

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

KRN100-12000-00-0S									
Case		S Standard Panel Mounting Type							
Power voltage		0 100-240VAC, 50/60Hz							
Communication output		0 None							
		1 RS485+Ethernet+USB(KRN-COM×1EA)							
Transmitter power output		0 None							
		1 3 EA(KRN-24V3×1EA)							
		2 6 EA(KRN-24V3×2EA)							
		3 9 EA(KRN-24V3×3EA)							
		4 12 EA(KRN-24V3×4EA)							
Alarm Relay output		0 None							
		1 4 EA(KRN-AR4×1EA)							
		2 8 EA(KRN-AR4×2EA)							
		3 12 EA(KRN-AR4×3EA)							
Alarm TR output		0 None							
		1 6 EA(KRN-AT6×1EA)							
		2 12 EA(KRN-AT6×2EA)							
Digital input		0 None							
		1 6 EA(KRN-DI6×1EA)							
		2 12 EA(KRN-DI6×2EA)							
Input channel		04 4 Channel(KRN-DI2×2EA)							
		06 6 Channel(KRN-DI2×3EA)							
		08 8 Channel(KRN-DI2×4EA)							
		10 10 Channel(KRN-DI2×5EA)							
		12 12 Channel(KRN-DI2×6EA)							
Item/Serial		KRN100 New Konics 100mm Paper Type Recorder							

I/O card model name

Type	Model name	Function and number of channel	Max. connectable card	Slot number
Universal input card	KRN-DI2	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	
	KRN-AT6	Alarm TR output 6 channel	2EA	
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-DI2(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



※ Launching soon

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)
Mechani- sm	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
Environ- ment *2	Temperature	0 to 50℃, Storage: -20 to 60℃, (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-DI2	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
		input impedance		Voltage(V): Min. 150kΩ RTD, thermocouple, voltage(mV): min. 2MΩ current: 51Ω
		Display accuracy ※2	RTD	Warm-up time: Min. 30 minutes •Room temperature (25℃±5℃) section: ±0.1% F.S.±1 Digit •Out of range of room temperature: ±0.2% F.S.±1 Digit
			Thermocouple	RTD: 500 to 850℃ is PV value±0.5%±1 Digit Thermocouple: Below -100℃ is ±0.3% F.S. ±1 Digit
Digital input card	KRN-DI6	Resolution		16Bit
		Noncontact input	Capacity	ON: Max. 1V of residual voltage, OFF: Max. 0.1mA leakage current
			Life cycle	ON: Max. 1kQ, OFF: Min. 100kQ, Short: Approx. 4mA
Alarm output card	KRN-AR4	Alarm Relay output	Capacity	250VAC 3A, 30VDC 3A, 1 Form A (resistance load)
	KRN-AT6	Alarm TR output	Life cycle	Mechanical: Min 50,000,000 times Electrical: Min 100,000 times (3A 250VAC, 3A 30VDC)
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, G: 0±5℃ to 100±4.0℃, B: No regulation accuracy below 400℃,
T, U: -200±5℃ to 100±3.0℃, -100±5℃ to 400±2.0℃, CU50: -200±5℃ to 200±1.0℃, DPT50: -200±5℃ to 500±1.5℃

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

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

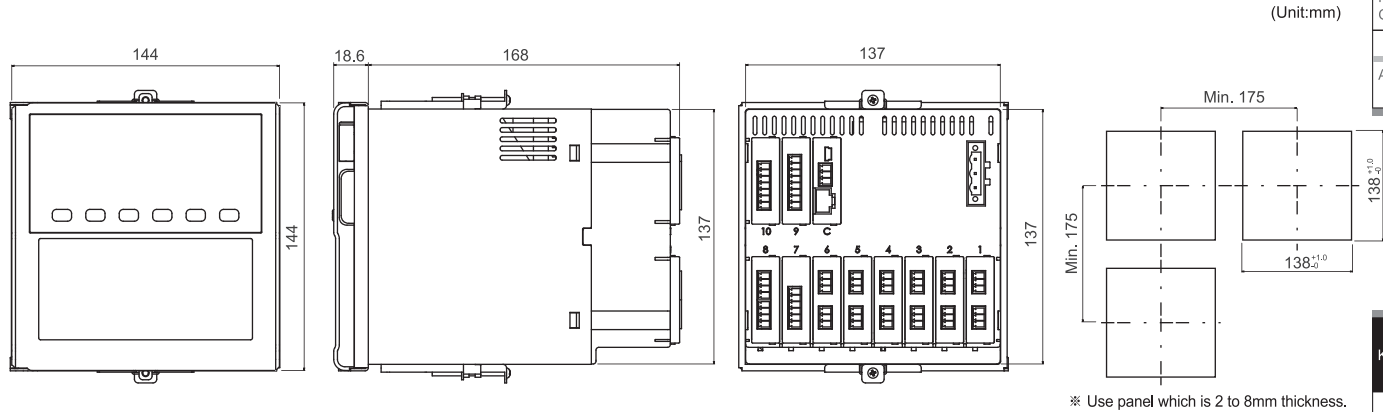
※5. It is recommended to use shield cable to decrease noise when supplying power for transmitter.

Multi Range Input

Input sensor		Mark	Measuring range		
			℃	℉	K
Thermo couple	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
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	
		-1.00 to 10.00V	-1V to 10V	Resolution:10mV	
	Current	0.00 to 20.00 mA	0 to 20 mA	Resolution:10μA	
		4.00 to 20.00 mA	4 to 20 mA	Resolution:10μA	

※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.

Dimension, Panel Cutout



Connections

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

Universal input card KRN-UI2

CH1, CH2

Inputs: Analog, TC, RTD

Alarm output card KRN-AR4(Relay output)

AL1, AL2, AL3, AL4

Alarm Output Relay Contact 250VAC 3A 1a RESISTIVE LOAD

Transmitter power output card KRN-24V3

24V3

Outputs: 24VDC (30mA)

Digital input card KRN-DI6

DI1, DI2, DI3, DI4, DI5, DI6

Alarm output card KRN-AT6(TR output)

AL1, AL2, AL3, AL4, AL5, AL6

Alarm Output NPN Open Collector 12-24VDC / 30mA Max. RESISTIVE LOAD

Communication output card KRN-COM

COM

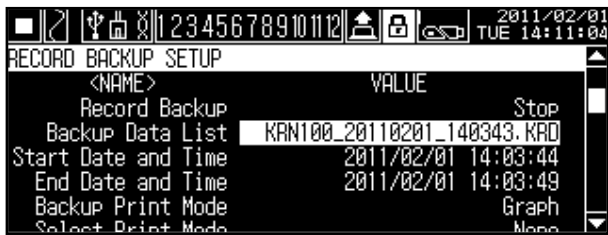
Outputs: USB 2.0 (Mini B type), RS485 A(+), RS485 B(-), RS485 S.G., 10/100 Base-T RJ45(Ethernet)

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).

Functions

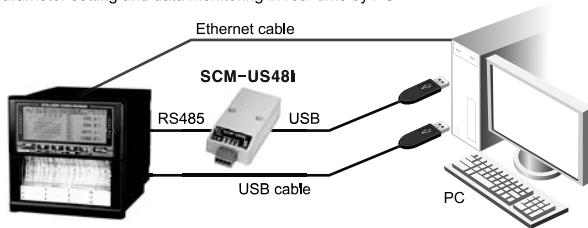
► Data logger function

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



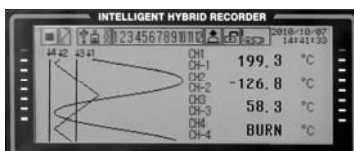
► Real-time data transmission function

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

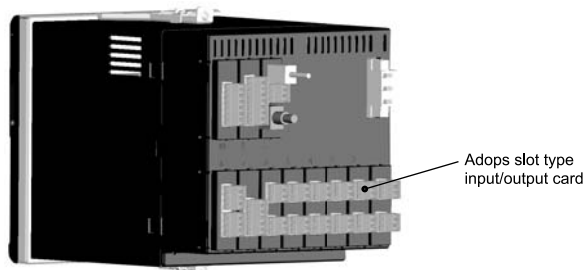
25ms high speed sampling, 240mm/h high speed continuous record function
F.S. $\pm 0.1\%$ of display accuracy

► Realizes high compatibility by supporting several communication types

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

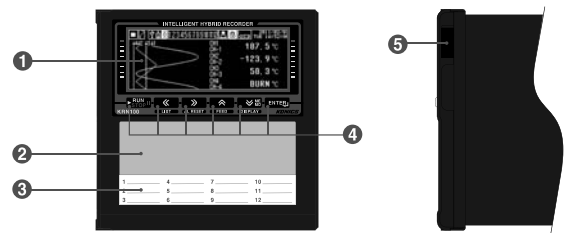
► Adops slot type input / output card

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



CH1 :	50.0 %	CH7 :	BURN °C
CH2 :	23.0 °C	CH8 :	27.8 °C
CH3 :	28.7 °C	CH9 :	BURN %
CH4 :	50.0 %	CH10 :	BURN %
CH5 :	BURN °C	CH11 :	42.9 %
CH6 :	36.0 %	CH12 :	43.4 %

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.