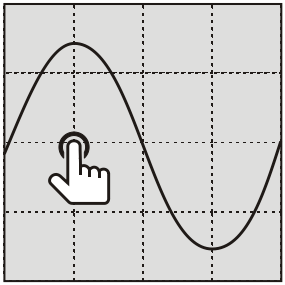
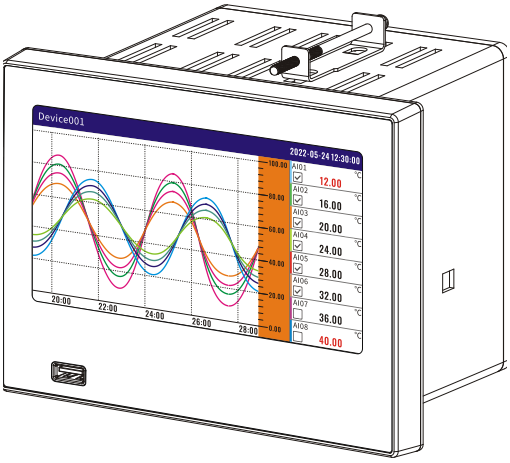
User Manual



Touch Color Paperless Recorder

User Manual



UMK8EN#D1 2026.4

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, 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.

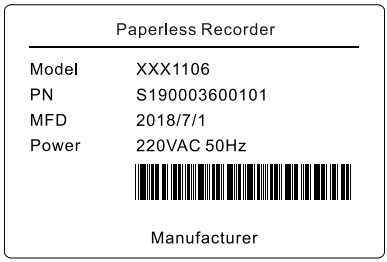
- **Do not repair or alter this instrument by yourself.**

Table of contents

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



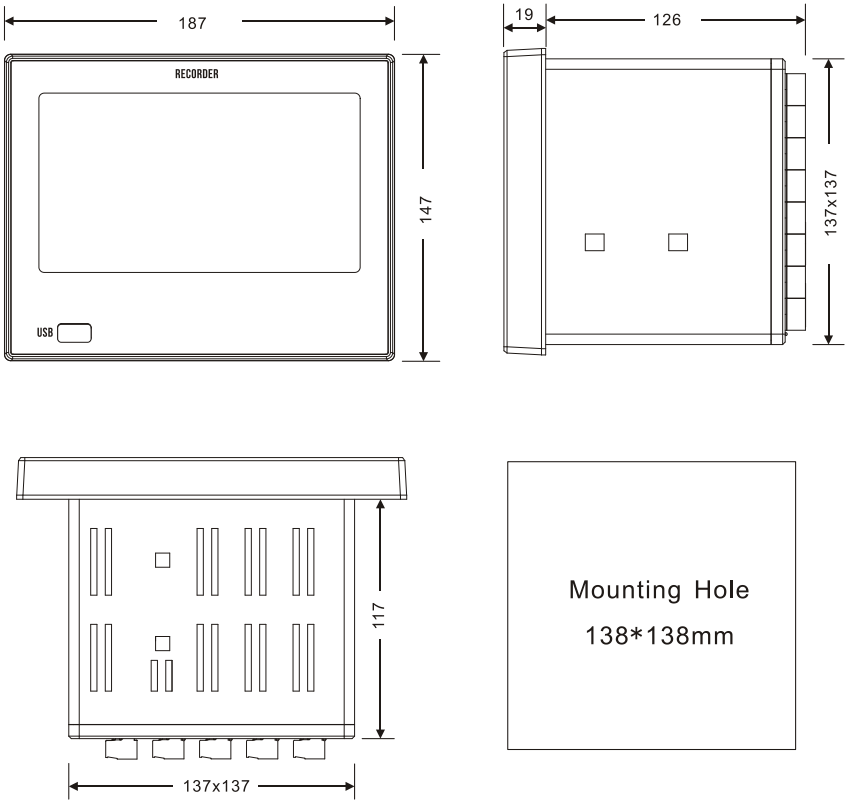
Nameplate

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.

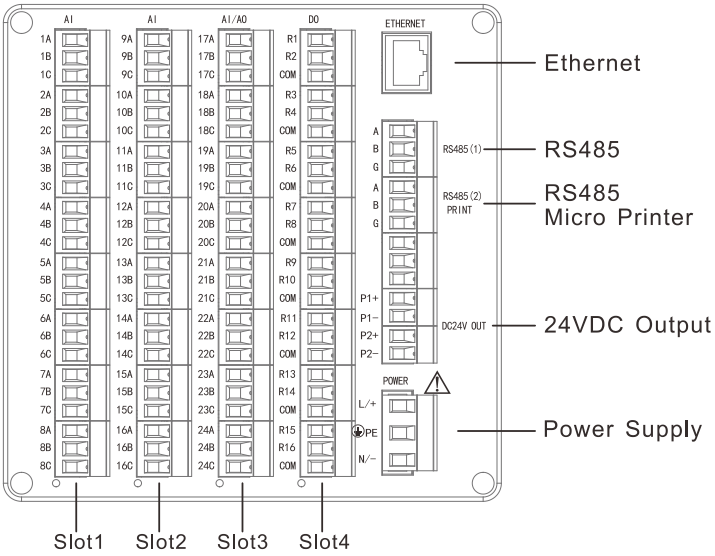
Unit:mm



3 Electrical connection

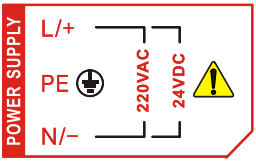
The analog signal input of this product is universal signal input, the channel is completely isolated. Before wiring the instrument, please pay attention to: Please operate when the instrument is powered off. Make sure the ground wire is connected before wiring.

3.1 Layout of terminals



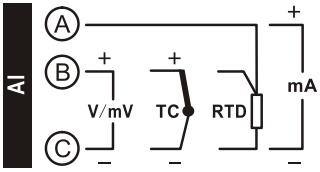
3.2 Power supply

AC 110V/220V: connected to L and N, nonpolar, voltage range 100-240 VAC 50 Hz; PE terminal is grounded.
24VDC: connected to 24V+ and 24V-, with voltage range of 24 V 10% and reverse connection protection.



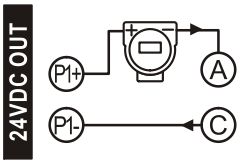
3.3 Analog Input

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, thermal resistance and thermocouple is shown in the figure.



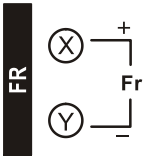
3.4 24VDC Output

P1+ P1-/P2+ P2- Two groups of DC 24V power output, as shown in the figure; Total output current ≤120mA.



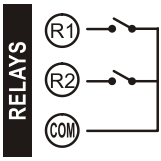
3.5 Frequency

Frequency input channel 1X+ 1Y- is the first channel, 2X+ 2Y- is the second channel, and so on.



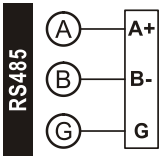
3.6 Relay

R1-R16 are relay output contacts, and COM is the common terminal; Every two relays share a common terminal.



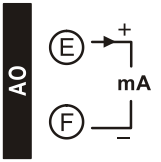
3.7 RS485

2 RS485 interfaces are provided. RS485(1) serves as the host computer communication interface, while RS485(2) is used for data acquisition or micro printer connection. Terminals A, B, and G are connected to RS485 A+, RS485 B-, and GND respectively.



3.8 Transmit

The transmit channels are AO1-8, 1E+ 1F- the first channel, 2E+ 2F- the second channel, and so on.



3.9 Ethernet

10/100Base-T RJ45 port with up to 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.

	1 channel	2 chnls	3-4 chnls	5-8 chnls
1s	320 days	160 days	80 days	40 days
5s	1600 days	800 days	400 days	200 days
10s	3200 days	1600 days	800 days	400 days
1m	19200 days	9600 days	4800 days	2400 days
	9-12 chnls	**13-16 chnls**	**17-24 chnls**	**25-32 chnls**
1s	26 days	20 days	16 days	10 days
5s	133 days	100 days	80 days	50 days
10s	266 days	200 days	160 days	100 days
1m	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&Power&Operation records

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.

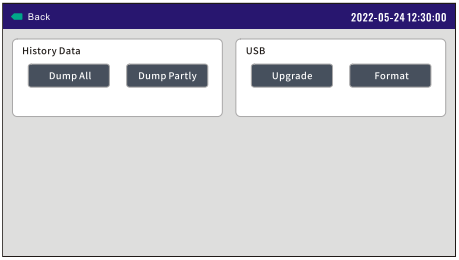
Operation log includes recorder operation events and time.

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 Device01#(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 upgrade

Copy the new firmware file to the root directory of the USB flash drive, insert the USB flash drive and click the firmware upgrade, and the system will automatically restart and upgrade; Do not turn off the power during the upgrade, otherwise the recorder will be damaged.

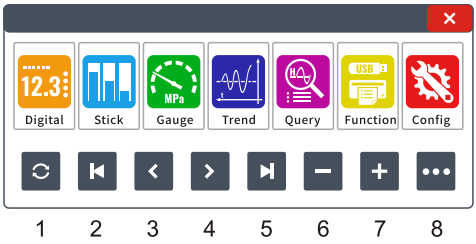
5.4 Format USB stick

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

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 15 seconds, the navigation bar will automatically hide.



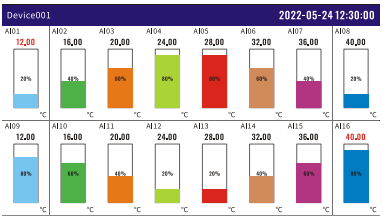
1 The patrol button will be displayed cyclically every 5 seconds after being turned on.
2: Quickly switch to the first group of cyclic display.
3: Switch to display the previous group circularly.
4: Toggle the display of the last group.
5: Quickly switch to display the last group in a loop.
6: Reduce 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

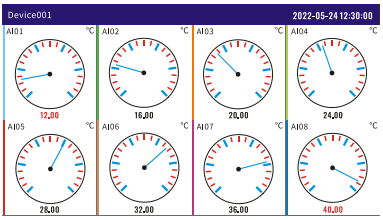
Use the navigation bar [+ -] button to adjust the single-screen display channel.
Use the navigation bar [| < < > >|] button to switch the following groups.
Use the navigation bar [...] button to display the signal debugging data.

Stick display



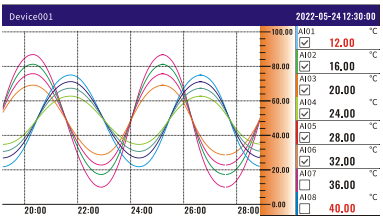
Use the navigation bar [+ -] button to adjust the single-screen display channel.
Use the navigation bar [| < < > >|] button to switch the following groups.
Use the [...] button in the navigation bar to switch the horizontal and vertical modes of the bar graph.

Gauge display



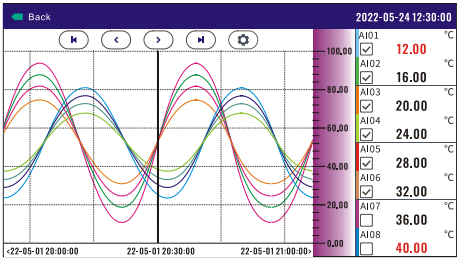
Use the navigation bar [+ -] button to adjust the single-screen display channel.
Use the navigation bar [| < < > >|] button to switch the following groups.

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.

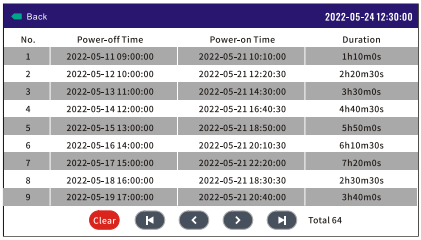
6.3 History curve

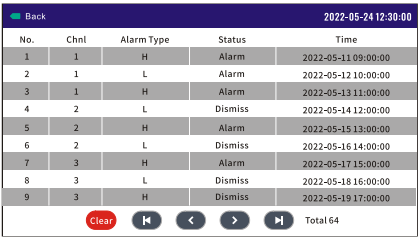


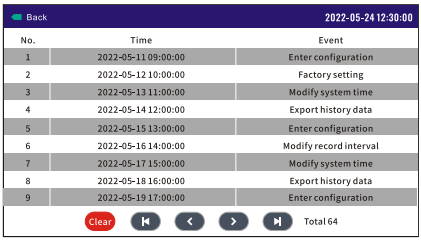
Browse the history curve, click the channel to hide channel, long press to switch the curve ruler.

6.4 Query power/alarm/operation records

Browse power switch records, alarm list and operation logs, each with 256 records.



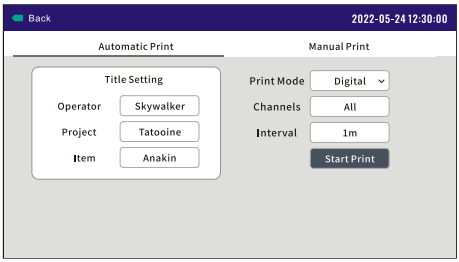




7 Digital data & curve print

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



Print mode: digital or curve can be selected.

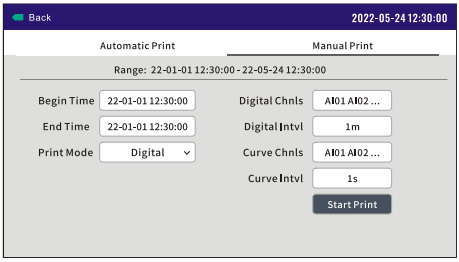
Printing channels: all channels and some channels can be selected, and curve printing can select up to 8 channels.

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



Range: optional range of historical data of recorder.

Time: select the time range for printing data.

Print mode: Digital, Curve, Digital+Curve are optional.

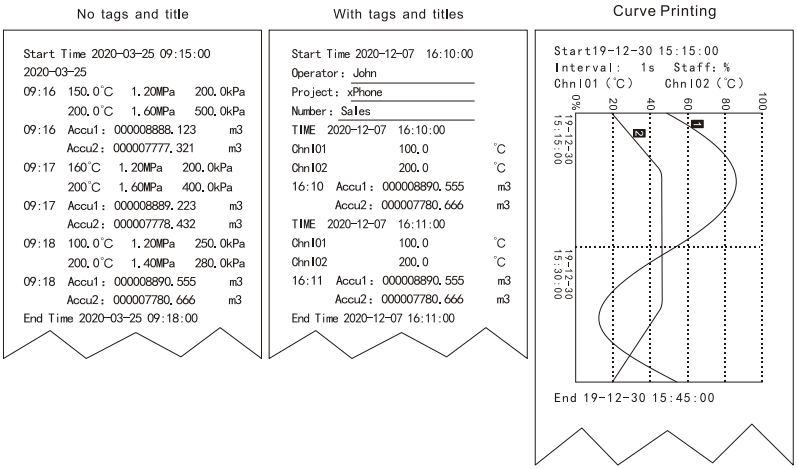
Digital Chnls: print channel selection.

Digital Intval: the digital printing interval 1 to 480 minutes.

Curve Chnls: print channel selection

Curve Intvl: the curve printing interval 1 to 480 seconds.

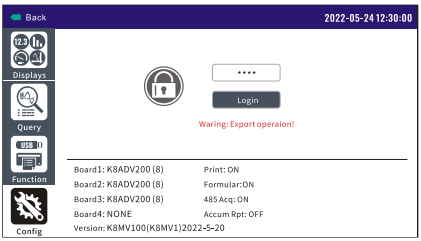
7.3 Print example



8 Configuration

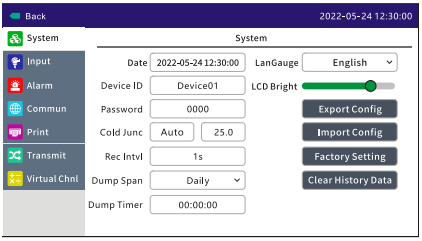
8.1 Login

Click the screen to pop up the navigation bar, and click the [Config] icon.
At the login interface, enter the password (the initial password is 0000), and click Login; After setting the parameters, press [Back] to exit, and choose to save or not to exit.



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 Device ID

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

8.2.4 LCD Bright

Drag the slider to adjust the screen brightness.

8.2.5 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.

8.2.6 Cold Junction

Cold-end compensation refers to the cold-end temperature compensation during thermocouple measurement. The recorder has its own temperature sensor, which is automatic by default. In special cases, it can be set manually. In automatic mode, click on the temperature value to correct it. After the accurate temperature value is entered, the system judges to correct it, and long press the temperature value to clear it.

8.2.7 Dump Span

Set the dump span, daily / weekly / monthly.

8.2.8 Dump Timer

Set the dump timer.

8.2.9 Configuration export & import

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

8.2.10 Factory setting

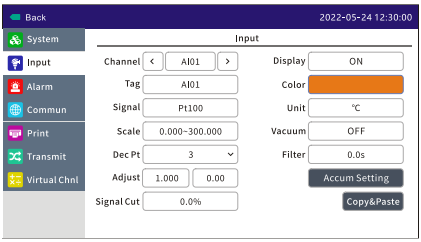
Resetting all the setting parameters and data of the recorder will clear the stored historical data. Please be careful.

8.2.11 Clear history data

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

8.3 Input

The input channel of the recorder is designed as universal input, which can input current, voltage, thermal resistance and thermocouple signals. Different signal types can be realized by setting the parameters of the input channel.



8.3.1 Signal type and burnout

The following table shows the signal types, and the 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
Resistance	0~400Ω
TC	K, S, B, J, R, N, T, E, WRe3-25, WRe5-26, F1, F2
RTD	Pt100, Cu50, Cu53, Cu100
Fr	0-10000Hz
Demonstration	sin, cos

8.3.2 Channel tag

Channel tag can be edited, the length is 16 characters.

8.3.3 Unit

Channel unit can be edited and set independently, the length is 8 characters.

8.3.4 Range and decimal point

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

8.3.5 Adjustment

Modification formula PV = K*PV+B, and adjust the ratio of K value and the difference of B value. By default, K=1.00 and B=0.00.

8.3.6 Low signal cut off

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

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 Channel activation and color

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

8.3.9 Vacuum

After the vacuum function is turned on, the channel is calculated, displayed and stored according to the vacuum algorithm, and the range is an index of 10, such as-5 ~ 5; The vacuum data is expressed in the form of 1.2E-5 exponent, and the actual data is 1.2*(10 to the fifth power). The segmentation mode is exponential average segmentation, and the numerical value in the segment is linearly calculated with the signal.

8.3.10 Accumulate

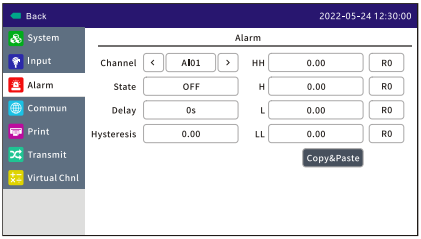
After the function of accumulation is turned on, calculate the accumulated value in real time according to the channel engineering quantity, and calculate the accumulated value in seconds in X/h instantaneous flow unit, with the maximum accumulated value of 99999999.999; When the flow rate is X/h, the 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.

8.3.11 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.

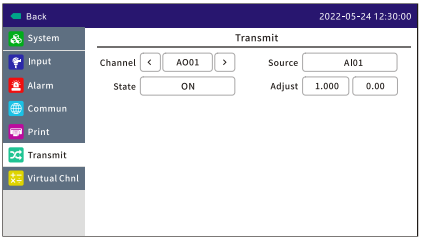


State: ON/OFF

Threshold value: Turn on the channel alarm function, and you can set four types of alarm: H, L, HH, LL and the corresponding relay contacts, which can be shared.
Delay time:After the alarm, time delay relay suction time
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.

8.5 Transmit

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.

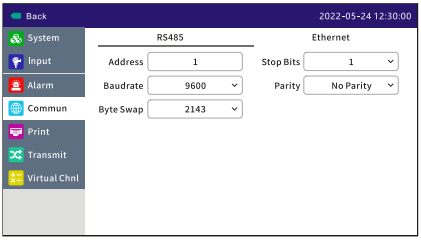


State: ON/OFF
Source: Source channel
Adjustment: According to the formula PV = PV * K+B, make adjustment, and the default value is K=1 and B=0.

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.

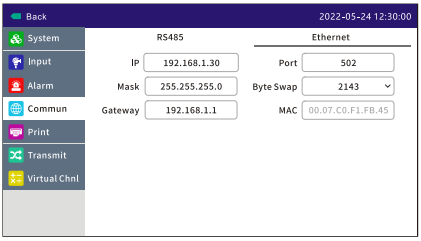
8.6.1 RS485



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



IP: Recorder's IP, default is 192.168.1.30
Mask: Lan's mask, default is 255.255.255.0
Gateway: Lan's gateway, default is 192.168.1.1
Port: Recorder's port, default is 502
Byte Swap: Byte-swap type of 4-byte data, default 2143

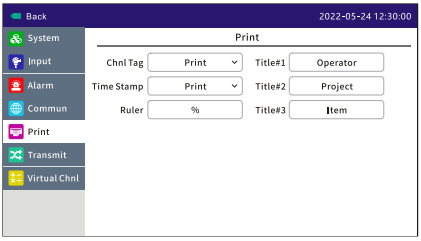
8.6.3 Register table

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

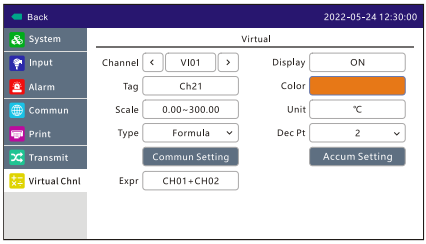
8.7 Print



Channel Tag: Print channel tag or not , optional Print or Hide
Time Stamp: Print time stamp or not , optional Print or Hide
Ruler: Choose percentage ruler or channel Range
Title1-3#: Customization title, 8 letters, titles will be hide when blank

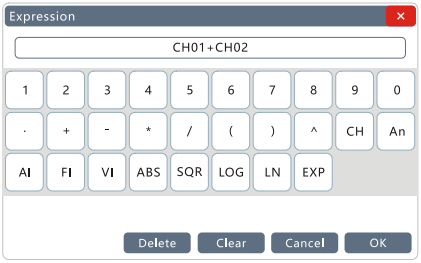
8.8 Virtual Chnl

Supports RS485 acquisition, RS485 writing, and formula. RS485 acquisition and RS485 writing cannot be enabled simultaneously.



8.8.1 Formula

Supports present value and constants for four arithmetic operations.



CH: real-time value of the channel, including AI / FI / VI

An: analog quantity AI: real-time value of analog input

FI: real-time value of plus input VI: real-time value of virtual channel

Such as: AI1, FI1, VI1,An1.

ABS: Absolute value, used with ()

SQR: Square, used with ()

LOG: the base logarithm of 10, used with ()

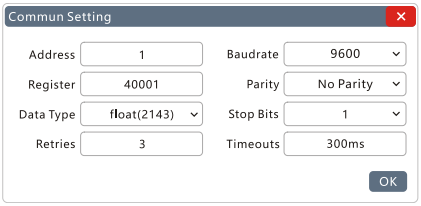
LN: the base logarithm of e, used with ()

EXP: the exponent of e, used with ()

Such as: SQR(2)、EXP(CH1)

8.8.2 RS485 acquisition

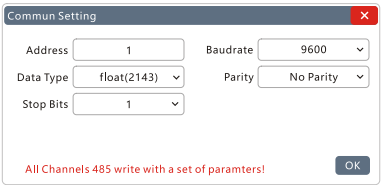
Acquire real-time data from sensors or instruments



Address: 1-247, default 1
Register: 40001-49999, default 40001
Baudrate: 9600/19200/38400/57600/115200, default 9600
Parity: No parity / Odd Parity / Even Parity, default No Parity
Data type: float(2143) / float(4321) / short / long(2143) / long(4321)，default float(2143)

8.8.3 RS485 writing

Supports ModbusRTU protocol and writes real-time data to the channel. All channels share a set of parameters.



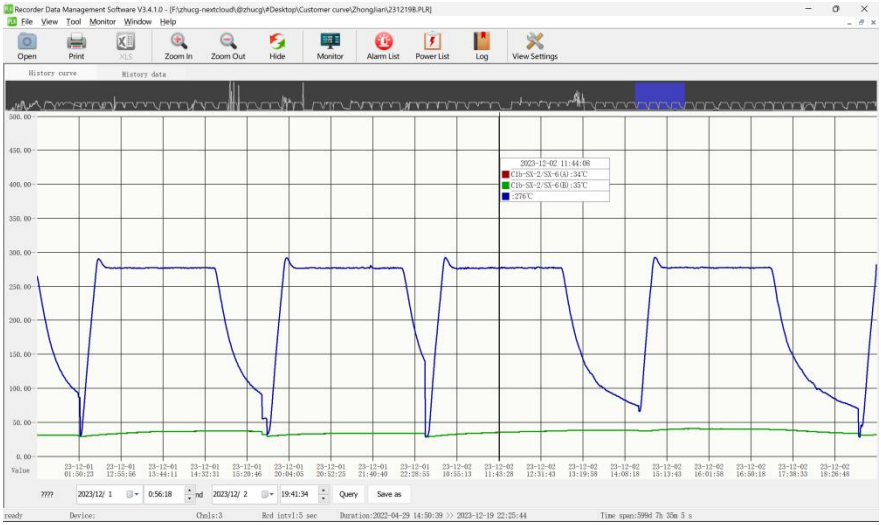
Baudrate: 9600/19200/38400/57600/115200, default 9600
Parity: No parity / Odd Parity / Even Parity, default No Parity
Data type: float(2143) / float(4321) / long(2143) / long(4321)，default float(2143)

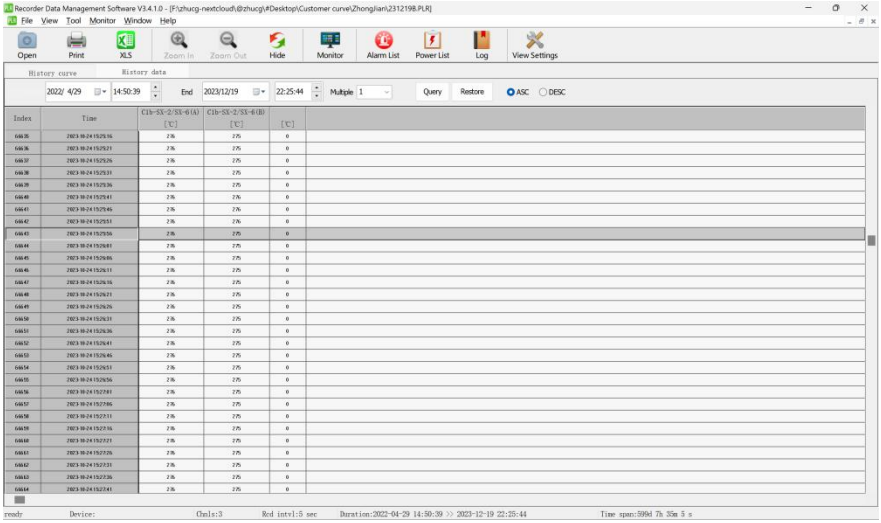
Param	Register	Param	Register	Param	Register
VI1	48193	VI9	48209	VI17	48225
VI2	48195	VI10	48211	VI18	48227
VI3	48197	VI11	48213	VI19	48229
VI4	48199	VI12	48215	VI20	48231
VI5	48201	VI13	48217	VI21	48233
VI6	48203	VI14	48219	VI22	48235
VI7	48205	VI15	48221	VI23	48237
VI8	48207	VI16	48223	VI24	48239

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:

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





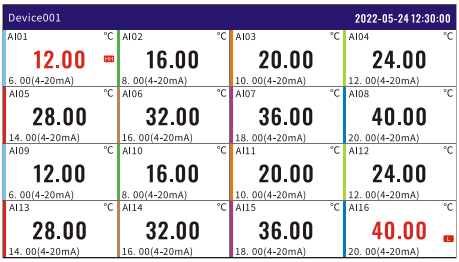
10 Trouble shooting

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.



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%
Resistance	0~400Ω	0.00~400.00Ω	0.1Ω
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℃
	F1	700~1210℃	±3℃
	F2	700~2000℃	±3s℃
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

Items	Description
Dimension	187*147*145mm(WHD), Mounting hole 138*138mm
Screen	7-inch color touch LCD, 800*480px resolution
Channel*	Up to 32 universal analog inputs
Accuracy	0.2%F.S.
TDS	≤100PPM/℃
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 ≤750Ω, Accuracy 0.2%
24VDC output	2 24VDC±10% outputs , total output current ≤120mA
RS485	RS485 communication interface, standard Modbus RTU protocol
Ethernet*	10/100Base-T RJ45 port, standard Modbus TCP protocol (≤3 connections)
USB	USB2.0, supporting 32G USB stick
Micro printer*	RS485 micro printer interface
Power supply	100-240VAC 50Hz / DC 24VDC±10% capacity ≤ 20W
Preheating time	30 minutes
Work environment	Temperature: -10~60℃ Humidity: 0~85%RH (no condensation)
EFT	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 20MΩ DC24V power supply: DC test voltage 100V5MΩ
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 Duration	32-channel with 1-second recording interval, recording for 10 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
Net Weight	1100 grams

[Note]* tag is optional