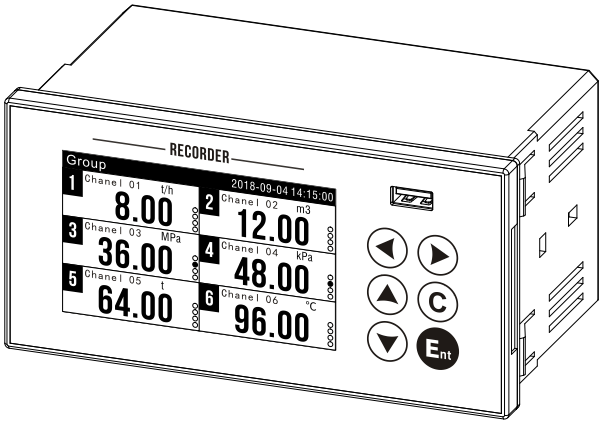
User's Manual & Guide

COLOR PAPERLESS RECORDER

INSTRUCTIONS



UM-K7B-EN1[A0] 5/2021

Preface

Thank you for buying our products. This specification describes the information required for product use, including product identification, storage, installation, commissioning, electrical connections, operation settings and troubleshooting.
This product is an industrial paperless recorder with 6 channels universal input. It can receive signals such as current, voltage, thermocouple and thermal resistance, display them in real time and store the data in the internal electronic memory. The device can quickly transfer the historical data through the USB interface.
Features:

- 6-Channel input, 6-Channel alarm
- 2-Loop transmitter, 2-Loop 24VDC output
- 4-inch 800X480 pixels color LCD display
- 128Mb Memory 900,000 historical records
- 256 records of alarm record/power-down/log
- High speed USB Interface

Safety instructions

- ### Installation and Environment of the Instrument.

Please do not put the instrument in a place where there are flammable gases and steam to run and store.

- ### Reliable grounding is necessary.

In order to prevent the occurrence of electric shock accidents, before closing the power switch, it is necessary to confirm that the grounding of the instrument is effective and reliable.

- ### Turn off the power supply when there is a fault.

When the instrument has abnormal odor, sound, smoke, shell temperature rise, please cut off the power supply.

- ### Do not repair or alter this instrument by yourself.

Table of contents

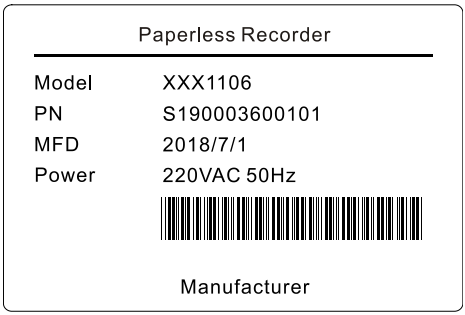
1 Unpacking

Confirmation of type and packing content

Before opening the packing box, confirm whether the packing is damaged or not; after opening the packing, if you find that there is a wrong model, quantity or physical damage on the appearance, please contact our company or the distributor who sells this product. The contents of packing are as follows:

Name	Quantity
Paperless Recorder	1
Mounting bracket	2
User Manual	1

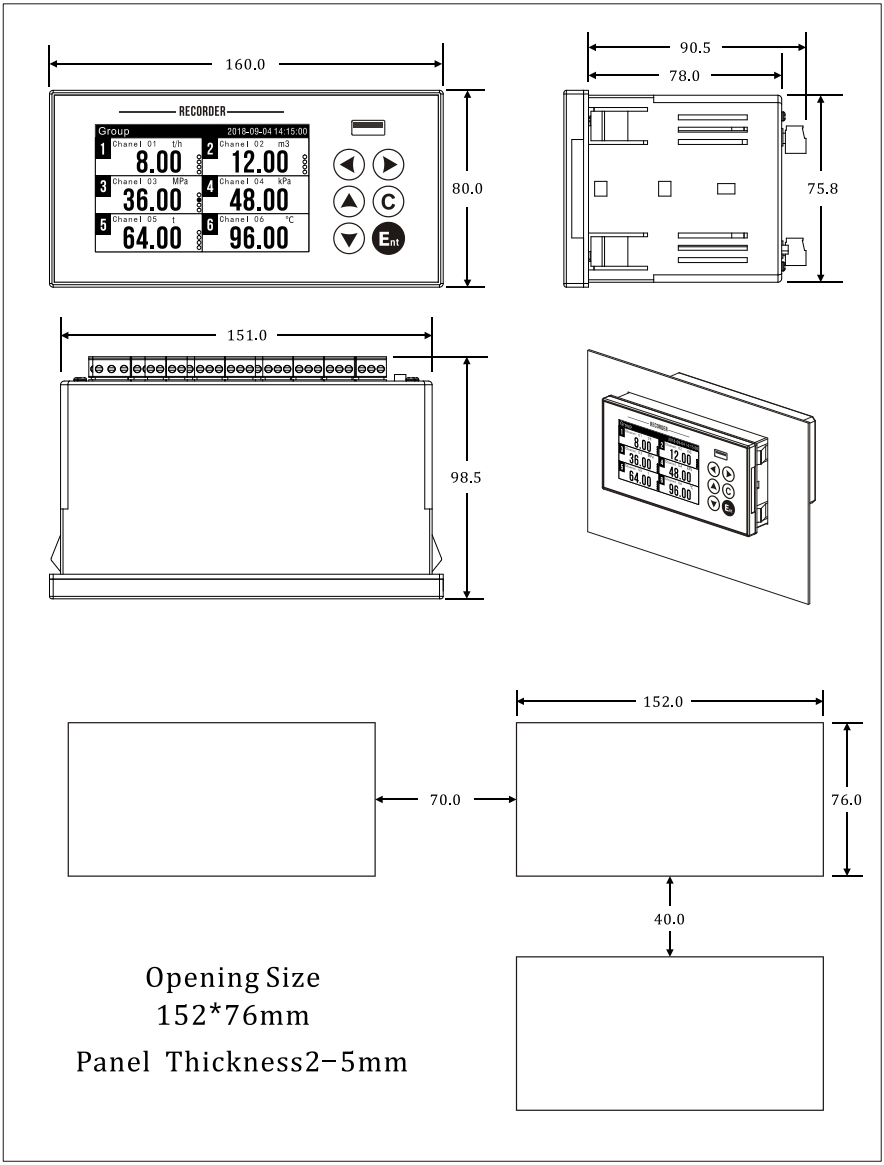
Product identification (nameplate)



Notice: Please check the power specifications according to the order model and make sure that the type of power supply is 220V AC or 24V DC in order to avoid damaging the instrument.

2 Dimensions and mounting

This product is designed as an indoor panel mounting instrument. Unit:mm

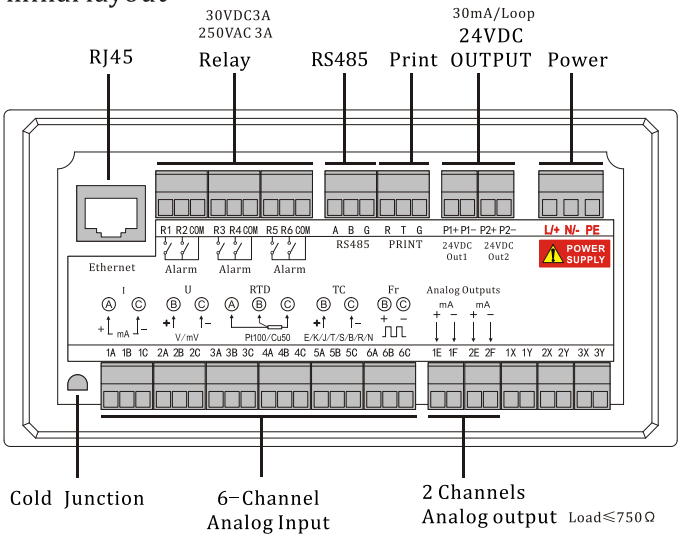


3 Electrical connection

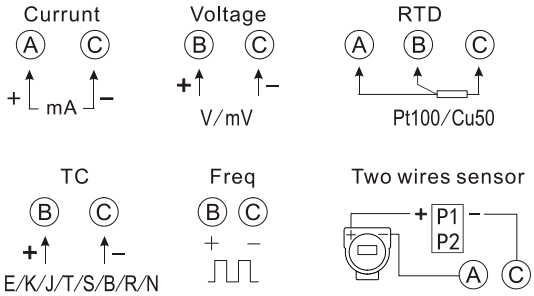
The analog signal input of this product is universal signal input, the channel is completely isolated, and the frequency signal has a dedicated input channel. Before wiring the instrument, please pay attention to:

- Please operate when the instrument is powered off.
- Make sure the ground wire is connected before wiring.

Terminal layout

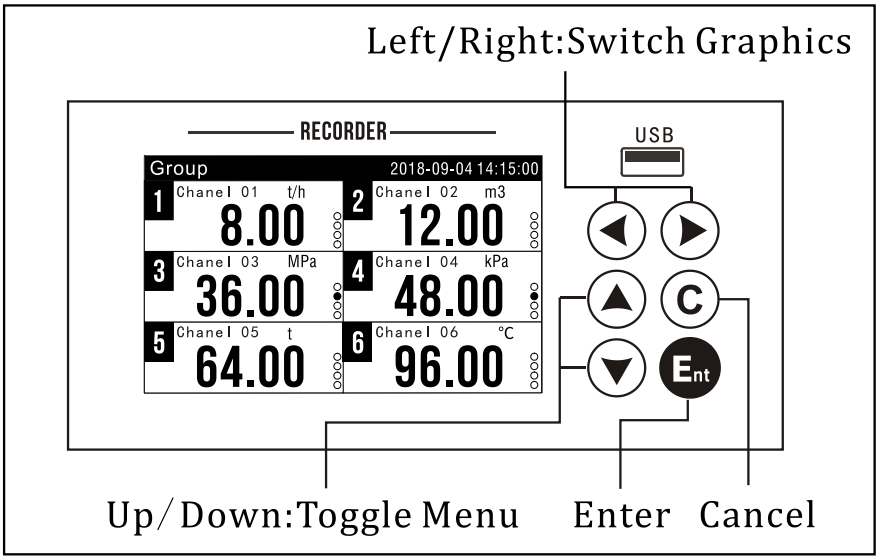


Electric Connection



4 Display and Operation

4.1 Keyboard



Right/Left key: Switch graphics

Up/Down key: Toggle menu entries

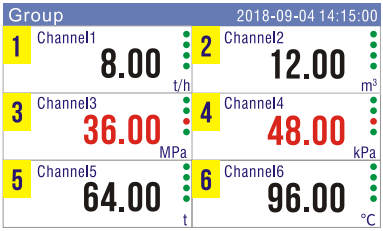
Enter key: Confirm or enter the menu, edit data

Cancel key: Return or cancel the current operation

4.2 Display

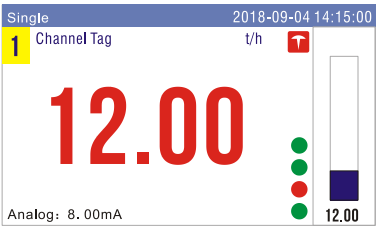
Display, left/ Right key to switch.

Data Display



Enter key: Display signal

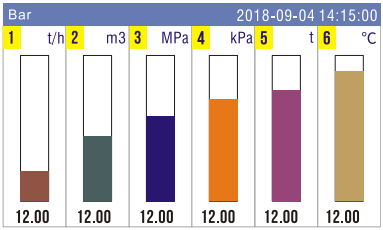
Patrol Display



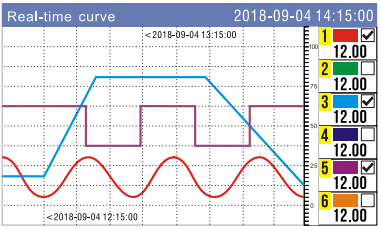
Up/Down key: Switch channel

Enter key: Fix display channel

Bar Display



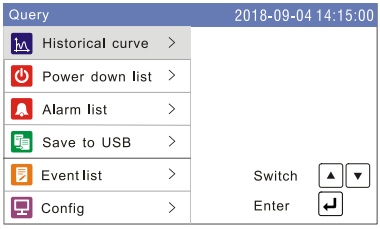
Real-time Curve Display



Up/Down key: Toggle channel selection

Enter key: Hide/show channel

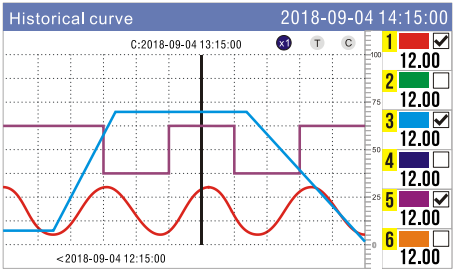
Query



Up/Down key: Switch function

Enter key: Enter into

4.3 Historical curve



Left/Right key: Move cursor

Up/Down key: Switch function

Enter key: Execution

ⓧ1 Zoom 1/2/4/8 Times

Ⓣ Query by date time

Ⓒ Show/Hide cursor

☑ Show/Hide Channel

4.4 Power/Alarm/System log

Power down list 2018-09-04 14:15:00

NO.	Power down	Power on	Timespan
1	18-08-01 12:00:00	18-08-01 13:00:00	1h0m0s
2	18-08-02 12:00:00	18-08-02 13:10:00	1h10m0s
3	18-08-03 12:00:00	18-08-03 13:20:00	1h20m0s
4	18-08-04 12:00:00	18-08-04 13:30:00	1h30m0s
5	18-08-05 12:00:00	18-08-05 13:40:00	1h40m0s
6	18-08-06 12:00:00	18-08-06 13:50:00	1h50m0s
7	18-08-07 12:00:00	18-08-07 13:00:00	1h0m0s
8	18-08-08 12:00:00	18-08-08 13:00:00	1h0m0s
9	18-08-09 12:00:00	18-08-09 13:00:00	1h0m0s
10	18-08-10 12:00:00	18-08-10 13:00:00	1h0m0s

Alarm list 2018-09-04 14:15:00

NO.	Channel	Type	Status	Time
1	1	LO	Alarm	18-08-01 12:00:00
2	1	LO	Elimination	18-08-02 12:00:00
3	1	LO	Alarm	18-08-03 12:00:00
4	1	LO	Elimination	18-08-04 12:00:00
5	1	LO	Alarm	18-08-05 12:00:00
6	1	LO	Elimination	18-08-06 12:00:00
7	1	LO	Alarm	18-08-07 12:00:00
8	1	LO	Elimination	18-08-08 12:00:00
9	1	LO	Alarm	18-08-09 12:00:00
10	1	LO	Elimination	18-08-10 12:00:00

Event list 2018-09-04 14:15:00

NO.	Time	Event
1	18-08-01 12:00:00	Login
2	18-08-02 12:00:00	Changing time
3	18-08-03 12:00:00	Modified interval
4	18-08-04 12:00:00	Factory Setting
5	18-08-05 12:00:00	Export
6	18-08-06 12:00:00	Changing password
7	18-08-07 12:00:00	Login
8	18-08-08 12:00:00	Login
9	18-08-09 12:00:00	Login
10	18-08-10 12:00:00	Login

There are 256 records of power down, alarm and system logs respectively.

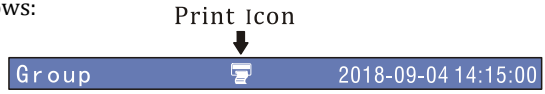
[Left/Right Keys] Page-turning browse,

[Up/Down Keys] Single line browse,

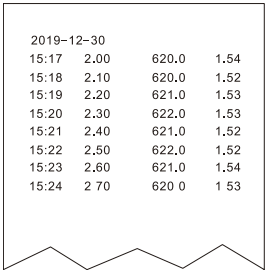
[Cancel Key] Exit.

4.5 Real Time Printing

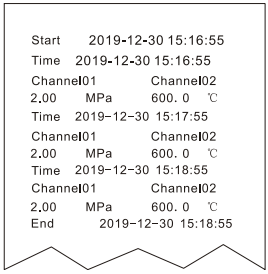
Press [C] to start or stop printing on the running screen, and print real-time data at intervals. The parameters such as printing interval, printing direction and printing format are set in the printing configuration. After printing is started, the status bar is marked as follows:



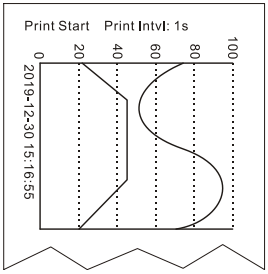
Simply mode(Reverse)



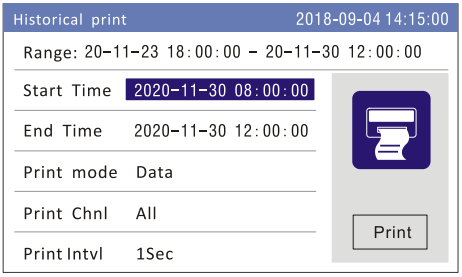
Fully mode(Reverse)



Real-time curve



4.6 Historical Printing

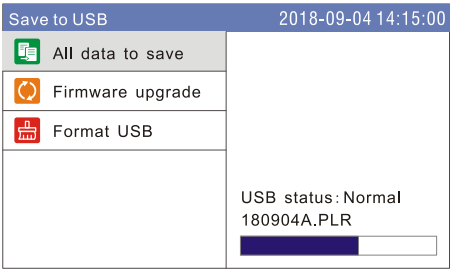


Select the start and end time, select the printing mode,Data or Curve two option, select the channel, select the printing interval, move the cursor to the printing button, and press the [Enter Key] to print.

4.7 Data backup

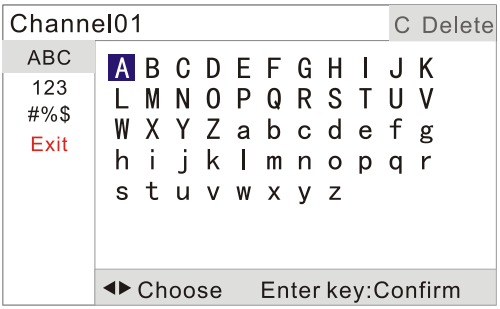
After inserting the USB stick, it will automatically go to the data transfer function interface or enter through the function query interface.

[Enter key] Performs data transfer function.



- Files are named by date, such as 180904A. PLR
- File output directory is PLR Directory
- Using Paperless Recorder Software (PLR. EXE)
- Data includes historical data, power-down record, alarm record and operation log.
- Firmware upgrade function, please contact the manufacturer

4.8 Data editing



The input method is used in text editing. On the left, [up and down keys] switch the classification and alphabet, on the right, [left and right keys] move the text cursor, [confirmation keys] select the text, [Cancel C keys] delete the text.

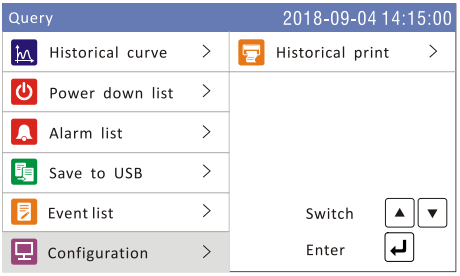
Exit: [Up and down key] Select red exit category, save exit or not.

5 Configuration

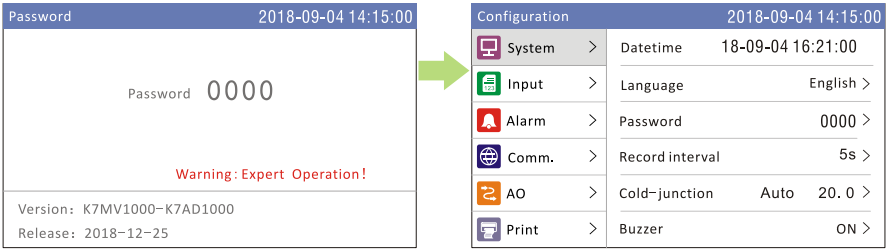
5.1 Login

Press [Left and Right key] to switch to the query graphic,

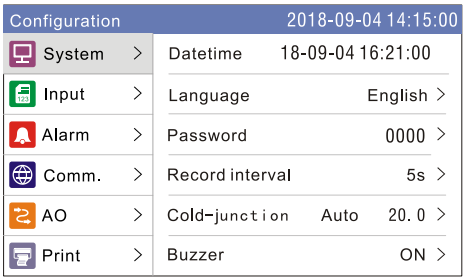
press [Up/Down key] to select the configuration, press [Enter key] to enter the login interface.



Enter the password, press [Enter key] to enter the configuration interface, the initial password is 0000.



5.2 System configuration



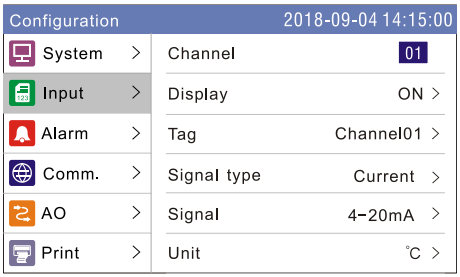
Date Time	System Date and Time	Enter Key
Language	English/Chinese	Left/Right Key
Password	0000	Enter Key
Record Interval	1s 2s 5s 10s 15s 30s 1m 2m 5m 10m 30m 1h; default 5s. 【Note】About Record duration See appendix below	Left/Right Key
Cold-junction	Automatic or Manual.	Left/Right Key
Buzzer	OFF/ON The sound of key.	Left/Right Key
Factory settings	Reset all parameter to default.	Enter Key
Export Config	Export configuration to USB Stick	Enter Key
Import Config	Import configuration from USB stick	Enter Key

Appendix：Record Duration

Record Interval	1s	5s	10s	1m	5m	10m	……
Record Duration	10 Days	50 days	100 days	600 Days	3000 Days	6000 Days	……

【Note】The channel quantity will not affect record duration

5.3 Input Configuration



Channel	Channel index. Long press Enter key to copy current channel parameter to all channel.	Left/Right Key
Display	ON/OFF; Display switch.	Left/Right Key
Tag	Channel tag, maximum 16 characters.	Enter Key
Signal Type	Current/Voltage/mV/Voltage/V/TC/RTD/Simulation	Left/Right Key
Signal	See appendix Signal Type, default 4-20mA.	Left/Right Key
Unit	See appendix Channel Uni, default ℃.	Enter Key
Decimal point	0-3, default 2.	Left/Right Key
Scale	-999999~999999, default 0.00-100.00.	Enter Key
K	Multiple, default 1.00.	Enter Key
B	Addition/Subtraction, default 0.00.	Enter Key
Burnout	####/Scale H/Scale L/Keep, default ####.	Left/Right Key
Filter	Inertial filter, 0.0-9.9s, default 0.0s.	Enter Key
Excision	Weak signal excision, 0.0-9.9%, default 0.0%.	Left/Right Key
Vacuum	OFF/A1/A2; A1:Exponential and signal linear proportion algorithm; A2:The index is divided into 10 segments, and the linear proportion algorithm of the value and signal in the segment	Left/Right Key
Accu	OFF/ON; default OFF.	Left/Right Key
Accu K	When flux unit is X/h, K equals 1.0; When flux unit is X/min, K equals 60.	Enter Key
Accu Unit	Kg/t/L/m^3/km^3/Nm^3/kNm^3 (Just display)	Enter Key
Clear Accu	Clear the accumulation	Enter Key

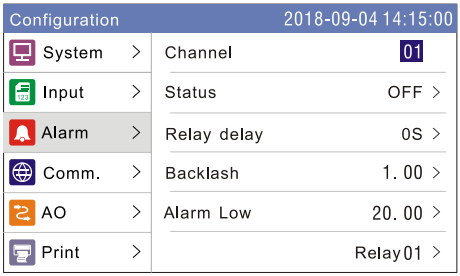
Appendix：Signal Type

Current	4-20mA/0-20mA/0-10mA/4-20mA Sqrt
Voltage mV	0-100mV/0-20mV
Voltage V	0-5V，0-10V/1-5V
TC	K/S/B/J/R/N/T/E/WRe3-25/WRe5-26/F1/F2
RTD	Pt100/Cu50/Cu53/Cu100
Fr	0-10000Hz (Customize)
Simulation	SIN/COS

Appendix：Channel Unit

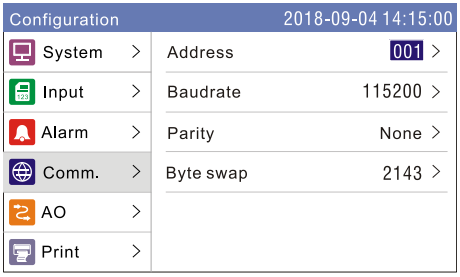
℃	°F	kg/h	t/h
m^3/h	km^3/h	L/h	Nm^3/h
kNm^3/h	bar	mbar	mmH_2O
mmHg	Pa	kPa	MPa
atm	kgf/cm^2	mm	cm
m	km	Wh	kWh
W	kW	MW	kJ
Hz	kHz	MHz	g
kg	t	mV	V
kV	mA	A	kA
kJ/h	MJ/h	GJ/h	ppm
ppb	%	‰	$ppmO_2$
$ppmH_2$	$\%O_2$	%LEL	NTU
ug/h	ug/kg	rpm	uS/cm
mS/cm	MOcm	r/min	pH
%RH	N	mg/L	g/L
kg/m^3	$kcal/m^3$	m/min	m/s
mg/m^3	°	cm/min	

5.4 Alarm Configuration



Channel	Channel Index.	Left/Right Key
Status	OFF/ON, default OFF.	Left/Right Key
Relay delay	The delay time of relay action, 0-60s。	Left/Right Key
Backlash	0-99999, Within the difference between the alarm limit and the return difference, the alarm is eliminated.	Enter Key
Alarm Type	4-Type: LL/Lo/Hi/HH.	Enter Key
Relay	Relay index 1-6.	Left/Right Key

5.5 Communication Configuration



Address	1-247; Modbus-RTU slave device address.	Left/Right Key
Baud rate	9600/19200/38400/57600/115200, default 9600。	Left/Right Key
Parity	None/Odd/Even, default None.	Left/Right Key
Byte swap	float data byte swap order, default 2143.	Left/Right Key

32bits float data(4XXXX: 03 Command)

Channel	Offset	Reg Addr	Channel	Offset	Reg Addr
Channel1	0000H	40001	Channel4	0006H	40007
Channel2	0002H	40003	Channel5	0008H	40009
Channel3	0004H	40005	Channel6	000AH	40011

Example: Read data of channel 1(32bits, float)

Query: 01 03 00 00 00 02 C4 0B

Response: 01 03 04 00 00 41 A4 CB D8

Analyze:[00 00 41 A4] => 20.50

32bits signed long data（3XXXX: 04 Command）

Channel	Offset	Reg Addr	Channel	Offset	Reg Addr
Channel1	0000H	30001	Channel4	0006H	30007
Channel2	0002H	30003	Channel5	0008H	30009
Channel3	0004H	30005	Channel6	000AH	30011

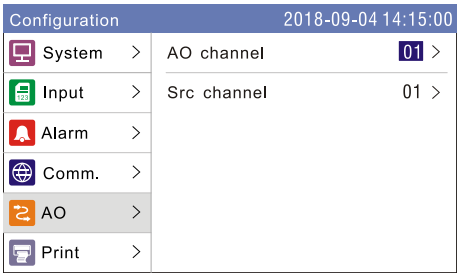
Example: Read data of channel 1(32bits signed long)

Query: 01 04 00 00 00 02 71 CB

Response: 01 04 04 00 00 03 E8 FB 3A

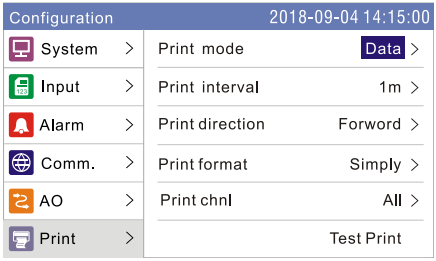
Analyze:[00 00 03 E8] => 100.0(1decimal point, same with channel setting)

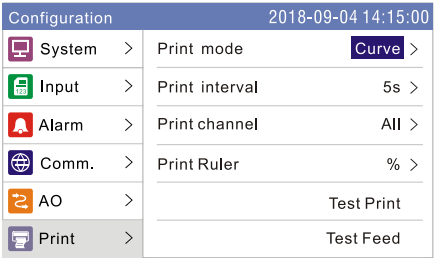
5.6 Analog output configuration



AO Channel	AO channel index	Left/Right Key
Src Channel	Source channel, 0 represents OFF.	Left/Right Key

5.7 Print Configuration





Print mode	None/Data/Curve	Left/Right Key
Print interval	Data mode: 1-240minutes Curve mode: 1-240seconds	Left/Right Key
Print direction	Forward/Reverse, default reverse; the direction of character.	Left/Right Key
Print format	Simply/Fully, default simply.	Left/Right Key
Print Chnl	All/Channel1-6.	Left/Right Key
Print Ruler	%/Channel1-6	Left/Right Key
Test Print		Enter Key
Test Feed		Enter Key

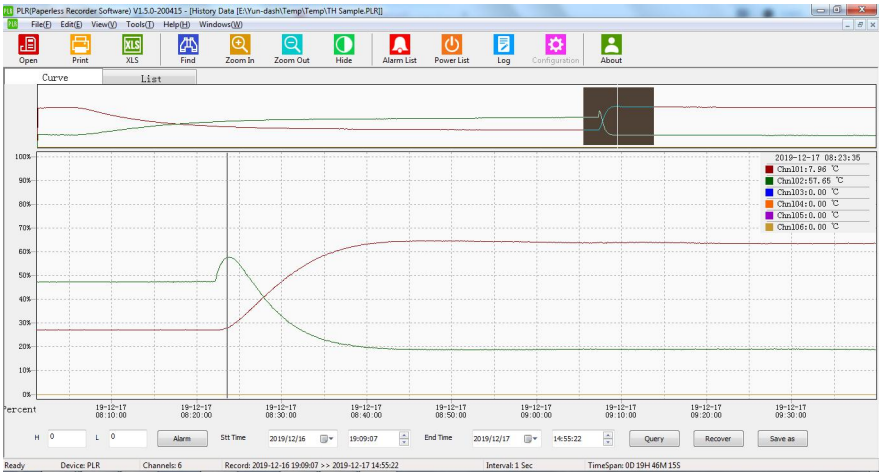
6 PC Software

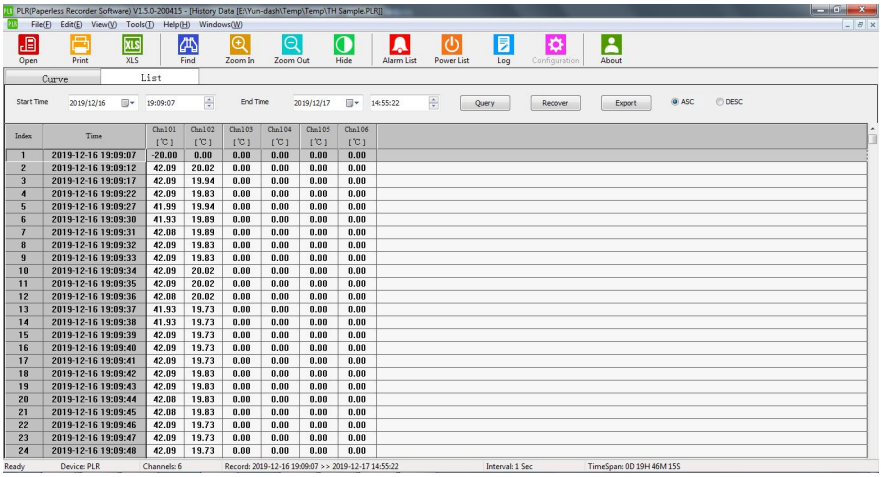
The file of the recorder is opened by the PC software PLR. EXE.

The software installation package can be obtained from the USB stick. The software icon is as follows.

The software operation interface is as follows.

PLR.EXE





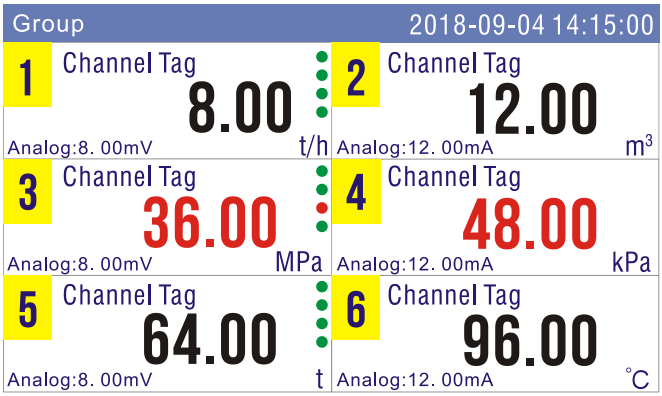
7 Trouble shooting

7.1 No data

(1) Check whether the electrical wiring is correct

(2) Check that the signal type is set correctly

(3) Press [Enter Key] to display the original signal value



7.2 No response of USB

Format the USB stick with FAT32, then try again.

7.3 Display ####/----

The burnout flag, please check whether the configuration and electrical connection are correct.

---- In order to give an alarm beyond the limit, it means that the signal value exceeds the upper limit of the measuring range. Please check the output signal to avoid damaging the instrument.

8 Specification

Category	Signal	Measuring range		Accuracy /25℃
Current	4-20mA	4.00~20.00mA		±0.2%
	0-20mA	0.00~20.00mA		±0.2%
	0-10mA	0.00~10.00mA		±0.2%
Voltage mV	20mV	0.00~20.00mV		±0.2%
	100mV	0.00~100.00mV		±0.2%
Voltage V	0-5V	0.000~5.000V		±0.2%
	0-10V	0.00~10.00V		±0.2%
	1-5V	1.000~5.000V		±0.2%
TC		Isolated	Not Isolated	
	K	-200~1372℃	T_{CJ}~1372℃	±2℃
	S	-50~1768℃	T_{CJ}~1768℃	±3℃
	B	250~1820℃	250~1820℃	±3℃
	J	-210~1000℃	T_{CJ}~1000℃	±2℃
	R	-50~1768℃	T_{CJ}~1768℃	±3℃
	N	-200~1300℃	T_{CJ}~1300℃	±3℃
	T	-200~400℃	T_{CJ}~400℃	±2℃
	E	-200~1000℃	T_{CJ}~1000℃	±2℃
	WRe3-25	0~2315℃	T_{CJ}~2315℃	±2℃
	WRe5-26	0~2310℃	T_{CJ}~2310℃	±2℃
	F1	700~2000℃	700~2000℃	±2℃
	F2	700~2000℃	700~2000℃	±2℃
RTD	Pt100	-200.0~650.0℃		±0.5℃
	Cu50	-50.0~140.0℃		±0.5℃
	Cu53	-50.0~150.0℃		±0.5℃
	Cu100	-50.0~150.0℃		±0.5℃
Fr	Fr	0~10000Hz		1Hz

[NOTE] T_{CJ}: The temperature of cold junction.

Project	Specification
Dimensions	Panel 160*80mm, opening 152*76mm
Weight	450 grams
Installation mode	Panel-mounting, indoor
Channels	6-channel universal analog input
Accuracy	0.2% F.S.
Sampling period	1second
EFT	Not isolated: Power EFT 1000V, Signal EFT 500V Isolated: Power EFT 2000V, Signal EFT 1000V
ESD	Contact discharge 4000V Air discharge 8000V
Limit voltage	Between input terminal: 400V; Between protect earth with input terminal: 1000V.
Insulation resistance	≥500MΩ
24VDC Output	2-Loop 24 VDC±10%, 30mA per loop
Alarm relay	6 relays, 250VAC 3A, 30VDC 3A (Normal open)
Analog output	2-Loop 4-20mA output Load < 750Ω Accuracy 0.2% F.S.
Power supply	AC 100~240 VAC 50Hz / DC 24VDC+10% 10W
Preheating time	30 minutes after power-on
Work environment	Temperature: -10~60°C humidity: 0~85% RH (no condensation)
LCD screen	4 inch color LCD screen, 800*480 pixels
Record Interval	1s/2s/5s/10s/15s/30s/1m/2m/5m/10m/30m/1h
Data memory	128Mb, 900,000 records; 10days record duration with 1s recording interval, The other recording intervals have the same linear ratio.
Other records	256 alarm records, 256 power-down records, 256 operation logs
RS485	Standard Modbus-RTU Protocol
Print	Micro printer, 3.3V TTL
USB	USB2.0

Attachment