

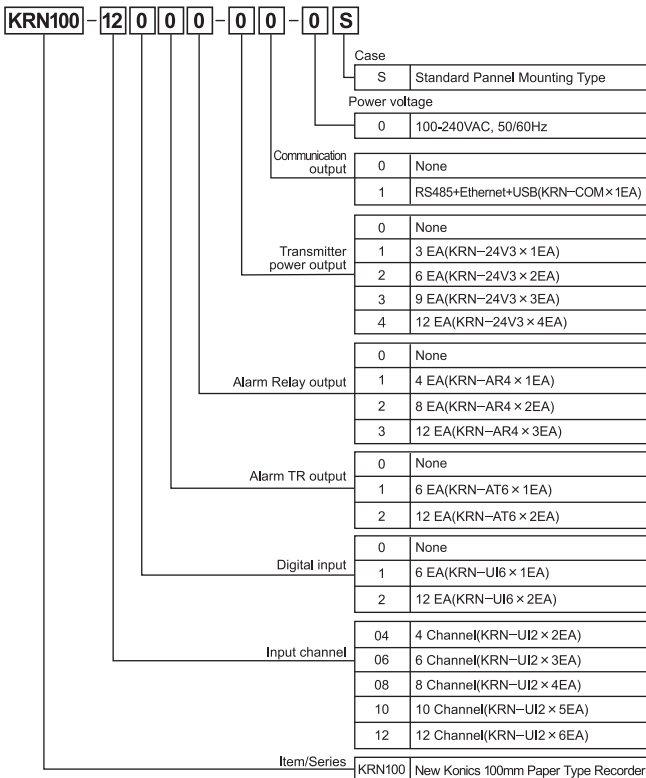
KRN100 series, 100mm hybrid paper type recorder, realizes paper and paperless type recorder, supporting recording function and backup both internal data memory and USB memory.

Features

- Combines functions of paper recorder and paperless recorder
- Enables to print the saved data of inner memory when run out of recording paper (Data logger function)
- Inner data backup with USB memory
- Supports several communication(RS485, Ethernet) to transfer real time data
- High legibility and setting convenient by graph LCD
- 25ms high sampling, 240mm/h high speed record function



Ordering Codes



I/O card model name

Type	Model name	Function and number of channel	Max. connectable card	Slot number
Universal input card	KRN-UI2	Universal input 2 channel	6EA	1 to 6
Digital input card	KRN-DI6	Digital input 6 channel	2EA	7 to 10 ※1
Alarm output card	KRN-AR4	Alarm relay output 4 channel	3EA	
Transmitter power output card	KRN-24V3	Transmitter 24VDC power output 3 channel	4EA	
Communication output card	KRN-COM	RS485 + USB + Ethernet Communication output	1EA	C

※1. Digital input card, alarm output card, transmitter power output card are connectable up to 4ea as mixed.

Example of ordering

To use universal input 10 channel, digital input 4 channel, alarm relay output 5 channel, and RS485 communication output, it is ordered as KRN100-10102-01-0S and connected I/O card is as below.

- KRN100(Recorder) : 1EA
- KRN-UI2(Universal input card) : 5EA
(Universal input card 2EA is factory default. 5EA×2 channel = 10 channel)
- KRN-DI6(Digital input card): 1EA
- KRN-AR4(Alarm relay output card): 2EA
- KRN-COM(Communication output card): 1EA

Specifications

Model	KRN100	
Power voltage	100-240VAC, 50/60Hz	
Allowable voltage range	85-264VAC	
Power consumption	Max. 55VA (264VAC 60Hz)	
Screen	LCD type	STN Graphic LCD
	Resolution	320 X 120Pixel
	Adjusting brightness	4 level(OFF / Min / Standard / Max)
	Backlight	White LED, 2 level(Temp/Always)
The number of input channel	4 / 6 / 8 / 10 / 12 channel(2 channel/card) – Expandable	
Universal input ※1	Temperature sensor(RTD, thermocouple), analog	
Sampling period	1 to 4 channel: 25 ms / 125ms / 250ms, 5 to 12 channel: 125 ms / 250ms (Inner sampling period is operation unit time for average movement filter and alarm output function.) ※ Max. sampling period for TC-R, U, S, and T sensor is 50ms.	
Recording period in graph mode	10, 20, 40, 60, 120, 240mm/h	
Storage period	1 to 3,600 sec (Storage interval time to inner log file is 1 sec.)	
Inner memory	512MByte	
USB memory	User purchased, recognizes max. 32GByte, enables to use cable up to 1.5m	
Function	Record color, Record zone, Input special function, Input digital filter, Reservation set, Summer time, Delay alarm, Record speed change, Data storage, Backup data record, etc	
Dielectric strength	2,500VAC 50/60Hz for 1 min. (power terminal and case) ※ USB Device and Ethernet are excepted	
Vibration (for convey and storage) and operating vibration	Vibration strength: 10to60Hz 4.9m/s ² (in X, Y, Z axes for each 1time) Operating vibration: 10to60 1m/s ² (in X, Y, Z axes for each 10 min.)	
Insulation resistance	Min. 20MΩ (at 500VDC megger)	
Noise resistance	±2kV the square wave noise (pulse width 1μs) by the noise simulator	
Time accuracy	Within ±2min/year (Enables to use up to 2100 year)	
Mechanism	Ink cartridge	Enables to normal print with going and returning printing max.5 times within 7 days after opening the unit
	Ink dry time	Max. 15 minutes
Protection	IP40(for front panel)	
Recording paper	113mm X 9m	
Environment ※2	Temperature	0 to 50 °C, Storage: -20 to 60 °C, (without ink cartridge)
	Humidity	35 to 85% RH, Storage: 35 to 85% RH ※ If using this unit at place with high humidity, it may cause paper jam. Please do not use this unit at place with high humidity.
Unit weight	Approx. 1.7 to 2.0kg	

※ 1. For more information of universal input, please refer to '2.2 I/O card'.

※ 2. Environment resistance is rated at no freezing or condensation.

Type	Model	I/O specification	Description		
Universal input card	KRN-UI2	Input type ※1	RTD	JPT100Q, DPT100Q, DPT50Q, CU100Q, CU50Q(Supply current 420μA)	
			Thermocouple	B, C(W5), E, G, J, K, L, L(Russia), N, P, R, S, T, U	
			Analog	Voltage: ±60mV ±200mV ±2V, 1-5V, ±5V, -1V to 10V Current: 0.00to20.00mA, 4.00to20.00mA	
		Display accuracy ※2	input impedance		Voltage(V): Min. 150kΩ RTD, thermocouple, voltage(mV): min. 2MΩ current: 51Ω
			RTD	Warm-up time: Min. 30 minutes	
				Thermocouple	•Room temperature (25°C±5°C) section: ±0.1% F.S.±1 Digit •Out of range of room temperature: ±0.2% F.S.±1 Digit RTD: 500 to 850 °C is PV value±0.5%±1 Digit Thermocouple: Below -100 °C is ±0.3% F.S. ±1 Digit
Resolution		16Bit			
Digital input card	KRN-DI6	Noncontact input	ON: Max. 1V of residual voltage, OFF: Max. 0.1mA leakage current		
		Contact input	ON: Max. 1kΩ, OFF: Min. 100kΩ, Short: Approx. 4mA		
Alarm output card	KRN-AR4	Alarm Relay output	Capacity: 250VAC 3A, 30VDC 3A, 1 Form A (resistance load) Life cycle: Mechanical: Min 50,000,000 times Electrical: Min 100,000 times (3A 250VAC, 3A 30VDC)		
		KRN-AT6	Alarm TR output	NPN Open Collector, 12-24VDC / 30 mA Max.	
Transmitter power output card	KRN-24V3	Power output for transmitter ※5	24±2VDC, total 3 channel, max. 30mA per 1 channel built-in over-current protection circuit		
Communication output card ※3	KRN-COM	Communication output	RS485: Modbus RTU ※ Recommended over AWG 24 shield cable		
		Ethernet	IEEE802.3(U), 10/100 BASE-T(Modbus TCP)		
		USB Device ※4	USB V2.0 Full Speed(Device Control)		

※ 1. To change input specification, you must turn OFF the power of KRN100, remove universal input card, set inner jumper pin (Please refer to 4.2 I/O card.) and re-connect it.

※ 2. Exception range for better accuracy by sensor (Accuracy after 30min warm-up time)

R, S, C: 0±Ts±100 ±4.0 °C, B: No regulation accuracy below 400 °C, T, U: -200±Ts-100±3.0 °C, -100±Ts±400±2.0 °C, CU50: -200±Ts±200±1.0 °C, DPT50: -200±Ts±500±1.5 °C

※ 3. RS485, Ethernet communication output are not available at the same time.

※ 4. USB Device is available only for parameter setting.

※ 5. It is recommended to use shield cable to decrease noise when supplying power for transmitter.

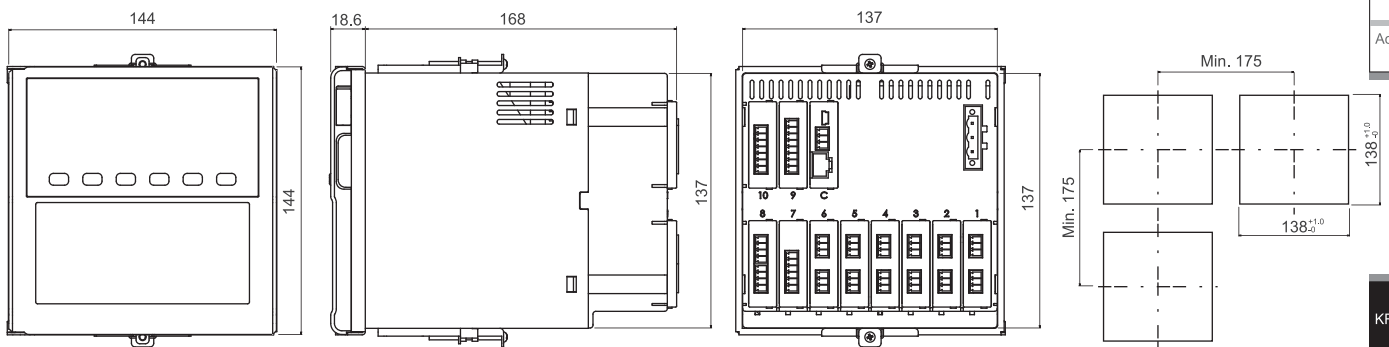
Multi Range Input

Input sensor	Mark	Measuring range		
		°C	°F	K
K(CA)	TC-K	-200.0 to 1350.0	-328.0 to 2462.0	73.2 to 1623.2
J(IC)	TC-J	-200.0 to 800.0	-328.0 to 1472.0	73.2 to 1073.2
E(CR)	TC-E	-200.0 to 800.0	-328.0 to 1472.0	73.2 to 1073.2
T(CC)	TC-T	-200.0 to 400.0	-328.0 to 752.0	73.2 to 673.2
B(PR)	TC-B	100.0 to 1800.0	212.0 to 3272.0	373.2 to 2073.2
R(PR)	TC-R	0.0 to 1750.0	32.0 to 3182.0	273.2 to 2023.2
S(PR)	TC-S	0.0 to 1750.0	32.0 to 3182.0	273.2 to 2023.2
N(NN)	TC-N	-200.0 to 1300.0	-328.0 to 2372.0	73.2 to 1573.2
C(TT) *1	TC-C	0.0 to 2300.0	32.0 to 4172.0	273.2 to 2573.2
G(TT) *2	TC-G	0.0 to 2300.0	32.0 to 4172.0	273.2 to 2573.2
L(IC)	TC-L	-200.0 to 900.0	-328.0 to 1652.0	73.2 to 1173.2
L (Russian type) *3	TC-L_R	0.0 to 600.0	32.0 to 1112.0	273.2 to 873.2
U(CC)	TC-U	-200.0 to 400.0	-328.0 to 752.0	73.2 to 673.2
Platinel II	TC-P	0.0 to 1350.0	32.0 to 2462.0	273.2 to 1623.2

*1. C(TT): Same temperature sensor type as existing W5(TT).
 *2. G(TT): Same temperature sensor type as existing W(TT).
 *3. Russian type L type temperature sensor is divided from general purpose L type.

Input sensor	Mark	Measuring range			
		°C	°F	K	
RTD	CU50Ω	CU50	-200.0 to 200.0	-328.0 to 392.0	73.2 to 473.2
	CU100Ω	CU100	-200.0 to 200.0	-328.0 to 392.0	73.2 to 473.2
	JPT100Ω	JPT100	-200.0 to 600.0	-328.0 to 1112.0	73.2 to 873.2
	DPT50Ω	DPT50	-200.0 to 600.0	-328.0 to 1112.0	73.2 to 873.2
	DPT100Ω	DPT100	-200.0 to 850.0	-328.0 to 1562.0	73.2 to 1123.2
Analog	Voltage	-60.00 to 60.00 mV	±60 mV	Resolution:10μV	Depending on decimal point position setting: -99999 to 99999 -9999.9 to 9999.9 -999.99 to 999.99 -99.999 to 99.999 -9.9999 to 9.9999
		-200.00 to 200.00 mV	±200 mV	Resolution:10μV	
		-2.000 to 2.000V	±2V	Resolution: 1mV	
		1.000 to 5.000V	1 to 5V	Resolution: 1mV	
		-5.000 to 5.000V	±5V	Resolution: 1mV	
	Current	-1.00 to 10.00V	-1V to 10V	Resolution:10mV	
		0.00 to 20.00 mA	0 to 20 mA	Resolution:10μA	
		4.00 to 20.00 mA	4 to 20 mA	Resolution:10μA	

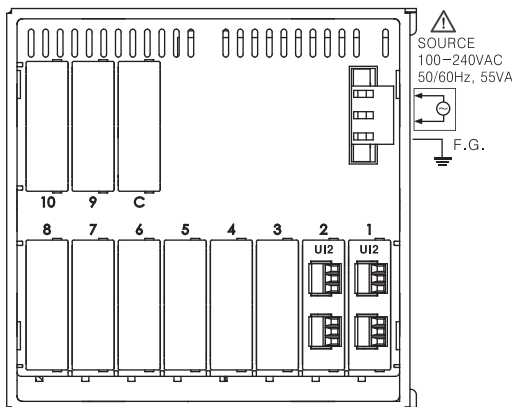
Dimension, Panel Cutout



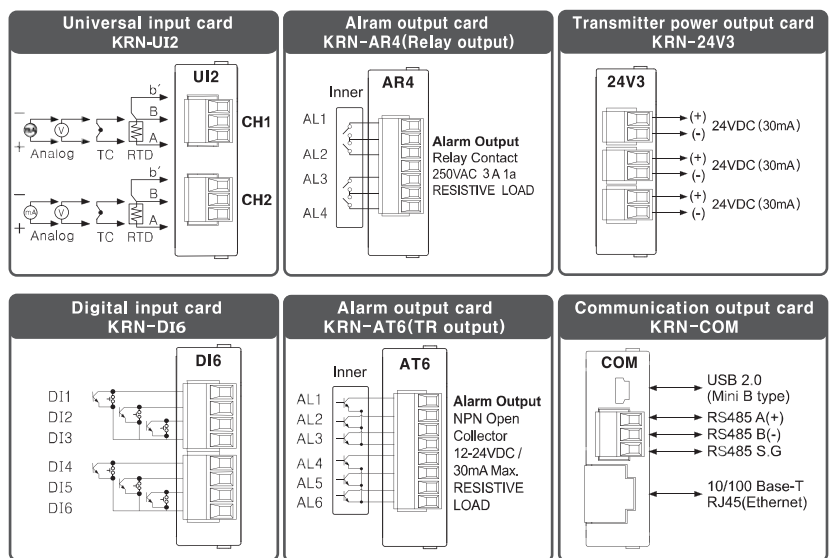
* Use panel which is 2 to 8mm thickness.

Connections

This figure is back side of KRN100-04000-00-0S model.



Slot	Description
1 to 6	Connects universal input card (KRN-UI2).
7 to 10	Connect digital input card (KRN-DI6), alarm output card (KRN-AR4, KRN-AT6), and transmitter power output card (KRN-24V3).
C	Connects communication output card (KRN-COM).



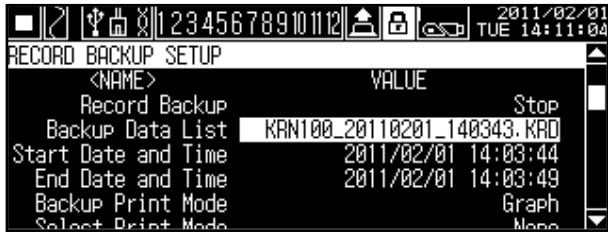
- A** Recorders
- B** Indicators
- C** Converters
- D** Controllers
- E** Thyristor Units
- F** Pressure Transmitters
- G** Temperature Transmitters
- H** Temp. Sensors
- I** Thermo Meters
- J** Pressure Gauges
- K** Accessories

- KRN100
- KRN50
- KR-100N
- KA-100
- VR-18

Functions

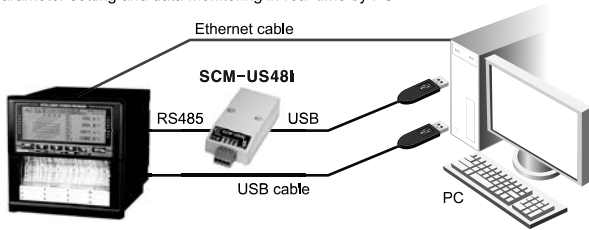
▶ Data logger function

Saving measured value to internal and USB memory in real-time and printing saved memory repeatedly



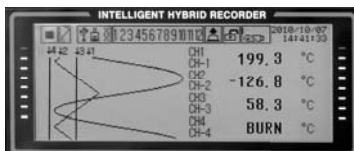
▶ Real-time data transmission function

Parameter setting and data monitoring in real-time by PC



▶ Graphic LCD display

High legibility and setting convenient by graphic LCD



▶ Realizes high speed and accuracy

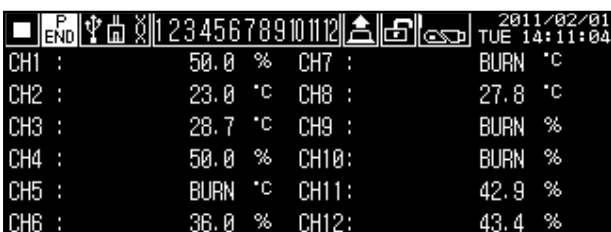
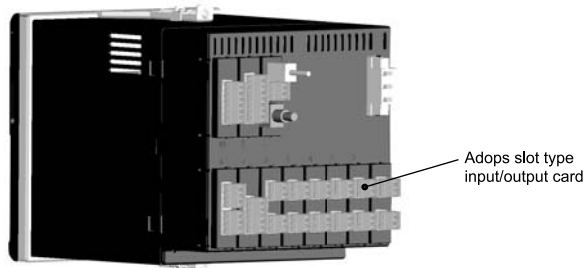
25ms high speed sampling, 240mm/h high speed continuous record function
F.S. ±0.1% of display accuracy

▶ Realizes high compatibility by supporting several communication types

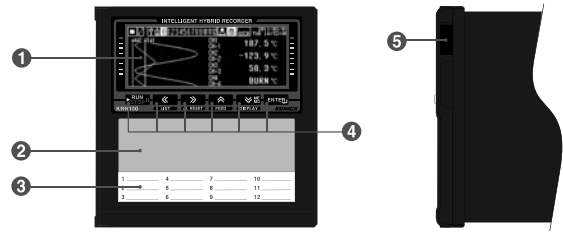
Supports RS485(Modbus RTU), Ethernet(Modbus TCP), USB(Modbus RTU)

▶ Adops slot type input / output card

Realizes high extensible and economical structure
Displays max. 12 channels at the same time



Front Panel Identification



- ① Display part: Displays measurement values as trend graph, bar graph, or digital number (1/8/12 channel).
- ② Recording print part: Records measuring value of data by each channel with designated color.
- ③ Channel information part: Write the information by each channel.
- ④ Control key/Function key: Executes parameter setting and recording, and special function.

Key	Function
	Using this key for starting/stopping recording, changing input characters on virtual keyboard status, and displaying Function key. Press this key for 3 sec in stop state, ink cartridge moves to the center. (Use this to replace ink cartridge.)
	Using this key for going out from parameter setting group or setting manual channel switch mode. It also executes to release auto channel switch mode and printer list output (3 sec) function.
	Using this key for moving parameter in setting mode, setting manual channel switch mode and forced alarm reset (3 sec).
	Using this key for moving parameter in setting mode, increasing digit value, setting auto channel switch mode, and manual feed function (by pressing over 3 sec.) in stop state.
	Using this key for moving parameter in setting mode, decreasing digit value, changing display mode and executing manual digital memo (3 sec) in recording state.
	Using this key for entering setting mode (3 sec) and set value change mode.

- ⑤ USB Host: Connects USB memory. It recognizes max. 32Gbyte and if using cable, it is available up to 1.5m.