

KONICS Bar Graph Digital Indicator KN-1000B SERIES

MANUAL



Thank you for choosing our Konics product. Please read the following safety considerations before use.

Safety Considerations

- ※Please observe all safety considerations for safe and proper product operation to avoid hazards.
- ※Safety considerations are categorized as follows.
- Warning** Failure to follow these instructions may result in serious injury or death.
- Caution** Failure to follow these instructions may result in personal injury or product damage.
- ※The symbols used on the product and instruction manual represent the following
- ▲ symbol represents caution due to special circumstances in which hazards may occur.

Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) Failure to follow this instruction may result in personal injury, fire, or economic loss.
- The unit must be installed on a device panel before use.** Failure to follow this instruction may result in electric shock.
- Do not connect, repair, or inspect the unit while connected to a power source.** Failure to follow this instruction may result in electric shock.
- Do not disassemble or modify the unit. Please contact us if necessary.** Failure to follow this instruction may result in electric shock or fire.
- Check the terminal numbers before connecting the power source and measuring input.** Failure to follow this instruction may result in fire.

Caution

- Do not use the unit outdoors.** Failure to follow this instruction may result in shorten the life cycle of the unit, or electric shock.
- Use the unit within the rated specifications.** Failure to follow this instruction may result in shorten the life cycle of the unit, or fire.
- Do not use water or oil-based detergent when cleaning the unit. Use dry cloth to clean the unit.** Failure to follow this instruction may result in electric shock or fire.
- Do not use the unit where flammable or explosive gas, humidity, direct sunlight, radiant heat, vibration, or impact may be present.** Failure to follow this instruction may result in fire or explosion.
- Keep dust and wire residue from flowing into the unit.** Failure to follow this instruction may result in fire or product damage.
- Check the polarity of the measurement input contact before wiring.** Failure to follow this instruction may result in fire or explosion.

Ordering Information

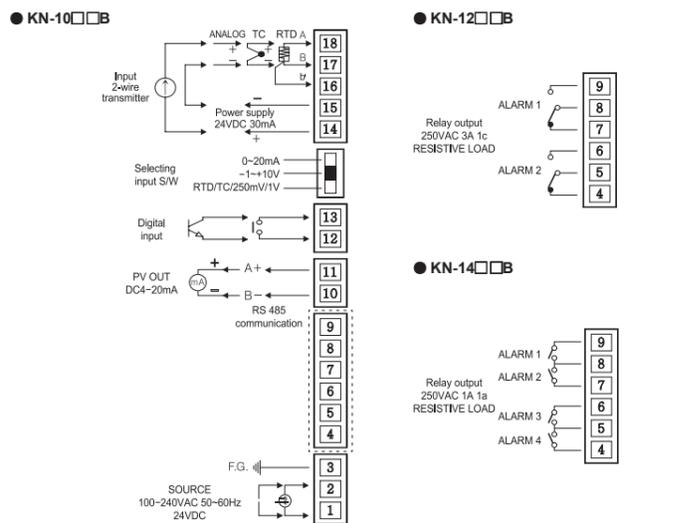
KN-1000B	Size	B	DIN W36×H144mm
	Power supply	0	100-240VAC 50/60Hz
		1	24VDC
	Option output	0	No option
		1	Transmission output (4-20mA)
		4	RS485 communication output
	Alarm output	0	No alarm output
		2	Alarm output: 2
		4	Alarm output: 4
	Item		KN-1 Bar Graph Indicator

Unit Description

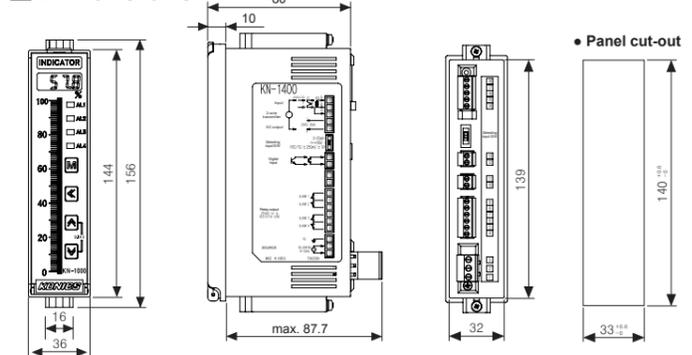
- Display part (red)
 - Run mode: Displays current measurement value.
 - Parameter set mode: Displays parameter and SV.
- Unit sticker part (unit sticker is an accessory)
- Alarm output indicator: Turns ON when the alarm is ON.
- M** key: Used to enter parameter set mode, move to parameters, save SV and return to RUN mode.
- ◀**, **▶**, **↔** key: Used to enter and change parameter SV.
- D.IN3**: Press the **▶** and **↔** keys for 3 sec at the same time, it operates the set function (alarm clear, display hold, zero-point adjustment) at **di-t** at program mode.
- Bar Graph (with 101 bar LEDs, green)
 - Displays measured value as bar graph.
- Space for recognizing device by user

※ The above specifications are subject to change without notice.

Connections



Dimensions



Input Type and Range

Input type selection switch

- 0-20mA: Select it for 0(4)-20mA input
- 1-10V: Select it for -1-10V input
- RTD/TC/mV/±1V: Select it for RTD, TC temperature sensor or ±1V, mV input

This unit is multi input product. Select the proper input with the input type selection switch and select this input type in **in-P** in program mode. The setting of input type selection switch and the input type **in-P** parameter should be same and it can display the proper measurement value. Factory default is 0-20mA.

Input type	Parameter	Input range(°C)	Input range(°F)	
Thermo couple	K(CA)	tcP1	-200 to 1350	-328 to 2462
	K(CA)	tcP2	-199.9 to 999.9	-328 to 1832
	J(IC)	tc-U	-199.9 to 800.0	-328 to 1472
	E(CR)	tc-E	-199.9 to 800.0	-328 to 1472
	T(CC)	tc-E	-199.9 to 400.0	-199.9 to 752.0
	B(PR)*	tc-b	100 to 1800	212 to 3272
	R(PR)	tc-r	0 to 1750	32 to 3182
	S(PR)*	tc-5	0 to 1750	32 to 3182
	N(NN)*	tc-n	-200 to 1300	-328 to 2372
	C(W5)*	tc-C	0 to 2300	32 to 4172
	L(IC)*	tc-L	-199.9 to 900.0	-328 to 1652
	U(CC)*	tc-U	-199.9 to 400.0	-199.9 to 752.0
RTD	Platine II*	tc-P	0 to 1390	32 to 2534
	Cu50Ω*	tcU50	-199.9 to 200.0	-199.9 to 392.0
	Cu100Ω*	tcU100	-199.9 to 200.0	-199.9 to 392.0
	JPT100Ω	tcP1	-199.9 to 600.0	-328 to 1112
	DPT50Ω	tcP1.5	-199.9 to 600.0	-328 to 1112
DPT100Ω	tcP1.5	-199.9 to 850.0	-328 to 1530	
Analog	Current	0.00 - 20.00mA	RAA1	-1999 to 9999 (Display range is variable according to decimal point position.)
		4.00 - 20.00mA	RAA2	
		-50.0 - 50.0mV	RAU1	
	Voltage	-199.9 - 200.0mV	RAU2	
	-1.000 - 1.000V	RA-U1		
	-1.00 - 10.00V	RA-U2		

※Above input types which have the * mark are not displayed. To display the above input types, supply the power with pressing the **M** key.

Specifications

Series	KN-1000B	
Power supply	AC voltage	100-240VAC~ 50/60Hz
	DC voltage	24VDC=
Allowable voltage range	90 to 110% of rated voltage	
Power consumption	AC voltage	Max. 6VA
	DC voltage	Max. 4W
Display method	7-segment (red), graphic bar (green) LED method	
Input type	RTD	JPT100Ω, DPT100Ω, DPT50Ω, Cu50Ω, Cu100Ω (5 types)
	Thermocouple	K, J, E, T, R, B, S, N, C (W5), L, U, PLII (12 types)
Analog	●Voltage:	±1.000V, ±50.00mV, -199.9-200.0mV, -1.00-10.00V (4 types)
	●Current:	4.00-20.00mA, 0.00-20.00mA (2 types)
	●Contact input:	max. 2kΩ in ON, max. 90kΩ in OFF
Digital input	●Non-contact input:	residual voltage max. 1.0V in ON, leakage current max. 0.03mA in OFF
	●Outflow current:	approx. 0.2mA
	●Alarm output	●2-point: relay contact capacity 250VAC~ 3A 1c ●4-point: relay contact capacity 250VAC~ 1A 1a
Sub output	Trans. output	ISOLATED DC4-20mA (PV transmission) load resistance max. 600Ω
	Com. output	RS485 (Modbus RTU)
Display accuracy	±0.2% F.S. ±1-digit (25°C±5°C)	
	±0.3% F.S. ±1-digit (-10°C to 20°C, 30°C to 50°C) in each of X, Y, Z directions for 2 hours	
Setting method	Set by front keys, or RS485 communication	
Alarm output hysteresis	Set ON/OFF interval (1 to 999-digit)	
Sampling cycle	Analog input: 100ms, temperature sensor input: 250ms	
Dielectric voltage	2000VAC 50/60 Hz for 1 min (between input terminal and power terminal)	
Vibration	0.75 mm amplitude at frequency of 5 to 55 Hz (for 1 min) in each of X, Y, Z directions for 2 hours	
	Mechanical: min. 10,000,000, electrical: min. 100,000 (250VAC 3A resistance load)	
Relay life cycle	Mechanical: min. 20,000,000, electrical: min. 500,000 (250VAC 1A resistance load)	
	Over 100MΩ (at 500VDC megger)	
Insulation resistance	Approx. 10 years (non-volatile semiconductor memory type)	
Noise immunity	±2kV the square wave noise (pulse width 1μs) by noise simulator	
Memory retention	Approx. 10 years (non-volatile semiconductor memory type)	
Environ-ment	Ambient temperature	-10 to 50°C, storage: -20 to 60°C
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH
Approval	CE	
Weight*1	Approx. 304g (approx. 182g)	

※1: The weight includes packaging. The weight in parenthesis is for unit only. ※Environment resistance is rated at no freezing or condensation.

Factory Default

Parameter	Default	Parameter	Default	Parameter	Default
AL1	0999	AL3	000.1	HPEP	----
AL2	0999	AL4	000.1	LPEP	----

Parameter	Default	Parameter	Default	Parameter	Default	Parameter	Default
in-P	AA1	in-b	0000	AL-1	AL1A	di-t	HoLd
Unit	°C	L-b5	0000	AL-2	AL1A	di-t	HoLd
L-rG	0000	H-b5	1000	AL-3	AL2A	bUrN	oFF
H-rG	2000	bAr	FbAr	AL-4	AL2A	Addr	01
dP	00	LoUt	0000	A-HY	001	bAUd	960
L-5C	0000	HoUt	1000	in5F	Lin	LoCk	oFF
H-5C	1000	Es10	SP	nARUF	04		

Monitoring Mode

※1. **M**: Press any key among the **◀**, **▶**, **↔**.
 ※2. **◀**: Moves digits / **▶**: Changes SV.
 ※3. Press the **M** key after checking/changing SV in each parameter. The value flashes twice and is saved. It moves to next parameter.
 ※After entering setting group, press the **M** key for 3 sec or there is no additional key operation in 30 sec, it returns to RUN mode.
 ※: This parameter may or may not appear, depending on the other parameter set or model type.

Set each alarm value; [AL-1 to AL-4] in program mode.
 • Setting range: Temp. sensor input → within temperature range
 Analog input → L-5C to H-5C
 ※When alarm operation [AL-1 to AL-4] in program mode is no alarm [AL-0] or sensor break alarm [5bR], these parameters are not displayed.
 ※For model with 2 alarm output (KN-12□□B), AL3, AL4 are not displayed.

Displays high/low peak value.
 ※High/Low peak value is available only to check and initialize it. (Refer to **High/Low peak monitoring** for initialization.)
 ※Initial high/low peak is saved after 2 sec from supplying the power.

Program Mode

※1. **M**: Press any key among the **◀**, **▶**, **↔**.
 ※2. **◀**: Moves digits / **▶**: Changes SV.
 ※3. Press the **M** key after checking/changing SV in each parameter. The value flashes twice and is saved. It moves to next parameter.
 ※After entering setting group, press the **M** key for 3 sec or there is no additional key operation in 30 sec, it returns to RUN mode.
 ※: This parameter may or may not appear, depending on the other parameter set or model type.

Select input type. (Refer to **Input Type and Range**.)

Temperature unit: Unit, °C, °F

Low limit input value: L-rG, 0400. Setting range: within analog input type range.

High limit input value: H-rG, 2000. Setting range: within analog input type range.

Decimal point: dP, 00. Select decimal point position of display scale value.

Low limit scale value: L-5C, 0000. Setting range: -1999 to 9999.

High limit scale value: H-5C, 1000. Setting range: -1999 to 9999.

Input correction: in-b, 0000. Setting range: -999 to 999.

Bar graph low limit scale value: L-b5, 0000. Setting range: Temp. sensor input → within temp. range (low limit) ≤ L-b5 ≤ (H-b5-1) Analog input → L-5C ≤ L-b5 ≤ (H-5C-1)

Bar graph high limit scale value: H-b5, 0000. Setting range: Temp. sensor input → (L-b5+1) ≤ H-b5 ≤ within temp. range (high limit) Analog input → (L-5C+1) ≤ H-b5 ≤ H-5C

Bar graph display method: bAr, FbAr, CbAr. Set display method for bar graph.

4mA output scale value: LoUt, 0000. Setting range: Temp. sensor input → within temp. range. Analog input → L-5C to H-5C

20mA output scale value: HoUt, 1000. Setting range: Temp. sensor input → within temp. range. Analog input → L-5C to H-5C

Input and trans. output extension: Es10, SP, 10P, 0P. Select extension range of 4-20mA input and transmission output.

AL1 mode: AL-1, AL1A. <Alarm operation> <Alarm option>

AL2 mode: AL-2, AL1A. Set AL1 to AL4 alarm operation and option.

AL3 mode: AL-3, AL2A.

AL4 mode: AL-4, AL2A. Next parameter

AL output hysteresis: A-HY, 001. Setting range: 001 to 999. ※When alarm operation [AL-1 to AL-4] in program mode is no alarm [AL-0] or sensor break alarm [5bR], this parameter is not displayed.

Input special function: in5F, Lin, rOoT, 59AR, tUF. Select input special function.

Digital filter: nARUF, 04. Set the number of moving average digital filters. Setting range: 01 to 16.

Digital input terminal: di-t, HoLd, EErO, ALrE. Select digital input function by no. 12 and 13. ※For the model without alarm output (KN-10□□B), ALrE is not displayed.

Digital input key: di-t, HoLd, EErO, ALrE. Select digital input function by front keys. ※Press the **▶**, **↔** keys for 3 sec at the same time and it executes the selected function. ※For the model without alarm output (KN-12□□B), ALrE is not displayed.

Sensor break alarm output: bUrN, oN, oFF. Select output status when sensor disconnection. ※Displayed only for alarm, transmission output models.

Com. address: Addr, 01. Set communication address. Setting range: 01 to 99.

Com. speed: bAUd, 960, 1920, 120, 240, 480. Select communication speed (baud rate).

Lock: LoCk, oFF, LoC1, LoC2. Select lock function.

Functions

Alarm [AL-1, AL-2, AL-3, AL-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 $d1-t$, $d1-t$ as $AL-E$) or turn the power OFF and ON.

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

Alarm operation

Mode	Name	Operation	Descriptions
$AL-0$	—	—	No alarm operation
$AL-1$	High limit alarm	OFF High limit alarm value: 800°C ON PV	$PV \geq$ alarm temperature, alarm is ON
$AL-2$	Low limit alarm	ON OFF Low limit alarm value: 200°C PV	$PV \leq$ alarm temperature, alarm is ON
$5bA$	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

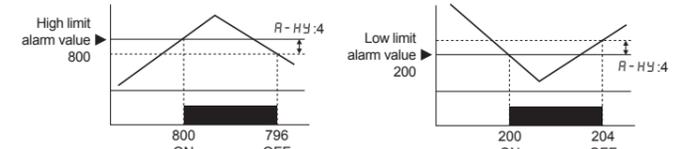
Option	Name	Descriptions
$AL-a$	Standard alarm	If it is an alarm condition, alarm output is ON. Unless an alarm condition, alarm output is OFF.
$AL-b$	Alarm latch	If it is an alarm condition, alarm output is ON. Before clearing the alarm, an ON condition is latched. (Holding the alarm output)
$AL-c$	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.
$AL-d$	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: A-HY]

Set the interval of ON/OFF alarm output.

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

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



High/Low peak monitoring [Monitoring mode: HPEL, LPEL]

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

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

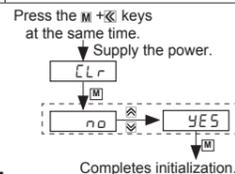
To initialize high/low peak, press the \square , \square keys at the same time for 3 sec at [HPEL] or [LPEL]. In this case, peak value is the present input value.

Error

Display	Descriptions	Troubleshooting
LLLL	Flashes when measured sensor input is lower than the temperature range.	When input is moved within the temperature range, it is cleared.
HHHH	Flashes when measured sensor input is higher than the temperature range	When input is moved within the temperature range, it is cleared.
bUr	Flashes when the sensor is break or not connected.	Check temperature sensor connection.
Err	Flashes when there is error to SV	Check set conditions and re-set it.

Parameter initialization

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



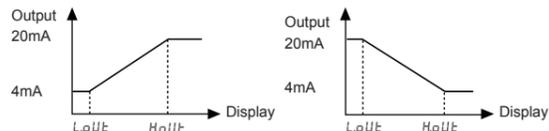
Decimal point [Program mode: d.P]

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: L.oUt, H.oUt]

For 4-20mA current output, this function is to set the display value for 4mA [L.oUt] and the display value for 20mA [H.oUt].

The interval between L.oUt and H.oUt is 10% F.S. If it is below 10%, it is fixed as 10% of SV.



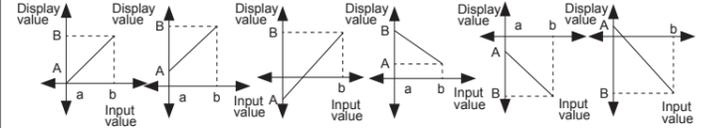
User input range [Program mode: L-rG, H-rG]

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-5C, H-5C]

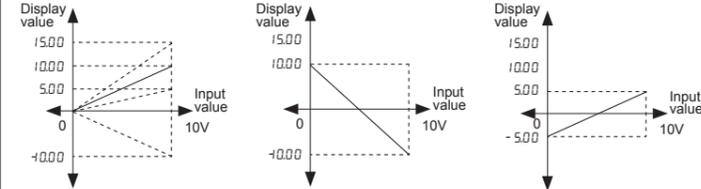
For analog input, this function is to set (-1999 to 9999) for particular high/low limit value in order to display high/low limit value of measurement input. If measurement inputs are 'a' and 'b' and particular values are 'A' and 'B', it will display a=A, b=B as below graphs.



Display scale function is able to change display value for max./min. measured input by setting high limit scale [H-5C] and low limit scale [L-5C] in program mode.

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

- L-5C = 0.00
- H-5C = 5.00, 10.00, 15.00, -10.00
- L-5C = 10.00
- H-5C = -10.00, 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 expensive, 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 $I-n-b = tUF$, $I-n-b$ 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.

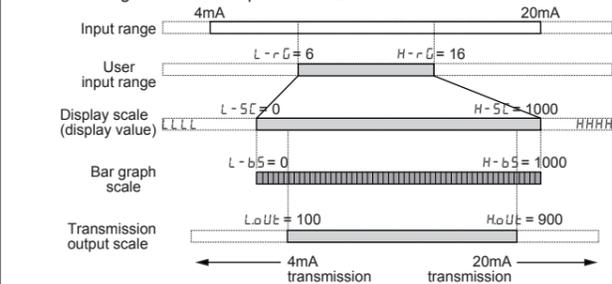
Bar graph scale [Program mode: L-b5, H-b5]

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	$L-5C \leq L-b5 \leq (H-5C-1)$
H-b5	Temp. sensor input	$(L-b5+1) \leq H-b5 \leq$ Input range (high limit)
	Analog input	$(L-5C+1) \leq H-b5 \leq H-5C$

※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.



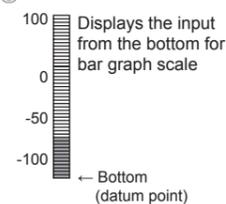
Bar graph display method [Program mode: bAr]

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

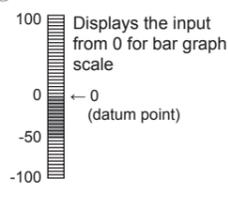
Full bar [F.bAr] displays input from the bottom, and center bar method [C.bAr] displays input from '0' as below figures.

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

Full Bar: F.bAr



Center Bar: C.bAr



Input and transmission output extension [Program mode: E4] o

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.
5P	Outputs 3.2 to 20.8mA for 5% out of the analog input range.
10P	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

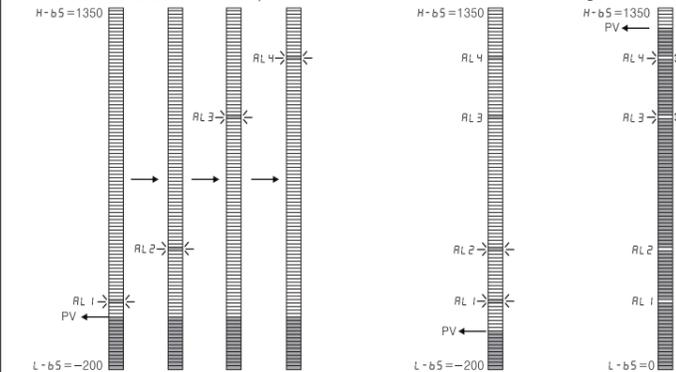
• All set alarm values are displays in RUN mode.

• 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,



※The bar LED for the alarm value flashes.

Input special function [Program mode: I-n5F]

When selecting analog input, this function is to display the calculated actual value by square, root ($\sqrt{\quad}$), or two unit function (TUF) as display value.

Parameter	Functions	Graph	Applications
$I-n$	Outputs as input value	Display: $Y = AX + B$ Input	Standard characteristics. Input for linearity.
$r\ o\ o\ t$	Outputs the rooted ($\sqrt{\quad}$) input value	Display: $Y = A(\sqrt{X}) + B$ ($X \geq 0$) $Y = 0(X < 0)$ Input	Used for measuring flows by pressure signal.
$59Ar$	Outputs the squared input value	Display: $Y = A(X)^2 + B$ ($X > 0$) $Y = -A(X)^2 + B$ ($X < 0$) Input	Used for outputting differential pressure by flow signal.
tUF	Refer to 'Two unit function'		

※Display value and mA output value for $59Ar$:

$$\text{Display value} = \left(\frac{\text{Input value} - L-rG}{H-rG - L-rG} \right) \times (H-5C - L-5C) + L-5C$$

※Display value and mA output value for $r\ o\ o\ t$:

$$\text{Display value} = \left(\frac{\sqrt{\text{Input value} - L-rG}}{H-rG - L-rG} \right) \times (H-5C - L-5C) + L-5C$$

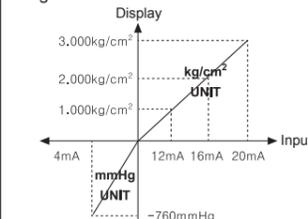
Two unit function [Program mode: tUF]

When connecting a pressure sensor, compound pressure which is below atmospheric pressure (0) is for vacuum as mmHg and which is atmospheric pressure or over it is for positive pressure as kg/cm².

Atmospheric pressure is 0 kg/cm². When this unit does not display 0 kg/cm², you can correct zero-point adjustment function.

When using two unit function, L-5C is fixed as -760.

L-5C parameter is displayed but you cannot set this. You can set H-5C within 0 to 9999 range.



Ex) When pressure range is -760.0 mmHg to 3,000 kg/cm², and pressure transmitter outputs 4-20mA, set the scale as H-5C: 3000, d.P: 0.000. This unit displays for 4mA input as -760.0, and for 20mA input as 3000.

Digital filter [Program mode: nALF]

Moving average digital filter is able to stably display and output the noise from input line and irregular signals as software.

• Filter setting range: 01 to 16

(When setting as 01, digital filter function does not run.)

※ Display cycle is same when executing moving average digital filter.

Burn out [Program mode: bUr n]

When disconnecting input sensor, you can set the status of transmission output.

• When setting $bUr n$ as $o n$, 4-20mA transmission output is fixed as 20mA.

• When setting $bUr n$ as $o f f$, 4-20mA transmission output is fixed as 4mA.

※It is available only for temperature sensor input and 4-20mA transmission output.

Digital input [Program mode: d1-t, d1-t]

By digital input terminal [d1-t] (no. 12, 13 terminals) or digital input key [d1-t] (D.IN3: \square + \square for 3 sec), one of three functions executes as the below table.

Function	Operation
$AL-E$	Alarm clear
$HoLd$	Display HOLD
$\Xi Er o$	Zero-point adjustment

Lock [Program mode: LoCt]

It limits to check parameter set value and to change it.

	oFF	LoCt	LoCt
Program mode	●	○	○
Monitoring mode	●	●	○

●: Enable to check/set, ○: Enable to check, disable to set, ○: Disable to check

※ In $LoCt$, only $LoCt$ parameter displays in program mode.

Communications

Communication manual

Refer to communication manual for RS485 communication.

Visit our web site (www.konics.com) to download communication manual.

Communication specifications

Item	Specifications
Com. method	RS485 2-wire half duplex
Com. speed (BPS)	9600, 4800, 2400, 1200
Converter	Converter built in RS232
Max. connections	32 units
Com. distance	Max. 1200m (within 700m recommended)
Protocol	Modbus 1.1 RTU
Parity	None
Stop Bit	1-bit
Data length	8-bit
—	—

Cautions during Use

- For connecting the power, use a crimp terminal (M3.5, max. 7.2mm).
 - The connection of this unit should be separated from the power line and high voltage line in order to prevent inductive noise.
 - Install a power switch or a circuit breaker to supply or cut off the power.
 - Switch or circuit breaker should be installed nearby users for convenient control.
 - Do not use this unit near the high frequency instruments (high frequency welding machine & sewing machine, large capacity SCR controller).
 - When supplying input, if HHHH or LLLL is displayed, measured input may have problem. Turn off the power and check the line.
 - This product may be used in the following environments.
 - ① Indoors
 - ② Pollution degree 2
 - ③ Altitude max. 2,000m
 - ④ Installation category II
- ※Failure to follow these instructions may result in product damage.

Major Products

- Recorders
- Indicators
- Converters
- Controllers
- Thyristor Units
- Temperature Sensors
- Pressure Transmitters
- Temperature Transmitters
- Thermometers
- Pressure Gauges

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