% F.S. If it is below 10%, it is fixed as 10% of SV.



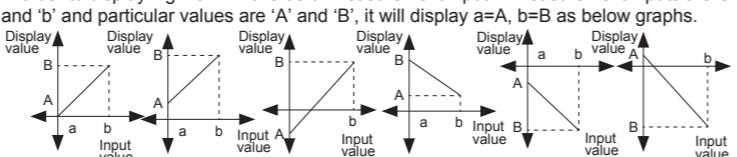
■ User input range [Program mode: L-rG, H-rG]

When selecting analog input, you can set the input range for your purpose. Set low limit input value [$L-rG$] and high limit input value [$H-rG$] to limit the input range.

• Set conditions: Low limit input value [$L-rG$] +20%F.S. < High limit input value [$H-rG$]

■ Display scale [Program mode: L-SC, H-SC]

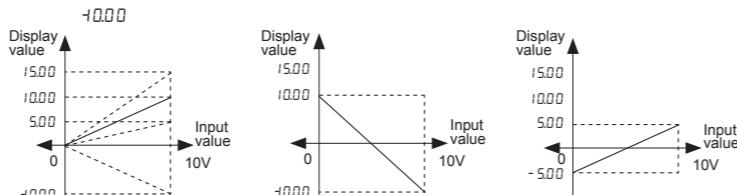
For analog input, this function is to set (-1999 to 9999) for particular high/low limit value in order to display high/low limit value of measurement input. If measurement inputs are 'a' and 'b' and particular values are 'A' and 'B', it will display a=A, b=B as below graphs.



Display scale function is able to change display value for max/min. measured input by setting high limit scale [$H-SC$] and low limit scale [$L-SC$] in program mode.

※ Ex) Set high/low scale value (input range is 0 to 10V)

• $L-SC = 0.00$, $H-SC = 10.00$, $L-SC = -10.00$, $H-SC = 5.00$



※ When changing input type, high/low scale is changed as factory default.

■ Input correction [Program mode: I-n-b]

This function is to correct the error occurring from a thermocouple, a RTD or analog input out of allowable error range of this unit.

This is also available to correct error when a sensor cannot contact the subject position by calculating the error temperature.

Variable temperature sensors have accuracy level. Because high accuracy type is expansive, standard thermocouples are generally used.

In this case, temperature sensor may occur error. By executing this function, you can get more accurate temperature.

When executing input correction function, you should measure the error from a sensor accurately. If the measured error is not correct, error may be greater.

(If $I-nSF = tUF$, $I-n-b$ as atmospheric pressure input value not as input correction function. Refer to ■ Two unit function.)

Ex) When measured temperature is 4°C and actual temperature is 0°C. Set $I-n-b$ as -4, and display value is 0°C.

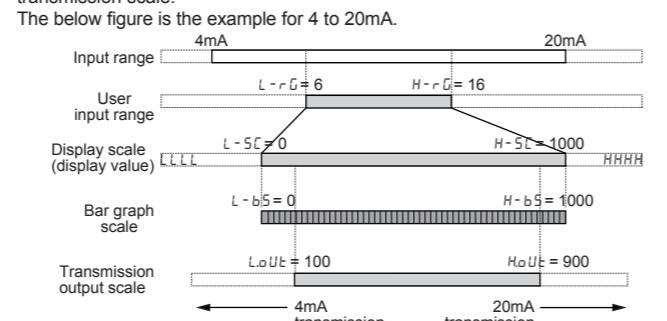
■ Bar graph scale [Program mode: L-b5, H-b5]

This is to set display range for bar graph. Display range is as below.

Parameter	Input	Display range
$L-b5$	Temp. sensor input	Input range (low limit) $\leq L-b5 \leq (H-b5-1)$
	Analog input	$L-SC \leq L-b5 \leq (H-SC-1)$
$H-b5$	Temp. sensor input	$(L-b5+1) \leq H-b5 \leq$ Input range (high limit)
	Analog input	$(L-SC+1) \leq H-b5 \leq H-SC$

※ Relation among input range, user input range, display scale, bar graph scale, and transmission scale.

The below figure is the example for 4 to 20mA.



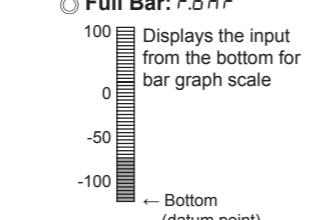
■ Bar graph display method [Program mode: bFr]

There are two methods for bar graph display; full bar and center bar.

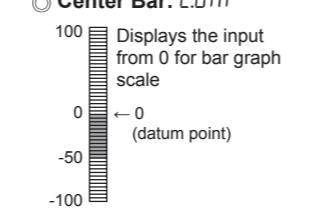
Full bar [$F.bFr$] displays input from the bottom, and center bar method [$C.bFr$] displays input from '0' as below figures.

※ Ex) When $L-b5 = -100$, $H-b5 = 100$, $PV = -50$,

○ Full Bar: F.bFr



○ Center Bar: C.bFr



■ Input and transmission output extension [Program mode: E4o]

This function is to extend analog input and 4 to 20mA transmission output to 5% or 10% range.

Mode	Operation
OP	Outputs 4 to 20mA within analog input range.
SP	Outputs 3.2 to 20.8mA for 5% out of the analog input range.
IP	Outputs 2.4 to 21.6mA for 10% out of the analog input range.

※ This parameter is displayed only for transmission output (4-20mA) model. But it is not displayed when selecting temperature sensor input.

※ The below of 0mA, 0V cannot be extended.

※ ±1V, 10V inputs are only available for 5% extension.

■ Alarm display in bar graph

When setting or occurring the alarm, it displays the status by the bar graph. You can check the alarm status. When setting alarm value, the bar LED for this alarm value turns ON. When alarm occurs, the bar LED for this alarm value flashes.

① When setting alarm value,

The bar LED for alarm SV flashes. When alarm set is complete, the bar LED for this alarm value turns ON.

② RUN mode

• All set alarm values are displayed in RUN mode.
• When it is alarm value, the bar LED for this alarm value flashes.

If alarm set value is out of bar graph scale when setting the value or in RUN mode, this value does not display in bar graph.

○

○ When setting alarm value in monitoring mode,

When all alarms are OFF,

$H-b5=1350$ $AL_1 \rightarrow$ $AL_2 \rightarrow$ $AL_3 \rightarrow$ $AL_4 \rightarrow$

$H-b5=1350$ $AL_4 \rightarrow$ $AL_3 \rightarrow$ $AL_2 \rightarrow$ $AL_1 \rightarrow$

$L-b5=-200$ $PV \leftarrow$

$L-b5=0$ $PV \leftarrow$