

Multi indicator KN-2000W series provides better visual indication with bigger & clearer color changeable LED display. Its diverse & advanced functions guarantee more productive and reliable solutions.

Features

- Clearer display by adopting 3-color LED
- Multi input signal (B, R, S, L, N, G, K, E, J, T, RTD, mV, V, mA)
- Internal 2 or 4 point alarm output
- Modbus RTU protocol by RS485 communication
- 4~20mA transmission output(Isolated output)
- Peak-Hold function : Memorize/indicate the highest value
- Burn-Out function & sensor compensation function
- Convenient digital input function(Alarm ON/OFF, Hold PV, Zero adjustment)
- Internal sensor power supply(24VDC)
- Full option model
(2 or 4 point alarm+RS 485 communication output+transmission output)
- CE



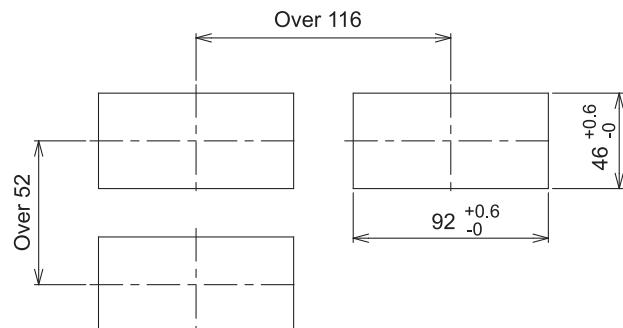
Ordering codes

KN - 2 0 0 0 W

Size(mm)	W	DIN W96×H48
Power(Voltage)	0	100-240VAC, 50~60Hz
	1	24VDC
Option output	0	None
	1	Output(4~20mA)
	4	485 Communication
	5	Output(4~20mA)+485Communication
Alarm output	0	None
	2	Alarm 2EA
	4	Alarm 4EA
Item	KN 2	Multi indicator

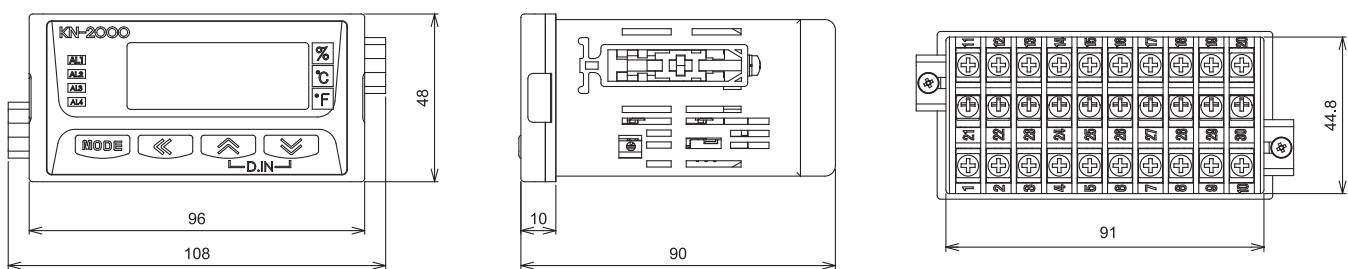
Panel Cutout

(Unit : mm)



Dimensions

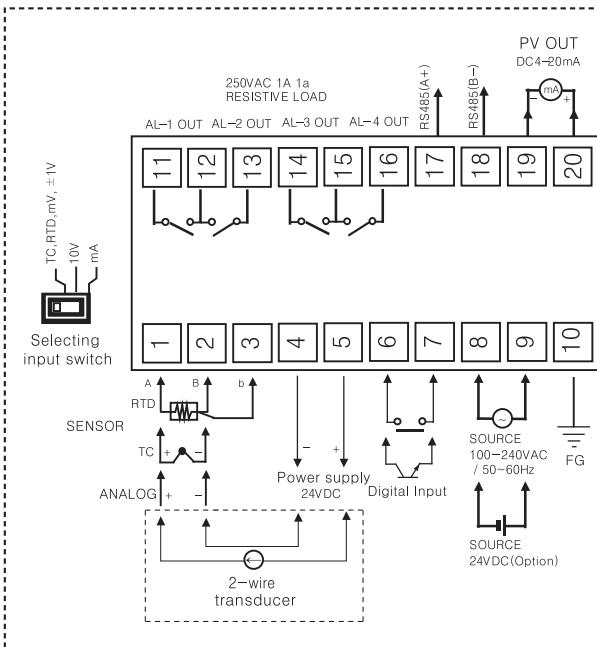
(Unit : mm)



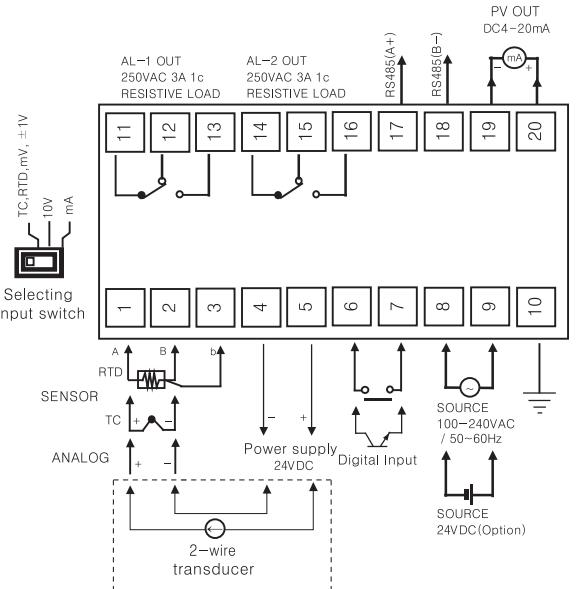
A	Recorders
B	Indicators
C	Converters
D	Controllers
E	Thyristor Units
F	Pressure Transmitters
G	Temperature Transmitters
H	Temp. Sensors
I	Thermo Meters
J	Pressure Gauges
K	Accessories

Connections

• KN-24□□-W



• KN-22□□-W



Specifications

Model		KN-2000W
Power supply		100-240VAC 50~60Hz / 24VDC
Power consumption		Approx. 8VA(264VAC 60Hz) / 3W 24VDC
Digital input		Free input selection by 3 function(Alarm ON/OFF, Hold-indicated value, zero adjustment)
Auxiliary output	Alarm output	2 point : Relay contacting point capacity 250VAC 3A 1c 4 point : Relay contacting point capacity 250VAC 1A 1c
	Transmission output	Isolated 4-20mA(PV transmission), Less 600 resistance load
	Communication output	RS 485(Protocol : Modbus)
Indicating accuracy		±0.2% F.S ±1 Digit(25±5°C), ±0.3% F.S ±1Digit (-10~20°C, 30~50°C) ※But, Under - 100°C in TC, ±0.4% F.S ±1Digit / ※TC-T, TC-U are at Min, ±2.0°C
Setting method		Set by Key
Alarm hysteresis		Set ON/OFF interval : within 999 digit
Input sampling cycle		100ms(Analog input), 250ms(Temperature input)
Function		Alarm, Self-Diagnosis, Peak-Storage, Digital input, Hold, Input special function, Input compensation, Indication scaling, Output scaling
Dielectric strength		2000VAC 50/60Hz during a minute(Between input terminal and power terminal)
Vibration		0.75mm amplitude at frequency of 5~55Hz in each of X, Y, Z directions for 2 hours
Life of relay	2 point	Mechanic-Over 10 million times, Electronics-Over 100,000 times(250VAC 3A Resistance load)
	4 point	Mechanic-Over 20 million times, Electronics-Over 500,000 times(250VAC 1A Resistance load)
Insulation resistance		Over 100MΩ(500VDC Mega STD)
Noise resistance		±2kV the square wave noise(pulse width : 1μs) by the noise simulator
Memory retention		About 10 years(when using non-volatile memory semiconductor)
Used ambient temperature		-10~50°C(at non-freezing status)
Storage temperature		-20~60°C(at non-freezing status)
Used ambient humidity		35~85%RH
Weight		Approx. 200g(except for packing box)

KN-1000B
KN-2000W
KN-2300
KN-270N
KCR-311

Multi Range Input

Sensor type	Type	Message	Selectable temp. range °C	Selectable temp. range °F
TC	K(CA)	ECE1	-200 ~ 1350	-392 ~ 2462
	K(CA)	ECE2	-199.9 ~ 999.9	-392 ~ 1832
	J(IC)	ECEJ	-199.9 ~ 800.0	-392 ~ 1472
	E(CC)	ECE-E	-199.9 ~ 800.0	-392 ~ 1472
	T(CC)	ECE-T	-199.9 ~ 400.0	-392.0 ~ 752.0
	R(RR)	ECE-r	0 ~ 1750	32 ~ 3182
	B(PR) *	ECE-b	0 ~ 1800	32 ~ 3272
	S(PR) *	ECE-S	0 ~ 1750	32 ~ 3182
	N(NN) *	ECE-n	-200 ~ 1300	-392 ~ 2372
	G(W) *	ECE-G	0 ~ 2300	32 ~ 4172
	L(IC) *	ECE-L	-199.9 ~ 900.0	-392 ~ 1652
	U(CC) *	ECE-U	-199.9 ~ 400.0	-392.0 ~ 752.0
	Platinel II *	ECE-P	0 ~ 1390	32 ~ 2534
RTD	CU50Ω *	CU50	-199.9 ~ 200.0	-392.0 ~ 392.0
	CU100Ω *	CU10	-199.9 ~ 200.0	-392.0 ~ 392.0
	JPt 100Ω	JPt.1	-199.9 ~ 600.0	-392 ~ 1112
	DPt 50Ω	DPt5	-199.9 ~ 600.0	-392 ~ 1112
	DPt 100Ω	DPt.1	-199.9 ~ 850.0	-392 ~ 1562
Analog	Current	0.00 ~ 20.00mA	RnR1	Scale display Range: -19999 ~ 19999
		4.00 ~ 20.00mA	RnR2	
	Voltage	-50.0 ~ 50.0mV	RnU1	
		-199.9 ~ 200.0mV	RnU2	
		-1.000 ~ 1.000V	R-u1	
		-1.00 ~ 10.00V	R-u2	

* If applying an electric current with pressing M key simultaneously, the type of input is able to be expanded.

* **CAUTION :** Please adjust the selecting input switch according to the input specification.

Functions**Digital filter function(Program mode : RnR.F)**

Digital filter function can be used in order for stable indication and output by controlling noise and unstable signal coming to input line. The cycle of display is same because of applying moving average filter.

※ Setting range : 01 ~ 16 (When setting 01, digital filter function does not operate)

Digital input function(Program mode : dI-b, dI-t)

It is able to operated through input terminal as below 3 kinds of function.

Mode	Operation
Alam ON/OFF function RnR.E	Although alarm is off, when setting Alarm ON/OFF function, alarm is unable to off. Then, using funtion by compulsive alarm off.
Hold indicated value function HnL.d	Temporarily indicated value is stopped in order to confirm indicated value, in flexible input
Zero adjustment function ZEro	"Same as Input compensation function." When zero adjustment, compensation value is possible to confirm and change in In-C

Input compensation function(Program mode : In-b)

It has not any errors by itself but, if temperature input, analog input etc. occur regular error, this function can add and subtract compensation value for measurement value.

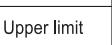
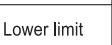
Expansion and control the upper/lower limit deviation of input and transmission output function(Program mode : EhnLo)

This function is to adjust the range of analog input/output. Please use after setting in accord with environment, because it can be changed with input/output to the point you want, if set as below. Following a diagram is the output range of 4-20mA

Mode	Operation
OP	Output 4-20mA in only the output range of 4-20mA
SP	Output 3.2-20.8mA to the input range which is out of 5% of 4-20mA output range
IOP	Output 2.4-21.6mA to the input range which is out of 10% of 4-20mA output range

Alarm function(RL-1, RL-2, RL-3, RL-4)

1) Alarm type

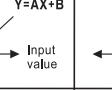
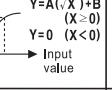
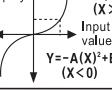
Alarm type	Explanation for alarm operation
Not use alarm output	- Eventhough it has alarm output inside and set to 'Not use alarm output', alarm output is not operated - 'Not use alarm output' has not alarm option
Upper limit alarm	 PV ≥ 800°C Alarm output ON Upper limit alarm value is set on RL-1, RL-2, RL-3, RL-4 of monitoring mode.
Lower limit alarm	 PV ≤ 200°C Alarm output ON Lower limit alarm value is set on RL-1, RL-2, RL-3, RL-4 of monitoring mode.
Disconnected sensor alarm	- In case disconnecting sensor and alarm output is ON, output is stable continuously. - 'Disconnected sensor alarm' does not have alarm option. ※ Keeping alarm can be removed by using 'Digital Input function' or power off

2) Alarm option

Alarm option	Explanation for alarm option
Normal alarm	- If it reaches alarm temperature, alarm output is ON but, if it is out of range, output is OFF
keeping alarm	- If it reaches alarm temperature, alarm output is ON and condition is stable continuously. (Alarm output HOLD) ※ Keeping alarm can be removed by using 'Digital Input function' or power off.
Expectation alarm	- If it reaches alarm temperature at first time, alarm output is not ON, but, since second time, if it reaches alarm temperature, normal alarm is operating.
keeping alarm+Expectation alarm	- keeping alarm and expectation alarm are operating at once.

• **Input special function (Program mode : In.SF)**

This function is used for when input value and PV are through calculation of Square, Root($\sqrt{\cdot}$) or TUF in case of voltage, current input.

mode	LIn	root	SQRe	TUF
Function	Input value without any operation	Input value with	Input value with x2	
Graph	Display  Input value	Display  Input value	Display  Input value	Two unit function relative
Application	General Measurement Input requiring linearization	Measure flow with Orifice	When differential output is from flow signal	

- In LIn message, PV and mA output value is :

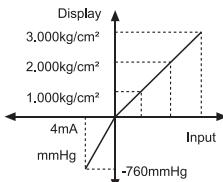
$$PV(\text{output value}) = \left\{ \left(\frac{\text{Input value} - L_{rnG}}{H_{rnG} - L_{rnG}} \right)^2 \times (H_{SC} - L_{SC}) \right\} + L_{SC}$$

- In root message, PV and mA output value is :

$$PV(\text{output value}) = \left\{ \left(\sqrt{\frac{\text{Input value} - L_{rnG}}{H_{rnG} - L_{rnG}}} \right) \times (H_{SC} - L_{SC}) \right\} + L_{SC}$$

• **TUF function**

- If ductile pressure is lower than air pressure(0), this is indicating the degree of vibration of mmHg, but if ductile pressure is same or higher than air pressure, this is indication the static pressure of kg/cm² unit.
- Air pressure is 0 kg/cm². If not 0kg/cm², it can be calibrated by 'Instance ZERO function' (Input compensation function is not accepted)
- In case of TWO UNIT FUNCTION, L-SC is fixed with -760 inside. Therefore, L-SC parameter is able to be indicated but, disable to set and H-SC is able to set in 0-9999.



• **Save peak value function**

This function is saving Max. and Min. value to check the abnormal condition of system, which is invisible, for input and it is possible for checking it by entering into [Monitoring mode] from RUN mode.

• **Burn Out function (Program mode : bURN)**

When line of sensor is disconnected, abnormal reaction will transmit to Master and fixed output 4mA or 20mA.

If set BURN = ON, PV(4-20mA DC) transmission output is 20mA.

If set BURN = OFF, PV(4-20mA DC) transmission output is 4mA.

* When it is TC and PV(4-20mA DC) transmission output, possible to be set.

• **Current output scale function (Program mode : L.out, H.out)**

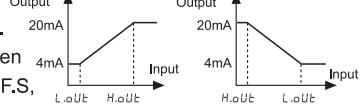
This function is to set current output

against PV in 4-20mA DC current

output. Set for outputting

4mA(L.out) and 20mA(H.out).

Minimum setting interval between L.out and H.out is over 10% F.S, if setting interval is within 10% F.S, automatically set.



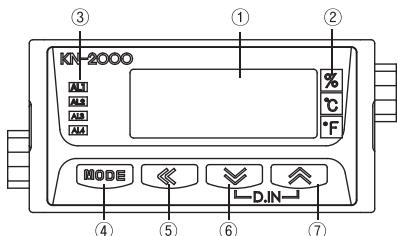
• **Error indicating function**

Display	Description	Action
LLL	When measured sensor input is lower than indicating	Input should be within indicating range.
HHH	When measured sensor input is higher than indicating	"
bURN	When temperature sensor is disconnected	Check the condition of temperature sensor.
Err	If there is error under operation.	After checking the setting condition, reset.
Err!	If input setting and position of switch is inconsistent(but, temperature sensor and analog input are classified.)	After checking input specification, reset.

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Front Panel Identifications



- ① Indicating display : Indicating measuring value and setting message
- ② Indicating unit
- ③ Alarm lamp
- ④ Mode key : Storing setting data and changing the menu of operation
- ⑤ Shift key : Decide setting position of data
- ⑥ Down key : Decreasing setting value of data
- ⑦ Up key : Increasing setting value of data