KN-2000W series

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)

Over 116

Over 52

$46^{+0.6}_{-0}$

$92^{+0.6}_{-0}$
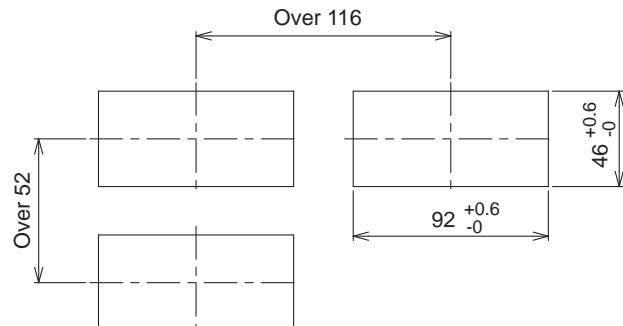
Dimensions

(Unit : mm)

KN-2000

48

96

108

10

90

44.8

91

KONICS
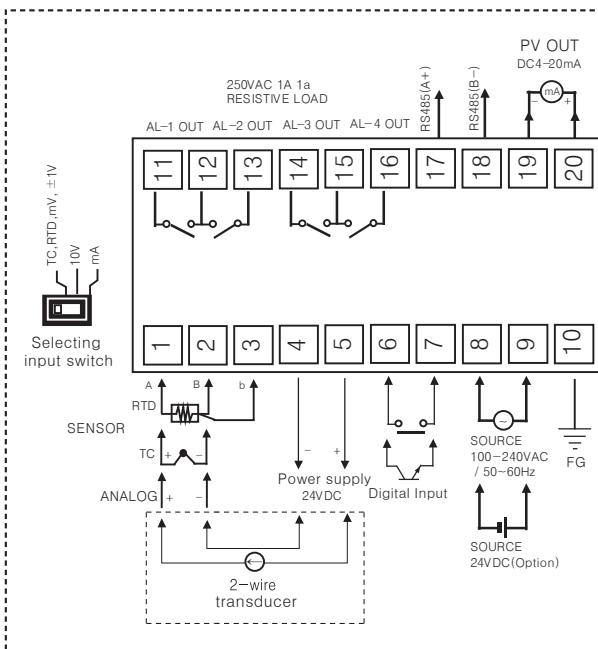
KN-2000W series

A

Recorders

B

Indicators

C

Converters

D

Controllers

E

Thyristor Units

F

Pressure Transmitters

G

Temperature Transmitters

Connections

・KN-24□□-W

・KN-22□□-W

Specifications

Model	KN-2000W Series		
Power supply	100-240VAC 50~60Hz / 24VDC		
Power consumption	Approx. 8VA(264VAC 60Hz)		
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℃), ±0.3% F.S ±1Digit (-10~20℃, 30~50℃) ※But, Under - 100℃ in TC, ±0.4% F.S ±1Digit / ※TC-T, TC-U are at Min, ±2.0℃		
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, Seif-Diagnosis, Peak-Storage, Digital input, Hoid, Input special function, Input compensation, Indication scaling, Output scaling		
Internal voltage	200VAC 50/60Hz during a minute(Between input terminal and power terminal)		
Internal 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)	
Isolation Resistance	Over 100MΩ(500VDC Mega STD)		
Internal noise	±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℃(at non-freezing status)		
Storage temperature	-20~60℃(at non-freezing status)		
Used ambient humidity	35~85%RH		
Weight	Approx. 200g(except for packing box)		

Multi Range Input

Sensor type		Type	Message	Selectable temp. range ℃	Selectable temp. range ℉
TC		K(CA)	$tC.K1$	$-200 \sim 1350$	$-392 \sim 2462$
		K(CA)	$tC.K2$	$-199.9 \sim 999.9$	$-392 \sim 1832$
		J(IC)	$tC-J$	$-199.9 \sim 800.0$	$-392 \sim 1472$
		E(CC)	$tC-E$	$-199.9 \sim 800.0$	$-392 \sim 1472$
		T(CC)	$tC-t$	$-199.9 \sim 400.0$	$-392.0 \sim 752.0$
		R(RR)	$tC-r$	$0 \sim 1750$	$32 \sim 3182$
		B(PR) ∗	$tC-b$	$0 \sim 1800$	$32 \sim 3272$
		S(PR) ∗	$tC-S$	$0 \sim 1750$	$32 \sim 3182$
		N(NN) ∗	$tC-n$	$-200 \sim 1300$	$-392 \sim 2372$
		G(W) ∗	$tC-G$	$0 \sim 2300$	$32 \sim 4172$
		L(IC) ∗	$tC-L$	$-199.9 \sim 900.0$	$-392 \sim 1652$
		U(CC) ∗	$tC-U$	$-199.9 \sim 400.0$	$-392.0 \sim 752.0$
		Platinel II ∗	$tC-P$	$0 \sim 1390$	$32 \sim 2534$
RTD		CU50Ω ∗	$CU.50$	$-199.9 \sim 200.0$	$-392.0 \sim 392.0$
		CU100Ω ∗	$CU.10$	$-199.9 \sim 200.0$	$-392.0 \sim 392.0$
		JPt 100Ω	$JPt.1$	$-199.9 \sim 600.0$	$-392 \sim 1112$
		DPt 50Ω	$dPt.5$	$-199.9 \sim 600.0$	$-392 \sim 1112$
		DPt 100Ω	$dPt.1$	$-199.9 \sim 850.0$	$-392 \sim 1562$
Analog	Current	$0.00 \sim 20.00$mA	$A.nA1$		
		$4.00 \sim 20.00$mA	$A.nA2$	Scale display Range: $-19999 \sim 19999$	
	Voltage	$-50.0 \sim 50.0$mV	$A.nu1$		
		$-199.9 \sim 200.0$mV	$A.nu2$		
		$-1.000 \sim 1.000$V	$A-u1$		
		$-1.00 \sim 10.00$V	$A-u2$		

∗ 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 : $nAu.F$)**

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 : $di-t, di-t$)**

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

Mode	Operation
Alam ON/OFF function $AL.rE$	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 $HoLd$	Temporarily indicated value is stopped in order to confirm indicated value, in flexible input
Zero adjustment function $EEro$	"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 : $Et.Lo$)**

This function is to adjust the range of analog input/output. Please 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
$10P$	Output 2.4-21.6mA to the input range which is out of 10% of 4-20mA output range

• **Alarm function($AL-1, AL-2, AL-3, AL-4$)**

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	OFF ┃H┃ON 800℃ ▲PV — $PV \geq 800℃$ Alarm output ON Upper limit alarm value is set on $AL-1, AL-2, AL-3, AL-4$ of monitoring mode.
Lower limit alarm	ON┃H┃ OFF ▲PV 200℃ — $PV \leq 200℃$ Alarm output ON Lower limit alarm value is set on $AL-1, AL-2, AL-3, AL-4$ 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
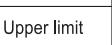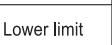
2) Alarm option

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($\sqrt{\ }$) or TUF in case of voltage, current input.

mode	LIn	root	SQAr	tUF
Function	Input value without any operation	Input value with	Input value with x2	Two unit function relative
Graph	Display Y=AX+B Input value	Display Y=A($\sqrt{X}$)+B (X≥0) Y=0 (X<0) Input value	Display Y=A(X)²+B (X>0) Input value Y=−A(X)²+B (X<0)	Two unit function relative
Application	General Measurement Input requiring linearization	Measure flow with Orifice	When differential output is from flow signal	
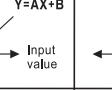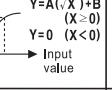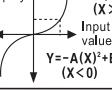
• In SQAr message, PV and mA output value is :

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

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

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

• **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 calabrated 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.

Display
3.000kg/cm²
2.000kg/cm²
1.000kg/cm²
4mA
mmHg
-760mmHg
Input
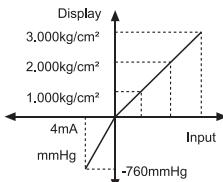
• **Save peak value function**

This function is saving Max. and Min. value to check the adnormal 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.

Output 20mA 4mA L.oUt H.oUt Input
Output 20mA 4mA H.oUt L.oUt Input

• **Error indicating function**

Display	Description	Action
LLLL	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.
Err1	If input setting and position of switch is inconsistent(but, temperature sensor and analog input are classified.	After checking input specification, reset.

Front Panel Identifications

③ ① ②
KN-2000
AL1
AL2
AL3
AL4
%
℃
°F
MODE D.IN
④ ⑤ ⑥ ⑦
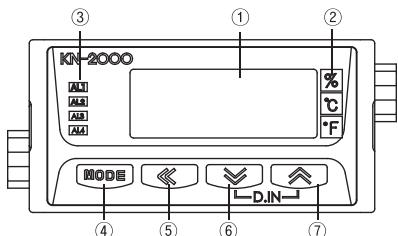
① Indicating display : Indicating measuring value and setting message
② Indicating unit
③ Alarm lamp
④ Mode key : Storing setting data and changing the menu of operation
⑤ Shift key : Decide setting position of data
⑥ Down key : Decreasing setting value of data
⑦ Up key : Increasing setting value of data

Multi Indicator
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