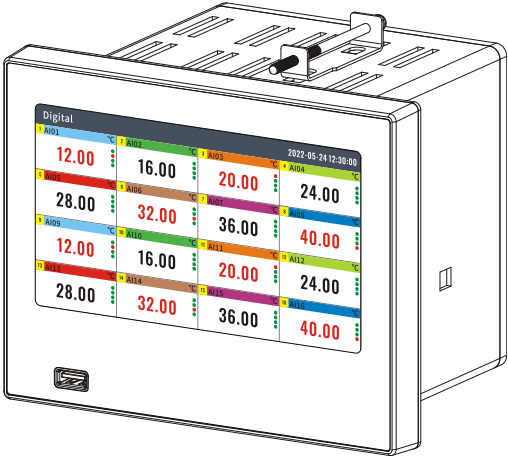


# Touch Color Paperless Recorder

# INSTRUCTIONS



# Preface

Thank you for purchasing our products. This document 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 a 7-inch touch color LCD screen and up to 32 channels of isolated universal signal input. It can access industrial standard signals such as current, voltage, TC, RTD and frequency (customized), and can also be configured with alarm relay output, current transmission output and other functions. Collect channel signals in real time, and display them in the form of numerical values, bar charts and curves. Save the real-time data to the recorder's internal memory. The fastest recording interval is one second, and the historical data can be quickly transferred through USB devices, which supports RS485 and Ethernet communication interfaces.

## Features:

- 7 inches touch LCD screen
- 138\*138mm mounting hole
- High speed USB port
- Up to 32 input channels
- Up to 16 output relays
- Up to 8 transmit channels
- RS485 port with Modbus RTU
- Ethernet port with Modbus TCP
- 2 24VDC output loops
- Micro printer port
- 64MB storage, 90k historical data
- 256 alarm records
- 256 power down records
- 256 operating logs
- Editable channel tag and unit

# 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.

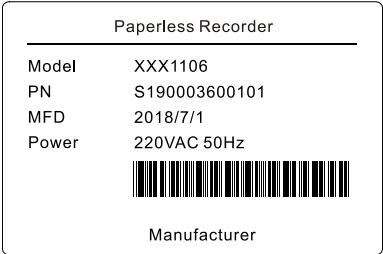
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# 1 Unpacking and identification

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
Certification card	1



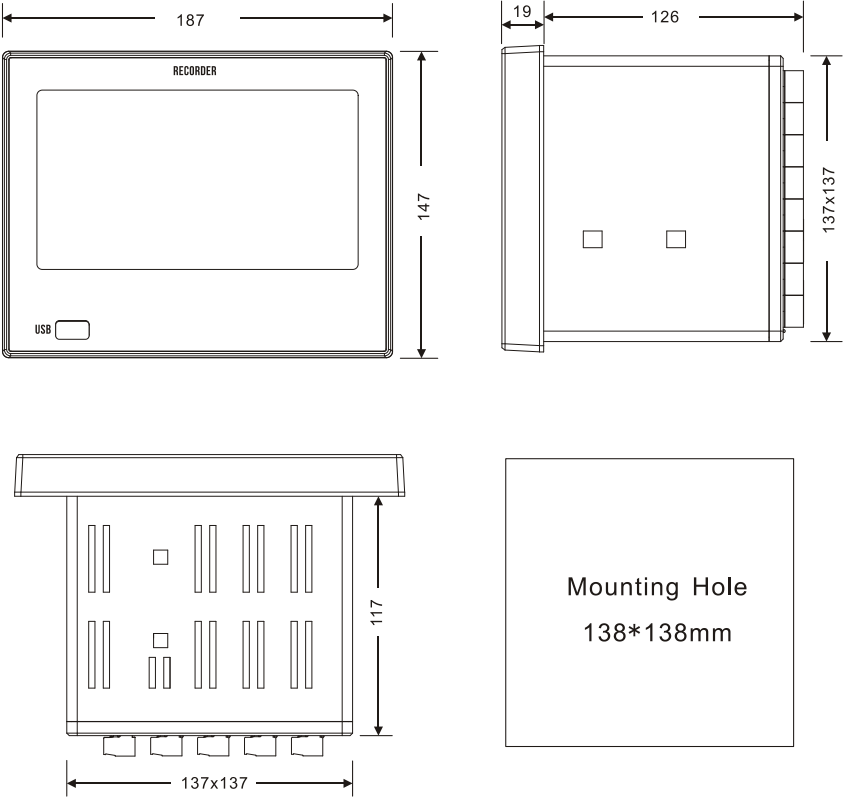
Nameplate

**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 Mounting and size

This product is designed as an indoor panel mounting instrument.

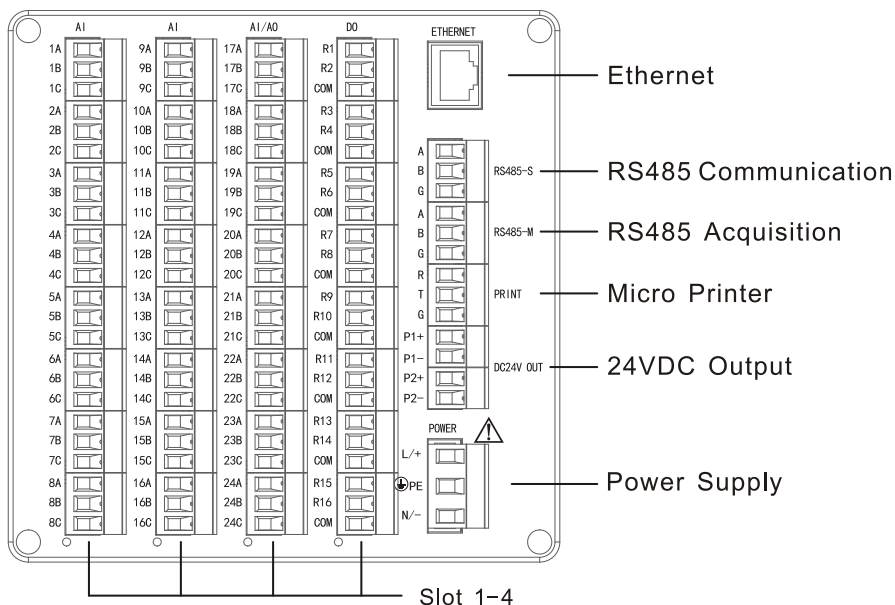
Unit:mm



## 3 Electrical connection

The analog signal input of this product is universal signal input, the channel is completely isolated. 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.

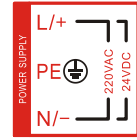
### 3.1 Layout of terminals



1. The recorder has 4 slots, and 4 boards can be configured.  
Board type: 8-way input board, 16-way Alarm board and 8-way transmission board; General configuration: 24 inputs + 16 Alarms (i.e. 3 input boards + 1 alarm board).
2. The maximum number of input channels is 32, which takes up 4 slots. Alarm and transmission can no longer be configured.
3. Configure the Alarm board and the output board, which will occupy the slot and correspondingly reduce the input AI.
4. Micro printer interface and RS485 data acquisition interface cannot coexist, so choose one.

### 3.2 Power

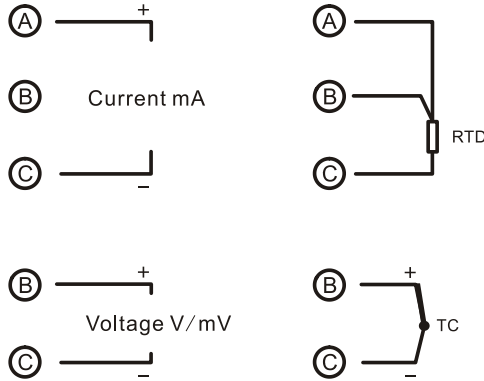
110VAC/220VAC is connected to **L** and **N**, with no polarity and the voltage range of 100-240VAC 50Hz; 24VDC is connected to **+** and **-**, with a voltage range of 24V 10% and reverse connection protection; **PE** terminal is grounded.



Power Supply

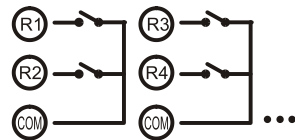
### 3.3 Signal input wiring

Each channel of recorder has three terminals, 1A 1B 1C is the first channel, 2A 2B 2C is the second channel, and so on. The electrical connection of voltage V, voltage mV, current mA, RTD and TC is shown in the figure.



### 3.4 Relays

**R1-R16** are relay output contacts, and COM is the common terminal; Each 2-way relay is a group that shares a common terminal. The electrical wiring is shown in the figure.



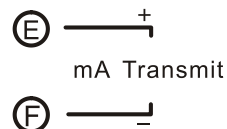
Relay

### 3.5 RS485

RS485 interface **A** **B** **G**: 485A+ 485B- GND.

### 3.6 Transmit

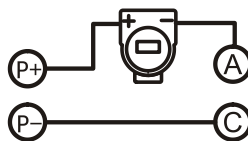
4-20mA current is transmitted to channel A01-8, **1E+** **1F-** is the first channel, **2E+** **2F-** is the second



channel, and so on; The output terminal is E+ F-.

## 3.7 24VDC Output

**P1+** **P1-** / **P1+** **P1-** 2 loops of 24VDC power output, with wiring as shown in the figure; Total output current  $\leq 120\text{mA}$ .



24VDC Output

## 3.8 Micro printer

**R** **T** **G**: Connect the R T G terminals of micro printer respectively.

## 3.9 Ethernet

10/100Base-T RJ45 Terminal, maximum 3 connections.



## 4 Record

### 4.1 Data record

The recording interval can be selected as 1s, 2s, 5s, 10s, 15s, 30s, 1m, 2m, 5m, 10m, 30m and 1h. The recorder saves data according to the interval. The internal memory can store 900k records, and the continuous recording time is as follows and calculated: the base number is 1s recording interval, with 32 channels at most, which can record for 10 days; The continuous storage time of different channel numbers is as follows, and the recording time of other recording intervals is doubled by multiples.

	<b>1 channel</b>	<b>2 channels</b>	<b>3-4 channels</b>	<b>5-8 channels</b>
<b>1s</b>	320 days	160 days	80 days	40 days
<b>5s</b>	1600 days	800 days	400 days	200 days
<b>10s</b>	3200 days	1600 days	800 days	400 days
<b>1m</b>	19200 days	9600 days	4800 days	2400 days
	<b>9-12 channels</b>	<b>13-16 channels</b>	<b>17-24 channels</b>	<b>25-32 channels</b>
<b>1s</b>	26 days	20 days	16 days	10 days
<b>5s</b>	133 days	100 days	80 days	50 days
<b>10s</b>	266 days	200 days	160 days	100 days
<b>1m</b>	1600 days	1200 days	960 days	600 days

[Note]

- Change the channel signal or range, the historical data will change according to the range, because it is saved as a percentage.
- Change the recording interval, and the historical data will not be lost.
- Adjust the time forward, and the overlapping historical data will be overwritten.
- When power is off, no historical data is generated.

### 4.2 Alarm records & Power records & Operation logs

At the same time, the recorder records alarm records, power records and operation logs, each with 256 records, which are stored circularly.

The alarm list includes alarm (alarm) channel, type, status and time.

The power-down record includes the power-down time, power-up time and duration of the recorder.

Operation log includes recorder operation events and time.

# 5 Data export & USB operation

## 5.1 Manual export

After the USB stick is inserted, the data transfer interface will automatically pop up, or you can manually enter USB Operation interface All or part of the data can be transferred.

- Filename consist of device name+year, month and day+serial number, such as 01#(180904A).PLR.The file transfer directory is the PLR folder under the root of USB flash drive.
- Open the file with PC software (PLR.EXE)
- The file contains historical data, power records, alarm records and operation logs.



## 5.2 Automatic export

Set the automatic exporting time in the system configuration, and the automatic exporting function will be triggered at this time point every day to dump all data to USB stick.

## 5.3 Firmware update

Copy the new version firmware file to the USB stick \PLR\K8.bin, insert the USB stick and execute this function. The system will automatically restart and update the firmware. Do not cut off the power during the upgrade process, or the recorder will be damaged.

## 5.4 Format USB stick

Format USB stick, and the file system is FAT32. Formatting will erase all the data in the USB stick.

## 6 Data display and query

### 6.1 Touch operation



Click screen to pop up the navigation bar

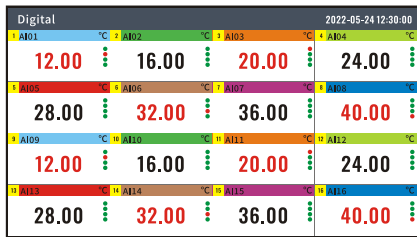
The recorder display is a touch screen. Click on the screen to pop up the navigation bar of the interface, and freely switch the interfaces of digital display, bar chart, dashboard, real-time curve, record query, function application and configuration setting. After 8 seconds, the navigation bar will automatically hide.



- 1 The patrol button will be displayed cyclically every 5 seconds after being turned on.
- 2: Quickly switch to the first group of cyclic display.
- 3: Switch to display the previous group circularly.
- 4: Toggle the display of the last group.
- 5: Quickly switch to display the last group in a loop.
- 6: Reduce the number of single-screen display channels.
7. Increase the number of single-screen display channels
- 8: Debugging button; Bar picture horizontal and vertical switch button.

6.2 Data and curve display

Digital display

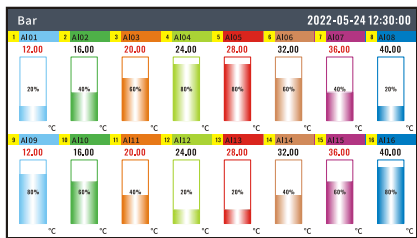


Use the navigation bar [+/-] button to adjust the single-screen display channel.

Use the navigation bar [| </>/>|] button to switch the following groups.

Use the navigation bar [...] button to display the signal debugging data.

Bar display

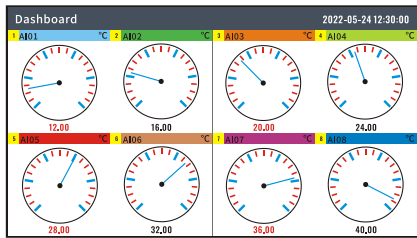


Use the navigation bar [+/-] button to adjust the single-screen display channel.

Use the navigation bar [| </>/>|] button to switch the following groups.

Use the [...] button in the navigation bar to switch the horizontal and vertical modes of the bar graph.

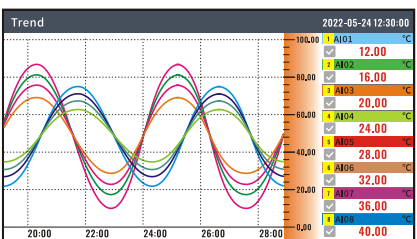
Dashboard display



Use the navigation bar [+/-] button to adjust the single-screen display channel.

Use the navigation bar [| </>/>|] button to switch the following groups.

Trend display



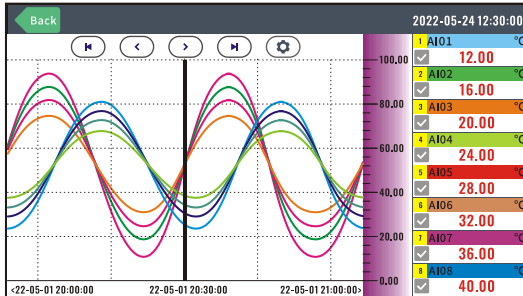
Use the navigation bar [+/-] button to adjust the single-screen display channel.

Use the navigation bar [| </>/>|] button to switch the following groups.

Click the channel area to hide the channel curve.

Press the long channel area to switch to the channel ruler.

## 6.3 Historical curve



Browse the history curve, click the channel to hide channel, long press to switch the curve ruler.

## 6.4 Query power/alarm/operation records

Browse power failure records, alarm list and operation log, each with 256 records.

2022-05-24 12:30:00			
No.	Power-off time	Power-on time	Duration
1	2022-05-11 09:00:00	2022-05-21 10:10:00	1h10m0s
2	2022-05-12 10:00:00	2022-05-21 12:20:30	2h20m30s
3	2022-05-13 11:00:00	2022-05-21 14:30:00	3h30m0s
4	2022-05-14 12:00:00	2022-05-21 16:40:30	4h40m30s
5	2022-05-15 13:00:00	2022-05-21 18:50:00	5h50m0s
6	2022-05-16 14:00:00	2022-05-21 20:10:30	6h10m30s
7	2022-05-17 15:00:00	2022-05-21 22:20:00	7h20m0s
8	2022-05-18 16:00:00	2022-05-21 18:30:30	2h30m30s
9	2022-05-19 17:00:00	2022-05-21 20:40:00	3h40m0s
Total 64			

2022-05-24 12:30:00				
No.	Chnl	Alarm Type	Status	Time
1	1	H	Alarm	2022-05-11 09:00:00
2	1	L	Alarm	2022-05-12 10:00:00
3	1	H	Alarm	2022-05-13 11:00:00
4	2	L	Dismiss	2022-05-14 12:00:00
5	2	H	Alarm	2022-05-15 13:00:00
6	2	L	Dismiss	2022-05-16 14:00:00
7	3	H	Alarm	2022-05-17 15:00:00
8	3	L	Dismiss	2022-05-18 16:00:00
9	3	H	Dismiss	2022-05-19 17:00:00
Total 64				

2022-05-24 12:30:00		
No.	Time	Event
1	2022-05-11 09:00:00	Enter configuration
2	2022-05-12 10:00:00	Factory setting
3	2022-05-13 11:00:00	Modify sytem time
4	2022-05-14 12:00:00	Export historical data
5	2022-05-15 13:00:00	Enter configuration
6	2022-05-16 14:00:00	Modify record interval
7	2022-05-17 15:00:00	Modify sytem time
8	2022-05-18 16:00:00	Export historical data
9	2022-05-19 17:00:00	Enter configuration
Total 64		

## 7 Digital data & curve print

The recorder can be configured with a micro printer to realize automatic printing and manual printing, and support printing data and curves.

### 7.1 Automatic print

The screenshot shows the 'Automatic Print' configuration window. At the top, there is a 'Back' button and a timestamp '2022-05-24 12:30:00'. The window is divided into two main sections: 'Automatic Print' and 'Manual Print'. Under 'Automatic Print', there is a 'Title setting' box containing three input fields: 'Operator' (Skywalker), 'Project' (Tatooine), and 'Item' (Anakin). To the right, under 'Manual Print', there are three input fields: 'Print Mode' (Digital), 'Chnls' (All), and 'Interval' (1m). A 'Start Print' button is located at the bottom right.

Print mode: digital or curve can be selected.  
Printing channels: all channels and some channels can be selected, and curve printing can select up to 8 channels.  
Printing interval: data printing interval or curve printing interval; The data printing interval is in minutes, ranging from 1 to 480 minutes; The printing interval of curves is in seconds, ranging from 1 to 480 seconds.  
Title setting: set the print title, with a maximum of 3 titles and 8 Chinese characters. In the configuration, the title header can be set to be blank, and the title will not be printed.  
Start automatic printing: start automatic printing, and the automatic printing icon appears in the title bar; Click to stop automatic printing again.

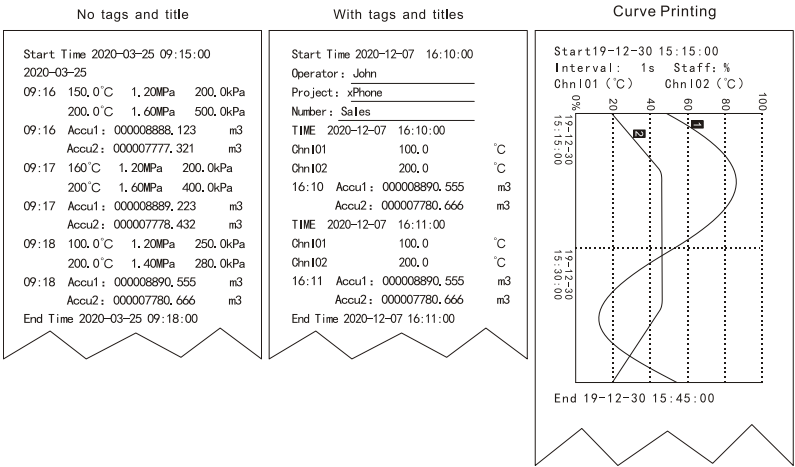
### 7.2 Manual print

The screenshot shows the 'Manual Print' configuration window. At the top, there is a 'Back' button and a timestamp '2022-05-24 12:30:00'. The window is divided into two main sections: 'Automatic Print' and 'Manual Print'. Under 'Manual Print', there is a 'Range' input field with the value '22-01-01 12:30:00 - 22-05-24 12:30:00'. Below this, there are four input fields: 'Start Time' (22-01-01 12:30:00), 'End Time' (22-01-01 12:30:00), 'Print Mode' (Digital), and 'Digital Chnls' (AI01 AI02 ...). To the right, there are two input fields: 'Digital Intvl' (1m) and 'Curve Intvl' (1s). A 'Start Print' button is located at the bottom right.

Range: optional range of historical data of recorder.

- Time: select the time range for printing data.
- Print mode: Digital, Curve, Digital+Curve are optional.
- Digital Chnls: print channel selection.
- Digital Intvl: the digital printing interval 1 to 480 minutes.
- Curve Chnls: print channel selection
- Curve Intvl: the curve printing interval 1 to 480 seconds.

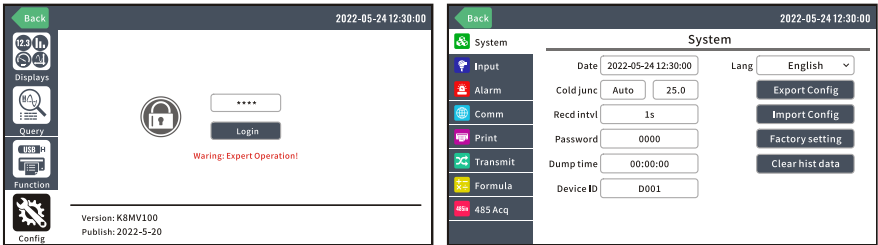
7.3 Print example



## 8 Configuration

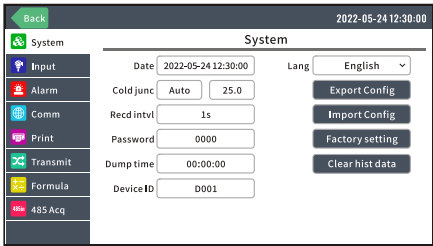
### 8.1 Login

Click the screen, the navigation bar pops up, and click the [Configuration Settings] icon. The configuration login interface pops up, enter the password (the initial password is 0000), and log in to the configuration setting interface; After setting, press [Back] to exit, and according to the prompt, choose to save or exit without saving.



### 8.2 System

Set the basic parameters of the recorder, and set the parameters correctly to ensure the normal operation of the recorder.



#### 8.2.1 Date time

Set the recorder system time. After the time is adjusted, the recorded data will not be lost. If the time is modified forward, the overlapping data will be covered.

#### 8.2.2 Language

Switch the display language of recorder system, Chinese and English are optional.

#### 8.2.3 Password

The configuration password is 4 digits, and the default value is 0000. Please remember the password after modification. If you forget the password, you can ask



the manufacturer for the master password.

8.2.4 Cold Junction

The cold end compensation is the temperature compensation of the cold end measured by TC. The recorder has its own temperature sensor, which defaults to automatic, and can be set manually in special circumstances. In automatic mode, click on the temperature value to make correction, just enter the accurate temperature, and press the temperature value for a long time to clear the correction.

8.2.5 Device ID

Set the device ID, 16 characters long, which is used for USB data export.

8.2.6 Config export & import

Use USB stick to export the recorder configuration and import the same type of recorder configuration.

8.2.7 Factory setting

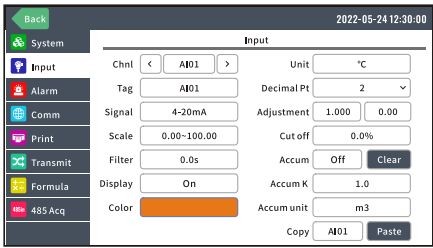
Resetting all the setting parameters and data of the recorder will clear the stored historical data. Please be careful.

8.2.8 Clear historical data

Please be careful when clearing the instrument history data. Please back up the exported data before clearing the data.

8.3 Input

The recorder's input channel is a 3-terminal universal input design, which can input current, voltage, RTD and TC signals. Different signal types can be realized by setting the input channel parameters.



8.3.1 Signal type and burnout

The following table shows the signal types, and the signal range value can be set independently for special signals. You can set the signal disconnection processing

methods, including lower limit, upper limit, hold, # # # # (lower limit), and the default is # # # # (lower limit).

Category	Signal type
current	4~20mA、0~20mA、0~10mA、4~20mA sqrt
Voltage mV	0~20mV、-20~20mV、0~100mV、-100~100mV
Voltage V	1~5V、0~5V、-5~5V、0~10V、-10~10V
TC	K、S、B、J、R、N、T、E、WRe3-25、WRe5-26、F1、F2
RTD	Pt100、Cu50、Cu53、Cu100
Fr(customize)	0-10000Hz
Simulation	Sin、Cos

### 8.3.2 Channel tag

You can set up to 8 Chinese character tags or 16 English letters, and support pinyin input of Chinese characters.

### 8.3.3 Unit

Channel display unit, which can be edited and set independently. The length is 8 English characters, and the default value is °C.

### 8.3.4 Range and decimal point

Range-999999 ~ 999999, with 0-3 decimal point.

### 8.3.5 Linear adjustment

Adjust the channel sampling value in real time according to the formula  $PV = PV * K + B$ , and the default value is  $K=1$  and  $B=0$ .

### 8.3.6 Low signal cut off

The range is 0.0%~10.0%. If the channel sampling value is less than the set value, the channel value will be reset to zero.

### 8.3.7 Inertia filter

The range is 0.0-9.9s Inertial filtering is carried out according to the set value, so as to reduce the sudden change of peak and stabilize the signal.

### 8.3.8 Accumulate

After the function of accumulation is turned on, calculate the accumulated value in real time according to the channel engineering quantity, and calculate the

accumulated value in seconds in X/h instantaneous flow unit, with the maximum accumulated value of 99999999.999; When the flow rate is X/h, the cumulative coefficient is set to 1.0; When the flow rate is X/min, the cumulative coefficient is set to 60. Cumulative company can edit independently, only display without participating in operation.

### 8.3.9 Accumulation clear

Clear the current channel accumulation.

### 8.3.10 Channel activation

Enable channel and set channel color, or the channel will not be displayed in the data curve interface.

### 8.3.11 Copy & paste

Select the source channel first, and then click Paste to paste the source channel parameters into the current channel.

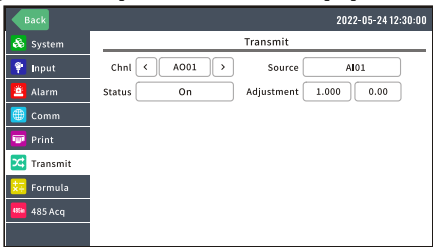
## 8.4 Alarm

Set channel alarm parameters and relay contacts to control the start-stop of external alarms or other equipment.

Items	Description
Threshold value	Turn on the channel alarm function, and you can set four types of alarm: lower limit, upper limit, lower limit and upper limit, and the corresponding relay contacts, which can be shared.
Hysteresis	For every set point, the switch point can be controlled via a hysteresis. The hysteresis is set as an absolute value (positive values only) e.g. upper set point = 100m, hysteresis = 1m: Set point on = 100m, set point off = 99m.
Delay time	After the alarm, time delay relay suction time

8.5 Transmitter

According to the range and real-time value of the input channel, it will be converted into 4-20mA signal again and output to lower-level equipment for collection and use.

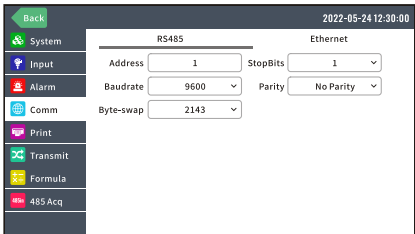


Items	Description
Status	ON/OFF
Source	Source channel
Adjustment	According to the formula $PV = PV * K + B$ , make linear adjustment, and the default value is $K=1$ and $B=0$ .

8.6 Communication

The recorder supports RS485 communication interface and Ethernet communication interface, which can be configured simultaneously. RS485 communication adopts Modbus RTU communication protocol, and Ethernet communication adopts Modbus TCP/IP communication protocol.

8.6.1 RS485



Items	Description
Address	Slave device address, 1-247, default 1, 0 is for broadcasting
Baudrate	9600/19200/38400/57600/115200, default 9600
Parity	No parity / Odd Parity / Even Parity, default No Parity
Byte-swap	Byte swap type of 4-byte data, default 2143

## 8.6.2 Ethernet

Items	Description
IP	192.168.1.30
Mask	255.255.255.0
Gateway	192.168.1.1
Port	502
Byte-swap	Byte swap type of 4-byte data, default 2143

## 8.6.3 Register table

- Registers of 32 bits float data (4XXXX: 03 Command)

Param	Register	Param	Register	Param	Register
CH1	40001	CH9	40017	CH17	40033
CH2	40003	CH10	40019	CH18	40035
CH3	40005	CH11	40021	CH19	40037
CH4	40007	CH12	40023	CH20	40039
CH5	40009	CH13	40025	CH21	40041
CH6	40011	CH14	40027	CH22	40043
CH7	40013	CH15	40029	CH23	40045
CH8	40015	CH16	40031	CH24	40047

e.g.: Read channel 1 real-time data

Command: 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

8.7 Print

Back

System

Input

Alarm

Comm

Print

Transmit

Formula

485 Acq

2022-05-24 12:30:00

Print

Chnl tag

Print

Title1

Operator

Time Stamp

Print

Title2

Project

Ruler

%

Title3

Item

Items	Description
Channel Tag	Print / Hide
Time stamp	Print / Hide
Curve ruler	Percentage / Channel Range
Title1-3	8 letters, titles will be hide when blank

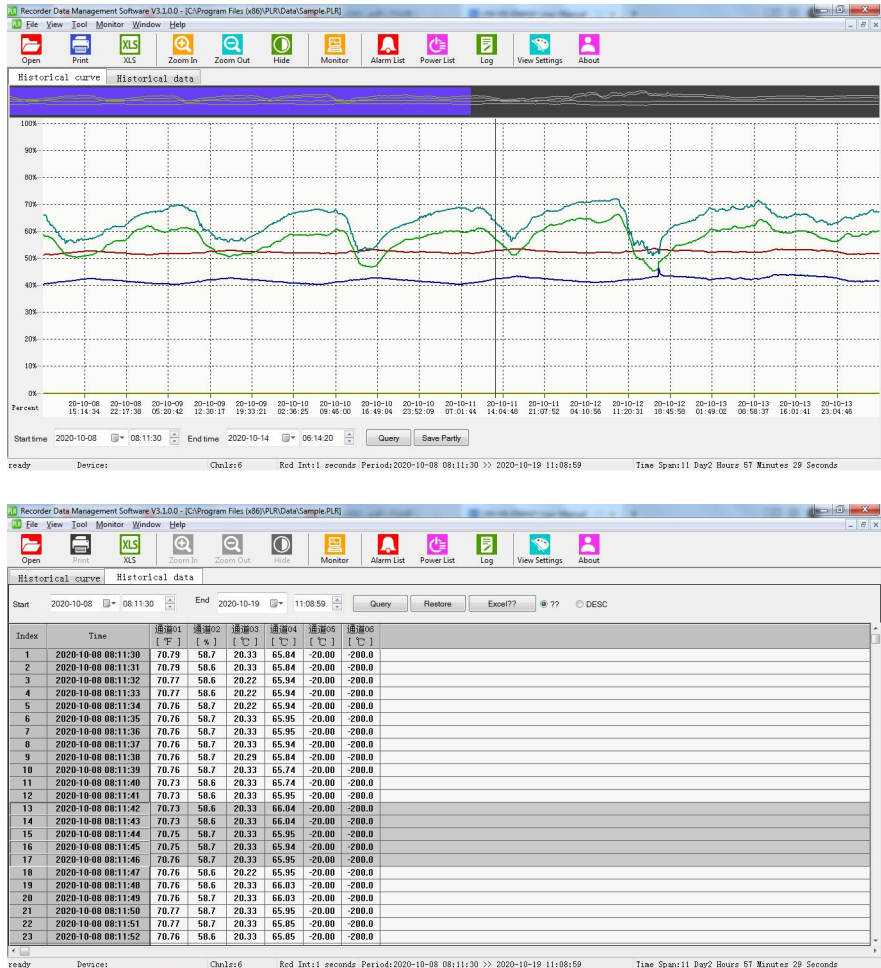
## 9 Data management software

The USB flash drive file of recorder is opened by PLR.EXE, a special PC software for paperless recorder, and the software installation package can be obtained from USB flash drive. The software icons are as follows:



PLR.EXE

The software operation interface is shown in the following figure. Please use the software help file for specific software use.



# 10 Trouble shooting

## 10.1 No data

- Check whether the electrical wiring is correct and whether the thread ends are loose.
- Check whether the signal type is set correctly.

## 10.2 Debug

Press the [...] button to display the original analog signal value.

Digital				2022-05-24 12:30:00			
1 AI01	°C	2 AI02	°C	3 AI03	°C	4 AI04	°C
12.00		16.00		20.00		24.00	
6.00mA		8.00mA		10.00mA		12.00mA	
5 AI05	°C	6 AI06	°C	7 AI07	°C	8 AI08	°C
28.00		32.00		36.00		40.00	
14.00mA		16.00mA		18.00mA		20.00mA	
9 AI09	°C	10 AI10	°C	11 AI11	°C	12 AI12	°C
12.00		16.00		20.00		24.00	
6.00mA		8.00mA		10.00mA		12.00mA	
13 AI13	°C	14 AI14	°C	15 AI15	°C	16 AI16	°C
28.00		32.00		36.00		40.00	
14.00mA		16.00mA		18.00mA		20.00mA	

## 10.3 Burnout alarm #####

##### is a disconnection sign. Please check whether the configuration and electrical connection are correct.

## 10.4 Overload alarm ----

---- is overload alarm, it means that the signal value exceeds the upper limit of the range. Please check the signal to avoid damaging the recorder.



# 11 Specification

Category	Signal Type	Range	Accuracy/25℃
Current	4~20mA	4.00~20.00mA	±0.2%
	0~10mA	0.00~10.00mA	±0.2%
	0~20mA	0.00~20.00mA	±0.2%
	4~20mA Sqrt	4.00~20.00mA	±0.2%
Voltage mV	0~20mV	0.00~20.00mV	±0.2%
	-20~20mV	-20.00mV~20.00mV	±0.2%
	0~100mV	0.00~100.00mV	±0.2%
	-100~100mV	-100.00mV~100.00mV	±0.2%
Voltage V	1~5V	1.00~5.00V	±0.2%
	0~5V	0.00~5.00V	±0.2%
	-5~5V	-5.00~5.00V	±0.2%
	10V	0.00~10.00V	±0.2%
	-10~10V	-10.00~10.00V	±0.2%
TC	K	-200~1372℃	±2℃
	S	-50~1768℃	±3℃
	B	250~500℃	±5℃
		500~1820℃	±3℃
	J	-210~1000℃	±2℃
	R	-50~100℃	±4℃
		100~1768℃	±3℃
	N	-200~1300℃	±3℃
	T	-200~400℃	±2℃
	E	-200~1000℃	±2℃
	WRe3-25	0~2315℃	±5℃
	WRe5-26	0~2310℃	±5℃
RTD	F1	700~2000℃	±2℃
	F2	700~2000℃	±2℃
	Pt100	-200.0~650.0℃	±0.5℃
	Cu50	-50.0~140.0℃	±0.5℃
	Cu53	-50.0~150.0℃	±0.5℃
Fr(Customize)	Cu100	-50.0~150.0℃	±0.5℃
	Fr	0~10000Hz	1Hz

Items	Description
Dimension	187*147*145mm(WHD), Mounting hole 138*138mm
Net Weight	1100 grams
Screen	7-inch color touch LCD, 800*480px resolution
Channel*	Up to 32 universal analog inputs
Accuracy	0.2%F.S.
Sampling period	1 second
Alarm*	Up to 16 normally open relays, 250VAC 3A, 30VDC 3A (resistive load)
Transmitter*	Up to 8 transmission outputs, 4-20mA with load $\leq 750\Omega$ , Accuracy 0.2%
24VDC output	2 24VDC $\pm 10\%$ outputs , total output current $\leq 120\text{mA}$
RS485	RS485 communication interface, standard Modbus RTU protocol
Ethernet*	10/100Base-T RJ45 port, standard Modbus TCP protocol ( $\leq 3$ connections)
USB	USB2.0, supporting 32G USB stick
Micro printer*	TTL micro printer interface
Power supply	100-240VAC 50Hz / DC 24VDC $\pm 10\%$ (reverse protection) capacity $\leq 20\text{W}$
Preheating time	30 minutes
Work environment	Temperature: -10~60℃ Humidity: 0~85%RH (no condensation)
EMC Electrical fast transient	Power supply 2000V, Signal 1000V.
ESD	Touch 4000V, Air 8000V.
Withstand Voltage	AC220V power supply: 1500V between terminal and ground DC24V power supply: 500V between terminal and ground 1000V between isolated terminals and terminals
Insulation Resistance	AC220V power supply: DC test voltage 500V 20M $\Omega$ DC24V power supply: DC test voltage 100V5M $\Omega$
Recording interval	1 sec, 2 sec, 5 sec, 10 sec, 15 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 30 m, 1 h
Data memory	64MB memory, 900k records
Recording	32-channel with 1-second recording interval, recording for 10

Duration	days, and dynamic cyclic overwrite storage.
Other records	There are 256 alarm lists, power switch records, and operation logs, which are stored circularly.
Installation	Panel mounting indoor , IP65 protection level for panel

[Note]\* tag is optional

