

LKS Hybrid Recorder



Your Automation Partner

Description

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

Feature

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

Specification

Model	PHC	
Power Voltage	100-240VAC; 50/60Hz	
Allowable Voltage Range	85-264 VAC	
Power Consumption	Max 55VA (264VAC 60Hz)	
Screen	LCD Type	STN Graphic LCD
	Resolution	320 x 120 Pixel
	Adjusting brightness	4 level (OFF/Min/Standard/Max)
	Backlight	White LED, 2 Level (Temp/Always)
The number of input channel	4/6/8/10/12 channel (2 channel/card) - Expandable	
Universal Input	Temperature Sensor (RTD, Thermocouple), Analog	
Sampling period	1 to 4 channel, 26ms/125ms	
Recording period in graph mode	10, 20, 40, 60, 120, 240mm/h	
Storage period	1 to 3600 sec (Storage interval time to inner log file is 1 sec)	
Inner Memory	512 MByte	
USB Memory	User purchased, recognized max 32GByte. Enables to use cable up to 1.5m	
Function	Record color ; Record Zone ; Inpu special function; Input digital filter ; Reservation Set ; Summer Time ; Delay Alarm ; Record Speed change ; Data Storage ; Backup Data Record ; etc	
Dielectric Strength	2500VAC 50/60Hz for 1 min (power terminal and case) #USB device and Ethernet are accepted.	
Vibration (for convey and storage) and operating vibration	Vibration strength:10 to 60Hz 4.9m/s ² (in X,Y, Z axes for each 1 time). Operating vibration: 10 to 60 1m/s ² (in X, Y, Z axes for each 10min).	
Insulation Resistance	Min 20MΩ (at 500VDC megger)	
Noise Resistance	±2KV the square wave noise (pulse width 1μs) by the noise simulator.	
Time Accuracy	Within ±2min/year (Enables to use up to 2100 year)	
Mechanism	Ink Cartridge	Enables to normal print with going and returning printing max. 5 times within 7 days after opening the unit.
	Ink Dry Time	Max 15 minutes
Protection	IP40 (for front panel)	
Recording Paper	113mm x 9m	
Environmental	Temperature	0 to 50°C, Storage: -20 to 60°C (without ink cartridge)
	Humidity	35 to 85% RH, Storage: 35 to 85% RH #If using this unit at place with high humidity, it may cause paper jam. Please do not use this unit at place with high humidity.
Unit Weight	Approx. 1.7 to 2.0Kg	

I/O Card Model

Type	Model	Function and No. of Channel	Max. Connectable Card	Slot No.
Universal Input Card	PHC-UI2	Universal Input 2 Channel	6EA	1 to 6
Digital Input Card	PHC-DI6	Digital Input 6 Channel	2EA	7 to 10
Alarm Output Card	PHC-AR4	Alarm Relay Output 4 Channel	3EA	
	PHC-AT6	Alarm TR Output 6 Channel	2EA	
Transmitter Power Output Card	PHC-24V3	Transmitter 24VDC power Output 3 Channel	4EA	
Communication Output Card	PHC-COM	RS485 + USB + Ethernet Communication Output	1EA	C

I/O Card Input Type Specification

Type	Model	I/O Specification		Description
Universal Input Card	PHC-UI2	Input Type*1	RTD	JPT100Ω, DPT100Ω, DPT50Ω, CU100Ω, CU50Ω (Supply Current 420μA)
			Thermocouple	B, C (W5), E, G, J, K, L, L(Russia), N, P, R, S, T, U
			Analog	Voltage: ±60mV, ±200mV, ±2V, 1-5V, ±5V, -1V to 10V. Current: 0.00 to 20.00mA, 4.00 to 20.00mA
		Input Impedance		Voltage(V): Min. 150KΩ RTD, thermocouple, voltage(mV): min. 2MΩ current: 51Ω
		Display accuracy *2	RTD	Warm up time: Min. 30 minutes Room temperature (25°C±5°C) section: ±0.1% F.S±1 Digit
			Thermocouple	Out of range of room temperature: ±0.2%F.S±1 Digit
Analog	RTD: 500 to 850°C is PV value ±0.5%±1 Digit Thermocouple: Below -100°C is ±0.3% F.S±1 Digit			
Resolution		16 Bit		
Digital Input Card	PHC-DI6	Noncontact Input		ON: Max. 1V of residual voltage, OFF: Max. 0.1mA leakage current
		Contact Input		ON: Max. 1KΩ, OFF: Min. 100KΩ, Short: Approx. 4mA
Alarm Output Card	PHC-AR4	Alarm Relay Output	Capacity	250VAC 3A, 30VDC 3A, 1 Form A (Resistance Load)
			Life Cycle	Mechanical: Min. 50,000,000 times Electrical: Min 100,000 times (3A 250VAC, 3A 30VDC)
	PHC-AT6	Alarm TR Output	NPN Open Collector, 12-24VDC/30mA Max.	
Transmitter Power Output Card	PHC-24V3	Power Output for Transmitter *5		24±2VDC, total 3 channel, Max. 30mA per 1 channel built-in over-current protection circuit
Communication Output Card *3	PHC-COM	Communication Output	RS485	Modbus RTU *Recommended over AWG 24 shield cable
			Ethernet	IEEE802.3(U), 10/100 BASE-T (Modbus TCP)
			USB Device	USB V2.0 Full Speed (Device Control)

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

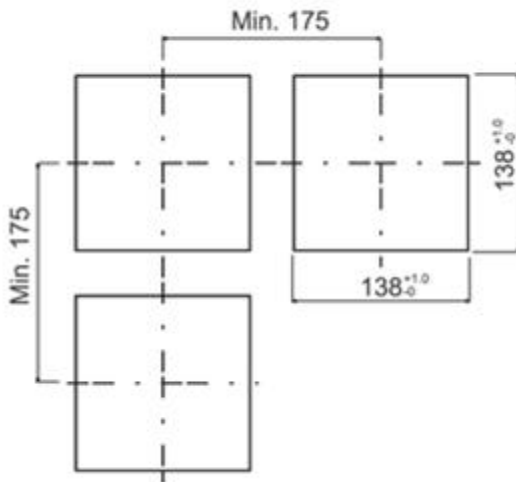
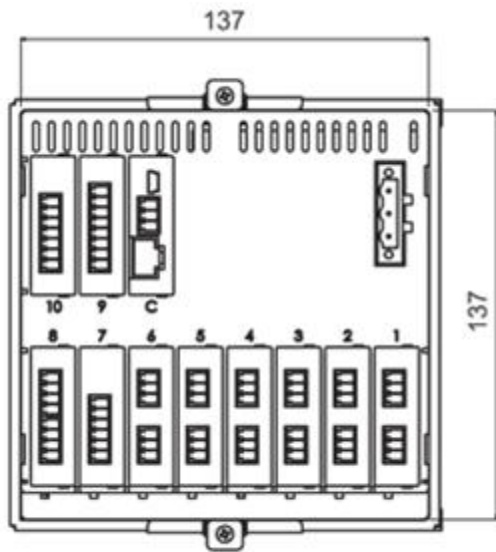
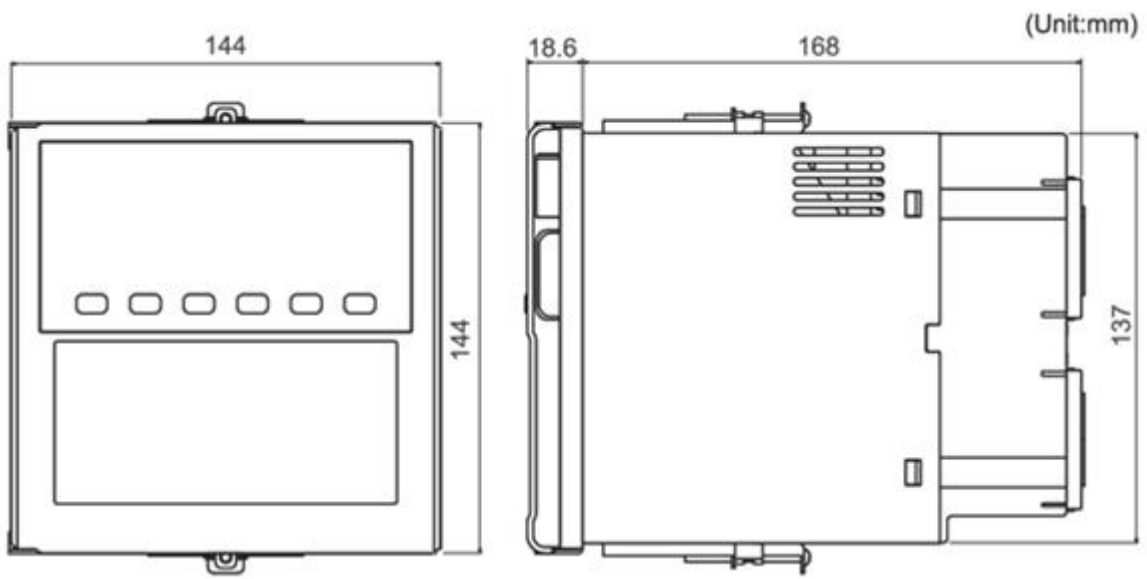
* 2. Exception range for better accuracy by sensor (Accuracy after 30min warm-up time) R, S, C, G: $0 \leq T \leq 100 \pm 4.0^\circ\text{C}$, B: No regulation accuracy below 400°C , T, U: $-200 \leq T \leq 100 \pm 3.0^\circ\text{C}$, $-100 \leq T \leq 400 \pm 2.0^\circ\text{C}$, CU50: $-200 \leq T \leq 200 \pm 1.0^\circ\text{C}$, DPT50: $-200 \leq T \leq 500 \pm 1.5^\circ\text{C}$

* 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.

Dimension, Panel cutout



※ Use panel which is 2 to 8mm thickness.

Ordering Code

PHC	-	12	0	0	0	-	0	0	-	0	S
①		②	③	④	⑤		⑥	⑦		⑧	⑨

① Item / Series	PHC	LKS Hybrid Chart Recorder
② Input Channel	02	2 Channel
	04	4 Channel
	06	6 Channel
	08	8 Channel
	10	10 Channel
	12	12 Channel
③ Digital Input	0	None
	1	6 EA
	2	12 EA
④ Alarm TR Output	0	None
	1	6 EA
	2	12 EA
⑤ Alarm Relay Output	0	None
	1	4 EA
	2	8 EA
	3	12 EA
⑥ Transmitter Power Output	0	None
	1	3 EA
	2	6 EA
	3	9 EA
	4	12 EA
⑦ Communication Output	0	None
	1	RS485 + Ethernet + USB
⑧ Power Voltage	0	100-240VAC, 50/60Hz
⑨ Case	S	Std Panel Mounting Type

Example of ordering

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

- PHC (Recorder) : 1EA
- PHC-UI2 (universal input card) : 5EA
(universal input card 2EA is factory default, 5EAx2 channel = 10 channel)
- PHC-AR4 (Alarm relay output card) : 2EA
- PHC-COM (Communication output card) : 1EA



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