

100mm Hybrid Recoder KRN100 Series

USER MANUAL

CE 🕼



Thank you very much for selecting KONICS products. For your safety, Please read the following before using.





Preface

Thank you very much for selecting KONICS products.

Please familiarize yourself with the information contained in the **Safety Precautions** section before using this product.

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.



User Manual Guide

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.

- Please familiarize yourself with the information in this manual before using the product.
- This manual provides detailed information on the product's features. It does not offer any guarantee concerning matters beyond the scope of this manual.
- This manual may not be edited or reproduced in either part or whole without permission.
- A user manual is provided as part of the product package.
 Visit our home-page (www.konics.com) to download a copy.
- The manual's content may vary depending on changes to the product's software and other unforeseen developments within KONICS, and is subject to change without prior notice.
- We contrived to describe this manual more easily and correctly. However, if there are any corrections or questions, please notify us these on our homepage.

User Manual Symbols

Symbol	Description
Note	Supplementary information for a particular feature.
🔥 Warning	Failure to follow instructions can result in serious injury or death.
A Caution	Failure to follow instructions can lead to a minor injury or product damage.
Ex.	An example of the concerned feature's use.
※1	Annotation mark.



Safety Precautions

- Following these safety precautions will ensure the safe and proper use of the product and help prevent accidents and minimize hazards.
- Safety precautions are categorized as Warnings and Cautions, as defined below:

🛕 Warning	Warning	Cases that may cause serious injury or fatal accident if instructions are not followed.
A Caution	Caution	Cases that may cause minor injury or product damage if instructions are not followed.

<u> (</u>Warning

 In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.

It may cause a fire, human injury or property loss.

- It must be mounted on panel.
 It may cause electric shock.
- Do not connect, inspect or repair this unit when power is ON. It may cause electric shock.
- Check input power specification and check power terminal number when wiring power cable.
 It may cause a fire or damage by a fire.
- Lithium battery is used in this product, do not disassemble or burn up this unit. It may cause an explosion.
- Do not touch the product or connect terminal within 30 sec. after turn off the power. It may cause electric shock.
- F.G. terminal should be isolation grounded. Grounded wire should be over AWG16(1.25 mm²).

It may cause electric shock.

- Do not insert your finger or object into the vent of this unit. It may cause electric shock or human injury.
- Do not disassemble or modify this unit. Please contact us if it is required. It may cause a fire, human injury or property loss.

Caution

- This unit shall not be used outdoors.
 It may shorten the life cycle of the product or cause electric shock.
- When wiring power input terminal and measuring input terminal, power line should be over AWG 20(0.50mm²). Terminal screw should be tightened with 0.74 N•m to 0.90 N•m torque. Please observe the rated specifications.

It may cause shorten the life cycle of the product and cause a fire.



- Do not use the load over the rated switch capacity value of relay contact part.
 It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
- When connecting magnet contact as load of relay contact output, connect surge absorber on coil part of contact.
 It may cause malfunction.
- In cleaning the unit, do not use water or organic solvent. And use dry cloth.
 It may cause electric shock or a fire.
- Do not use this unit in place where there is flammable, explosive gas, humidity, direct light, radiant heat, vibration, or impact.
 It may cause a fire or explosion.
- Do not inflow dust or wire dregs into the unit. It may cause a fire or malfunction.
- Wire properly after checking the terminal polarity. It may cause a fire or explosion.
- Wire properly after checking the terminal polarity when connecting temperature sensor. It may cause malfunction.
- Connection should be followed as connection diagram of this manual. Before power ON, check the connection correct.
 It may cause a fire.
- Do not touch terminal during dielectric or insulation resistance test. It may cause electric shock.
- It is recommended to use insulation transformer and noise filter power in case of too much noise from power. Attach noise filter on the grounded panel, etc. Wire between noise filter output part and power terminal of the product should be short as possible.
 It may cause damage to the product, malfunction by surge, etc.
- Before connecting temperature sensor (thermocouple, RTD) and analog (voltage, current) input, set jumper pin of universal input card as input type.
 It may cause damage and malfunction to this unit.
- Do not connect or separate input, output card when the product power is ON.
 It may cause serious damage.
- Do not open the cover or insert your finger during operation. It may cause electric shock.
- Do not control with alarm output or measure data during firmware upgrade. Alarm output, contact input, data measurement, etc do not operate normally. Therefore, this unit does not operate as intended.
- Check the complete message for firmware upgrade and turn OFF to ON the power.
 If do not turn OFF to ON the power, it does not operate normally.
- All parameter set value is initialized after firmware upgrade. It may not operate as same way with before upgrade operation.
- Use voltage output of transmitter power output card only for transmitter power. It may cause damage to output module.

The specifications and dimensions of this manual are subject to change without any notice.



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1 **Overview**

1.1 Feature of KRN 100

KRN100 is 100mm hybrid recorder with dot. It combines functions of paper recorder and paperless recorder by saving function with an USB memory (the world's first) and by adopting Trend graph, Bar graph, digital number display function through graphic LCD.

KRN100 enables to print the saved data of system memory as data backup function when run out of recording paper. KRN100 improves convenience by parameter setting, data transmittion through RS485 and Ethernet communication (USB device is only for parameter setting), and backup data logger function.

It also adopts slot type input, output card to connect option card up to 12 channels. It supports several communication types, of course, and graphic user interface(GUI) with graphic display for easire and convenient use.

- 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 an USB memory
- High legibility and setting convenient by graph LCD
- 25ms high sampling, 240mm/h high speed record function
- 100mm paper record (Selectable 6 kinds of record color)
- Supports system memory and external memory data backup (storage)
- Supports several input up to 12 channel with slot type input card
- Enables to select several option card with slot type output card
- Supports several communication(RS485, Ethernet) to transfer real time data
- Enables to set parameter with USB Device X1
- Space saving for installation with compact design (Rear length: 168mm)
- Supports total 27 kinds of input sensor
- Enables to order several type input card (weight, voltage, current, frequency, potential meter, etc)



1.2 Component and sold separately

1.2.1 Component



Fixing bracket 2ea



Note

Before using KRN100, check the component. If any component is left out or damaged, contact our company or seller. KONICS service center: +82-32-820-2343

1.2.2 Accessory

(1) **I/O card**



SCM-38I(RS232C/RS485 converter)
 SCM-US48I(USB/RS485 converter)

Appearances of SCM-38I (RS232C to RS485 converter) and SCM-US48I (USB to RS485 converter) are same.



1.3 Ordering information

(1) Ordering information

KRN100	-	12	0	0	0	-	0	0	-	0	S
1		2	3	4	(5)		6	7		8	9

Item	Descriptio	n
①ltem	KRN100	New KONICS 100mm Paper Type Recorder
	04	4 channel (KRN-UI2 X 2ea)
	06	6 channel (KRN-UI2 X 3ea)
②Input channel	08	8 channel (KRN-UI2 X 4ea)
	10	10 channel (KRN-UI2 X 5ea)
	12	12 channel (KRN-UI2 X 6ea)
	0	None
③Digital input	1	6ea(KRN-DI6 X 1ea)
	2	12ea(KRN-DI6 X 2ea)
	0	None
④Alarm TR output	1	6ea(KRN-AT6 X 1ea)
	2	12ea(KRN-AT6 X 2ea)
	0	None
© Alarm Dalay autaut	1	4ea(KRN-AR4 X 1ea)
5 Alarm Relay output	2	8ea(KRN-AR4 X 2ea)
	3	12ea(KRN-AR4 X 3ea)
	0	None
	1	3ea(KRN-24V3 X1ea)
6 Transmitter power output	2	6ea(KRN-24V3 X 2ea)
	3	9ea(KRN-24V3 X 3ea)
	4	12ea(KRN-24V3 X 4ea)
@Communication autout	0	None
⑦Communication output	1	RS485/Ethernet/USB(KRN-COM X 1ea)
⑧Power voltage	0	100 to 240VAC, 50/60Hz
(9)Case	S	Standard panel mounting type



(2) I/O card model name

Туре	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	
	KRN-AR4	Alarm relay output 4	3ea	
Alarm output card		channel		7 to
	KRN-AT6	Alarm TR output 6 channel	2ea	10 ^{×1}
Transmitter power	KRN-24V3	Transmitter 24VDC power	4ea	
output card	11112110	output 3 channel	100	
Communication	KRN-COM	RS485+USB+Ethernet	1ea	С
output card		communication channel	ica	0

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

(3) 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 X 2 channel =10 channel)
- KRN-DI6(Digital input card): 1ea
- KRN-AR4(Alarm relay output card): 2ea
- KRN-COM(Communication output card): 1ea

1.4 Part description

1.4.1 Front and side part



 Display part: Displays measurement values as trend graph, bar graph, or digital number (1/8/12 channel).

Please refer to '7.1 Screen display'.

- 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.)
LIST	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.
AL RESET	Using this key for moving parameter in setting mode, setting manual channel switch mode and forced alarm reset (3 sec).
FEED	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.
ME DISPLAY	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.
ENTER	Using this key for entering setting mode (3 sec) and set value change mode.

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



🖉 Note

Function key: Use this key to enter virtual keyboard in parameter setting.

Press **Press** key, and <u>Function</u> key appears on lower screen as below figure. Press

key as below Function key, it operates the appropriate Function key's operation.





1.4.2 Back side



- ① Slot(C) for connecting communication output card(KRN-COM)
- ② Slot(7to10) for connecting digital input card(KRN-DI6), alarm relay output card(KRN-AR4), alarm TR output card (KRN-AT6), transmitter power output card(KRN-24V3) You can connect total 4ea by combining digital input card, alarm output card, and transmitter power output card, as below combination example.



- ③ Slot(1 to 6) for connecting universal input card(KRN-UI2)
- ④ Power connecting part (100-240VAC, 50/60Hz)

X Above back side image is connected every otuput card to help your understand. Factory default is only connected with universal input cards (Slot1 and 2).



1.4.3 Inside



- Ink cartridge: Record ink cartridge to record data on recording paper. (Model name: D33006B-66X-01)
- 2 Recording paper cassette: Cassette saves the recording paper.
- ③ Recording paper cassette lever: Press the lever down and this recording paper cassette is removed from KRN100. Remove the recording paper cassette for recording paper replacement, ink cartridge replacement.

1.4.4 Paper cassette



- ① Recording paper holder: Movement holder of recording paper when recording
- 2 Recording paper storage part: Storage part for recorded recording paper
- ③ Front cover of recording paper storage: Open recording paper guide for recording paper replacement
- New recording paper storage: Storage part for new recording paper (1EA recording paper is storable.)
- (5) Back cover of recording paper storage

2 Specification

2.1 KRN100

Model		KRN100				
Power voltage		100 - 240VAC, 50/60Hz				
Allowable voltage range		85 - 264VAC				
Power co	nsumption	Max. 55VA				
	LCD type	STN Graphic LCD				
	Resolution	320 X 120Pixel				
Screen	Adjusting brightness	4 level(OFF / Min / Standard / Max)				
	Backlight	White LED, 2 level(Temp/Always)				
The numl channel	ber of input	4 / 6 / 8 / 10 / 12 channel(2 channel/card) – Expandable				
Universal	input *1	Temperature sensor(RTD, thermocouple), analog				
		1 to 4 channel: 25 ms/125 ms/250 ms, 5 to 12 channel: 125 ms/250 ms				
Compling	noriad	(Inner sampling period is operation unit time for average movement filter				
Sampling	penou	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				
Changers		1 to 3,600 sec				
Storage p	Deriod	(Storage interval time to inner log file is 1 sec.)				
Inner mei	mory	512MByte				
	2024	User purchased, recognizes max. 32GByte,				
USB men	nory	enables to use cable up to 1.5m				
		Record color, Record zone, Input special function, Input digital filter,				
Function		Reservation set, Summer time, Delay alarm, Record speed change, Data				
		storage, Backup data record, etc				
Dielectric		2,500VAC 50/60Hz for 1 min. (power terminal and case)				
Dielectric		※ USB Device and Ethernet are excepted				
Vibration strength		Vibration strength: 10to60Hz 4.9m/s2 (in X, Y, Z axes for each 1time)				
(for convey and storage)		Operating vibration: 10to60 1m/s2 (in X, Y, Z axes for each 10 min.)				
and operating vibration						
Insulated resistance		Min. 20M Ω (at 500VDC megger)				
Noise		$\pm 2kV$ the square wave noise (pulse width 1µs) by the noise simulator				
Time acc	uracy	Within ±2min/year (Enables to use up to 2100 year)				
Mechanis	Ink	Enables to normal print with going and returning printing max.5 times				
INICCI IAI IIS	cartridge	within 7 days after opening the unit				



	Ink dry time	Max. 15 minutes			
Protection		IP40(for front panel)			
Recording pa	aper	113mm X 9m			
Installation e	nvironment	t shall be used indoor, Altitude Max. 2,000m, Pollution Degree2			
motaliation c	Invironment	Installation category II			
	Temperat	0 to 50 $^\circ \!\!\!\mathrm{C}$, Storage: -20 to 60 $^\circ \!\!\!\mathrm{C}$, (without ink cartridge)			
Environ-	ure				
ment ^{**2}		35 to 85% RH, Storage: 35 to 85% RH			
mont	Humidity	stIf using this unit at place with high humidity, it may cause paper jam.			
		Please do not use this unit at place with high humidity.			
Approval		CE 🕼			
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.



2.2 I/O card

Туре	Model	I/O speci	fication	Description	
	KRN-UI2	Input specific ation ^{≋1}	RTD	JΡΤ100Ω, DΡΤ100Ω, DΡΤ50Ω, CU100Ω,	
				CU50Ω(Supply current 420μA)	
			Thermoco uple	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: 0.00to20.00 mA 4.00to20.00 mA	
Universal input card		Input impedance		Voltage(V): Min. 150k Ω RTD, thermocouple, voltage(mV): min. 2M Ω current: 51 Ω	
		Display accurac y ^{≋₂}	RTD	Warm-up time: Min. 30 minutes	
			Thermoco uple	Room temperature (25℃±5℃) section: ±0.1% F.S.± 1 Digit	
			Analog	·Out of range of room temperature: $\pm 0.2\%$ F.S. ± 1 Digit RTD: 500 to 850°C is PV value $\pm 0.5\% \pm 1$ Digit Thermocouple: Below -100°C is $\pm 0.3\%$ F.S. ± 1 Digit	
		Resolution		16Bit	
Digital	KRN-DI6	Noncontact input		ON: Max. 1V of residual voltage, OFF: Max. 0.1 mA leakage current	
input card		Contact input		ON: Max. 1k Ω , OFF: Min. 100k Ω , Short: Approx. 4 mA	
	KRN-AR4	Alarm relay output	Capacity	250VAC 3A, 30VDC 3A, 1 Form A (resistance load)	
Alarm output card			Life	Mechanical: Min. 50,000,000 operations Electrical: Min. 100,000 operations (3A 250V AC, 3A 30V DC)	
	KRN-AT6	Alarm TR output		NPN Open Collector, 12-24VDC / 30 mA Max.	
Transmitt er power output card	KRN- 24V3	Power output for transmitter ^{×5}		24±2VDC, total 3 channel, max. 30 mA per 1 channel built-in over-current protection circuit	
Communi cation	KRN-	Commu nication output	RS485	Modbus RTU ※Recommended to use shield cable over AWG24	
output	COM		Ethernet	IEEE802.3(U), 10/100 BASE-T(Modbus TCP)	
card ^{×3}			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: $0 \le T \le 100 \pm 4.0$ °C,
 - B: No regulation accuracy below 400 °C
 - T, U: -200 \le T \le -100 \pm 3.0 °C, -100 \le T \le 400 \pm 2.0 °C,
 - CU50: -200 \le T \le 200 \pm 1.0 °C,
 - DPT50: -200 ${\leq}T{\leq}500{\pm}1.5\,^\circ{\rm C}$
- *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.

<u> (</u>Caution

If connecting or disconnecting input/output card when power is ON, it may cause malfunction. To connect or disconnect input/output card, you must turn OFF the power.



2.3 Input specification and measuring range

				Measuring range		
Input sensor			Mark	°C	۴	к
	K(CA)		тс-к	-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)		тс-т	-200.0 to 400.0	-328.0 to 752.0	73.2 to 673.2
	B(PR)		ТС-В	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
Thermonounle	S(PR)		TC-S	0.0 to 1750.0	32.0 to 3182.0	273.2 to 2023.2
Thermocouple	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 (Russia	an 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
	CU50 Ω		CU50	-200.0 to 200.0	-328.0 to 392.0	73.2 to 473.2
Resistance	CU100Ω		CU100	-200.0 to 200.0	-328.0 to 392.0	73.2 to 473.2
temperature detector	JPT100Ω		JPT100	-200.0 to 600.0	-328.0 to 1112.0	73.2 to 873.2
(RTD)	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
		-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 9.999	
		-200.00 to 200.00 mV	±200 mV	Resolution:10µV		
	Valtaria	-2.000 to 2.000V	±2V	Resolution: 1mV		
Angles	Voltage	1.000 to 5.000V	1 to 5V	Resolution: 1mV		
Analog		-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.



To change input specification, set jumper pin of KRN-UI2(Universal input card). (Please refer to '4.2 I/O card.)





(Unit:mm)

3 Dimensions

(1) KRN100

144

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X Back side dimension is with installed I/O cards to every slot.

144

(2) Panel cut-out



X Use panel which is 2 to 8mm thickness.



4 Connection

4.1 KRN100

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).	
С	Connects communication output card (KRN-COM).	



4.2 I/O card





🦉 Note

Depending on input specification, set the jumper pin of universal input card (KRN-UI2) channel 1, channel 2 as below figure.



Jumper pin	Input specification	Input break alarm
1	0 to 20 mA, 4 to 20 mA	Enables only 4 to 20 mA
2	TC, RTD, ±60mV, ±200mV	Enables
3	±2V, 1 to 5V, ±5V, -1 to 10V	Disables





5 Installation

5.1 Installation place

Install this unit in place where the below conditions are satisfied.

- Place where ventilation is well To prevent from malfunction and damage by overheating (use temperature range: 0 to 50°C), install this unit where ventilation is well. In case installing several KRN100, space each other by panel cut-out.
- Place where vibration is not severe If there is too much vibration, it may cause malfunction such as print error. For more information about vibration, please refer to '2 Specification'.
- In case of temperature measurement with thermocouple temperature sensor at the place where temperature is fluctuated, data error may occur. You should warm-up this unit over 30 min. to acquire accurate data before using it.
- At the place where temperature and humidity is fluctuated excessively, recording paper color may be changed.



5.2 Installation

5.2.1 Bracket mounting

1st Install KRN100 on the processed panel as panel cut-out diagram. Mount fixing brackets on upper/lower parts.



2nd Tighten fixing brackets on upper/lower parts to fix on the panel with phillips screwdriver (+). (Torque: 0.4N•m)





5.2.2 Additional I/O card connection

1st To connect I/O card additionally, turn OFF the power of KRN100. Remove the proper slot cover to insert I/O card with flat-head screwdriver or knife.



2nd Insert I/O card to the proper slot and turn ON the power of KRN100.





5.3 USB to Serial driver

Install USB to serial driver which is applied for KRN100 sereis and connect DAQMaster and you can set parameter setting.(It is available only when communication output card (KRN-COM) is connected. Supporing OS for USB to Serial driver is Windows XP 32/64bit, Windows 7 32/64bit.)

5.3.1 Driver installation

- 1st Visit our homepage www.konics.com and downlaod 'KRN100_USB_Serial_Drivers'. Unzip this file to the desired folder.
- 2nd Connect KRN100 USB port of communication output card(KRN-COM) and PC USB port with USB cable (A-Mini 5P, 1.5m).



3rd 'Found New Hardware Wizard' appears.

Select 'Install from a list or specific location (Advanced)' and click 'Next>'.

Found New Hardware Wizard			
	Welcome to the Found New Hardware Wizard		
	This wizard helps you install software for:		
	KRN100 USB to Serial		
	If your hardware came with an installation CD or floppy disk, insert it now.		
	What do you want the wizard to do?		
	 Install the software automatically (Recommended) Install from a list or specific location (Advanced) 		
	Click Next to continue.		
	<pre></pre>		


4th Select 'Search for the best driver in these locations' and check 'Include this locationin the search:'.

Click 'Browse' and select the folder which has 'KRN100_USB_Serial_Drivers' and

click 'OK'.	
Found New Hardware Wizard	Browse For Folder
Please choose your search and installation options.	Select the folder that contains drivers for your hardware.
 Search for the best driver in these locations. Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed. Search removable media (floppy, CD-RDM) Include this location in the search: C:\Documents and Settings\Autorics\Desktop\KRN v Browse Don't search. I will choose the driver to install. Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware. 	Desktop Desktop Desktop Desktop Desktop Desktop Desktop Desktop Desktop Ny Vectwork Places Desktop Desktop Ny Vectwork Places Desktop Desktop Desktop Network Places Desktop Desktop
< Back Next > Cancel	To view any subfolders, click a plus sign above.

 $5 \mathrm{th}~$ If hardware compatibility message appears, click 'Continue Anyway' and it processes

the next.

Hardwar	re Installation
1	The software you are installing for this hardware: KRN100 USB To Serial Converter has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

6th At 'Completing the Found New Hardware Wizard', click 'Finish' and driver installation is complete

s complete.								
Found New Hardware Wiz	ard							
	Completing the Found New Hardware Wizard							
	The wizard has finished installing the software for:							
	KRN100 USB To Serial Converter							
	Click Finish to close the wizard.							
	< Back Finish Cancel							



5.3.2 Checking driver

To check the driver, right click 'My computer' and select 'Properties' on pop-up menu. 'System Properties' dialog appears.

Select 'Hardware' tab and click 'Device Manager'. 'Device Manager'dialog appears.

Check 'Ports(COM & LPT)' - 'KRN100 USB To Serial Converter (COMx)'.

System Properties	📕 Device Manager 📃 🗖	\times
System Restore Automatic Updates Remote General Computer Name Hardware Advanced	File Action View Help ← → III III III III	
Device Manager Image: Image: Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device. Device Manager Divers Drivers Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers. Driver Signing Windows Update Hardware Profiles Image: Hardware profiles provide a way for you to set up and store different hardware configurations.	AUTONICS-AS6DA7 Computer Diskdrives Dislay adapters Dislay adapters DVD/CD-ROM drives DVD/CD-ROM drives	
OK Cancel Apply		

6 Display

6.1 Initial booting screen

Below booting screens are initially displayed when power is supplied to KRN100. These screens progresses initial settings for KRN100 to operate normally and checks inner system memory.

If there is no error for inner system memory, booting is finished and KRN100 operates normally.

Screen for progressing initial setting



• Screen for checking error of inner system memory



If there are lots of log data files, booting time may take a long time. Delete log data file. For more information, refer to '8.7.4 Memory Clear (Delete memory)'.

Screen for error of inner system memory



Above this figure, if there is error of inner system memory, KRN100 cannot operate normally. Please contact us. KONICS service center: +82-32-820-2343



6.2 Screen layout

Screen layout is divided as two; upper screen for status display, lower screen for measuring value display, virtual keyboard display, parameter display.



6.2.1 Status display

Upper screen displays recorder status and information of recorder as icon.



Section	lcon	Name	Description
		Record start icon	Marks if for starting recording measuring value of
			recordable channels.
1		Record stop icon	Stops recording measuring value.
		List record icon	Flashes during list recording.
	RE	Reservation record icon	Flashes during reservation recording.
	FEED	FEED icon	Flashes during feeding recording paper.
	RECORD BACKUP	Backup data print icon	Flashes during backup data printing.
		Digital mode icon	Marks it for digital record mode.
2	\square	Graph mode icon	Marks it for graph record mode.
2		Record memory status	Marks it storage capacity of record memory in
	\sum	icon	digital mode or graph mode.



Section	lcon	Name	Description						
	P	No recording paper	Marks it for no recording paper. Please replace						
	P END	icon ^{×1}	new recording paper.						
	•17	LICD communication icon	Marks 🦞 icon during Modbus RTU						
	Ŷ	USB communication icon	communication using USB.						
2		Ethernet communication	Marks 🗴 icon during ModBus TCP						
3		icon	communication using Ethernet.						
		RS485 communication	Marks 🎽 icon during Modbus RTU						
	X	icon	communication using RS485.						
4	1212	Alarm ON icon	Marks 1 2 12 channel icon which alarm occurs.						
		Digital input(DI) icon	Marks the below icon according to input function						
		Digital input(DI) icon	setting during digital input (DI).						
	ME	Digital input(DI)- memo	Marks it when digital memo of digital input or front						
	ME MO!!	icon	● is input in recording status.						
	RE	Digital input(DI)- alarm	Marks it when alarm reset signal of digital input						
5	RE SET	reset icon	(DI) is input.						
	RUN	Digital input(DI)- start	Marks it when start record signal of digital input						
		record icon	(DI) is input.						
	ST OP	Digital input(DI)- stop	Marks it when stop record signal of digital input						
	ОР	record icon	(DI) is input.						
	LI ST	Digital input(DI)- LIST	Marks it when LIST output signal of digital input						
	ST	output icon	(DI) is input.						
	SP EED	Digital input(DI)- record	Marks it when changing record speed signal of						
		speed icon	digital input (DI) is input.						
	đ	Unlock icon	Marks it for unlock status.						
6	₿	User(general user) lock icon	Marks it for user (general user) lock status.						
		Administrator lock icon	Marks it for administrator and general user lock status.						
			Displays data capacity of internal memory as bar						
		Inner and external (USB)	graph. When an USB memory is connected, it						
7		memory capacity icon	displays data capacity of an USB memory as bar						
			graph						
			of total capacity, it flashes.						
8	2011 / 02 / 07 MON 15: 17: 34	Date/Time display	Displays current date and time. In summer time						
0	MON 15: 17: 34		season, (S) mark is also displayed at front of year.						

* 1. If there is no recording paper, icon flashes. After replacing recording paper, P.END BACKUP PRINT screen as below is activated.



Backup data recording function by P.END is same as RECORD BACKUP. Backup Data List

cannot be changed.

🔳 🖉 📲 🖞 123456	1789101112 🚖 🔂 📥 🛛 2011/06/ THU 14:46:	09 22
P. END BACKUP PRINT		۸
<name></name>	VALUE	
Record Backup	Stop	
Backup Data List	KRN100_20110609_144512, KRD	
Start Date and Time	2011/06/09 14:45:46	
End Date and Time	2011/06/09 14:45:50	
Backup Print Mode	Graph	
Soloct Print Mode	Graph	\mathbf{T}

Starting print by P.END Backup, it prints the data but backup data file date, file name, and backup record starting line.



6.2.2 Virtual keyboard

•

You can enter set value with vertual keyboard. (Supports only English letters for entering character.).

Virtual keyboard is activated when set value is input.

You can enter English letters, numbers, special characters by **RUND**, **WE**, **W**

No	Front key	Description
		Press key once and English capital letters, English small
1		letters, and special character virtual keyboard is switching. ^{$\times 1$}
	When pressing and holding key, screen of I	
		is displayed. ^{×2}
2	LIST, AL RESET, FEED, DISPLAY	Moves digit to select character of virtual keyboard
3	ЕНТЕВІ	Enters set characters

※1. Enterable characters are as below.

Eng	glish	capit	tal le	tters							
	A	В	С	D	Е	F	G	+	1	2	3
Key	Н	1	J	К	L	М	N	Ι	4	Б	6
Keyboard	0	Р	Q	R	S	T	U	*	7	8	9
гд	٧	₩	Х	Y	Ζ	Spa	ace	11	. 0		-
										Å	a +

English small letters

0	-										
	а	Ь	С	d	е	f	9	+	1	2	3
Key	h	i	j	k	Ι	M	Π	-	4	5	6
Keyboard	0	Р	q	r	s	t	U	*	7	8	9
Гď	۷	W	Х	У	z	Spa	ace	1	0		-
										A	a *

Special character

	+	~	*	1	ш	[]	+	1	2	3
Key	!	Ø	#	\$	%	{	}	-	4	5	6
Keyboard	^	&	:	;	?	()	*	7	8	9
Ъ	<	>		•	,	Spa	ace	1	0		-
										A	a *

% 2. Screen of Function key using

	■ 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 🛄 TUĘ 16: 26: 4													
	A	В	С	D	Е	F	G	+	1	2	3			
Key	Н	Ι	J	К	L	М	Ν	-	4	5	6			
Keyboard	0	Ρ	Q	R	S	T	U	*	7	8	9			
Гd	۷	K-Le	eft	Right->		Del	Delete		Cancel		ОК			
										A	a *			



6.2.3 Parameter setting display

🔳 🛛 🖞 🛔 🕅 1234567891011	12 1 1 1 1 1 1 1 1 1 1	🔳 🖉 🖞 🖞 🛯 23456789	101112 🚖 🗗 🛛 2011/06/15 WED 20:27:20
INPUT SETUP	H3 H-3 0.0 °C	INPUT SETUP <name></name>	
DIGITAL INPUT SETUP	H4 −3.6° C	Select UI Card Input Set Copy	
	H5 1.8 ℃	LCD/Paper Record Pen Color	ON 3-Black
FILE/MEMORY SETUP	H6 H-6 Cancel OK	Record Zone	

Press front **EVER** key for 3 sec, and it enters parameter setting group.

When entering parameter setting group, setable parameter setting groups are displayed. At parameter setting group, press key to enter parameter setting.

For more information of parameter detail setup, please refer to '8 Parameter detail setup'.

7 Operation





7.1 Screen display

7.1.1 Measuring value display

KRN100 displays measuring value as trend graph, bar graph, and digital number display(1 channel, 8 channels, 12 channels). You can select one by key.



(1) Trend graph

■ 🛛 🖞曲፬123456789	10 11 12 🚖 🖁	2011/02/01
1 4µ2 +3↓1 <	CH1 CH-1	187.5 ℃
> >	CH2 CH-2	−123. 9 °C
J2	CH3 CH-3	58. 3 ℃
	CH4 CH-4	BURN °C

Displays input measuring value of each channel as trend graph (left) and digital number (right).

4 channels are displayed per one screen. To switch channel, please refer to "7.1.2 Channel switch".

(2) Bar graph

🔳 ស 🖞 🖞 🏹 1 2 3 4 5	6789101112 🚖 🗗	2011/02/01 SD TUE 14:52:06
.1	CH1 CH-1	BURN %
42	CH2 CH-2	24.5 °C
43	CH3 CH-3	29.8 °C
±4	CH4 CH-4	50.0 %

Displays input measuring value of each channel as bar graph (left) and digital number (right). You can easily check present measuring value within the set display range as level (%). 4 channels are displayed per one screen. To switch channel, please refer to "7.1.2 Channel switch".



(3) Digital number

Displays input measuring value of each channel as digital number.

Digital number display is divided as 1 channel digital number, 8 channels digital number, 12 channels digital number.

• Display of 1 channel digital number: Displays 1 channel per 1 screen with big font size. It has high visibility.



• Display of 8 channels digital number: Displays 8 channels per 1 screen.

■応撃曲炎	12345678	3 9 10 11 12 🚖 d	2011/02/01 CCD TUE 14:11:54
CH1 CH-1	BURN %	011-0	BURN °C
CH2 CH-2	24.5 °	с <u>СН6</u> СН-6	36.0 %
CH3 CH-3	29. 3 °	с CH7 CH-7	BURN °C
CH4 CH-4	50.0 %	, CH8 , CH-8	28.8 °C

 Display of 12 channels digital number: Displays 12 channels (all channels) per 1 screen.

	οΨфŎ	123456	789	10 11 12 🚖 c	5 3010/ 20:	09/03 15:22
CH1 :		50.0	%	CH7 :	BURN	•C
CH2 :		23.0	•C	CH8 :	27.8	•C
СНЗ :		28.7	•C	CH9 :	BURN	%
CH4 :		50.0	%	CH10:	BURN	%
CH5 :		BURN	•C	CH11:	42.9	%
CH6 :		36.0	%	CH12:	43.4	%



7.1.2 Channel switch

It displays measuring value of all input channels by switching channel of display types. You can set channel switch mode as auto channel switch or manual channel switch.

7.1.2.1 Auto channel switch

A screen displays 4 channels and automatically switches other screens by 3 sec period.

(1) Trend graph



(2) Bar graph





(3) Digital number(1 channel)



(4) Digital number(8 channels)

1~8 channel			9~12 channel
■ 記 学 品 汶川 23456789101112 金 団 画 CH1 49.5 % CH5 CH2 22.7 °C CH6 CH2 27.8 °C CH7 CH3 27.8 °C CH7 CH7 CH7 CH7 CH7 CH7 CH7 CH7	2011/02/07 MON 15:17:34 BURN °C 36.0 % BURN °C 27.2 °C	3 sec.	Image: Series construction Series construct

(5) Digital number(12 channels)

	1~12 channel						
	ä≬1234561	789	10 11 12 🚖 🖅	2011/02/07 MON 15:17:34			
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 %			

Digital number (12 channels) displays all channels (1 to 12 channel). It does not support auto/manual channel switch function.

7.1.2.2 Auto channel switch mode↔ Manual channel switch mode

- 1st When supplying/re-supplying power to KRN100, it is display currently display and auto channel switch mode.
- 2nd If you want to change manual channel switch mode, press **Key** key or **Key** key.
- 3rd You can switch/select the to-be displayed channel by pressing key or key.
- 4th In manual channel switch mode, press key to change to auto channel switch mode.



<u>«</u>

7.2 **Special operation for record**

KRN100 executes special operation for record with front keys (

(1) Start record (RUN)/Stop record (STOP)

Press front key at once, it starts recording and press this key once again, it stops recording.

When digital input operation status is set as 'Level', you cannot start/stop record by front key. In case of as 'Edge', start record (RUN)/stop record (STOP) function is available with front **store** key.

(2) Parameter's set information print (List Print)

This function is to record the main parameter's set information on recording paper. Press key for over 3 sec. during recording or stop state, and it records the set information of each menu.

For more information, please refer to '8.5.13 List Out Option (List record option)'.



Note

Even if you print the parameter set information with max record speed (240mm/h), it takes a lot of time. (It takes approx. 40 minutes for 12 channels.) Be sure that for printing the list.

(3) Manual feed (FEED)

In record STOP state, press front _____ key for over 3 sec, record state icon is changed to icon and you can feed recording paper manually.

To tear recording paper, use this manual feed function at first.

(4) Digital memo (Digital Memo)

Press for over 3 sec, during recording status, digital input icon 🚖 changes to

memo icon. It records current time (hh:mm:ss) and display value of each channel as digital number on recording paper. It also displays 'M' which means the recording by memo at front of current time.



7.3 Parameter setting group

7.3.1 Parameter setting

The setting order of KRN100 basic parameters is as below.

For more information of detail setup of each parameter, please refer to '8 Parameter detail setup'.



- Cancel: Moves to upper parameter after not saving the setting.
- OK: Moves to upper parameter after saving the setting.

🔳 🖉 🖞 🖞 🛯 23456789) 10 11 12 🚖 🗗	2011/06/15 WED 20:18:53
INPUT SETUP ALABM SETUP	▲СНЗ СН-3	0.0°C
DIGITAL INPUT SETUP		-3, 6°≎
COMMUNICATION SETUP RECORD SETUP		1.8℃
SYSTEM SETUP FILE/MEMORY SETUP	CH-5 CH6	
	▼CH-6	Cancel OK



7.3.2 Parameter







XDot-lined parameters are affected by set value of other parameters.





8 Parameter detail setup

8.1 INPUT SETUP(Input setting)

You can set details for input specification and scale by universal input channel, record method, input digital filter, input error correction, etc.

Move to INPUT SETUP with	≫M ⁶ ,	eys, press 💵 key l	to enter INPUT SETUP.
■ 2 123456789101112 2 123456789101112 2 123456789101112 2 123456789101112 2 123456789101112 2 123456789101112 2 123456789101112 2 12345678910112 2 12345678910112 2 12345678910112 2 12345678910112 2 12345678910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910 2 1234578910112 2 12345789101112 2 1234578910112 2 1234578910112 2 1234578910 2 12357891000000000000000000000000000000000000	2011/06/15 WED 20:24:46 0.4°C −3.4°C 1.8°C 1.0°C	■ 2 1234567891 INPUT SETUP 《NAME> Select UI Card Input Set Copy LCD/Paper Record Pen Color Record Zone Tag Mage	01112 ▲ ▲ web 2011/06/15 WED 20:27:20 CH3=S2UI=1 CH3=S2UI=1 Select ON 3-Black Zone CH-3

Parameter list

Parameter	Set range	Factory default
Select UI Card (Select universal input card)	CH□-S□UI-□	Automatica Ily set
Input Set Copy (Copy input parameter)	None, CH□-S□UI-□	CH Select
LCD/Paper Record (Display and record measuring value)	OFF ↔ ON	ON
Pen Color (Record color)	1-Violet \leftrightarrow 2-Red \leftrightarrow 3-Black \leftrightarrow 4-Green \leftrightarrow 5-Blue \leftrightarrow 6-Brown	Automatica Ily set
Record Zone (Record zone)	None, 1 ↔ Zone n	None
Tag Name (Channel name)	None/1 to 6 characters	CH-1to12
Input Type (Input specification)	Refer to detail descriptions.	ТС-К
	TC, RTD: 0 ↔ 0.0	0.0
Range/Scale Point (Decimal point)	Analog: $0 \leftrightarrow 0.0 \leftrightarrow 0.00 \leftrightarrow 0.000 \leftrightarrow 0.0000$ If special function is two unit: $0 \leftrightarrow 0.0 \leftrightarrow 0.00$	0.0
Display/Temp Unit (Display	TC, RTD: ℃ ↔ °F ↔ °K	°C
unit/Temperature unit)	Analog: Refer to detail descriptions.	%
High/Low Range & Graph Scale(Upper/Lower limit input value and	Low: Input range/Min. graph scale value to upper limit input value /Graph scale value (High Range/Graph Scale)– F.S. 5%	-200.0
graph scale value)	High: Lower limit input value/Graph scale value (Low Range/Graph Scale) + F.S 5% to input range/Max. graph scale value	1350.0
Low Scale/High Scale (Lower	Low: Set the range by set value of scale point	-
limit/Upper limit scale value)	High: Set the range by set value of scale point	-
Chariel Eurotian (Chariel function)	TC, RTD: None ↔ Difference	Nono
Special Function (Special function)	Analog: Linear ↔ Square ↔ Root ↔ Two Unit	None
Two Unit (Display the degree of a vacuum, static pressure)	1 to 35	-
Reference Channel (Reference channel)	None \leftrightarrow CH \Box -S \Box UI- \Box (Activates connected universal input(2 channel per one	-



Parameter	Set range	Factory default
	card))	
Input Bias(Error correction)	-999.9 to 999.9	0.0
Span (Gradient adjustment)	0.100 to 5.000	-
Record Method (Data storage method)	Instant ↔ Average ↔ Minimum ↔ Maximum	Instant
Filter Type (Input digital filter)	None ↔ Moving	None
Filter Counter (The number of digital filter)	1 to 128	-
Burnout Action (Display setting for break)	$OFF \leftrightarrow Up_Scale \leftrightarrow Down_Scale$	OFF

**Shaded parameters are affected by set value of other parameters. Please refer to specific descriptions of each parameter.

►



When changing set value of Input Type(input type) parameter, Range/Scale Point(Decimal point position) Display/Temp Unit(Display unit/Temperature unit) Low Range & Graph Scale (Lower limit input value and graph scale value) High Range & Graph Scale (Upper limit input value and graph scale value) Low Scale(Analog lower limit scale value) High Scale(Analog upper limit scale value) Special Function (Input special function) parameters' set values are initialized.



8.1.1 Select UI Card (Select universal input card)

■ 🖉 🖞 🖞 🛛 23456789101112 🚖 🗗	2011/06/15 WED 22:01:30	🔳 🖉 🖞 🖞 🛛 2345678910	112 🚖 🗗 🕴 2011/06/15 WED 22:01:30
INPUT SETUP CH3-S2UI-1	•CH3-S2UI-1 🔺	INPUT SETUP C	H3-S2UI-1 •CH3-S2UI-1 🔺
<name> <value <="" <value="" th="" value=""><th></th><th><name></name></th><th><valu ch4-s2ui-2<="" th=""></valu></th></value></name>		<name></name>	<valu ch4-s2ui-2<="" th=""></valu>
Select UI Card		Select UI Card	CF CH5-S3UI-1
Input Set Copy	CH6-S3UI-2 💻	Input Set Copy	CH6-S3UI-2
LCD/Paper Record	CH7-S4UI-1	LCD/Paper Record	CH7-S4UI-1
Pen Color	CH8-S4UI-2	Pen Color	CH8-S4UI-2
Record Zone	CH9-S5UI-1 🖵	Record Zone	CH9-S5UI-1
Tog Nome	СН10-8501-2 🔽	Tog Nomo	CH10_95UI_2 ▼

Select the channel of universal input card (KRN-UI2) to be set.

One universal input card has two channels.

KRN100 automatically searches slot connected universal input card (KRN-UI2) and displays as channel as soon as power is ON.

Channel name form is as below.



Ex.

CH06-S3UI-2: It means 6th channel and 2nd input of 3rd slot connected universal input card.

8.1.2 Input Set Copy (Copy input parameter)

🗖 🗗 🖞 🖞 12345678	9101112 🚖 🗗 🛛 🕺 2011/10 MON 11:54	0∕17 1:18	🔳 🖉 🖞 🛱 🕅 123456789	10 11 12 🚖 🐻	2012/07 WED 08:58	
INPUT SETUP	CH3-S2UI-1	▲	ALARM SETUP	CH7-S4UI-1	•No Select	
<name></name>	<value></value>		<name></name>	<valu< th=""><th>CH1-S1UI-1</th><th></th></valu<>	CH1-S1UI-1	
Select UI Card	CH3-S2UI-1		Select UI Card	CH	CH2-S1UI-2	
Input Set Copy	CH Select		Alarm Set Copy	(CH3-S2UI-1	
LCD/Paper Record	ON		Alarm1 Type		CH4-S2UI-2	
Pen Color	3–Black		Alarm1 Ref CH		CH5-S3UI-1	
Record Zone	None	Ц	Alarm1 Option		CH6-S3UI-2	Ш
Tog Nomo	CH_3	\mathbf{T}	Olarm1 Value		CH7_S4UT_1	\mathbf{T}

You do not need to repeat the setting of same parameter for each channel. KRN100 copies set values of the set-completed channel to other channels.

Copyable parameters are as following.

Input Type (Input specification)	Range/Scale point (Decimal point)
Display/Temp Unit (Display/Temperature unit)	Low Scale (Lower limit scale)
High Scale (Upper scale)	Special Function (Special function)
Two Unit (Display the degree of a vacuum, static	Reference Chanel (Reference channel)
pressure)	
Input Bias (Error correction)	Span (Gradient adjustment)
Record Method (Data storage method)	Filter Type (Input digital filter)
Filter Counter (The number of digital filter)	Burnout Action (Display setting for break)
High Range & Graph Scale (Upper limit input value and	Low Range & Graph Scale (Lower limit input value and
graph scale value)	graph scale value)
■ Set range: None/CH□-S□UI-□	
 Factory default: CH Select 	



8.1.3 LCD/Paper Record (Display and record measuring value)

🔳 🗗 🖞 🖞 🖬 🕅 💷	2011/10. 11:55 Mon 11:55	∕17 :20
INPUT SETUP	CH3-S2UI-1	
<name></name>	<value></value>	
Select UI Card	CH3-S2UI-1	
Input Set Copy	CH Select	
LCD/Paper Record	ON	
Pen Color	3-Black	
Record Zone	None	\square
Tog Nomo	CH_3	\mathbf{T}

Set whether to record measuring value.

If you set ON, KRN100 displays and records measuring value on LCD screen, and recording paper. If you set OFF, KRN100 does not display and record measuring value on LCD screen, and recording paper.

- Set range: ON ↔ OFF
- Factory default: ON

8.1.4 Pen Color (Record color)



Designate record color when recordingmeasuring value.

- Set range: 1-Violet ↔ 2-Red ↔ 3-Black ↔ 4-Green ↔ 5-Blue ↔ 6-Brown
- Factory default: Automatically set

8.1.5 Record Zone (Record zone)



In case record mode is graph mode, you can select record zone for to graph measuring value when recording.

Set range is set accoriding to the set value of '8.5.6 Divide Zone (Record zone division)' from RECORD SETUP .

If the set is 'None', record zone is full width(100mm) of recording paper.

- Set range: None, 1 ↔ Zone n (n: set value of Divide Zone (Record zone division))
- Factory default: None



8.1.6 Tag Name (Channel name)

🔳 🖉 🖞 🖞 🛯 2345678910)1112 🚖 🗗 🛛 🕺 2011/06 WED 22:10	2/15 1:39		2 4	ЪX	123	4561	7891) 11 12 ,	<u> </u>				06∕09 14:55
INPUT SETUP C <name></name>	:H5-S3UI-1 <yalue></yalue>	▲		A	В	С	D	Е	F	G	+	1	2	3
Input Set Copy	Select		Kej	Н	Ι	J	К	L	М	Ν	-	4	5	6
LCD/Paper Record Pen Color	ON 5-Blue		eyboa	0	Ρ	Q	R	S	T	U	*	7	8	9
Record Zone	Zone		a	۷	Ψ	Х	Y	Ζ	Spa	асе	1	0	•	-
Tag Name Input Type	CH-5 TC-K	▼		CH-1			-						A	а *

Designate channel name with virtual keyboard.

You can enter max. 6 characters with English capital letters, English small letters, and speical characters.

- Set range: 1 to 6 characters
- Factory default: CH-1 to CH-12(Channel number by slot)

Note

Some special character may be printed in low quality due to low print resolution.

8.1.7 Input Type (Input specification)



Set input specification of channel.

Set input speicfication is total 27 such as thermocouple, RTD, voltage, and current. For more details, please refer to '2.3 Input specification and measuring range'. For jumper pin setting of universal input card (KRN-UI2) by inpust specification, refer to '4.2 I/O card'.

- Set range: Refer to '2.3 Input specification and measuring range'
- Factory default: TC-K

8.1.8 Range/Scale Point (Decimal point)

In case Input Type(Input specification) is temperature sensor(thermocouple, RTD), set wheter to display decimal point to measuring value. In case analog(voltage, current), set decimal point position of Low Scale(Lower limit scalevalue), High Scale(Upper limit scale value).

Set range

In case Input Type(Input specification) is temperature sensor(thermocouple, RTD): 0 ↔ 0.0

In case analog(current, voltage): $0 \leftrightarrow 0.0 \leftrightarrow 0.00 \leftrightarrow 0.000 \leftrightarrow 0.0000$

Factory default: 0.0

🖉 Note

If you want high accuracy display, select '0.0(decimal point)'. If you want to stable accuracy display, select '0 (no dicimal point)'.



8.1.9 Display/Temp Unit (Display unit/Temperature unit)

In case Input Type(Input specification) is temperature sensor(thermocouple, RTD), temperature unit is activated. In case analog(current, voltage), display unit is actiaved.



Set range

In case Input Type(Input specification) is temperature sensor(thermocouple, RTD): $^{\circ}C \leftrightarrow ^{\circ}F \leftrightarrow ^{\circ}K$ In case analog : Refer to below table.

■ Factory default: °C

Set range in case analog (current, voltage)

No	Unit	No	Unit	No	Unit	No	Unit	No	Unit
1	°C	17	%	32	V	48	mA	64	User0
2	°F	18	Wt%	33	mV	49	А	65	User1
3	°K	19	mass%	34	μV	50	kg/cm ²	66	User2
4	Kcal/m ³	20	Vol%	35	kV	51	Pa	67	User3
5	Kcal	21	ppm	36		52	kPa	68	User4
6	cal	22	ppb	37	m	53	MPa	69	User5
7	j	23	mol	38	μ	54	N/m ²	70	User6
8	Btu	24	Blank	39	s	55	N/mm ²	71	User7
9	I	25	lx	40	μs	56	inH₂O	72	User8
10	ml	26	cd	41	VA	57	mmH₂O	73	User9
11	t	27	lm	42	W	58	bar		
12	gal	28	cd/m ²	43	kW	59	Torr		
13	lb	29	rpm	44	MW	60	mmHg		
14	oz	30	Hz	45	Var	61	mmAq		
15	barrel	31	m²/s	46	kVar	62	psi		
16	-	32	ср	47	MVar	63	Blank		

You can use user-defined unit image by selecting user-defined (User0 to User9) unit. Please refer to '9.3.2 User unit setting'.

🖉 Note

The unit with multiplier such as kg/cm² or complicated unit may be printed in low quality due to low print resolution.



8.1.10 High/Low Range & Graph Scale(Upper/Lower limit input value and graph scale value)

Set the actual used input range (Lower limit input value/Upper limit input value) in analog input.

If input range becomes small, the resoultion also becomes low in proportion to total range. Decimal point position is changed by 'Scale Point(Scale decimal point position)' setting.

(1) Low Range (Lower limit input value)

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗	2000/01/01 SAT 00:10:22		23	ЪŽ	123	456	7891	D 11 12	â.				06∕09 15:59
INPUT SETUP CH1-S1UI-1 <name> <value></value></name>	▲		A	В	С	D	Е	F	G	+	1	2	3
Input Type	±60mV	Key	Н	Ι	J	Κ	L	М	N	-	4	Б	6
Range/Scale Point Display/Temp Unit	0.0	/boa	0	Ρ	Q	R	S	T	U	*	7	8	9
Low Range	-60.00mŶ	Ъ	٧	₩	Х	Y	Ζ	Spa	асе	1	0		-
High Range	60.00mV		-200	.0								A	а *

Set the actual used lower limit input value within input range of Input Type(Input specification).

- Set range: Min. input range value to upper limit input value(High Range) F.S. 5% In case input range is 0 to 100°C, set range is 0 to 95°C.
- Factory default: -

(2) High Range (Upper limit input value)

🔳 🖉 🖞 🖞 🛛 23456789101112	2000/01 SAT 00:10	∕01 ∶26		2 1	ЪŽ	123	456	7891) 11 12 .	<u> </u>				06∕09 16:21
INPUT SETUP CH1-S1U <name></name>	I-1 <value></value>			A	В	С	D	E	F	G	+	1	2	3
Input Type	±60mV		Key	Н	Ι	J	Κ	L	М	Ν	-	4	5	6
Range/Scale Point Display/Temp Unit	0.0 %		eyboa	0	Р	Q	R	S	T	U	*	7	8	9
Low Range	-60.00mV		ЪГ	٧	Ŵ	Х	Y	Ζ	Spa	ace	1	0		-
High Range	60.00mV	F		1									A	а *

Set the actual used upper limit input value within input range of Input Type(Input specification).

- Set range: Lower limit input value(Low Range) + F.S. 5% to max. input range value In case input range is 0 to 100°C, set range is 5 to 100°C.
- Factory default: -

Set the displayed graph scale value on recording paper and LCD in temperature sensor input type (Thermocouple, RTD), (They does not displayed in analog input type.). You can designate the record range and record specific section as detail graph by these parameters. (If graph scale range is small, resoultion is also lower in proportion to recording range.)

(3) Low Graph Scale (Lower limit graph scale value)

ĺ	■ 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🖅 🖡	2000/01/01		2	ЪŽ	123	4561	7891	D 11 12	<u> </u>		THU	011/0 10:	06∕09 15:59
	INPUT SETUP CH1-S1UI-1	▲		A	В	С	D	E	F	G	+	1	2	3
	<name> <value> Input Type</value></name>	DPT100	Key	Н	1	J	К	L	М	N	-	4	5	6
	Range/Scale Point	0.0	/boa	0	Р	Q	R	S	Т	U	*	7	8	9
	Display/Temp Unit Low Graph Scale	-200.0	ard	٧	Ŵ	Х	Y	Ζ	Spa	асе	1	0		-
	High Graph Scale	850.0		-200	.0								A	a *

Within the input range of Input Type (Input specification), set lower limit graph scale value.

Set range: Min. value of input range to upper limit graph scale value (High Graph Scale) – F.S. 5%

When TC-K input range is -200.0 to 1350°C, set range is -200.0 to 1272.5°C.

• Factory default: -200.0



(4) High Graph Scale (Upper limit graph scale value)

■ 🖉 🖞 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 🖡	2000/01/0 SAT 00:11:2	1	2	Ύф́	123	456	7891	D 11 12 (â e				06∕09 15:59
INPUT SETUP CH1-S1UI-1	A		A	В	С	D	E	F	G	+	1	2	3
<pre></pre>	DPT100	500	βH	1	J	К	L	М	N	-	4	5	6
Range/Scale Point	0.0	- Cyboo	0	Р	Q	R	S	T	U	*	7	8	9
Display/Temp Unit Low Graph Scale	-200.0			Ŵ	Х	Y	Z	Spa	ace	1	0		-
High Graph Scale	850.0	-	-20	0.0								A	а *

Within the input range of Input Type (Input specification), set upper limit graph scale value. They does not displayed in analog input type.

 Set range: Lower limit graph scale value (Low Graph Scale) + F.S. 5% to Max. value of input range

When TC-K input range is -200.0 to 1350℃, set range is -122.5 to 1272.5℃.

• Factory default: 1350.0



8.1.11 Low Scale/High Scale (Lower limit/Upper limit scale value)

This function is for set the desired display value based on measuring value. It is applied to analog (voltage, current) input type only.

As below figure, for example, measuring input value are 'a' and 'b' and the desired display value are 'A' and 'B'. In this case, about the input 'a' and 'b', it displays a=A, b=B as linearly.



You can change display value about min./max. input value of measuring value.

Ex.

In case input specification is 0 to 20 mA

 Set Low Scale (Lower limit scale value) = 0.0, High Scale (Upper limit scale value) = 10.0, 20.0, 30.0, -20.0.



Set Low Scale (Lower limit scale value) = 20.0, High Scale (Upper limit scale value) = -20.0.
 Display





Set Low Scale (Lower limit scale value) = -20.0, High Scale (Upper limit scale value) = 20.0. Display



(1) Low Scale(Lower limit scale value)

■ 2
<name> <value> Low Scale 0.0 High Scale 100.0 Special Function Linear</value></name>
<pre><name> <value> Low Scale 0.0 High Scale 100.0 Special Function Linear Two Upit</value></name></pre>
Low Scale 0.0 High Scale 100.0 Special Function Linear
High Scale 100.0 Special Function Linear
Special Function Linear
Two Upit
Reference Channel None 🗕
Input Bioc 🛛 🕅 🔍

								_	_		
	2 1	ЪŽ	123	4561	7891() 11 12 ,	<u> </u>		тн	011/0 1 10:	06/09 17:16
	A	В	С	D	Е	F	G	+	1	2	3
20	Н	Ι	J	К	L	М	Ν	-	4	5	6
Komboord	0	Ρ	Q	R	S	T	U	*	7	8	9
1	۷	Ŵ	Х	Y	Ζ	Spa	асе	1	0		-
	0.0									A	а *

Set scale value for lower limit input value (Low Range).

Set range: -99999 to 99999 ↔ -9999.9 to 9999.9 ↔ -999.99 to 999.99 ↔ -99.999 to

- 99.999 ↔ -9.9999 to 9.9999 (Depending on Scale Point setting, the range is different.)
- Factory default: -

٠

(2) High Scale(Upper limit scale value)

🔳 🖉 🖞 🖞 🛙 12345678	9 10 11 12 🚖 🗗	2011/ WED 22:			2 4	ЪŽ	123	456	7891) 11 12 .	<u> </u>		2 THU	011/0 10: :	06∕09 17:29
INPUT SETUP <name></name>	CH5-S3UI-1 <value></value>		^		A	В	С	D	E	F	G	+	1	2	3
Low Scal	9	0.0		Key	Н	Ι	J	Κ	L	Μ	Ν	Ι	4	5	6
High Scal Special Functio		100.0 Linear		Keyboa	0	Ρ	Q	R	S	T	U	*	7	8	9
Two Uni	t			Ē	٧	Ψ	Х	Y	Ζ	Spa	асе	1	0		-
Reference Channe Input Bio		None a a	▼		100.	Q								A	а *

Set scale value for upper limit input value (High Range).

- Set range: -99999 to 99999 ↔ -9999.9 to 9999.9 ↔ -999.99 to 999.99 ↔ -99.999 to ٠
 - 99.999 ↔ -9.9999 to 9.9999 (Depending on Scale Point setting, the range is different.)
- Factory default: -.



8.1.12 Special Function (Special function)

🔳 🖉 🖞 🖞 🛯 23456789	10 11 12 🚖 🗗 🛛 201 1 / 06/ WED 22: 18:	15 43
INPUT SETUP	CH5-S3UI-1	
<name></name>	<value></value>	
Low Scale	0.0	
High Scale	100.0	
Special Function	Linear	
Two Unit		
Reference Channel	None	
Input Bioc	<u> </u>	$\mathbf{\nabla}$

It dispalys the applied measuring value of the set special function. Depending on Input Type(Input specification), appliable special function is different.

Set range

When input type(input specification) is temperature sensor (thermocouple, RTD): None \leftrightarrow Difference analog (voltage, current): Linear \leftrightarrow Root \leftrightarrow Squre \leftrightarrow Two Unit (Two Unit is displayed when Input Type (input specification) is set as 0 to 20 mA, 4 to 20 mA.)

Factory default: None

Below graph's patterns are liner, root, square for analog input.

🖒 Ex.

Lower limit input value: -5V, Upper limit input value: +5V, Lower limit scale: -1000, Upper limit scale: 1000





(1) Difference(Deviation)

It is available to set when Input Type(input specification) is temperature sensor (thermocouple, RTD). It displays the deviation of Reference Channel (Reference channel) measuring value.

(Display value = standard channel measuring value - reference channel measuring value) Standard channel measuring valve



- The set channel as analog (current, voltage) of Input Type (Input specification) is not able to set as Reference Channel (reference channel).
- If there is no set reference channel, it displays standard channel measuring value.
- If any one of reference channel, or standard channel is break (BURN), upper limit value (HHHH), lower limit value(LLLL) status, it displays as correspond value. If you select the channel which is used Difference function as reference channel, it displays the value based on calculating actual measuring value, not display value of reference channel.

(2) Linear

It applies lower limit scale and upper limit scale to lower limit input value and upper limit input value and displays this values.

In case lower limit input value: -5V, Upper limit input value: +5V and in case lower limit scale: -1000, upper limit scale: 1000 if current input value is 2V, display value is 400. Display value = Upper limit input value –Lower limit input value × (Upper limit scale – Lower limit scale) +

$$400 = \frac{7}{10} \times 2000 - 1000$$

(3) **Root**

In case voltage, current input type, this mode is used when input value is calculated by Root $(\sqrt{})$ for the desired display value. Differential pressure signal of differential pressure flow meter is calculated Root($\sqrt{}$) for the to-be measured flux. This function is used to measure flux by input value.

In case lower limit input value: -5V, upper limit input value: +5V and in case lower limit scale: -1000, upper limit scale: 1000, if current input value is 2V, display value is approx. 673.32. Display value =

 $\sqrt{\frac{1}{\text{Upper limit input value}}} \times (\text{Upper limit scale} - \text{Lower limit scale}) + 1$ Lower limit scale

$$673.32 = \sqrt{\frac{7}{10}} \times 2000 - 1000$$



(4) Square

In case of voltage, current input type, this mode is used when input value is calculated by square for the desired display value. Reverse of Root, flux signal is calculated by square for differential pressure signal.

In case lower limit range: -5V, upper limit range: +5V and in case lower limit scale: -1000, upper limit scale: 1000, if current input value is 2V, display value is -20. **Display** value

 $= \left(\frac{\text{Input value} - \text{Lower limit input value}}{\text{Upper limit input value} - \text{Lower limit input value}}\right)$

× (Upper limit scale – Lower limit scale) + Lower limit scale

$$-20 = \left(\frac{7}{10}\right)^2 \times 2000 - 1000$$

(5) Two Unit

🔳 🛚 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 🔹 тно 10: 54: 37				ť	'фХ	123	456	7891	D 11 12 ,	<u>a</u> le		тни	011/ J 10:	08/04 54:45
INPUT SETUP CH1-S1UI-1 <name> <</name>	1 VALUE>	▲		A	В	С	D	Е	F	G	+	1	2	3
Low Scale	*HLUL/		Key	Н	Ι	J	К	L	М	Ν	-	4	5	6
High Scale Special Function	 Two Unit		/bos	0	Р	Q	R	S	T	U	*	7	8	9
Two Unit -769mm			ā	٧	Ŵ	Х	Y	Ζ	Spa	асе	1	0		-
Reference Channel	None a a	▼		4.0									A	a *

For compound pressure, if input pressure is lower than atmospheric pressure(0), it displays the degree of a vacuum with mm Hg unit. If input pressure is higher than or same as

atmospheric pressure(0), it displays positive pressure with kg/m² unit.

When using Two Unit function, lower limit value is fixed as -760mmHg and kg/cm² value is able to set within set range 1 to 35.

Two Unit limits scale point as 0 0.0 0.00. When using Two Unit, display unit is automatically changed as mmHg or kg/cm².

The calculation with Record Method (Data storage method) and Filter type (Input digital filter) is impossible and ignored due to different type of two unit value.

- Set range: 1 to 35
- Factory default: -



Ex.

If pressure range is -760mmHg to 3kg/cm², and pressure transmitter outputs 4 to 20 mA, for 4 mA input it displays -760 mmHg, 8mA input is unit changing point. For 20 mA input, it displays 3kg/cm².



Range	Unit changing
Range	point (mA)
-760mmHg to 1kg/cm2	12.130
-760mmHg to 5kg/cm2	6.740
-760mmHg to 10kg/cm2	5.498
-760mmHg to 15kg/cm2	5.031
-760mmHg to 20kg/cm2	4.786
-760mmHg to 25kg/cm2	4.635
-760mmHg to 30kg/cm2	4.533
-760mmHg to 35kg/cm2	4.459

🖉 Note

Unit changing point = $\left(\frac{16}{X+1.033} \times Y\right) + 4$

16	4 to 20 mA output interval
Х	Max. pressure range value (Ex. For 760 to 3 kg/cm ² , it is " 3 ".)
1.033	Converted value from 760 mmHg to kg/cm ² unit value (same unit)
Y	Use pressure + 1.033 (Ex. Use pressure is '0', Y is 1.033.)
4	Output value for zero, 4.00 mA

Set range

In case Input Type(Input specification) is temperature sensor(thermocouple, RTD): None ↔ Difference

In case Input Type(Input specification) is analog(voltage, current): Linear \leftrightarrow Root \leftrightarrow Square \leftrightarrow Two Unit (Two Unit is activated for current input(0 to 20 mA, 4 to 20 mA).)

Factory default: None



8.1.13 Reference Channel (Reference channel)



In case Input Type(Input specification) is temperature sensor(thermocouple, RTD), set Special Function(special function) as Difference to set reference channel.

- Set range: None / CH□-S□UI-□
- Factory default: -

8.1.14 Input Bias(Error correction)

. ■ 🖉 📲 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 🔜 Tuế	011/06/21 17:26:47		23	ЪX	123	4561	7891) 11 12 ,	<u>a</u> 6		THU	011/0 011/0	06∕09 19:40
INPUT SETUP CH1-S1UI-1 <name> <value></value></name>	^		A	В	С	D	E	F	G	+	1	2	3
High Scale 100.		Key	Н	Ι	J	Κ	L	М	Ν	Ι	4	Б	6
Special Function Two Uni Two Unit -760mmHg ~ 0kg/cm		Keyboa	0	Ρ	Q	R	S	T	U	*	7	8	9
Reference Channel Non	e 🗖	Z	٧	Ψ	Х	Y	Ζ	Spa	асе	1	0		-
Input Bias 0.			Ø.									A	a *

This function is for error correction from input (thermocouple, RTD, voltage, current) not from this recorder.

When temperature sensor cannot be installed near measured subject, there may be the temperature deviation between temperature sensor area and measured subject area. This function calculates and corrects this errors. Several kinds of temperature sensor has specified grade. High accuracy type is high price and ordinary product is generally used. To correct input by measuring error from each helps more accurate temperature measurement.

For using this error correction function, you should accurately measure the deviation from input part , at first. If this deviation is not correct, the error may be higher.

- Set range: -9999 to 9999 ↔ -999.9 to 999.9 ↔ -99.99 to 99.99 ↔ -9.999 to 9.999
 - ↔ -0.9999 to 0.9999 (Depending on the set scale point, range is different.)
- Factory default: 0.0



In case actual temperature is 80° C but display temprature from recorder is 78° C, set Input Bias(Error correction) as '2' and display temperature is 80° C.



8.1.15 Span (Gradient adjustment)

■ 🖉 📲 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 💻 тис 17: 26: 59		2	Ϋ́db	123	456	7891	D 11 12 ,	≜.e				06∕09 19:58
INPUT SETUP CH1-S1UI-1		A	В	С	D	E	F	G	+	1	2	3
Special Function Two Unit	29	Н	1	J	К	L	М	N	-	4	5	6
Two Unit -760mmH9 ~ 0kg/cm2 Reference Channel None ■		0	Р	Q	R	S	T	U	*	7	8	9
Input Bias 0.0		۷	Ŵ	Х	Y	Z	Spa	ace	1	0		-
Span 1.000 Peccard Mothed		1.0	90								A	a *

This menu is for adjusting upper limit error by regulating display value which is about measuring value or applied scale.

Ex.

In case Low Scale(Lower limit scale value) and High Scale(Upper limit scale value) are fixed, and Span (Gradient adjustment) is only set. When Input range is 0 to 10V, Low Scale(Lower limit scale) value is 0.00, and High Scale(Upper limit scale) value is 10.00.

If changing gradient adjustment value as 0.500, 1.000 or 1.500, display value by each changed gradient adjustment value is below.

Lower limit scale value	Upper limit scale value	Gradient adjustment value	Range of display value	Same
0.00	10.00	0.500	0.00 to 5.00	result
0.00	10.00	1.000	0.00 to 10.00	=
0.00	10.00	1.500	0.00 to 15.00	



Lower limit scale value	Upper limit scale value	Gradient adjustment value
0.00	5.00	1.000
0.00	10.00	1.000
0.00	15.00	1.000

In case Low Scale(Lower limit scale value) and High(Upper limit scalevalue) are fixed, and Span (Gradient adjustment) is only set (reverse gradient). When Input range is 0 to 10V, Low Scale(Lower limit scale) value is 10.00, High Scale(Upper limit scale) value is 0.00.

If changing gradient adjustment value as 0.500, 1.000, or 1.500, display value by each changed gradient adjustment value is below.

Lower limit scale value	Upper limit scale value	Gradient adjustment value	Range of display value	Same
10.00	0.00	0.500	10.00 to 5.00	result
10.00	0.00	1.000	10.00 to 0.00	=
10.00	0.00	1.500	10.00 to -5.00	

Lower limit scale value	Upper limit scale value	Gradient adjustment value
10.00	5.00	1.000
10.00	0.00	1.000
10.00	-5.00	1.000





8.1.16 Record Method (Data storage method)

🔳 🖉 🖞 🖞 🕹 🕅 🔤	2011/06/ ТНU 10:20:	09 05
INPUT SETUP	CH1-S1AI-1	۸
<name></name>	<value></value>	
Two Unit	-760mmH9 ~ 3k9/cm2	
Reference Channel	None	
Input Bias	0.0	
Span	1.000	
Record Method		
Filtor Type	Nono	¥

Set storage method for measured data by channel to inner/external memory. Display and print method is Record Method.

Set value	Description
Instant(Instant value)	Saves measuring value by every record period (Log Speed)
Average(Average value)	Saves averaged measuring value during record period (Log Speed).
Minimum(Min. value)	Saves min. measuring value during record period (Log Speed).
Maximum(Max. value)	Saves max. measuring value during record period (Log Speed).

- Set range: Instant ↔ Average ↔ Minimum ↔ Maximum
- Factory default: Instant

8.1.17 Filter Type (Input digital filter)



In some applications the fluctuating measuring input causes the display value to fluctuate. In this case accurate display/record is disable. This function is able to make display value stable by input digital filter.

Input digital filter uses moving average method (Moving Average Filter). It does not affet to display period but display value may be different with input value.

- Set range: None ↔ Moving
- Factory default: None



8.1.18 Filter Counter (The number of digital filter)

🔳 🖉 📲 🖞 🛙 234567891	0 11 12 🚖 🗗 📕 2011/06/21 TUE 17: 27: 33		2 4	ЪX	123	456	7891	D 11 12 ,	<u>a</u> f		THU	011/0 11:	06∕09 12 : 16
INPUT SETUP <name></name>	CH1-SIUI-1 VALUE>		A	В	С	D	E	F	G	+	1	2	3
Shenic Z	1.000	Kej	Н	1	J	Κ	L	М	N	-	4	5	6
Record Method Filter Type	Instant Moving	/boa	0	Ρ	Q	R	S	T	U	*	7	8	9
Filter Counter	1	Ę	٧	Ŵ	Х	Y	Ζ	Spa	ace	1	0	•	-
Burnout Action	OFF 🚽		3									A	a *

Designate the number of sampling which apply to digital filter.

When you set Filter Type(Input digital filter), this parameter is activated.

- Set range: 1 to 128
- Factory default: -



When the set value of input digital filter is '4', it does moving average input sampling values for 0.1 sec (100ms) and displays this value.



$$D2 = \frac{S1 + S2}{2}, D3 = \frac{S1 + S2 + S3}{3}$$

Display values of D1, D2, D3 is the initial operation before averaging 4 sampling values.

$$D4 = \frac{S1 + S2 + S3 + S4}{4}, D5 = \frac{S2 + S3 + S4 + S5}{4}$$
$$D6 = \frac{S3 + S4 + S5 + S6}{4}, D7 = \frac{S4 + S5 + S6 + S7}{4}$$
$$D8 = \frac{S5 + S6 + S7 + S8}{4}$$


8.1.19 Burnout Action (Display setting for break)

🔳 🖉 📲 🖞 123456789	101112 🚖 🗗 💶 2011/06/2 TUE 17: 27: 45	$\frac{1}{5}$
INPUT SETUP	CH1-S1UI-1	-
<name></name>	<value></value>	L
Span	1.000	L
Record Method	Instant	L
Filter Type	Moving	L
Filter Counter	1	
Burnout Action	OFF	1
		,

In case Input Type(Input specification) is temperature sensor(thermocouple, RTD), set alarm operation and alarm option for break input. (In case Input Type(Input specification) is analog(voltage, current), this function does not operate.)

Set value	Description
OFF	When input break, after moving display value downward or upward according to
OFF	circuit structure ^{涨1} (max. or min. value in graph record state) it displays BURN.
	When input break, after moving display value only upward (records max. value in
Up Scale	graph record state) it displays BURN.
Down Scale	When input break, after moving display value only downward (records min. value
Down Scale	in graph record state) it displays BURN.

- Set range: OFF ↔ Up Scale ↔ Down Scale
- Factory default: OFF



Note

According to circuit structure, when thermocouple(Thermo Couple) temperature sensor, RTD(RTD) temperature sensor's A-B terminal or voltage input \pm 60mV, \pm 200mV input is break, it displays Down Scale.

When RTD(RTD) temperature sensor's B-B' terminal input is break, it displays Up Scale.



8.2 ALARM SETUP (Alarm setting)

You can set alarm output specification such as alarm operation mode and alarm option by input channel, alarm ON/OFF delay, alarm output relay, relay contact, etc.

Move to ALARM SETUP with Keys, keys, press keys to enter ALARM SETUP.

▶ 2 🖞 🖞 🕅 23456789101112 🚖 🚮	2012/01/04 WED 17:01:56	▶ 🖉 🖞 🖞 🕅 123456789	
INPUT SETUP	24.3℃	ALARM SETUP <name> Select UI Card</name>	CH1-S1UI-1 ▲ <value> CH1-S1UI-1</value>
DIGITAL INPUT SETUP COMMUNICATION SETUP RECORD SETUP	26. 1℃	Alarm Set Copy Alarm1 Type	CH Select PV.Hi
SYSTEM SETUP FILE/MEMORY SETUP		Alarm1 Ref CH Alarm1 Option Olarm1 Value	 None

Parameter list

Parameter	Set range		Unit	Factory default
Select UI Card (Select universal card input)	CH□-S□UI-□		-	Automaticall y set
Alarm Set Copy (Copy alarm parameter)	No Select/ C	H□-S□UI-□	-	CH Select
Alarm⊡ Type(Alarm⊡ operation mode) ^{≋1}	OFF ↔ PV.Hi ↔ PV.Lo ↔ DV.Hi ↔ DV.Lo ↔ SBA ↔ P.END		-	Alarm1 Type: PV.Hi Alarm2 Type to Alarm4 Type: None
Alarm Ref Channel(Alarm reference channel)	None / CH	-S□UI-□	-	-
Alarm ☐ Option(Alarm ☐ option) ^{≋1}	None ↔ Lat	tch ↔ StBy ↔ La+St	-	None
Alarm⊡ Value(Alarm⊡ set value) ^{≍1}	F.S. of INPUT TYPE by channel		Digit	Alarm1 Value: 1350.0 Alarm2 Value to Alarm4 Value: -
Alarm Hysteresis(Alarm hysteresis) ^{∞1}	F.S. of INPUT TYPE by channel		Digit	0.0
Alarm⊡ ON/OFF Delay(Alarm⊡ ON/OFF output delay time) ^{≋1}	0 to 3600		sec	0s
Alarm⊡ Alarm No(Alarm⊡ output alarm number) ^{ж1}	None / S⊡A	0-□	-	None
Select Alarm Card(Select alarm output card)	-		-	Automaticall y set
	N.O.↔N.C.			N.O.
	N.O.↔N.C.	When connecting Relay	type KRN-AR4	N.O.
Alarm- Status (Relay and TR output method) ^{$\times 1$}	N.O.↔N.C.	(alarm output card), AL1 activated.		N.O.
	N.O.↔N.C. When connecting TR typ (alarm output card), AL1			N.O.
	N.O.↔N.C.	activated.		N.O.
	N.O.↔N.C.			N.O.



※1. Alarm□ Type to Alarm□ Alarm No parameters are displayed as the number of connected alarm output card.

%Shaded parameters are affected by set value of other parameters. Please refer to specific descriptions of each parameter.

8.2.1 Select UI Card (Select universal card input)

💻 🕘 🕿 🖞 1 2 3 4 5 6 7 8 9 10 11 12	2011/06/21 TUE 17:28:00	🔳 🖉 🖞 🖥 🕅 123456789	10 11 12 🚖 🖥	2012/07/26 THU 13:42:45
ALARM SETUP CH1-3	S1UI-1 📤	ALARM SETUP	CH1-S1UI-1	•CH1-S1UI-1 🛛 📥
<name></name>	<value></value>	<name></name>	<valu< th=""><th>CH2-S1UI-2</th></valu<>	CH2-S1UI-2
Select UI Card	CH1-S1UI-1	Select UI Card	Cł	CH3-S2UI-1
Alarm Set Copy	CH Select	Alarm Set Copy	1	CH4-S2UI-2
Alarm1 Type	PV. Hi	Alarm1 Type		CH5-S3UI-1
Alarm1 Ref CH		Alarm1 Ref CH		CH6-S3UI-2
Alarm1 Option	None 🖵	Alarm1 Option		CH7-S4UI-1
Olarm1 Value	100.0 🔻	Olorm1 Voluo		CH8_S4UT_2

Select the channel of universal input card (KRN-UI2) to be set.

One universal input card has two channels.

KRN100 automatically searches connected input/output card on slot power when power ON and recognizes the number of universal input card(KRN-UI2).

- Set range: CH□-S□UI-□(Activated connected universal input(2 channels per input card))
- Factory default: Automatically set

8.2.2 Alarm Set Copy (Copy alarm parameter)

🔳 🖉 🖞 🖞 12345678	9101112 🚖 🗗 💶 🛛 TUE 173	/06/21 :28:09	🔳 🖉 📲 🖞 🛙 123456789	10 11 12 🚖 🗗 💶 201 1/06/21 TUE 17:28:18
ALARM SETUP	CH1-S1UI-1	▲	ALARM SETUP	CH1-S1UI-1 •No Select 🔺
<name></name>	<value></value>		<name></name>	<valu ch1-s1ui-1<="" th=""></valu>
Select UI Car	d CH1-S1UI-1		Select UI Card	CH CH2-S1UI-2
Alarm Set Cop	/ CH Select		Alarm Set Copy	CH3-S2UI-1
Alarm1 Typ	e PV. Hi		Alarm1 Type	CH4-S2UI-2
Alarm1 Ref C			Alarm1 Ref CH	CH5-S3UI-1
Alarm1 Optio	n None		Alarm1 Option	CH6-S3UI-2
Olarm1 Valu	100.0	\bullet	Olarm1 Value	CH7_S4UT_1

You do not need to set same parameter settings repeatedly for other channels. This function is to copy set value of alarm parameter of the set channel and applys it to other channels. Copiable parameters are as below.

Alarm Type	Alarm Ref Channel	Alarm Option
(Alarm operation mode)	(Alarm reference channel)	(Alarm option)
Alarm∏ Value	Alarm∏ Hysteresis	Alarm ON Delay
(Alarm⊟ Set value)	(Alarm hysteresis)	(Alarm ON delay time)
Alarm OFF Delay	Alarm 🗌 Alarm No	
(Alarm□ OFF delay time)	(Alarm output relay number)	

- Set range: No Select/CH -S UI- (Activated connected universal input(2 channels per input card)
- Factory default: CH Select



8.2.3 Alarm Type(Alarm operation mode)

🗖 🖉 📲 🗖 🕅 🗖 🗖	101112 🚖 🗗 📕 2011/06/21 TUE 17:28:29
ALARM SETUP	CH1-S1UI-1
<name></name>	<value></value>
Select UI Card	CH1-S1UI-1
Alarm Set Copy	CH Select
Alarm1 Туре	PV. Hi
Alarm1 Ref CH	
Alarm1 Option	None 🗕
Olarm1 Value	100.0

Designate alarm operation when alarm ON. You can set up to 4 operations by each channel and alarm operations are as below.

\sum	Туре	Record	Alarm operation		Description
1	No alarm	-	-		-
2	Absolute value upper limit alarm	PV.Hi (▲)	Alarm set value: 90°C OFF ↓ H ↑ ON 90°C PV100°C		If display value is same or higher than alarm set value, alarm output turns ON.
3	Absolute value lower limit alarm	PV.Lo (▼)	Alarm set value: 90°C ON ↑ H ↓ OFF 90°C PV100℃		If display value is same or lower than alarm set value, alarm output turns ON.
4	Deviation upper limit alarm	DV.Hi (△)	Alarm set value: -10°C OFF H ON PV 110°C Reference channel PV 110°C	Alarm set value: 10°C OFF H ON A Reference channel PV 90°C	If the deviation between display value and the display value of reference channel is same or higher than alarm set value, alarm output turns ON.
5	Deviation lower limit alarm	DV.Lo (▽)	Alarm set value: 10°C ON H OFF A Reference channel PV 100°C	Alarm set value: -10°C ON H OFF A PV 90°C Reference channel PV 100°C	If the deviation between display value and the display value of reference channel is same or lower than alarm set value, alarm output turns ON.
6	Input break alarm	SBA (S)	alarm output turns ON	-	e is break during controlling, her input cable is break by er or other devices.
7	No recording paper alarm	P.End (P)	In case of no recording paper during recording, record operation stops and this alarm output turns ON. (Measuring value is saved at system memory automatically.) Alarm is automatically cleared when recording paper is replaced (in case of general alarm). P.END BACKUP PRINT window is activated and it is available to output backup data.		



※ H: Alarm output hysteresis(Hysteresis)

If even one alarm occurs, alarm ON icon marks the specified channel to check whether alarm has occurred.

(1) Record Mode(Record mode) is Graph

It records alarm sign, alarm operation mode, and occurrence time on recording paper with the set record color in 'Pen Color' of INPUT SETUP. Alarm sign is recorded at alarm set value position.



Alarm ON from 1 channel,	Records alarm sign of corresponding channel's graph.	
	Records also alarm and time information at right.	
Alarm ON at the same time	Records alarm sign of corresponding channel's graph. Records	
from over 2 channels,	only time information at right.	
Over 2 alarms ON from 1	Records alarm sign and 'CH1 AL-⊡(the number of alarm)	
channel,	14:00:33' form.	

If alarm occurs at digital memo time, memo information includes alarm information. Therefore, as below figure, alarm sign, alarm information, time information is not recorded and is replaced as digital memo.



No.	Name	Alarm sign
1	Absolute value upper limit alarm	▲
2	Absolute value lower limit alarm	•
3	Deviation upper limit alarm	\bigtriangleup
4	Deviation lower limit alarm	\bigtriangledown
5	Input break alarm	S
6	No recording paper	Р





(2) Record Mode(Record mode) is Digital

It records alarm ON channel, data information, alarm abbreviation, time with the set record color of corresponding channel.

In front of ON time, as below, 'A' is marked to mean the data by alarm.



After alarm recording, if it maintains same alarm or alarm is cleared, it does not record the relevant data.

1	······································	1	
In case of record by digital	memo it prints alarm ar	obreviation of occurring	l alarm as below
in cace of record by aightain	nionio, il printo alami al		alainin ao boloini

Name	Alarm abbreviation	Note
Absolute value upper limit alarm	PH	-
Absolute value lower limit alarm	PL	-
Deviation upper limit alarm	DH	-
Deviation lower limit alarm	DL	-
Input break alarm	SB	-
No recording paper	PE	-
Several alarm ON	AL	It is used when printing 2 channels in one line.
	Absolute value upper limit alarm Absolute value lower limit alarm Deviation upper limit alarm Deviation lower limit alarm Input break alarm No recording paper	NameabbreviationAbsolute value upper limit alarmPHAbsolute value lower limit alarmPLDeviation upper limit alarmDHDeviation lower limit alarmDLInput break alarmSBNo recording paperPE

■ Set range: OFF ↔ PV.Hi ↔ PV.Lo ↔ DV.Hi ↔ DV.Lo ↔ SBA ↔ P.End

Factory default

Alarm1 Type: PV.Hi, Alarm2 Type to Alarm4 Type: None

8.2.4 Alarm Ref Channel (Alarm reference channel)

💻 🖉 🐒 🖞 1 2 3 4 5 6 7 8 9 10 11	12 1 1 1 1 1 1 1 1 1 1		💻 🖉 🖞 🖞 🛙 1 2 3 4 5 6 7 8 9 10	1112 🚖 🗗 📕	2011/06/21 TUE 17:28:55
	I-S1UI-1	▲) Select 🛛 📥
<name></name>	<value></value>		<name></name>	< VALU CH	11-S1UI-1
Select UI Card	CH1-S1UI-1		Select UI Card	СН СН	12-S1UI-2
Alarm Set Copy	CH Select		Alarm Set Copy	d CH	13-S2UI-1 📗
Alarm1 Type	DV- Lo		Alarm1 Type	I CH	14-S2UI-2
Alarm1 Ref CH	None		Alarm1 Ref CH	CH	15-S3UI-1
Alarm1 Option	None		Alarm1 Option	CH	16-S3UI-2
Olorm1 Voluo	0 0	\mathbf{T}	Olormi Voluo	CH	I7_\$4UT_1 ▼

Designate reference channel which is standard of deviation upper limit alarm(DV.Hi) or deviation lower limit alarm(DV.Lo).

If display value of relevant channel is lower than the display value of set reference channel, deviation upper limit alarm or deviation lower limit alarm turns ON.

This parameter is activated when Alarm Type(Alarm operation mode) is set as deviation upper limit alarm(DV.Hi) or deviation lower limit alarm(DV.Lo).

- Set range: None / CH□-S□UI-□
- Factory default: -



8.2.5 Alarm Option(Alarm option)

🔳 🖉 📲 🖞 🛙 123456789	101112 🚖 🗗 💶 2011/06/21 TUE 17:29:06
ALARM SETUP	CH1-S1UI-1
<name></name>	<value></value>
Select UI Card	CH1-S1UI-1
Alarm Set Copy	CH Select
Alarm1 Type	DV- Lo
Alarm1 Ref CH	None
Alarm1 Option	None
Olarm1 Value	▼ 0.0

Set alarm output by alarm operation.

Set value		Description
None Standard alarm		If it is an alarm condition, alarm output is ON. If it is a clear alarm condition, alarm output is OFF.
Latch ^{×1} Alarm latch		If it is an alarm condition, alarm output is ON and maintains ON status. (Alarm output HOLD)
StBy ^{*2}	Standby sequence	First alarm condition is ignored and from second alarm condition, standard alarm operates.
La+St and standby sequence		If it is an alarm condition, it operates both alarm latch and standby sequence. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, alarm latch operates.

※1. In case Alarm□ Type (Alarm□ operation mode) is SBA(Input break alarm) or P.End(No recording paper alarm), you can only select Latch(Alarm latch).

- %2. Condition of re-applied standby sequence: Power ON, changing the set alarm temperature, forced alarm reset.
- Set range: None↔Latch↔StBy↔La+St
- Factory default: None

🖉 Note

In case for input break alarm(SBA), no recording paper alarm (P.END), standby sequence, or alarm latch and standby sequence option does not operates and you cannot set it. In case of alarm by alarm latch, to reset alarm output, press key for 3 sec at not alarm condition, use alarm reset function by digital input, or turn OFF the power and ON.

To reset alarm output by digital input, DI-□ Type(Select digital input□) from DIGITAL INPUT SETUP is should be set as 'Alarm Reset'.

Reset alarm output is available only when alarm option is set as alarm latch or alarm latch and standby sequence, or when current temperature is out of alarm operation range. At the next alarm output ON, alarm output operates normally.



Alarm Type(Alarm operation mode): PV.Lo (Absolute value lower limit alarm)

Alarm Value(Alarm set value): 90

Alarm Hysteresis(Alarm hysteresis): 5

Alarm Option(Alarm option): StBy(Standby sequence)





When power is ON, it is alarm condition and it is ignored. From second alarm conditions, it operates as standard alarm.

8.2.6 Alarm Value(Alarm set value)

12345678	9 10 11 12 🚖 🗗	2011 WED 22	1/06/15 2:26:21		24	'фХ́	123	4561	7891) 11 12 ,	â.		WEC	011/ 22:	06∕15 26:27
ALARM SETUP <\name>	CH3-S2UI-1 <value></value>				A	В	С	D	Е	F	G	+	1	2	3
Alarm Set Copy	/ CH :	Select		Kej	Н	Ι	J	К	L	Μ	Ν	-	4	5	6
Alarm1 Type Alarm1 Ref C		PV.Hi		Seyboa	0	Ρ	Q	R	S	T	U	*	7	8	9
Alarm1 Option	ì	None		P	۷	Ψ	Х	Y	Ζ	Spa	ace	1	0		-
Alarmi Value Olormi Hystorosia		1350.0 0.0	T		1350	.0								A	a *

Set alarm set value based on alarm output operation mode, it executes alarm operation.

- Set range: Using set input from Input Type(Input specification)/within display range
- Factory default: Alarm1 value: 1350.0, Alarm2 Value to Alarm4 Value: -



8.2.7 Alarm Hysteresis(Alarm hysteresis)

■ 🛛 🖞 🖞 🕺 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗	2011/0 WED 22:2	6/15 6:37		24	'фХ	123	4561	7891) 11 12]	<u> </u>	י	WEC	011/ 22:	06∕15 26:45
ALARM SETUP CH3-S2UI-1 <name> <valu< td=""><td>IE \</td><td>▲</td><td></td><td>A</td><td>В</td><td>С</td><td>D</td><td>Е</td><td>F</td><td>G</td><td>+</td><td>1</td><td>2</td><td>3</td></valu<></name>	IE \	▲		A	В	С	D	Е	F	G	+	1	2	3
Alarm1 Type	PV. Hi		Kej	Н	Ι	J	Κ	L	М	Ν	-	4	5	6
Alarm1 Ref CH Alarm1 Option	 None		/boa	0	Ρ	Q	R	S	T	U	*	7	8	9
Alarmi Value	1350.0		ā	۷	Ψ	Х	Y	Ζ	Spa	асе	1	0		-
Alarm1 Hysteresis	0.0 6	◄		0.0									A	a *

Set the interval between alarm output ON and OFF.

If PV is over or below alarm output SV, output turns ON and it sets OFF time by hysteresis settings.

When input value is changed near SV, alarm output is often. Set hysteresis and it can be prevent from often alarm output.

- Set range: 0.0 to 9999.9 (Decimal point position is different by the set decimal point position of input.)
- Factory default: 0.0

Ex.

The below graph is when Alarm Type(Alarm operation mode) is set as absolute value upper limit alarm, Alarm Value(Alarm set value) is set as 200, and Alarm Hysteresis(Alarm hysteresis) is set as 10.





8.2.8 Alarm ON/OFF Delay(Alarm ON/OFF output delay time)

2012/08/02 THU 13:25:57	🔳 🖉 🖞 🖬 🕅 1 2 3 4 5 6 7 8 9 10 11 12 <i>i</i>	2012/08/02 THU 13:26:04
		<value></value>
		1350.0
0.0	Alarm1 Hysteresis	0.0
Øs	Alarm1 ON Delay	Øs
		Øs Nopo
	1	UI-1 ALARM SETUP CH1-S1 <value> None 1350.0 Alarm1 Option 0.0 Alarm1 Hysteresis 0s Alarm1 Option</value>

Set delay time (unit: sec.) to prevent alarm malfunction by wrong input from external disturbance and noise.

Item	Description
	Even after standby the set time when alarm ON condition (alarm ON
Alarm On Delay	channel flashes on screen), if it is still alarm condition, alarm output turns
	ON. (Alarm ON channel flashes on screen).
	Even after standby the set time when alarm reset condition (alarm ON
Alarm OFF Delay	channel display is hold), if it is still alarm reset condition, alarm output turns
	OFF. (Alarm ON channel resets the display.)



Set range: 0 to 3600

Factory default: 0s



8.2.9 Alarm Alarm No(Alarm output alarm number)

🔳 🖉 🖞 🖞 🛛 23456789101112 🛃	2011/06/15 WED 22:27:25	2 学出 X123456789101	1112 🚖 🗗 2011/06/15 WED 22:27:50
ALARM SETUP CH3=S2 <aame> Alarm1 Option Alarm1 Value Alarm1 Hysteresis Alarm1 ON Delay</aame>		ALARM SETUP CH <name> Alarm1 Value Alarm1 Hysteresis Alarm1 ON Delay Alarm1 Off Delay</name>	(3-S2U) ● None < TR-S7AL-1 (0) TR-S7AL-2 (0) TR-S7AL-3 (0) TR-S7AL-4 (0) TR-S7AL-5 (0)
Alarm1 Off Delay		Alarm1 Alarm No 🗌	TR-S7AL-6(0)

Select alarm output number to output alarm in alarm ON.

If the setting as 'None' and when alarm operation occurs, it displays alarm on the screen and records alarm operation mode, and alarm occurrence time on recording paper, but it does not output alarm.

There are two alarm output types; TR and RELAY output. KRN recognizes automatically the connected type and displays it.

In this parameter, TR output type is displayed as TR-S \square AL- $\square(\square)$, and RELAY output type is displayed as RELAY-S \square AL- $\square(\square)$.

These parameter's meaning is as below.

S□: The number of module connected SLOT,

AL: Alarm output channel number,

Number in parenthesis '(□)': the number of designated alarm as output in the specified channel

- Set range: None / □-S□AO-□(□)
- Factory default: None

8.2.10 Select Alarm Card(Select alarm output card)



Select alarm output card(KRN-AR4, KRN-AT6) to set output type (Normally Open, Normally Closed) of alarm output. In front of output card name, RELAY or TR abbreviation is displayed for easy to know connected module type when selecting output card.



8.2.11 Alarm- Status (Relay and TR output method)



Set alarm output method (Normally Open, Normally Closed) of each alarm output channel from the set alarm output card in Select Alarm Card (Select alarm output card). You can use alarm output as relay output or TR output by inserting the desired alarm output card(Relay output: KRN-AR4, TR output: KRN-AT6).

Set	Descriptio		Alarm	Alarm output			
value	Descriptio	סח	occurrence	Relay	TR		
NO	.O. Normally In normal status it is open. Open If alarm occurs, it is closed.	OFF	Contact Open	TR OFF			
N.O.		If alarm occurs, it is closed.	ON	Contact Close	TR ON		
NG	Normally	Normally In normal status it is closed.	OFF	Contact Close	TR ON		
N.C.	Closed	If alarm occurs, it is open.	ON	Contact Open	TR OFF		

This function displays as Alarm- Status and it is connected Relay or TR Type's output card information. One card for relay has 4 outputs (Alarm-1 Status to Alarm-4 Status), for TR has 6 outputs (Alarm-1 Status to Alarm 6 Status).

Relay output card(KRN-AR4) is connectable up to 3, and TR output card (KRN-AT6) is connectable up to 2 at Slot7 to 10.

Alarm output turns ON or OFF by total 4 alarm conditions and relay, TR output are able to output by max. 48 alarm conditions. However, every relay output and TR output condition is OR operation (Among several alarm conditions connected one alarm output, even one alarm condition is met, output must turn ON.).

- Set range: N.O. ↔ N.C.
- Factory default: N.O.

🖉 Note

REALY and TR type output is basically fixed as Normally Opened method and H/W when power is ON.

Therefore, KRN100 takes booting time max. 20sec and maintains Normally open status. In case of RUN mode after booting, it maintains use-defined output type; Normally Open or Normally Closed.





8.3 DIGITAL INPUT SETUP(Digital input setting)

You can set executing function by digital input card, operation stauts, etc.

Move to DIGITAL INPUT SETUP with , keys, press with key to enter DIGITAL INPUT SETUP.

🔳 🖉 📲 🗖 🖉 🗖 🖉	789101112 🚖 🗗	2011/06/01 ■ WED 15:40:18	🔲 🖉 🖞 🖞 🛙 1 2 3 4 5 6 7 8 9 1	01112 🚖 🗗 🔜 2011/00 WED 15:40	
INPUT SETUP ALABM SETUP	CH1 CH-1	BURN° C	DIGITALINPUT SETUP S7D: <name></name>	i <value></value>	
DIGITAL INPUT SETUP COMMUNICATION SETUP	CH2 CH-2	BURN° C	Select DI DI-1 Type	S7DI None	
RECORD SETUP SYSTEM SETUP	СНЗ	NONE	DI-1 Reset No DI-1 Status		
	D CH4	NONE	DI-2 Type	None	▼

Parameter list

Parameter	Set range	Factory default
Select DI Card (Select digital input card)	S7DI ↔ S8DI ↔ S9DI ↔ S10DI	Automatically set
DI-□ Type (Select digital input □)	None ↔ Run ↔ Memo ↔ ListOut ↔ Speed ↔ Alarm Reset	None
DI-⊡ Reset No (Reset alarm number)	None ↔ ALL ↔ S□AL-□	-
DI-□ Status (Operation status)	Edge ↔ Level	-

XShaded parameters are affected by set value of other parameters. Please refer to specific descriptions of each parameter.



8.3.1 Select DI Card (Select digital input card)

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🖅	2011/06/15 WED 22:30:21	🔲 🖉 🖞 🖞 🛛 23456789101112 🚖 🗗	2011/06/15 WED 22:30:27
DIGITALINPUT SETUP S8DI <name> <value></value></name>		DIGITALINPUT SETUP S8DI <name> <value></value></name>	
Select DI Card	SBDI	Select DI Card	●S8DI
DI-1 Туре DI-1 Reset No	None	DI-1 Туре DI-1 Reset No	S9DI S10DI
DI-1 Status DI-2 Type	None	DI-1 Status DI-2 Туре	None
DI-2 Type DI-2 Pocot No		DI-2 Type DI-2 Pocot No	

Select digital input card (KRN-DI6) to be selected.

KRN100 searches connected digital input card automatically on slot and recognizes the number of digital input card as soon as power is ON.

Channel name is as below.



Factory default: Automatically set



S9DI: This means connected digital input card on 9th slot



8.3.2 DI- Type (Select digital input)

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗	2011/06/15 WED 22:30:37	🔳 🖉 🏋 🖞 1 2 3 4 5 6 7 8 9 10 11 1	2012/07/26 THU 15:06:17
DIGITALINPUT SETUP S8DI		DIGITALINPUT SETUP S10DI	
<name> <value< td=""><td></td><td><name></name></td><td><value></value></td></value<></name>		<name></name>	<value></value>
Select DI_Card	S8DI	Select DI Card	Run
DI-1 Type	None	DI-1 Type	Memo
DI-1 Reset No		DI-1 Reset No	ListOut
DI-1 Status		DI-1 Status	Speed
DI-2 Type	None 📙	DI-2 Type	Alarm Reset
DI-2 Pocot No		DI-2 Pocot No	HIAIM NESEL

Select digital input.

			Level		Edge	
Mode	Operation name	Operation description	Open	Short	Min. signal input ^{×1}	lcon ^{**2}
None	-	No function	-	-	-	
Run ^{×3}	Start/Stop recording	Starts/Stops recording on recording paper.	STOP	RUN	STOP⇔RU N	RUN _, OP
Memo	Digital memo	Executes digital memo function	-	-	Memo	ME MO!!
ListOut	List output	Outputs parameter set information	-	-	ListOut	LI ST
Speed	Record speed (graph) and period (digital)	Executes to record with set option record speed and period (Option speed, period).	Standa rd	Option	Standard ↔Option	SP EED
Alarm Reset	Forced alarm reset	In case alarm option is alarm latch, alarm output is reset by force.	-	-	Alarm Reset	RE SET

* 1. At every min. signal input width (over 0.3 sec.), it executes the function repeatedly.

*2. The appropriate icon is displays on the screen, digital input function is operating.

※3. When digital input operation status is set as Level in RUN mode, you cannot operate starting/stopping recording with front wey. (If it set as 'Edge', front wey operates starting/stopping recording.)

When reservation record(Reservation) is set and now is reservation recording state, digital input function is not available as RUN mode. This is available in record stop state by reservation record.

- Set range: None ↔ Run ↔ Memo ↔ ListOut ↔ Speed ↔ Alarm Reset
- Factory default: None



8.3.3 DI- Reset No (Reset alarm number)

🔳 🖉 🖞 🖞 🛛 23456789101112 🖉	2011/06/15 WED 22:30:57	🔳 🖉 🖞 🖞 🛛 23456789101112 🚖	2011/06/15 WED 22:31:04
DIGITALINPUT SETUP S8DI	≙	DIGITALINPUT SETUP S8DI	•None 🔶
<name></name>	<value></value>	<name></name>	<val all="" th="" ■<=""></val >
Select DI_Card	S8DI 📕	Select DI_Card	TR-S7AL-1
DI-1 Type	Alarm Reset	DI-1 Type	TR-S7AL-2
DI-1 Reset No	None	DI-1 Reset No	TR-STAL-3
DI-1 Status	Edge	DI-1 Status	TR-S7AL-4
DI-2 Type	None 🖵	DI-2 Type	TR-STAL-5
DI_2 Pocot No	*	DI_2 Pocot No	T TRENULTER IT

Select alarm to reset at digital input.

Set DI- Type(Select digital input) as forced alarm recet (Alarm Reset), it is activated.

Alarm reset is available when alarm option is Alarm latch or Alarm latch and standby sequence and it is not alarm condition.

- Set range: None↔ALL↔ S□-AL-□
- Factory default: -

8.3.4 DI- Status (Operation status)



Designate operation status of set digital input.

Set value	Description
Edge When digital input is input over 0.3 sec., the set function operates. If digital input input the reverse function operates.	
Level	open over 0.3 sec., the operation is stop.

Set range: Edge ↔ Level(Please refer to '8.3.2 DI-□ Type (Select digital input □)'.)
 Factory default: -



In digital input setting, when DI- Type is set as Run or Seed, and DI- Status is set as Edge, overlap setting is available. But DI- Status is set as Level, overlap setting is not available.

If even one Level is set, DI- Status's overlap setting to Level or setting to Edge is not available.

In case DI- Status(operation status) is Edge: You can execute to start/stop recording with front key.

In case DI- Status(operation status) is Level: You cannot execute to start/stop recording with front key.



8.4 **COMMUNICATION SETUP (Communication setting)**

Set the related parameters with communication output card(KRN-COM).

You can only check the item of COMMUNICATION SETUP by communication but cannot change the set.

This parameter is for setting and monitoring parameters from external upper system (PC and graph panel, etc) or transmitting the data to external devices by RS485, Ethernet, or USB Device communication

It is recommended to use our dedicated software program DAQMaster for monitoring. If you want to develop monitoring program not using our DAQMaster program or to use the related Modbus program, please refer to user manual for communication.

Visit our homepage (www.konics.com) to download DAQMaster program, and user manual for communication.

Move to COMMUNICATION SETUP with COMMUNICATION SETUP.

梁 尚 X 1 2 3 4 5 6 7 8 9 10 11 12 金 局	2011/06/15 WED 20:28:08	🔳 🖉 📲 🖞 🛙 2345678910)1112 🚖 🗗 📩 2011/06/01 WED 15:47:12
INPUT SETUP	0.4°C	COMMUNICATION SETUP	<value></value>
DIGITAL INPUT SETUP CONNUNCERTION SETUP	-3.4°C	RS485 Port Address	Enable 1
RECORD SETUP CH5 SYSTEM SETUP CH-5	1.8°C	Baud Rate Parity Bit	9600 None
FILE/MEMORY SETUP	1.1℃	Stop Bit	2 20 mc

Parameter list

Parameter	Set range	Factory default
Modbus Address (Communication address)	1 to 127	1
RS485 Port (Use RS485 communication)	Enable ↔ Disable	Enable
Baud Rate (Baud rate)	2400↔4800↔9600 ↔ 19200 ↔ 38400	9600
Parity Bit (Communication parity bit)	None ↔ Odd ↔ Even	None
Stop Bit(Communication stop bit)	1 ↔ 2	2
Termination Set (Terminating resistance)	Disable ↔ Enable	Disable
Response Wait Time (Communication response wait time)	5 to 99ms	20ms
Protocol (Communication protocol)	Modbus RTU	Modbus RTU
RS485 Com Write (RS485 communication write)	Enable⇔Disable	Enable
Ethernet Port (Use Ethernet communication)	Enable⇔Disable	Disable
IP Address (IP address)	0.0.0.0 to 255.255.255.255	-
Subnet Mask (Subnet Mask)	0.0.0.0 to 255.255.255.255	-
Default Gateway (Default gateway)	0.0.0.0 to 255.255.255.255	-
Ethernet Com Write (Ethernet communication write)	Enable ↔ Disable	-
USB Device Port (Use USB communication)	Enable ↔ Disable	Enable
USB Com Write (USB communication write)	Enable ↔ Disable	Enable

Note Note

KRN100 does not supports RS485 port, Ethernet port at the same time for preventing system overload. If you change one as 'Enable', the other is changed 'Disable' automatically. In case USB Device, it is able to set 'Enable', 'Disable' regardless of RS485 or Ethernet setting.



Interface

Item	RS485	Ethernet	USB Device
Application standard	Compliance with EIA RS485	-	Compliance with USB V2.0
Max. connection	31 units (address: 1 to 127)	1 units (number of occupations per a unit)	1 units
Communication distance ^{≋1}	Max. 1Km (Below 9600bps)	Single cable within 100m (Recommended over CAT5E)	Single cable within 1.5m
Communication method	Half Duplex	Full Duplex	-
Communication synchronization method	Asynchronous	Asynchronous	Asynchronous
Communication speed	2400/4800/9600/19200 /38400bps	10/100Mbps	12Mbps(Full Speed)
Communication response wait time	5to99 ms	-	-
Start Bit	1 bit(fixed)	-	-
Data Bit	8 bit(fixed)	-	-
Parity Bit	None, Odd, Even	-	-
Stop Bit	1, 2 bit	-	-
Protocol	Modbus RTU	Modbus TCP	Modbus RTU

* 1. When connecting through the network such as network hub (HUB) and gateway, etc, there is no distance limit, but it is recommaned to use min. network.

Please use communication cables which is satisfied the below conditions.

DC405 communication	Shield Twist Pair over AWG24, characteristic impedance
RS485 communication	100 Ω , capacity component 50pF/m cable length max. 1km
Ethernet communication	Over CAT5E, cable max. length: 100m
USB Device communication	Single cable built-in ferrite core within 1.5m

🖉 Note

USB Device communication may cause recognition error by external noise and environment during connecting PC. If there is error, please re-connect this. Please use USB Device as for setting.



During communication, if you chaging the communication settings, it may cause communication error.

🖉 Note

RS485 communication port of KRN100 is connected for 3 A, B, SG terminals. SG terminal is connectable with shield or SG of converter, and you do not need to connect SG terminal.

To remove noise during RS485 communication, use shield cable. There are three methods for shield processing.

1	Connects shield cable only for SG terminal of communication module.	When electric potential occurs between computer and recorder grounded, connect shield cable for SG terminal of recorder to minimize noise effect not to flow current on shield cable. (It is used generally.)
2	Connects shield for both SG terminal of communication module and the grounding of computer.	When electric optional does not occur between computer and recorder grounded, it is effective to minimize noise influence.
3	Connects shield for one of SG terminal of communication module or the grounding of computer.	It can minimize noise effect in case of connecting non- polarity condenser in series.

It is recommended to use SCM-US 48I(USB/RS485 converter) or SCM-38I(RS232C/RS485 converter) for RS485 communication between PC and KRN100.

If using the non-grounded converter between FG and SG, it may cause damage to KRN100 and communication error by electric potential of between ground during long-distance communication.

For using terminating resistance, turn ON only terminal resistance of recoder on end of connected communication line (Enables to set using terminating resistance in communication set function), and also turn ON terminal resistance of connected communication to PC.



8.4.1 Modbus Address (Communication address)

🔳 🖉 🖞 🖞 🛯 234567891	01112 🚖 🗗 🛛 2011/06/15 WED 22:33:47
COMMUNICATION SETUP	▲
<name></name>	<value></value>
Modbus Address	1
RS485 Port	Enable
Baud Rate	9600
Parity Bit	None
Stop Bit	2 📙
Tormination Sot	Dicable 💌

Designate communication address.

The designated communication address is able to apply to RS485, USB Device, also Ethernet communication. However, duplicated communication address setting in same communication line does not allow.

- Set range: 1 to 127
- Factory default: 1

8.4.2 RS485 Port (Use RS485 communication)



Set whether using RS485 communication. If you set RS485 Port's set value as 'Enable', Ethernet Port's set value is changed 'Disable' automatically.

- Set range: Enable ↔ Disable
- Factory default: Enable

8.4.3 Baud Rate (Baud rate)

2 学出 X123456789	101112 🚖 🗗 🛛 2011/06/15 WED 22:34:04
COMMUNICATION SETUP	▲
<name></name>	<value></value>
Modbus Address	1 📕
RS485 Port	Enable
Baud Rate	9600
Parity Bit	None
Stop Bit	2 🖵
Termination Set	Dicoblo 🗸

Designate baud rated.

- Set range: $2400 \leftrightarrow 4800 \leftrightarrow 9600 \leftrightarrow 19200 \leftrightarrow 38400$ (unit: bps)
- Factory default: 9600



8.4.4 Parity Bit (Communication parity bit)

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 1	01112 🚖 🗗 2011/06/15 WED 22:34:04
COMMUNICATION SETUP	_
<name></name>	<value></value>
Modbus Address	1 🗖
RS485 Port	Enable
Baud Rate	9600
Parity Bit	None
Stop Bit	2 🔟
Termination Set	Dicoblo 🔽

Designate communication parity bit.

- Set range: None ↔ Odd ↔ Even
- Factory default: None

8.4.5 Stop Bit(Communication stop bit)

🔳 🖉 🖞 🖞 🛛 🖓 🖉	01112 🚖 🗗 2011/06/15 WED 22:34:15
COMMUNICATION SETUP	<u> </u>
<name></name>	<value></value>
Modbus Address	1 🔳
RS485 Port	Enable
Baud Rate	9600
Parity Bit	None
Stop Bit	2 🗌
Termination Set	Dicoblo

Designate communication stop bit.

- Set range: 1 ↔ 2 (unit: bps)
- Factory default: 2

8.4.6 Termination Set (Terminating resistance)

🔳 🖉 🖞 🖞 🛛 🖉 🖉	01112 🚖 🗗 🕴 2011/06/15 WED 22:34:21
COMMUNICATION SETUP	▲
<name></name>	<value></value>
RS485 Port	Enable 🗖
Baud Rate	9600
Parity Bit	None
Stop Bit	2
Termination Set	Disable
Poepopeo Mait Timo	

Desigante wheter using terminating resistance .

You do not need to external terminating resistance (120Ω) because KRN100 is enable to use terminating resistance by parameter setting.

- Set range: Enable Disable
- Factory default: Disable



8.4.7 Response Wait Time (Communication response wait time)



To prevent possible error due to communicating with low speed Master (PC, PLC, etc), set communication response wait time.

If you set too short communication response wait time, communication error may occur in Master.

- Set range: 5 to 99 (unit: ms)
- Factory default: 20ms

8.4.8 Protocol (Communication protocol)



It supports Modbus RTU(Remote Terminal Uint) as communication protocol.

(Data Length: 8bit, Data interval: 24bits or less, Error Detection: CRC-16)

- Set range: Modbus RTU
- Factory default: Modbus RTU

8.4.9 RS485 Com Write (RS485 communication write)



Set whether changing the set value of KRN100 parameter by RS485 communication.

To read the set value of each parameter is available regardless of the communication write enable/disable setting.

- Set range : Enable ↔ Disable
- Factory default : Enable





8.4.10 Ethernet Port (Use Ethernet communication)

🔳 🖉 🖞 🖞 🖞 1 2 3 4 5 6 7 8 9 1	01112 🚖 🗗 🛛 2011/06/15 WED 22:34:43
COMMUNICATION SETUP	▲
<name></name>	<value></value>
Termination Set	Disable
Response Wait Time	20 ms 👝
Protocol	Modbus RTU 💻
RS485 Com Write	Enable
Ethernet Port	Disable
IP Oddroce	102 168 1 2

Set whether using Ethernet communication. If you set Ethernet Port as 'Enable', RS485 Port is changed as 'Disable' automatically.

- Set range: Enable ↔ Disable
- Factory default: Disable



You can monitor or set parameter KRN100 with DAQMaster or the related Modbus program (Modbus Poll, etc). For more information, refer to 'KRN100 user manual for communication.'

[Modbus TCP communication] The following is based on Windows XP.

1st First of all connect Ethernet slot of KRN-100 communication output card (KRN-COM)

and LAN slot of PC with LAN cable.



2nd Execute Start > Run to check IP address of PC.





- ? X Run Type the name of a program, folder, document, or =/# Internet resource, and Windows will open it for you. ipconfig ¥ Open: OK Cancel Browse C:\WINDOWS\system32\ipconfig.exe - 🗆 🗙 ٠ Windows IP Configuration Ethernet adapter Local Area Connection: 255.255.0 168.0.1 -
- 3rd Enter "ipconfig" at "Open" in Run dialog box and you can check IP address of PC.

4th Set KRN100 Ethernet Port(Use Ethernet communication) as 'Enable' at COMMUNICATION SETUP (Communication setting) of KRN100. Set IP Address(IP

address) as installation environment.

	PC	KRN100
IP Address	192.168.1.1	192.168.1.2
Subnet Mask	255.255.255.0	
Default Gateway	192.168.1.1	

💻 🖉 📲 🖞 🛙 123456789	101112 🚖 🗗 🕴 2011/06/ WED 22:34:	15 51
COMMUNICATION SETUP		▲
<name></name>	<value></value>	
Response Wait Time	20 ms	
Protocol	Modbus RTU	
RS485 Com Write	Enable	
Ethernet Port	Disable	
IP Address	192.168.1.2	_
Subpot Mack	255 255 255 0	-

IP address set for Modbus TCP communication is complete.



8.4.11 IP Address (IP address)

🔳 🖉 📲 🖞 1 2 3 4 5 6 7 8 9 10 11 12	2011/06 WED 22:34	×15	■ 1 23456789101112 2 011/06/ ₩ED 22:34:	
COMMUNICATION SETUP		▲	COMMUNICATION SETUP	
<name></name>	<value></value>		Ethernet Settin	
Response Wait Time	20_ms		Re	
Protocol	Modbus RTU		IP Address 192. 168. 1. 2	
RS485 Com Write	Enable		NetMask 255, 255, 255, 0 ₽	
Ethernet Port	Disable		GateWay 192,168, 1, 1 g	
IP Address	192.168.1.2 255.255.255.0	₩.		Ŧ
Subpot Mack	255 255 255 A	V	Subpot Mack 265 265 0	•

Designate used IP address to identify the device on the network. If there is same IP address on the network, communication does not operate by IP conflict.

- Set range: 0.0.0.0 to 255.255.255.255
- Factory default: -

8.4.12 Subnet Mask (Subnet Mask)



To recognize network ID part and host ID part of IP address, set 32 bit address allowing to IP packet receiver.

To enter correct set value, whenever press **FEED**, **WE** keys, it displays inputable subnet mask value is displayed.

- Set range: 0.0.0.0 to 255.255.255.255
- Factory default: -

8.4.13 Default Gateway (Default gateway)



Designate IP address to connect IP router directly.

- Set range: 0.0.0.0 to 255.255.255.255
- Factory default: -



8.4.14 Ethernet Com Write (Ethernet communication write)



Set whether changing the set value of KRN100 parameter by Ethernet communication.

To read the set value of each parameter is available regardless of the communication write enable/disable setting.

- Set range: Enable ↔ Disable
- Factory default: -

8.4.15 USB Device Port (Use USB communication)



Set whether using USBcommunication.

USB communication is available regardless of RS485 Port or Ethernet Port setting.

- Set range: Enable ↔ Disable
- Factory default: Enable

8.4.16 USB Com Write (USB communication write)



Set whether changing the set value of KRN100 parameter by USB communication.

To read the set value of each parameter is available regardless of the communication write enable/disable setting.

- Set range: Enable ↔ Disable
- Factory default: Enable



8.5 **RECORD SETUP (Record setting)**

You can set record mode, record speed, record language, and digital memo, etc.

Depending on record mode (Digital, Graph), below parameters are changed.

Move to RECORD SETUP with SETUP, keys, press keys, bress keys, bre

🔳 🖉 🖞 🖞 🛯 2345678	9101112 🚖 🗗	2011/06/15 WED 20:32:30
INPUT SETUP ALABM SETUP	▲CH3 CH-3	0. 2°C
DIGITAL INPUT SETUP		-3.7℃
RECORD SETUP		1.7℃
SYSTEM SETUP FILE/MEMORY SETUP	CH-5	0.9°C
LIGED INFORMATION SETUD	▼I CH-6	U.7C



Parameter list

Parameter	Set range	Factory default
Record Mode (Recode mode)	Graph ↔ Digital	Graph
Digital Print type (1 line record channel during numeric recording)	OneCH ↔ TwoCH	ТwoCH
Standard Speed (Standard record speed)	$10 \leftrightarrow 20 \leftrightarrow 40 \leftrightarrow 60 \leftrightarrow 120 \leftrightarrow 240$ mm/h	20mm/h
Option Speed (Option record speed)	$10 \leftrightarrow 20 \leftrightarrow 40 \leftrightarrow 60 \leftrightarrow 120 \leftrightarrow 240$ mm/h	20mm/h
Memo Period (Digital memo period)	Refer to detail descriptions.	2hour
Divide Zone (Record zone division)	None, 2 to 12	None
Standard Period (Standard record period)	00m01s to 99m99s	-
Option Period (Option record period)	00m01s to 99m99s	-
Listing Language (Language for list output)	Korea ↔ English	English
Alarm Speed (Alarm record speed)	$10 \leftrightarrow 20 \leftrightarrow 40 \leftrightarrow 60 \leftrightarrow 120 \leftrightarrow 240$ mm/h	20mm/h
Power On Status (Record status when power ON)	Hold ↔ Run ↔ Stop	Hold
Run Status (List printing at start recording)	OFF ↔ ON	OFF
List Out Option (List record option)	Standard ↔ Option	Standard
Zone Dot Line Distance (Dot line for zone division)	None to 8.0mm	4.0mm
CH Print Distance (Record interval for each channel graph)	None to 100.0mm	20.0mm
Start Line Print (Start line when starting record)	ON ↔ OFF	ON
Range Print Time (Input range record period)	Disable,1to 24 hour	Disable

X Shaded parameters are affected by set value of other parameters. Please refer to specific descriptions of each parameter.





8.5.1 Record Mode (Recode mode)

🔳 🖉 🖞 🖞 🛯 234567891	01112 🚖 🗗 🛛 2011/06/15 WED 22:37:04
RECORD SETUP	▲
<name></name>	<value></value>
Record Mode	Graph
Digital Print Type	OneCH
Standard Speed	20mm/h
Option Speed	20mm/h
Memo Period	1hour 📙
Divido Zopo	1 🗸

Set record mode to record display value on recording paper. KRN100 supports Graph, and Digital record modes.

(1) Graph

Records display value as graph type on recording paper.

It records current time (hh:mm:ss), display value by channel in set Memo Period(Digital memo record period)



(2) Digital

Records display value as numeric on recording paper.

It records current time (hh:mm:ss), display value by channel in set Standard Period (Print/Record period) and also records current date (Year-Month-Day) and time in every 00:00:00.

You can record digital memo manually by front key (press key for 3 sec), or digital input terminal.



- Set range: Graph ↔ Digital
- Factory default: Graph





8.5.2 Digital Print type (1 line record channel during numeric recording)

🔳 🖉 🖞 🖞 🛯 234567891	01112 🚖 🗗 2011/06/15 WED 22:37:11
RECORD SETUP	<u>▲</u>
<name></name>	<value></value>
Record Mode	Graph
Digital Print Type	OneCH
Standard Speed	20mm/h
Option Speed	20mm/h
Memo Period	1hour 🔄
Divido Zopo	1 📕

Designate the number of channels to be printed when recording display value on recording paper.

It prints channel information between Graph and Digital record mode.

- Set range: OneCH ↔ TwoCH
- Factory default: TwoCH

Ex.

(1) TwoCH

It records 2 channels in one line and records occurring alarm as abbreviation. In case of multi alarms, it records as 'AL'. Print form is as below.

DATE Taq Name Unit Unit P٧ Unit ΡV TIME O: CH-1 125.5 CH-2 203.3 Ĉ °C CH-3 320.2 PI CH-4 512.6 °C 11 /06 /16 0 CH-5 452.1 CH-6 825.0 °C 11:00:00 Ο



Alarm/Error

(2) OneCH

It records 2 channels in one line and records occurring alarm as abbreviation. Not as TwoCH, it also records one channel's error message and occurring alarms in 4 alarms. Print form is as below.

Tag Name	PV	Unit	Error	Alarm1	Alarm2	Alarm3	Alarm4	DATE TIME	
O CH-1	125.5	°C	LL	,	SB		DH		\bigcirc
OCH-2	850.1	°C							\bigcirc
O CH-4	524.3	°C	нн						
CH-5	348.1	°C		PH				1 /06 /16	
O CH−6	152.2	Ċ	 ,					1: 00: 00	

For the information about alarm abbreviations, please refer to '8.2.3 Alarm Type(Alarm operation mode)'.

For the information about error abbreviations, please refer to '11.1 Error message'.



8.5.3 Standard Speed (Standard record speed)

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12	2011/06/15 WED 22:37:19	🔳 🖞 🖞 🛛 1 2 3 4 5 6 7 8 9 10 1	112 🚖 🗗 📕 2000/01/01 SAT 00:02:02
RECORD SETUP (NAME> Record Mode Digital Print Type Standard Speed Option Speed Memo Period Diwide Zepa	<pre><value> Graph OneCH 20mm/h 1hour</value></pre>	RECORD SETUP <name> Record Mode Digital Print Type Standard Speed Option Speed Memo Period Divide Zopo</name>	(VALUE) Gra 20mm/h Twd 20mm 20mm 20mm 20mm/h 20mm/h 20mm/h 240mm/h

Designate record speed on recording paper.

Recorder speed is indicated as feed length of recording paper per an hour (mm/h) and it is activated only when Record Mode(Record mode) is set as 'Graph(Graph)'.

- Set range: $10 \leftrightarrow 20 \leftrightarrow 40 \leftrightarrow 60 \leftrightarrow 120 \leftrightarrow 240$ mm/h
- Factory default: 20mm/h

8.5.4 Option Speed (Option record speed)



Designate option record speed.

Recorder speed is indicated as feed length of recording paper per an hour (mm/h) and it is activated only when Record Mode(Record mode) is set as 'Graph(Graph)'.

After setting DI- Type(Select digital input) as 'Speed', select either Standard

Speed(standard record speed) ↔ Option Speed(option record speed) by digital input.

When changing the set value of Standard Speed(Standard record speed), the set value of Option Speed(Pption record speed) is also changed as same as the set value of Standard Speed. (Option Speed should not be lower than Standard Speed.)

- Set range: 10 \leftrightarrow 20 \leftrightarrow 40 \leftrightarrow 60 \leftrightarrow 120 \leftrightarrow 240 mm/h
- Factory default: 20mm/h



8.5.5 Memo Period (Digital memo period)

■ZŸ₫X	123456789101112	2011 WED 22	1/06/15 2:37:44	🔳 🖉 🖞 🖞 🛙 234567891	10 11 12 🚖 🗗 🖡	2011/06/1 HED 22:37:5
RECORD SETUR			▲	RECORD SETUP		●1hour 🔺
<na< th=""><th>ME></th><th><value></value></th><th></th><th><name></name></th><th><value></value></th><th><u>2hour</u></th></na<>	ME>	<value></value>		<name></name>	<value></value>	<u>2hour</u>
	Record Mode	Graph		Record Mode	Gr	3hour
Digita	l Print Type	OneCH		Digital Print Type	Or	4hour 📄
St	andard Speed	20mm/h		Standard Speed	20n	8hour –
	Option Speed	20mm/h		Option Speed	20n	16hour
	Memo Period	1hour		Memo Period	11	24hour 🖵
	Divido Zopo	1	•	Divido Zopo		\

Designate record period (unit: min) for digital memo(current time, current value by channel).

Digital memo time is recorded at right time. You can record digital memo manually by pressing key for 3 sec or using digital input terminal (DI-2).

- Set range: Recording record speed and record channel, set range of digital memo period is limited.
- Factory default: 2hour

🖒 Ex.

If digital memo period is set as 60 min. and record start time is '09:20', first record time is '10:00', not '10:20'.

Digital record time is '10:00 \rightarrow 11:00 \rightarrow 12:00 \rightarrow 13:00 \rightarrow record end time'.

If digital memo period is set as 10 min, and record start time is '09:23', first record time is '09:30', not '09:33'.

Digital record time is '09:30 \rightarrow 09:40 \rightarrow 09:50 \rightarrow 10:00 \rightarrow record end time'.

🛛 Note

Г

Depending on record speed and the number of record channels, memo period setting time is limited. (Record speed unit: mm/h)

Digital m	emo per	iod settir	ng time w	hen reco	ord chan	nel is 1 t	o 2CH					
Record speed	1 min	5 min	10 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	8 hour	16 hour	24 hour
10			х	х								
20		х	^									
40	х											
60				0	0	0						
120		0	0									
240	0											

Digital m	emo per	riod setti	ng time v	hen reco	ord chan	nel is 3 t	o 4CH					
Record speed	1 min	5 min	10 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	8 hour	16 hour	24 hour
10				х	Х							
20		x	х	^								
40	v	^				\sim						
60	^				0	0						
120			0	0								
240		0										



Digital m	emo peri	iod settir	ng time w	hen reco	ord chan	nel is 5 te	o 6CH					
Record speed	1 min	5 min	10 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	8 hour	16 hour	24 hour
10					х	х						
20			х	х	^							
40		х	^									
60	Х					0	0					
120				0	0							
240		0	0									

Digital m	emo per	iod settir	ng time v	when reco	ord chan	nel is 7 t	o 8CH					
Record speed	1 min	5 min	10 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	8 hour	16 hour	24 hour
10					х	х						
20				x	^							
40		х	х	^								
60	Х					0	0					
120					0							
240		0	0	0								

Digital m	emo per	iod settii	ng time v	vhen rec	ord chan	nel is 9 t	to 10CH					
Record speed	1 min	5 min	10 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	8 hour	16 hour	24 hour
10					х	Х						
20				х	^							
40		х	х	^								
60	Х					0	0					
120					0							
240		0	0	0								

Digital m	iemo per	riod setti	ng time v	vhen rec	ord char	nel is 11	to 12CH	l				
Record speed	1 min	5 min	10 min	15 min	30 min	1 hour	2 hour	3 hour	4 hour	8 hour	16 hour	24 hour
10						v	Х					
20				х	х	Х						
40			х	^								
60	Х	х					0	0				
120					0	0						
240			0	0								



8.5.6 Divide Zone (Record zone division)

🔳 🖉 🖞 🖞 🛯 23456789	01112 🚖 🗗 2011/06/15 WED 22:38:02
RECORD SETUP	_
<name></name>	<value></value>
Digital Print Type	OneCH 🔳
Standard Speed	20mm/h
Option Speed	20mm/h
Memo Period	2hour
Divide Zone	
Stopdard Poriod	

Divides record zone for measuring value by channel.

It divides equally max. 12 zones as equal value. User needs to set record zone by channel in Record Zone setting at Input Setup.

It is easy to check measuring value due not to duplicated record zone with divided record zone by channel which is set in Record Zone setting at Input Setup.

If there is too many division for record zone, record value check accuracy is low.

- Set range: None, 2 to 12
- Factory default: None



Set value of record zone division: None









8.5.7 Standard Period (Standard record period)



Set record period to record current time, display value by channel as digital number on recording paper.

It is actiaved when Record Mode(Record mode) is Digital.

 Set range: 00m 01s to 99m 59s (Depending on the number of recording channel, min. set range is limited as below.)

Record channel	Set range	Record channel	Set range
1 to 2	01m 00s to 99m 59s	7 to 8	04m 00s to 99m 59s
3 to 4	02m 00s to 99m 59s	9 to10	05m 00s to 99m 59s
5 to 6	03m 00s to 99m 59s	11 to 12	06m 00s to 99m 59s

Factory default: -

8.5.8 Option Period (Option record period)



When Record Mode(Record mode) is set as 'Digital', set record period for current time (hh:mm:ss) and measuring value by channel (min:sec) through digital input(Speed set).

 Set range: 00m 01s to 99m 59s (Depending on the number of recording channel, min. set range is limited as below.)

Record channel	Set range
1 to 2	01m 00s to 99m 59s
3 to 4	02m 00s to 99m 59s
5 to 6	03m 00s to 99m 59s

Record channel	Set range
7 to 8	04m 00s to 99m 59s
9 to 10	05m 00s to 99m 59s
11 to 12	06m 00s to 99m 59s

Factory default: -



8.5.9 Listing Language (Language for list output)

🔳 🖉 🖞 🖞 🛛 🖓 🗖 🖉	01112 🚖 🗗 🛛 🕺 2011/06. WED 22:38	/15 :11
RECORD SETUP		۸
<name></name>	<value></value>	1
Memo Period	2hour	
Divide Zone	1	
Standard Period		
Option Period		
Listing Language	English	
Olarm Speed	20mm /b	\mathbf{T}

Desigante recorded langauge when list output.

Language	Example of recording
English	O PRINT MODE=DIGITAL 2011/06/14(THU) , 11:35:27 O SPEED=STANDARD:240 , ALARM:240 ,OPTION:240mm/H CH INPUT LO_RNG LO_SC UNIT O TAG HI_RNG HI_SC FILT O 1 TC-K -200.0 °C O O O 0 1 TC-K -200.0 °C O O O O 2 TC-K -200.0 °C O
Korea	○ 프린터방식:=그래프 2011/06/14(목) 11:35:27 ○ 기록속도=표준:240 알람:240 옵션:240mm/H 채널 입력 하한범위 하한스케일 단위 ○ 이름 상한범위 상한스케일 필터 ○ 1 TC-K -200.0 ℃ ○ CH-1 1350.0 0 ○ ○ 2 TC-K -200.0 ℃ ○ CH-2 1350.0 0 ○

- Set range: English ↔ Korea
- Factory default: English



8.5.10 Alarm Speed (Alarm record speed)



Set record speed for alarm cause and details when alarm occurs.

It is actiaved when Record Mode(Record mode) is set as Graph.

You cannot set Alarm Speed(Alarm record speed) as below Standard Speed(Standard record speed). If you change Standard Speed, Alarm Speed is changed as the same set value automatically.

When alarm occurs, record progresses with set Alarm Speed. When alarm is reset, it returns to Standard Speed.

- Set range: 10↔20↔40↔60↔120↔240mm/h
- Factory default: 20mm/h

🖉 Note

 If alarm and digital input occur at the same time, digital input is ignored and it records with the set value of Alarm Speed(Alarm record speed). When alarm is reset, it returns to Standard Speed (Standard record speed).

In graph mode, record speed is change by Standard speed, Alarm and Option Speed. Backup data is printable only with Standard speed. Therefore, original graph mode printout and backup graph mode printout may be different.

8.5.11 Power On Status (Record status when power ON)

② 梁齿 X 123456789	101112 🚖 🗗 🕴 2011/06/1 WED 22:38:3	15
RECORD SETUP		٠
<name></name>	<value></value>	
Standard Period		
Option Period		
Listing Language	English	
Alarm Speed	20mm/h	
Power On Status	Hold	
Pup Statue		٣

Designate one record operation stauts from 3 mode for when KRN100 re-turns ON from OFF by power failure.

Hold(Maintain)	Maintains record status of before power OFF (recording or stop recording).
Run(Record)	Operates recording when power is ON.
Stop(Stop recording)	No recording when power is ON.

- Set range: Hold↔Run↔Stop
- Factory default: Hold


8.5.12 Run Status (List printing at start recording)

🔳 🖉 🖞 🖞 🛯 234567891	01112 🚖 🗗 🕴 2011/06/15 WED 22:38:44
RECORD SETUP	▲
<name></name>	<value></value>
Option Period	
Listing Language	English
Alarm Speed	20mm/h
Power On Status	Hold
Run Status	OFF
Lict Out Option	

Set wheter to print setting list when starting recording. When printing list, icon for record in section 1 is changed as and flashes. After printing list with 240mm/h record speed, it processes record with changed set record speed. Please refer to List Out Option(List record option) for the set list item.

Set range: ON / OFF

Factory default: OFF



8.5.13 List Out Option (List record option)



Select parameter set value recording either Standard or Option and, it starts record.

It is activated when Run Status(List printing at start recording) is set as 'ON'.

Set	Description	Example of recording
Standard	Records standard parameters only.	PRINT MODE=DIGITAL 2011/06/14(THU) , 11:35:27 SPEED=STANDARD:240 , ALARM:240 , OPTION:240mm/H CH INPUT LO_RNG LO_SC UNIT TAG HI_RNG HI_SC FILT 1 TC-K -200.0 C CH-1 1350.0 0 0 2 DPT100 -200.0 C CH-2 850.0 0 0 Input specification(INPUT), channel name (TAG), lower limit input value(LO-RNG), upper limit input value(HI-RNG), display unit(UNIT), input digital filter(FILT)
Option	Records standard parameters and option parameters.	PRINT MODE=DIGITAL 2011/06/14(THU) 11:35:27 SPEED=STANDARD:240 ALARM:240 OPTION:240mm/H CH INPUT LO_RNG LO_SC UNIT ALM1 VALUE RELAY ALK2 VALUE RELAY ALM3 VALUE RELAY ALK4 VALUE RELAY ALM3 VALUE RELAY ALK4 VALUE RELAY DV.Lo 1000.0 None None None None DV.Lo 1000.0 None None None None None None None None None None DV.Lo 1000.0 None None None None None None None None None None

- Set range: Standard↔Option
- Factory default: Standard

🖉 Note

List is printed with max. record speed (240mm/h). Depending on the number of channel, it may take long time. Therefore, be sure this when printing the list.





8.5.14 Zone Dot Line Distance (Dot line for zone division)

🔳 🖬 🖞 🖞 🖾 🎗 123456789	101112 🚖 🗗 🖘 wed 16:30:51
RECORD SETUP	<u>▲</u>
<name></name>	<value></value>
Power On Status	Hold
Run Status	OFF
List Out Option	Standard 🗕
Zone Dot Line Distance	4.0mm
CH Print Distance	20.0mm 🗕
Stort Line Print	OM 🗸

Designate present/absence and interval of dot line at right to divide zone when zone is set. Dot line for zone division is printed in violet.

- Set range: None to 8.0mm (Set with 0.8mm interval)
- Factory default: 4.0mm



8.5.15 CH Print Distance (Record interval for each channel graph)

🔳 🖉 🖞 🖞 🛛 🖉 🖉	01112 🚖 🗗 🛛 2011/06/15 WED 22:39:14
RECORD SETUP	▲
<name></name>	<value></value>
Power On Status	Hold
Run Status	ON
List Out Option	Standard
Dot Line Distance	8. 0mm
CH Print Distance	100. Omm
Stort Lipo Print	

Designate the interval for printing channel number of each graph as below figure.

It is activated when Record Mode(Record mode) is set as 'Graph'.

- Set range: No Print to 100.0mm(Set by 10mm interval)
- Factory default: 20.0mm





8.5.16 Start Line Print (Start line when starting record)



Set whether to draw start line when starting record.

	0 R	ECORD STAR	T 2011/06/14 11:33:16(TUE)	🛥 — Start Line
	0			\Box
0 0	0			\bigcirc
	0			

- Set range: ON ↔ OFF
- Factory default: ON

8.5.17 Range Print Time (Input range record period)



It is actiaved when Record Mode(Record mode) is set as Graph. Set record period of High/Low Range & Graph Scale(High/ Low input value and graph scale value).

- Set range: Disable ↔ 1 to 24hour
- Factory default: Disable

Ex.



🖉 Note

During Range printing, the other data except graph is not recorded within pritted range. Be sure that if there is too many channel numbers or if Range Print Time interval is too short with low speed, various information about channel is not printed at Range print zone.



8.6 SYSTEM SETUP (System setting)

You can set system parameters of KRN100.

Set the item related system (date and time, reservation record, option, etc).

Move to SYSTEM SETU	P with DISPLAY, FEED	keys, press ENTER	key to enter SYSTEM	I SETUP.
■ ② 【学曲 X 1 23456789101112 INPUT SETUP ALARM SETUP DIGITAL INPUT SETUP COMMUNICATION SETUP RECORD SETUP FILE/MEMORY SETUP USED MEMORY SETUP USED MEMORY SETUP	: 2.7℃ 3: 1.6℃ 1: BURN℃	■ ② 繁曲 ※1234567 SYSTEN SETUP <name> Device Name Date/Time Date Type Summer Time Summer Time Period Percerution Type</name>	2011/00 VALUE> VALUE> KRN100 Recorder 2011/06/01 (Wed) 14:49:24 yyyy/mm/dd Disable Dicable	

Parameter list

Parameter	Set range	Factory default
Device Name (Device name)	Max. 16 characters	KRN100 Recorder
Date/Time (Date/Time)	Date: 2000y01m01d to 2099y12m 31d Time: 00h 00m 00s to 23h 59m 59s	Set as factory default
Date Type (Date type)	yyyy/mm/dd ↔ mm/dd/yy ↔ dd/mm/yy	yyyy/mm/dd
Summer Time (Summer time)	Disable ↔ Enable	Disable
Summer Time Period (Summer time period)	01m 01d 00h to 12m 31d 23h	
Reservation Type (Reservation record)	Disable ↔ Single ↔ Repeat	Disable
Reservation Period (Reservation record period)	2000y 01m 01d to 2099y 12m 31d	
Reservation Time (Reservation record time)	00h 00m 00s to 23h 59m 59s	
Alarm Sound (Alarm sound)	OFF ↔ Min ↔ Standard ↔ Max	OFF
Sampling Rate (Sampling period)	1 channel to 4 channel: 25, 125, 250 5 channel to 12 channel: 125, 250	125ms
Log Speed (Save period)	0 to 3600	1s
Backlight (LCD backlight brightness)	OFF ↔ Min ↔ Standard ↔ Max	Standard
Backlight On/Off (LCD backlight ON method)	Temp ↔ Always	Temp

 $\,\%\,$ Shaded parameters are affected by set value of other parameters. Please refer to specific descriptions of each parameter.



8.6.1 Device Name (Device name)

1234567	789101112 🚖 🗗	2011/06/15 WED 22:40:34		24	'фХ	123	4561	7891) 11 12 ,	<u>a</u> le		WEC	011/0 22:0	06/15 40:41
SYSTEM SETUP <name></name>	<value></value>			Å	В	С	D	Е	F	G	+	1	2	3
Device Name	KRN100		Kej	Н	Ι	J	Κ	L	Μ	Ν	-	4	Б	6
Date/Time Date Type		22:40:34 yyy/mm/dd	eyboa	0	Р	Q	R	S	T	U	*	7	8	9
Summer Time	y;	Disable	Гđ	۷	Ŵ	Х	Y	Ζ	Spa	ace	1	0		-
Summer Time Period		Dicoblo 🔻		KRNI	00 Re	ecord	er						A	a *

Designate user defined KRN100 name.

It supports up to 16 characeters with English capital letters, English small letters, and special letter.

- Set range: 16 characters
- Factory default: KRN100 Recorder

8.6.2 Date/Time (Date/Time)

🔳 🖉 📲 📥 🗴 1234567	89101112 A B WED 22:40	3∕15 3∶49	■2 44	<u>123456</u>	789101112	<u>+</u> 6		2011/06 WED 22:40	3/15 3:56
SYSTEM SETUP		▲	SYSTEM SE	TUP					-
<name></name>	<value></value>		<1	Set Date/Tim	е				
Device Name	KRN100 Recorder		I [-			order	
Date/Time	2011/06/15(Wed) 22:40:49			Date	2011/	67	15	40:56	
Date Type	уууу/mm/dd			Time	22 :		53	mm/dd	
Summer Time	Disable							sable	
Summer Time Period			Summer						
Pecoruption Type	Dicable	•	Pocor	uption lype				Hicoblo	•

Desigante system date and time of KRN100.

When you set the date, the day of week is automatically set and time is displayed in 24-hours format.

Based on set date and time, it records and saves the data.

Set range

Date: 2000y01m01d to 2099y12m31d, Time: 00h00m00s to 23h59m59s

Factory default: Set as factory default

8.6.3 Date Type (Date type)



Set KRN100 system date display method on the screen and record method on the recording paper.

You can select one display method among yyyy(year)/mm(month)/dd(day), mm(month)/dd(day)/yy(year), or dd(day)/mm(month)/yy(year).

- Set range: yyyy/mm/dd ↔ dd/mm/yy ↔ mm/dd/yy
- Factory default: yyyy/mm/dd



8.6.4 Summer Time (Summer time)

🔳 🖉 🖞 🖞 🛙 🖉 🖉	89101112 🚖 🗗 2011/06/15 WED 22:41:18
SYSTEM SETUP	▲
<name></name>	<value></value>
Device Name	KRN100Recorder
Date/Time	2011/06/15(Wed) 22:41:17
Date Type	уууу/mm/dd
Summer Time	Enable
Summer Time Period	00m00d 00h ~ 00m00d 00h 🖵
Pocorustion Type	Dicoblo 💌

This function is for applying summer time (daylight saving time) in specific contries and regions.

When you set Summer Time, it adds current time and 1 hour and displays '(S)' mark in front of the date and time on LCD screen or in front of the date on recording paper.

- Set range: Disable ↔ Enable
- Factory default: Disable

8.6.5 Summer Time Period (Summer time period)

🔳 🖉 🖞 🖞 🛙 🖉 🖉	89101112 🚖 🗗 🛛 🛛 🖉 🕺 2011/06/1	.5 24	■ 2 123456789101112 ▲ C web 22:42:12
SYSTEM SETUP	4		SYSTEM SETUP
<name></name>	<value></value>		<hl> ⟨I << SummerTime >> </hl>
Device Name	KRN100 Recorder		rder
Date/Time	2011/06/15(Wed) 22:41:24		Start Date/Time 📕 🗐 / 31 – 0 2:11 📕
Date Type	уууу/mm/dd		End Date/Time 9/1-0 m/dd
Summer Time	Enable		able
Summer Time Period	00m00d 00h ~ 00m00d 00h	_	Summer ØØh
Pecoruption Type	Dicoblo N		Perceruption lype icoble

Designate summer time (daylight saving time) period.

When Summer Time is set as 'Enable', it is activated. Designate Start date/Time, and End Date/Time.

- Set range: 01m01d 00h to 12m31d 23h
- Factory default: --



When changing summer time, it creates new backup data.



8.6.6 Reservation Type (Reservation record)

2 望山 X 1234567	89101112 🚖 🗗 🛛 🛛 2011/06 WED 22:42	215 135
SYSTEM SETUP		▲
<name></name>	<value></value>	
Summer Time Period	05m31d 00h ~ 09m01d 00h	
Reservation Type	Disable	
Reservation Period		
Reservation Time		
Alarm Sound	OFF	Ц
Sompling Poto	125mc	\mathbf{T}

This function is to set reservation time. At the set time, it starts/stops recording automatically.

You can select reservation record either Repeat(Repeat ON/OFF) or Single(Single ON/ OFF).

When selecting reservation record, 'Reservation Period(Reservation record period)' and 'Reservation Time(Reservation record time)' are activated. When reservation record is set, record flashes with recording) or recording) icon.

RE icon tuns OFF when reservation setting is 'Disable'.

- Set range: Disable ↔ Repeat ↔ Single
- Factory default: Disable

(1) Repeat(Repeat ON/OFF)

From start recording date to end recording date, it records data at from the set start time to the set end time. End time must be later than Start time.

Ex.

Reservation Period(Reservation record period) setting: Start Date 2011/ 1/ 1, End Date 2011/ 1/ 3

Reservation Time(Reservation record time) setting: Start Time 12/ 00/ 00, End Time 23/ 59/ 59



It records data every at from 12:00:00 to 23:59:59 in from 1^{st} , Jan, 2011 to 3^{rd} , Jan, 2011.

(2) Single(Single ON/OFF)

Starts recording at the start set time on start date and finishes recording at the end set time on end date.



Reservation Period(reservation record period): Start Date 2011/ 1/ 1, End Date 2011/ 1/ 5 Reservation Time(reservation record time): Start Time 12/ 00/ 00, End Time 23/ 59/ 59 12h00m00s 23h59m59s



2011y01m01d 2011y01m02d 2011y01m03d 2011y01m04d 2011y01m05d It starts recording at 12:00:00 on January 1st 2011 and finishes it at 23:59:59 January 5th 2011.





8.6.7 Reservation Period (Reservation record period)

■ 🛛 🖞 🖞 🛛 🖓 🕄 🖉	89101112 🚖 🗗 🛛 🛛 2011/06 WED 22:42	2:41	■ 2011/06/1
SYSTEM SETUP		▲	SYSTEM SETUP
<name></name>	<value></value>		<hr/> Reservation
Summer Time Period	05m31d 00h ~ 09m01d 00h		Summer d 00h
Reservation Type	Repeat		Resel Start Date 2000/ 1/ 1 epeat
Reservation Period	0000v00m00d ~ 0000v00m00d		Reserva End Date 2043/ 11/ 30 0m00d
Reservation Time	00h00m00s ~ 00h00m00s		Reset
Alarm Sound	OFF		
Sompling Poto	125mc		Sampling Mater 125mc

Designate reservation record period. When Reservation Type(Reservation record) is set as 'Repeat(Repeat ON/OFF)' or 'Single(Single ON/OFF)', it is activated to designate Start Date(Start date) and End Date(End date).

- Set range: 2000 / 01 / 01 to 2099 / 12 / 31
- Factory default: --

8.6.8 **Reservation Time (Reservation record time)**

■ 🛛 🖞 🖞 🛯 234567	2011/06/2011/06/WED 22:43	/15 :23	■ 🖉 🖞 🖞 X 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 🛛 🖉 221 1 / 06	i∕15 3:33
SYSTEM SETUP		▲	SYSTEM SETUP	▲
<name></name>	<value></value>		<hr/> Reservation	ור
Summer Time Period	05m31d 00h ~ 09m01d 00h		Summer d 00h	
Reservation Type	Repeat		Resel Start Time 0/ 0/ 0 epeat	
Reservation Period	2000y01m01d ~ 2043y11m30d		Reserva End Time 22/ 0/ 0 1m30d	
Reservation Time	00h00m00s ~ 00h00m00s		Reser	
Alarm Sound	OFF		OFF OFF	
Sompling Pote	125mc	$\mathbf{\nabla}$	Sompling Moto 125mc	V

Designate reservation record time. When Reservation Type(Reservation record) is set as 'Repeat(Repeat ON/OFF)' or 'Single(Single ON/OFF)', it is activated to designate Start Time(Start time) and End Time(End time).

- Set range: 0/ 00/ 00 to 23/ 59/ 59
- Factory default: --

🖉 Note

If reservation record(Reservation record) is set and during reservation recording, digital input is not available as RUN mode. In stopping recording status by reservation record, it is available.



8.6.9 Alarm Sound (Alarm sound)



Designate Alarm Sound (alarm sound) level when alarm operation turns ON.

- Set range: OFF ↔ Min ↔ Standard ↔ Max
- Factory default: OFF

8.6.10 Sampling Rate (Sampling period)



Designate sampling rate (Sampling period) of measuring value.

Set range may be different by the number of connected universal input card(KRN-UI6).

Set range

When connecting 1 to 2 universal input card(KRN-UI2): 25↔125↔250ms When connecting 3 to 6 universal input card(KRN-UI2): 125↔250ms

Factory default: 125ms

🖉 Note

Min. sampling period for TC-R, U, S, T sensors is 50ms.



8.6.11 Log Speed (Save period)

🔳 🖉 📲 🖞 1234567	89101112 🚖 🗗 🛛 2011/06/15 WED 22:43:51
SYSTEM SETUP	▲
<name></name>	<value></value>
Reservation Period	2000y01m01d ~ 2043y11m30d
Reservation Time	00h00m00s ~ 22h00m00s
Alarm Sound	OFF _
Sampling Rate	125ms 💻
Log Speed	1s
Backlight	Stopdard 💌

Designate the save period of measured data by universal input card (KRN-UI2) to system memory. The recorded data on recording paper is also recorded by save period.

For example, 3 sec save period records every 3 sec data, but it does not record during 3 sec of data which are changed.

- Set range: 0 to 3600
- Factory default: 1s

🖉 Note

If save period is set longer, the relation between graph data and alarm ON data is lower because of the occuring alarm record in the middle of save period during recording.

When setting as '0s' for Log Speed(save period), recording operates normally but the data does not saved at inner/external memory. If no recording paper (P.END) alarm occurs, there is no designated data and backup data is not recorded.

8.6.12 Backlight (LCD backlight brightness)

🔳 🖉 🖞 🖞 🛯 23456789	101112 🚖 🗗 🛛 2011/06/15 WED 22:44:00
SYSTEM SETUP	▲
<name></name>	<value></value>
Reservation Time	00h00m00s ~ 22h00m00s
Alarm Sound	OFF
Sampling Rate	125ms
Log Speed	1s 📕
Backlight	Standard
Bocklight Op/Off	Tomp 🗸

Designate LCD backlight brightness as 4 levels.

- Set range: OFF ↔ Min ↔ Standard ↔ Max
- Factory default: Standard

8.6.13 Backlight On/Off (LCD backlight ON method)

🔳 🖉 🖞 🗖 🕅 1234567	89101112 🚖 🗗	2011/06/ WED 22:44:	
SYSTEM SETUP			٠
<name></name>	<value></value>		11
Alarm Sound		OFF	
Sampling Rate		125ms	
Log Speed		1s	
Backlight		Standard	
Backlight On/Off		Temp	
			\bullet

Designate LCD backlight ON method.

If you set as 'Always', it maintins ON status, as 'Temp', it maintains only for 30 sec when key is input.

- Set range: Always ↔ Temp
- Factory default: Temp



8.7 FILE/MEMORY SETUP(File/Memory setting)

You can set the parameter about parameter set file and storage data.

Move to FILEMEMORY SETUP with FILE/MEMORY SETUP. EN 21123456789101121合同 (第2011/06/13)

🏽 🖉 🖞 🖞 🛙 🕅 🕅 🕅 🕅) 10 11 12 🚖 🗗	(S) 2011/06/15 WED 23:44:26) 🖞 🖞 🖞 🛛 1 2 3 4 5 6 7 8 9 1	01112 🚖 🗗 🛛 (S) 2011/0 WED 23:4	
DIGITAL INPUT SETUP	≜н 9 :	2.8°C	FILE	MEMORY SETUP		▲
COMMUNICATION SETUP	H10:	1.7°C		<name></name>	<value></value>	
RECORD SETUP	1=			Load Set File	None	
SYSTEM SETUP	111:	BURN°⊂		Save Set File	Select	
FILE/MEMORY SETUP	H12:	BURN°⊂		Memory Status	4%	
USER INFORMATION SETUP				Memory Clear	Clear	
Record Backup Setup	Ц			USB LogData Save	Disable	
	V			Momory Soup Option	Stop	•

Parameter list

Parameter	Set range	Factory default	
	None, Default.pms, User1.pms, User2.pms,		
	User3.pms, User4.pms, User5.pms,		
Load Set File (Open parameter setting file)	User1.pms(USB), User2.pms(USB),	None	
	User3.pms(USB), User4.pms(USB),		
	User5.pms(USB)		
	None, Default.pms, User1.pms, User2.pms,		
	User3.pms, User4.pms, User5.pms,		
Save Set File (Save parameter setting file)	User1.pms(USB), User2.pms(USB),	Select	
	User3.pms(USB), User4.pms(USB),		
	User5.pms(USB)		
Memory Status (Memory capacity)	0% to 100%(display range)	0%	
Memory Clear (Delete memory)	Cancel ↔ All Clear	Clear	
USB LogData Save (USB storage function)	Enable ↔ Disable	Disable	
Memory Save Option (Memory storage option)	Overwrite ↔ Stop	Stop	
USB Memory Copy/Move (Move/Copy data)	-	USB Copy/Move .	



8.7.1 Load Set File (Open parameter setting file)

🔳 🖉 🖞 🖞 🛛 2345678910111	2 1/06 WED 23:45	∕15 ∶13	🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12	<u>a</u> b	(S)2011/06/15 WED 23:45:19
FILEMEMORY SETUP <pre></pre>	<value> None Select 4% Clear Disable Step</value>		FILEMEMORY SETUP	<value> Sele Cle C</value>	None Default.pms User1.pms User2.pms User3.pms User4.pms User5.pms

Applies set value of saved parameter set file.

When applying this set, backup data, user unit and booting logo are not changed.

None, Default.pms file is activated and if there is User1.pms to User5.pms, User1.pms(USB) to User5.pms(USB) file(parameter set save file), it is activated.

- Set range: None ↔ Default.pms ↔ User1.pms to User5.pms ↔ User1.pms(USB) to User5.pms(USB)
- Factory default: None

🔼 Caution

Be sure that if selecting 'Default.pms' file, every set value is initialized as factory default. Save the current set parameter as Save Set File (parameter setting file storage) at first and initialize it for the provision.

User1.pms to User5.pms, User1.pms(USB) to User5.pms(USB) file is selected, all parameter setting information of KRN100 is changed as the set value of the selected parameter save file. Set value changing may be also affected to every setting of KRN100's overall operations. Check possible problems occuring on system and change the desired set value.

8.7.2 Save Set File (Save parameter setting file)

ฅ⊑ 🖉 🖞 🖞 12345678910	1112 🚖 🗗 (S) 2011/06/ WED 23:45:	15 26	🕫 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12	(S) 2011/06/15 WED 23:45:41
FILEMEMORY SETUP (NAME) Load Set File Save Set File Memory Status Memory Clear USB LoeData Save	<pre><value> None Select 4% Clear Disable</value></pre>		FILEMENORY SETUP <name> Load Set File Save Set File Memory Status Memory Clear USB LogOata Save</name>	VALUE> None User1. Pms User2. Pms User3. Pms User4. Pms User5. Pms User5. Pms

Saves current set parameter set value to User1.pms to User5.pms file of inner memory. In case of empty file, it displays gray.

- Set range: None ↔ User1.pms to User5.pms, User1.pms(USB) to User5.pms(USB)
- Factory default: Select ...



8.7.3 Memory Status (Memory capacity)



Displays system memory usage in %.

If memory usage is 100%, depending the set value of '8.7.6 Memory Save Option (Memory storage option)', new data is overwritten on oldest backup data or it stops saving backup data.

- Display range: 0 to 100%
- Factory default: 0%



Inner system memory of KRN100 is 512 Mbyte, and KRN100 supports an external USB memory up to 32 Gbyte. Another file to be saved data is created when it is over 100 Mbyte.

Below table is save time for 100Mbyte data by the number of input channels.

The number of CH	Saved time
1 channel	Approx. 50 days
2 channels	Approx. 43 days
3 channels	Approx. 37 days
4 channels	Approx. 33 days
5 channels	Approx. 30 days
6 channels	Approx. 27 days

The number of CH	Saved time
7 channels	Approx. 25 days
8 channels	Approx. 23 days
9 channels	Approx. 21 days
10 channels	Approx. 20 days
11 channels	Approx. 18 days
12 channels	Approx. 17 days

8.7.4 Memory Clear (Delete memory)



Delete the saved log data on system memory.

Current saving backup data is not deleted when deleting backup data.

- Set range: Cancel ↔ All Clear
- Factory default: Clear ...





8.7.5 USB LogData Save (USB storage function)

🔳 🖉 🖞 🖞 🛯 234567891	01112 🚖 🗗 (S) 2011/06/15 WED 23:47:17
FILEMEMORY SETUP	▲
<name></name>	<value></value>
Save Set File	Select
Memory Status	4%
Memory Clear	Clear
USB LogData Save	Disable
Memory Save Option	Stop
USB Momory Copy/Mouo	USB Copy/Mouo

Set whether to save backup data which is saved on system on an USB memory.

When selecting Enable to saving data to an USB memory, it also saves data to system memory at the same time. A connected USB memory at left side USB Slot, KRN100 starts to save. It takes check time for storage free space approx. 10 to 60 sec. depending on memory capacity.

The data is saved as 'KRN100_20100815(year month day)_091050(hour min. sec.).KRD' file name and if main set^{**1} is changed or backup data capacity is over 100MByte, it creates new file.

- Set range: Disable ↔ Enable
- Factory default: Disable
- * 1. Main set is as follwoings.

Sampling Rate(Sampling period), Display/Temp Unit(Display/Temperature unit),

Input Type(Input specification), Range/Scale Point(Decimal point),

Special Function(Special function), High/Low Range & Graph Scale(High/Low input value

and graph scale value), Low Scale/High Scale(Lower/Upper limit scale value),

Alarm Type(Alarm operation mode), Alarm Alarm No(Alarm output alarm

number), Record Mode(Record mode), Divide Zone(Record zone division),

Standard Speed(Standard record speed), Memo Period(Digital memo period),

Log Speed(Save period), Summer Time(Summer time)

🖉 Note

Supporting file system is FAT16, FAT32 when using an USB memory. Microsoft's file system, NTFS, and Linux's file system, EXT2, EXT3, etc., are not supportable.

🔼 Caution

When connecting an USB memory, KRN100 pauses backup data download by Modbus function, and backup data printer function to recognize memory for a while (dending on the capacity, max. 30 sec).

If an USB memory's LED flashes, do not remove an USB memory, or it may damage to the data. If the damage of USBmemory data occurs, you can find the saved data from KRN100 inner memory and save the desired file to an USB memory.

Set USB LogData Save(USB storage function) as 'Disable' and when the below message disappears, remove an USB memory.

•21	🖞 🛗 X 1 2 3 4 5 6 7 8 9 10 11 12 🚖 🗗 🗾 ма	2013/04/01 N 13:48:13
CH1 :	KRN100 Message	ec.
CH2 :		PC
СНЗ :	Plase Wait, USB LogData Save!!!	PC
CH4 :		PC
CH5 :	20.2°C UNIT.	c
CH6 :	27.2°⊂ CH12:	°C



8.7.6 Memory Save Option (Memory storage option)

🔳 🖉 🖞 🖞 🛯 234567891	0 11 12 🚖 🗗 (S) 2011/06/15 WED 23: 47: 17
FILEMEMORY SETUP	▲
<name></name>	<value></value>
Save Set File	Select
Memory Status	4%
Memory Clear	Clear
USB LogData Save	Disable
Memory Save Option	Stop
USB Momory Copy/Mouo	USB_Copy/Mouo

Set the operation how to storage new data when inner memory storage space is used all as 100%.

Set value	Description
Overwrite	Deletes the oldest backup data file in order and saves new data. Important backup data should be backup at first.
Stop(Stop saving)	Stops backup data. It does not save Backup data. Even though new recording paper is replaced, output function for backup data does not operate.

- Set range: Overwrite ↔ Stop
- Factory default: Stop





8.7.7 USB Memory Copy/Move (Move/Copy data)

7 8 9 10 11 12 🚖 🛃 🖌 🐕) 2 ION	011/01/ 18:59:	/31 /08
None			۸
Copy to USB Memory		/1>	
	Γ		
File Infomation		55602	
<< Prev Page		35415	
	F	34222	÷
	None Copy to USB Memory Move to USB Memory Delete File File Infomation	None Copy to USB Memory Move to USB Memory Delete File File Infomation <	None ///> Copy to USB Memory //> Move to USB Memory 15322 Delete File 15034 File Infomation 55602 Prev Page 35415 Next Page > 34222

Moves, copies or deletes the saved backup data on inner Memory to an USB memory. Currently saving backup data has '*' mark and it is not able to copy, move and delete.

Item	Description
None	No operation
Copy to USB Memory	Saves selected backup data to an USB memory and preserves backup data of system memory.
Move to USB Memory	Saves selected backup data to an USB memory and deletes backup data of system memory.
Delete File	Deletes backup data.
File Information	Displays backup data information. Displayed information is Name, Path, Size, Log Channel, Log Speed.
<< Prev Page	Moves to previous page of file or directory list.
Next Page >>	Moves to next page of file or directory list.
Up Directory	Moves to parent folder
Into Directory	Moves to sub folder.

- Set range: (For the desired file) Copy to USB Memory, Move to USB Memory, Delete File
- Factory default: USB Copy/Move ...

)	Note
----------	------

Copy(Move) to USB Memory

■ 🖉 🖞 🖞 🛯 234567	789101112 🚖 🔠 🖌 🕷)2011/01/31 ON 18:59:08
USB Move/Copy	None	▲ ▲
<internal (12)="" 1="" 2<="" th=""><th></th><th>/1></th></internal>		/1>
*KRN100_20110131_185		15322
KRN100_20110131_174		15034
KRN100_20110131_173		55602
KRN100_20110131_172		35415
KRN100_20110131_171		⊣34222 ⊣
VDN100 20110131 169	Up Directory	V

🔳 🖉 🖞 🖞 🛯 2345678910	1112 🚖 🔒 💦 (S) 2011/01/31 MON 18:59:37
USB Move/Copy	▲
<internal (12)="" 1="" 2=""></internal>	<usb 1="" memory(5)=""></usb>
*KRN100_20110131_185449	KRN100_20101230_115322
KRN100_20110131_174853	KRN100_20101230_115034
Сору: 94 🕺	KRN100_20101229_155602
KRN100_20110131_172720	KRN100_20101229_135415
KRN100_20110131_171902	KRN100_20101229_134222
VDN100 20110131 165800	▼

Into Directory

🔳 🖉 🖞 🖞 🛛 2345678910	1112 🚖 🔒 💦 (S) 2011/01/31 MON 19:01:06
USB Move/Copy	▲
<internal (1)="" 1=""></internal>	<usb 1="" memory(3)=""></usb>
2011/	KRN100_20101230_115322
	KRN100_20101230_115034
	KRN100_20101229_134222
	▼

1234567	'89101112 🚖 🔠 🖌 🕷)2011/01/31 ON 19:01:22	1
USB Move/Copy	Move to USB Memory	A	-
<internal (2)="" 1="" 1)<="" th=""><th>Delete File</th><th>/1></th><th></th></internal>	Delete File	/1>	
2011/1	File Infomation	15322	4
2011/0	<< Prev Page	15034	L
	Next Page >>	34222	L
	Up Directory		L
	Into Directory	\square \square	4
	Soloct Filo	V	<u>'</u>

File Information

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 11 12	(S) 2011/01/31 MON 19:00:28	■ 🖉 🖞 🖞 🖉 🛛 12345678	9101112 🚖 🔒 (\$) 2011/01/31 MON 18:59:46
USB Move/Copy <internal (12)="" 1="" 2=""> *KRN100_20110131_185449 KRN100_20110131_174853 KRN100_20110131_173747 KRN100_20110131_172720 KRN100_20110131_172720 KRN100_20110131_112820</internal>	R Delete File	<< FILE Info >> <name></name>	(VALUE> (VALUE> /SUC/data/2011/01/31 20068 Byte 6 1s

USER INFORMATION SETUP(User information setting) 8.8

You can set user management, check system information, firmware upgrade.

Move to USER INFORMATION SETUP with USER INFORMATION SETUP.

🔳 🖉 🖞 🖞 🛯 23456789	10 11 12 🚖 🗗	2011/06/15 WED 20:33:30
ALARM SETUP DIGITAL INPUT SETUP	▲CH3 CH-3	0.0°C
COMMUNICATION SETUP RECORD SETUP	CH4 CH-4	-3.8℃
SYSTEM SETUP	CH5 CH5	1.7℃
USER INFORMATION SETUP		0.8°C

s	et r	ange		Factory defaul
0.8°C		Information Firmwore Undete	Display V20110503(Sc	
1.7 ℃		Change Admin Password User Lock		OFF
-3.8 ℃		Password Login Admin	Disa	
U. U \heartsuit		NNHNE Z		

■ 2011/06/01 WED 15:48:08 USERINFORMATION SETUP Password Disable

Parameter list

Parameter	Set range	Factory default
Password (Password mode)	Disable ↔ Enable	Disable
Login Admin (Administrator log in)	0000 to 9999	-
Change Admin Password (Change password by administrator)	0000 to 9999	-
User Lock (Change user authority)	$OFF \ \leftrightarrow \ LOCK1 \ \leftrightarrow \ LOCK2, \ \leftrightarrow \ LOCK3$	OFF
Information (Check system information)	-	Display
Firmware Upgrade (Firmware upgrade)	-	Automatically display





8.8.1 Password (Password mode)

🔳 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 1	101112 🚖 🗗 (S) 2011/06/15 WED 23:48:15
USERINFORMATION SETUP	[Password Disable] 📃 📥
<name></name>	<value></value>
Password	Disable
Login Admin	
Change Admin Password	
User Lock	OFF
Information	Display
Eirmworo Uparodo	V20110615(Somo)

You can set password and the mode as user(general user) mode and administrator mode to restrict parameter setting and record function.

Administrator has every operate authority and user(general user) has only administrator-defined authority.

ltem	Description						
Disable	Allows every user operation authorization to use all functions.						
Enable	With administrator's or user's log-in and password, allows operation authorization.						



When setting the password, lock icon is displayed. In user(general user) mode, lock icon marks as **a**, and in administrator mode, it marks as **b**.



- Set range: Disable ↔ Enable
- Factory default: Disable

🖉 Note

Password mode setting: Disable \rightarrow Enable is available without authority. But Enable \rightarrow Disable changing is only available by administrator's authority. Enter the set password at Login Admin to change the mode. In administrator lock state, when power turns OFF/ON, it changes user lock mode.





8.8.2 Login Admin (Administrator log in)

🅫 🖉 🖞 🖞 1 2 3 4 5 6 7 8 9 10 1	112 🚖 🔂 (S) 201 WED 2	1/06/15 3:48:27		24	'фХ	123	4561	7891	D 11 12 ,		ł			06∕15 48:33
USERINFORMATION SETUP (U <name></name>	lser Mode] <value></value>	^		A	В	С	D	Е	F	G	+	1	2	3
Password	VALUE/		Key	Н	Ι	J	Κ	L	М	Ν	-	4	5	6
Login Admin Change Admin Password	****		/boa	0	Ρ	Q	R	S	T	U	*	7	8	9
User Lock	OFF		īd	۷	₩	Х	Y	Ζ	Spa	асе	1	0		-
Information Firmwore Upgrade	Display V20110615(Sama)	-		0000									A	а *

Log in to the parameter by entering password as administrator.

- Set range: 4 digit number
- Factory default: -

🖉 Note

When password is not set yet, default password is "0000".

When entered administrator's password is wrong, it displays 'Fail, ASKey: xxxx'. Please call our service center (+82-32-820-2343) and tell us ASKey and you can check administrator's password.



8.8.3 Change Admin Password (Change password by administrator)

RE 🖉 🖞 🖞 123456789	101112 🚖 🛃 (S) 2011/ WED 233	/06/15 :48:44		21	ŻфХ	123	4561	7891) 11 12 ,	<u> </u>		_ MON	011/0 17:/	02∕14 41:09
USERINFORMATION SETUP <name></name>	[Admin Mode] <value></value>	^		A	В	С	D	E	F	G	+	1	2	3
Password	Enable		Key	Н	1	J	К	L	Μ	N	-	4	5	6
Login Admin Change Admin Password	*****		/boa	0	Р	Q	R	S	T	U	*	7	8	9
User Lock	OFF		īd	٧	Ŵ	Х	Y	Ζ	Spa	ace	1	0		-
Information	Display	Ŧ		adda	1								A	а *

Change the previous password. Changing password is able only when login status as administrator.

- Set range: 4 digit number
- Factory default: -



8.8.4 User Lock (Change user authority)

🔳 🖉 🖞 🖞 🛯 23456789	01112 🚖 🛃 👘 (S) 2011/06/15 WED 23:48:57
USERINFORMATION SETUP	[Admin Mode]
<name></name>	<value></value>
Password	Enable
Login Admin	
Change Admin Password	****
User Lock	OFF
Information	Display
Eirmworo Uparodo	V20110615(Somo)

User(general user) mode has three levels for function set authority. Setable parameter by function set authority is as below.

Item	OFF	Lock1	Lock2	Lock3
DIGITAL INPUT				
ALARM SETUP	•	-	-	
INPUT SETUP				
RECORD SETUP				x
SYSTEM SETUP	•	-		~
COMMUNICATION SETUP				
RECORD BACKUP DATA			x	x
FILEMEMORY SETUP	-		^	^

●: Enables to check and change set value, ▲: Enables to check set value, X: Disable to check and change set value

- Set range: OFF ↔ LOCK1 ↔ LOCK2 ↔ LOCK3
- Factory default: OFF

🖉 Note

Regardless of User Lock(change user authority) setting, User(general user) mode cannot change firmware upgrade, the set file initialize, password mode disable functions.

8.8.5 Information (Check system information)

🔳 🖉 🖞 🗖 Х 123456789	10 11 12 🚖 🛃 (S) 2011/06/ WED 23: 49:	15 04		15 23
USERINFORMATION SETUP	[Admin Mode]		<< INFORMATION SETUP >>	
<name></name>	<value></value>		<name> <value></value></name>	
Password	Enable		Ethernet IP Address 192,168,1,2	
Login Admin			Ehternet Mac Address 58:e8:08:00:00:00	
Change Admin Password	****		Slot UI2 S1: , S2:UI, S3:UI	_
User Lock	OFF		S4:UI, S5:UI, S6:UI	
Information	Display		Slot Option S7:ATE , S8:DIE	_
Eirmwore Upgrode	V20110615(Sama)	\mathbf{T}	3TD+812 ND+02	Ŧ

Check system information of KRN100.

You can firmware version, an USB memory capacity, communication concerns, slot connection status, etc.

🖉 Note

If connected and displayed card on slot and actaul connected card is inconsists, check the connect status of card and re-supply power. If it is not recognized even though re-supplying power, please contact our service center. KONICS service center: +82-32-820-2343



8.8.6 Firmware Upgrade (Firmware upgrade)



Updates KRN100 firmware.

When upgrading firmware, parameters' set values are initialized.

- Set range: -
- Factory default: Automatically set



Firmware upgrade

- 1st Visit our homepage (<u>www.konics.co</u>m) to download 'KRN100 firmware file (krn100.fwu)'.
- 2nd Copy the downloaded firmware file to an USB memory's loot (top) directory and connect an USB memory to KRN100.
- 3rd Check that firmware is recognized on "USERINFORMATION SETUP -Firmware

Upgrade" menu.



4th Check currrent version's date and to-be upgraded version's date. Select 'Upgrade'

button and it starts firmware upgrade.



Before processing, warning message appears. Select 'OK'.

	02/10 22:40						
<pre>KRN100 Message ></pre>							
<warrning !!!=""> System is Stop and Upgrade Start ?</warrning>							
CANCEL OK							
Cancel Upgrade							



5th After completing firmware upgrade, below message appears. Turn OFF the power and turn ON it again.



6th At first booting after upgrade, initialize and delete every parameter set file (Inner default set file, User1.pms to User5.pms) to consider firmware version information

print, and compatibility with previous parameter setting.

	10 08					
KRN100 Firmware Update Success <v20110211></v20110211>						
<pre><warrning !!!=""> Parameter is all Reset !!!</warrning></pre>						
ОК						

🔨 Caution

During firmware upgrade, alarm output, digital input and log file save, etc functions does not operate normally. Therefore, please take proper measure to prevent malfunction of KRN100 system before starting firmware upgrade.

After completing firmware upgrade, you must turn OFF and ON the power of KRN100 to operate normally.

In process of firmware upgrade, when power turns OFF, firmware upgrade is not complete. When power turns ON again, KRN100 operates with previous firmware version. Try firmware upgrade again.

After completing firmware upgrade and OFF/ON the power, if KRN100 displays booting screen and does not operate normally, it may have damage to the inner firmware during firmware upgrade. It is required to repair.

Please contact our service center. KONICS service center: +82-32-820-2343



8.9 **RECORD BACKUP_ SETUP (Backup data record setting)**

Record Backup creates file when power ON regardless of starting/stopping record and saves the data to inner system memory (An USB memory storage is available (Enable) by the set.) according the set record mode.

This parameter is useful to print the desired time data with backup data or check data by computer with DAQ Master (dedicated software).

Therefore, backup data set function is for printing the saved backup data at inner system memory and an USB memory.

Move to RECORD BACKUP SETUP with Keys, keys, press Keys, keys to enter RECORD BACKUP SETUP.

🔳 🖉 🖞 🖬 🗴 123456789	10 11 12 🚖 🗗	2011/06/15 WED 20:48:23
DIGITAL INPUT SETUP COMMUNICATION SETUP	▲ CH11	°C
RECORD SETUP	CH12	°C
SYSTEM SETUP FILE/MEMORY SETUP	CH-12	Ċ
USER INFORMATION SETUP		
Record Backup Setup		

🔲 🖉 🖞 🛗 🕅 123456	2011/06/03 WED 15:48:26
Record Backup Setup	▲
<name></name>	YALUE
Record Backup	Stop
Backup Data List	File Not Found!!
Start Date and Time	0000/00/00 00:00:00
End Date and Time	0000/00/00 00:00:00
Backup Print Mode	Graph 🔔
Soloct Dript Mode	Graph 🔻

Parameter list

Parameter	Set range	Factory default
Record Backup (Backup data record)	Stop ↔ Start	Stop
Backup Data List (Backup data list)	-	File Not Found!!
Start Date and Time (Start time for data storage)	Date: yyyy/ mm/ dd, Time: hh: mm :ss	0000/00/00 00:00:00
End Date and Time (End time for data storage)	Date: yyyy/ mm/ dd, Time: hh: mm :ss	0000/00/00 00:00:00
Backup Print Mode (Backup data record mode)	-	Graph
Select Print Mode (Backup data recording mode setting)	Graph ↔ Digital	Graph

🖉 Note

- When printing with backup data, the saved data in backup data is accurate but backup data printout may not be same 100% with the real-data due to the difference between printing time and backup time. Please use backup data as only for reference.
- For printing backup data, KRN100 reads saved backup data in memory from beginning to end at first and starts printing. If backup data section is long or backup data is saved as low speed record mode, reading takes a lot of time. Therefore, print only for the desired section.
- In graph mode, record speed is changed by Standard speed, Alarm, or Option Speed.
 Backup data is printed with Standard speed. Therefore, original printout and backup printout in graph mode may be different.



8.9.1 Record Backup (Backup data record)

■ 🖉 🖞 🖞 🛯 23456	i 789101112 🚖 🗗 🛛 🕺 2011/06 WED 20:48	∕15 :30
RECORD BACKUP SETUP		
<name></name>	VALUE	
Record Backup	Stop	
Backup Data List	File Not Found!!	
Start Date and Time	0000/00/00 00:00:00	
End Date and Time	0000/00/00 00:00:00	
Backup Print Mode	Graph	
Soloct Print Mode	Groot	$ \bullet $

Designate whether recording saved backup data.

Item	Description
Cton	Not printing the designated backup data on Backup Data List, it returns to RUN
Stop	mode.
	Records the designated backup data on Backup Data List from start date and
	time to end date and time and returns to RUN mode.
Start	At RUN mode, the icon for record changes as BACKUP and flashes. KRN100
	reads backup data to the end and starts recording.
	(Depending on backup data file size, reading time may take longer.)

When starting printing by Record Backup function, starts recording as below figure.



- Set range: Start ↔ Stop
- Factory default: Stop

8.9.2 Backup Data List (Backup data list)

🔳 🖉 🖞 🖞 🛙 234567	89101112 🚖 🐻 (S) 2011/06/11	52
Record Backup Setup	▲	5
<name></name>	VALUE	
Record Backup	Stop	4
BackupData List	File Not Found!!	T
Start Date and Time	0000/00/00 00:00:00	T
End Date and Time	0000/00/00 00:00:00	T
Backup Print Mode	Graph 📙	4
Soloct Print Mode	Groop 💌	1

You can check saved Backup Data List(Backup data list).

Backup Data is sorted automatically according to the recently occuring order.

For the information of file selection of backup data list, please refer to '8.9.6 Select Print Mode (Backup data recording mode setting)'.



8.9.3 Start Date and Time (Start time for data storage)

■ 	789101112 🚖 🔂	(S) 2011/06/ WED 23:55:	15 19	■2 [\$#]	123456	789101112	10		(S)2011/06 WED 23:55	
RECORD BACKUP SETUP				RECORD BACKU	p setup					▲
<name></name>	VALUE			<ni<sub>Da</ni<sub>	te/Time					
Record Backup		Stop		Rec					Stop	
Backup Data List	KRN100_20110615_2			Backup	Date	2000/	17	1	6. KRD	
Start Date and Time	2000/01/0			Start Dat	Time	0:	0:	0	00:00	
End Date and Time	2000/01/01			End Dat					00:00	
Backup Print Mode		Graph		Backup 🔄					Graph	
Soloct Print Mode		Groop	•	Soloct Ur	int Modo				Groop	

Set storage start date and time for backup data. You can set start date and time.

Set range is within start date and time to end date and time.

Set range

Date: yyyy/ mm/ dd, Time: hh: mm :ss

Factory default: 0000/00/00 00:00:00

8.9.4 End Date and Time (End time for data storage)

■2 🖞 🖞 🛯 123458	6789101112 🚖 🔂 👘 (S) 2011/06/1 Wed 23:55:3	5	■ଥ∛≞⟩	123456	789101112			(S)2011/06/1 WED 23:55:4	
Record Backup Setup	4		Record Backu	P SETUP				_	•
<name></name>	VALUE			te/Time					
Record Backup	Stop		Rec					Stop	
Backup Data List	KRN100_20110615_225126, KRD		Backup	Date	2000/	17	1	6. KRD	
Start Date and Time	2000/01/01 00:00:00		Start Dat	Time	<u> </u>	0:	0	00:00	-
End Date and Time	2000/01/01 00:00:00		End Dat					00:00	
Backup Print Mode	Graph 🖵	4	Backup					Graph _	_
Soloct Dript Mode	Graph 🔤		Soloct Uri	int Modo				Groop N	,

Set storage end date and time for backup data. You can set end date and time.

Set range is within start date and time to end date and time.

Set range

Date: yyyy/ mm/ dd, Time: hh: mm :ss

Factory default: 0000/00/00 00:00:00

8.9.5 Backup Print Mode (Backup data record mode)

₽⊑ 🖉 🖞 🖞 123456	789101112 🚖 🔂 👘 (S) 2011/06/ WED 23:56:	15 00
Record Backup Setup		۸
<name></name>	YALUE	
Backup Data List	KRN100_20110615_225126, KRD	
Start Date and Time	2000/01/01 00:00:00	
End Date and Time	2000/01/01 00:00:00	
Backup Print Mode	Graph	_
Select Print Mode	Graph	
		•

You can check record mode of current saved backup data.



8.9.6 Select Print Mode (Backup data recording mode setting)

№ 🖉 🖞 🖞 123458	3789101112 🚖 🔂 (S) 2011/06/ WED 23:56:	15 06
Record Backup Setup		▲
<name></name>	VALUE	
Backup Data List	KRN100_20110615_225126, KRD	
Start Date and Time	2000/01/01 00:00:00	
End Date and Time	2000/01/01 00:00:00	
Backup Print Mode	Graph	
Select Print Mode	Graph	
		¥

It is able to print with different record mode from original backup data's record mode.

- Set range: Graph ↔ Digital
- Factory default: Graph

🖉 Note

To print with different record mode from original backup data's record mode, it records with the set record speed(in case record mode is Graph) or the set record period (in case record mode is set as Digital) from record mode(Digital or Graph) on current record setup.

For example, in case original backup data is saved as Digital mode (Backup Print Mode: displays digital). To print with Graph mode (Select Print Mode: set as Graph), Graph mode's record speed follows the set record speed of graph mode in current record setup.

- How to select record backup file
 - 1st Move to RECORD BACKUP SETUP parameter setting group.

🔳 🖉 🖞 🖞 🛯 23456789	101112 🚖 🗗	2011/06/15 WED 20:48:23
DIGITAL INPUT SETUP COMMUNICATION SETUP	▲CH11 CH-11	°C
RECORD SETUP	CH12	°C
SYSTEM SETUP FILE/MEMORY SETUP	CH-12	Ŭ
USER INFORMATION SETUP		
RECORD BACKUP SETUP	-	

2nd In Backup Data List, press key and system memory and the saved backup

data in USB are also display. (If backup data is not designated or does not exist, it

displays "File Not Found!!".)

alopiaj		ounan ij								
■2 ⋭⋢	I X 12345678910	112 📤 🗗 🔛	2011/0 THU 18:2	2/10 2:28	•	"⊈ ₫ Х123	456789101	12 📤 🗗 🖁	2011/02/1 THU 18:22:2	10 28
Record Back	(UP SETUP			▲	Rec	ord Backup M	lemory Ope		A	
<na< th=""><th>ME></th><th>VALUE</th><th></th><th></th><th></th><th><internal (5)<="" th=""><th></th><th><usb memory<="" th=""><th></th><th></th></usb></th></internal></th></na<>	ME>	VALUE				<internal (5)<="" th=""><th></th><th><usb memory<="" th=""><th></th><th></th></usb></th></internal>		<usb memory<="" th=""><th></th><th></th></usb>		
	rd Backup		Stop			N100_2010122		USE	3 Not Found	
		<u>00_20101229_18</u>				N100_2010122				
Start Date		2010/12/29				N100_2010122				
	and Time	2010/12/29				N100_2010122				
	rint Mode		Graph		KR	N100_2010122	9_175034			
Soloct D	ript Modo		Groop							<u></u>

3rd Select the desired file in Basckup Data List and press wey and menu is

displayed.

(Marked '*' files displays currently saving file.)

🔳 🖉 🖞 🖞 🛛 23456789	1011 12 🚖 🖂 📘 т	2011/02/ HU 18:22:	/10 28
Record Backup Memory De	lete File :	▲	
<internal (5)="" 1="" 1;="" fi<="" th=""><th>le Infomation</th><th>/1></th><th></th></internal>	le Infomation	/1>	
*KRN100_20101229_186 <<	Prev Page	Found	
	xt Page >>		
KRN100_20101229_175 Up	Directory		
	to Directory		
KRN100_20101229_175 Se	lect File		
		▼I I	•



2nd 4th In menu screen, select Select File and press key and "S" is displayed in front of backup data. Select currently saving file, it displays only '*'.

Press **E** key to operate Function key and press **E** key to enter and it selected.

File Information: Checkes Backup Data information

Prev Page, Next Page: Moves page (If there are lots of files)

Up Directory: Moves parent folder

Into Directory: Enter the folder

5th You can check save time information of the selected Backup Data.

	7891011 <mark>12 🚖 🗗 </mark> тно 18:22	2/10 2:28
Record Backup Setup		
<name></name>	VALUE	
Record Backup	Stop	
Backup Data List	KRN100_20101229_180207, KRD	
Start Date and Time	2010/12/29 18:02:07	
End Date and Time	2010/12/29 18:03:37	
Backup Print Mode	Graph	Ш
Soloct Print Modo	Graph	-

- Moves parent folder
 - 1st Press www. key in selected file to activate selected screen. Select 'Up Directory'

and it moves to parent-folder.

🔳 🖉 🖞 🖞 1 23 45 6 7 8 9 10 11 12 🚖 🗃 🖕	2011/02/10 THU 18:22:28
Record Backup Memory Delete File	/1>
<pre></pre>	Found

2nd To moving parent-folder, you can check folders by created date.

	-		
💻 🖉 🖞 🖞 🖞 🖞 🖞 🖉 🖉	112 🚖 🗃 🖕	2011/02 THU 18:22	/10 :28
Record Backup Memory Ope			▲
<internal (3)="" 1=""></internal>	<usb memory(<="" th=""><th></th><th></th></usb>		
2010/12/29/	USB	Not Found	
2010/12/28/			
2010/12/27/			
			ᄫ
			_

3rd To move desired date folder, press were key at the selected folder and menu

screen is activated. Select 'Into Directory' in this menu, it moves to inner folder.

🔳 🖉 🖞 🖞 🕹 🕺 🖉 🖉	89101112 🚖 🔁 🖌	THÎ	2011/02 J 18:22	/10 :28
Record Backup Memors	Move to USB Memory			۸
<internal (3)="" 1="" 12<="" td=""><td>Delete File</td><td></td><td>71></td><td></td></internal>	Delete File		71>	
2010/12/2	File Infomation		Found	
2010/12/2	<< Prev Page			
2010/12/2	Next Page >>			
	Up Directory			
	Into Directory			Ш
	Soloct Filo	•		\mathbf{T}

4th Below screen shows inner folder and saved files.

🔳 🖉 🖞 🖞 🛯 234567891011	2011/02/10 THU 18:22:28
Record Backup Memory Ope	
<internal(6) 1=""></internal(6)>	<usb 1="" memory(0)=""></usb>
KRN100_20101228_113709	USB Not Found 💻
KRN100_20101228_092746	
KRN100_20101228_092611	
KRN100_20101228_092139	
KRN100_20101228_091622	Ц
VDN100 20101228 085812	▼

9 DAQMaster

9.1 **Overview**

DAQMaster is integrated device management program and is able to utilize for temperature controller product line, meter product line, and counter product line of Autonics and recorder product line of KONICS.

DAQMaster provides graph user interface (GUI) for easy and convenient integrated several products' parameter setting and data monitoring.



🖉 Note

Visit our homepage (www.konics.com) to download 'DAQMaster user manual'.

This 'KRN100 user manual' describes only for dedicated KRN100 functions. For more information about DAQMaster, please refer to 'DAQMaster user manual'.



9.2 Features

DAQMaster has the following features.

Supports multiple device

DAQMaster is able to simultaneously monitor multiple devices and set parameters of the devices. The units with different addresses in a single device are connectable at the same time. In Modbus RTU communication, several RS232 port are available.

Device scan

In case multiple units (with different addresses) are connected together, use unit scan function to automatically search for units.

Convenient user interface

User can arrange windows, attributes, and project screens, etc to monitor the data as convenient.

When saving the project, set screen is also saved.

Project management

You can save the setting of monitoring for added device and data, selection of I/O source, etc as the project. When loading the project, this file has the saved setting status.

You can also construct project list for convenient project file management.

Monitoring data log

It logs the data during monitoring and is able to save it as one of DAQMaster data file (*.ddf) or CSV file (*.csv). You can load the saved CSV file in Microsoft Excel directly. You can also designate file name, storage rules, and storage folders for easy file management.

Data analysis

You can analyze data file (*.ddf) with DAQMaster's data analysis function as spread or graph.

You can save the analysis as *.rtf, *.txt, *.html, or *.csv file on spread.

Modbus map table reporting output

It can output the registered Modbus device address map as report. You can save the report for Modbus map table as HTML file (*.html) or PDF file (*.pdf).

Supports multi-language

It supports Korean, English, Japanese and Simplified Chinese. To add a different language, modify the files in the Lang folder, rename, and save it.

Supports script

You can designate each other different I/O process by device using Lua script language.





9.3 Dedicated KRN100 functions

Among DAQMaster's functions, there are dedicated KRN100 functions during communicating with DAQMaster

Property					
KRN100 >> 1					
🖃 General					
Device Name	KRN100				
Unit Address	1				
Model					
Repeat Interval	1000 msec				
Frame Time	40 msec				
Unit Name					
Version					
Print Control & Status					
Mounting Slot					
INPUT SETUP					
ALARM SETUP					
ALARM OUTPUT STATU	S SETUP				
DIGITAL INPUT SETUP					
COMMUNICATION SETU	P				
RECORD SETUP					
SYSTEM SETUP					
FILE/MEMORY SETUP					
USER/INFORMATION SE	TUP				
User Memory					
Record Backup	LogData Download				
User Unit/Logo Image	User Unit/Logo Image Dowr,				
Boot Logo (Capture)	Capture				

9.3.1 Record Backup

You can download backup data which is saved in KRN100 inner memory from "Record Backup" section.

Directory form is year, month, day. Click the relevant icon and check below list.

To download backup file, click the file name with right mouse button and select "Download Log File" menu.

KRN100 Record Memory Data							
Name	Size	The Numb	Start Time	End Time			
₽ <u>i</u> 2012							
- 🔁 4							
🖨 🛅 3							
- 🛅 29							
- 🔁 28							
- 🔁 12							
- 🔁 9							
e- 🛅 7							
KRN100_20120307_125244 KDD Download Log File 6	24,844	2	2012.03.08 13:53:44	2012.03.08 14:07:39			
- 🛅 2							
- 🔁 1							
2011							
Download Folder							
				OK Cancel			

Backup files are strucured as tree type directory at KRN100 inner memory. You can easily fine and download the desired file.



Note N

When checking backup data by DAQMaster, it may not be same as origital print out 100%. Therefore, please use backup data as reference.

9.3.2 User unit setting

Total 3 sizes user units are needed; two for display output, one for printing.

Image type	Size
Unit image for printing	32X10(Small unit)
Unit image in several channel for displaying	32X12(Middle unit)
Unit image in 1 channel for displaying	72X64(Large unit)

- How to register user unit image
 - 1st Make 3 sizes images (file type: bmp) using image tools.
 - 2nd Double-click the arrow area as below figure and select the desired image files.

Download	KRN100 User Image	
Unit	Boot	Delete Download
User0 User1 User2 User3 User4 User5 User6 User7 User8 User9	User Unit Position	Small Unit(32x10) mA/h Middle Unit(32x12) mA/h Big Unit(72x64) Image MA/h
Data Di	ownload Status	
L		Close

If you not select the image, this unit is proceses as blank.

Open							? 🗙
Look in:	🞯 Desktop		· ·	9 📂 🛄	•	(91×28)	Q
My Recent Documents	My Documents My Computer My Network Pla KRN100_USB_ a b b c						
My Documents						mA/h	
My Documents My Computer							
	File name:	a		~	Open		
My Network	Files of type:	Bitmap File(*.bmp)		*	Cancel		



3rd Select image files by type and size, click "Download" to download user images.

Download	KRN100 User Image				×
Unit			Delete	Download	
User0 User1 User2 User3 User4 User5 User6 User7 User8 User9	User Unit Position	Image	Small Unit(32x1 mA/h Middle Unit(32x mA/h Big Unit(72x64)	(12)	
Data D	ownload Status				
				Close	

9.3.3 Boot logo image setting

You can set boot logo image to display during KRN100 booting. After making '320x120' size image with image tools and download it.





9.3.4 Backup data checking function

This function is output downloaded backup data by DAQMater or an USB memory.

1st Execute Data Anal. At taskbar, click [Start]-[Program]-[DAQMaster]-[DataAnal] or at

DAQMaster menu, click [Tool]-[Data Anal].							
6	Programs	Þ	Contraction of the local division of the loc				
Ì	Documents	١	🛅 DAQMaster	Þ	ΦD	DAQMaster	
1	Settings	•			8	DataAnal	
	Search	,	1.11		() ()	Readme Uninstall	
?	Help and Support		and the second second			Website	
	Run		Contraction of the local division of the loc				
D	Log Off Autonics						
0	Turn Off Computer		and the second second				

2nd 'Data Anal' program opens. Click open file icon and select downloaded ".KRD" file.

🧏 Data Anal		
File View Align Windows Help		
DAQ Space		
Open	<u> </u>	
Look in:	🞯 Desktop 💌 🗢 🛅 🕂 🏢 -	
	My Documents My Computer	
My Recept Documents	My Network Places	
	KRN100_055_5erai_0rivers	
Desktop		
My Documents		
My Computer		
DAQ List My Network	File name:	Ф ×
No File Places	Files of type: KRN100 Record Data File(*.krd) Cancel	'ar Type Unit Description
		>





3rd Open chart and drag the desired channel to check waveforms or values.

For more information, please refer to 'DAQMaster user manual'.

🖉 Note

When checking backup data by DAQMaster, it may not be 100% same with original print out. Please use backup data only for reference.



10 Maintenance

10.1 Ink cartridge replacement

1st Press key for 3 sec. in stop recording state and Ink cartridge moves to the center to be replaced easily. Open front cover of KRN100.



2nd Push down recording paper cassette lever placed at below recording paper cassette, recording paper cassette is removed from KRN100.





3rd Pull out ink cartridge and it is removed from KRN100. Insert new ink cartridge.



10.2 Recording paper replacement

1st From 1st to 2nd steps are same as Ink cartridge replacement method. Please refer to this.

Below figure is detached recording paper cassette.



2nd Open new recording paper storage cover and finished recording paper storage cover of recording paper cassette.





3rd For better print, recording paper should be loosen by entering the air.

If not as below figure, it may cause paper jam.



4th Remove finished recording paper in finished recording paper storage and replace ne recording paper.







5th Put recording paper's holes (circle, oval) at recording paper holder and close new recording paper storage cover and finished recording paper storage cover.





6th Push recording paper cartridge into KRN100 until click sound. Close front cover of KRN100.

7th Check recording paper operates normally by pressing front key with FEED function in stop recording state.





11 Troubleshooting

No	Error	Troubleshooting	
1	When power ON, KRN100 does not display anything on LCD screen and operate.	Check power supply and power connector is connected normally.	
2	Displayed date and time is not correct.	KRN100 has date and time error within ±2min/year (Useable until in 2100). Set date and time again.	
3	Sensor input value is not right.	Check sensor input settings are correct in INPUT SETUP. Turn OFF the power of KRN100 and remove input cards from KRN100 and check jumper pin settings according to input specification.	
4	KRN100 records former digital data not current time's.	 Displaying record memory status icon (or) is the state of recording former digital data. Because there are lots of alarms and record events or recorded data is accumulated due to short memo period. To cancel former data recording, pause and re-start record. Change the settings about record for proper operation. 	
5	In graph mode, printout for line and letters is not clear and spread.	Replace ink cartridge.	
6	Recording paper's terminal mark, red star shape, is displayed.	Recording paper should be replaced. Present recording paper lefts only 330mm from terminal mark.	
7	When power ON, after booting screen, KRN100 does not change normal operation screen.	SD card of inner KRN100 has problem. Please contact our service center.	
8	USB memory is not recognized.	USB memory's file system supports only FAT16 and FAT32. Format as FAT16 or FAT32.	
		If partitions of an USB memory are divided, KRN100 recognizes only first partition.	
9	Cannot connect communication by Ethernet.	Check communication line connection and reset it as following '8.4 COMMUNICATION SETUP (Communication setting)'.	
10	Cannot connect communication by RS485 communication.	Check communication line's A, B signal polarity is connected correctly. Reset it as following '8.4 COMMUNICATION SETUP (Communication setting)'.	



11.1 Error message

Displays error messages on screen and print data when error occurs.

Error message	Description	
нннн	In case Input Type is temperature sensor(thermocouple, RTD), if input value is higher than upper limit range, this error message flashes. If input value is within upper limit range, it is removed automatically.	
	In case Input Type is analog(current, voltage), if input value is higher than over 10% of upper limit input range, this error message flashes. If input value is within 10% of upper limit input range, it is removed automatically.	
	Prints HH.	
LLLL	In case Input Type is temperature sensor(thermocouple, RTD), if input value is lower than lower limit range, this error message flashes. If input value is within lower limit range, it is removed automatically.	
	In case Input Type is analog(current, voltage), if input value is lower than over 10% of lower limit input range, this error message flashes. If input value is within 10% of lower limit input range, it is removed automatically.	
	Prints LL.	
_H	In case Input Type is analog(current, voltage), if input value is higher than below 10% of upper limit input range, "_H" is displayed with current value to notify that current value is higher than upper limit input range.	
	Ex) When upper limit input range is 100 and current value is 102, it displays as 102_H.	
_L	In case Input Type is analog(current, voltage), if input value is lower than below 10% of lower limit input range, "_L" is displayed with current value to notify that current value is lower than lower limit input range.	
	Ex) When lower limit input range is 0 and current value is -1, it displays as -1_L.	
BURN	If input is break, this error message flashes. When input is connected, it is removed automatically.	
	Prints BH(display value by break is High) or BL (display value by break is Low). Refer to '8.1.19 Burnout Action (Display setting for break)'.	
NONE	If universal input card is not connected, this error message flashes.	
ERR	When there is parameter setting error, card recognition error, etc, this error message flashes twice and KRN100 returns to previous screen.	
Inner Memory Access	■	
	As above screen, if excess error message for inner system memory Read/Write occurs frequently, please contact our service center.	





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