

# **USER MANUAL**

## **Paperless recorder**

U-0002NR-EN1





## **Preface**

- This manual is a description of product functions, wiring methods, setting methods, operation methods and troubleshooting methods.
- Please read this manual carefully before operation, and use this product correctly to avoid unnecessary losses caused by wrong operation.
- After you finish reading, please keep it in a place that is easy to read at any time for reference when operating.

## **Notice**

- If the contents of this manual are modified due to function upgrade, please refer to the newly released document.
- We strive to be correct in the contents of this manual. If you find anything wrong, please contact us.
- It is strictly forbidden to reprint or copy the contents of this manual.
- Please use this product according to the explosion-proof characteristics of this product and comply with the requirements of national and regional laws and regulations.
- The final interpretation right of this manual belongs to our company.

## **Version**

U-0002NR-EN1 First edition April 2023

## **Safety**

In order to use this product safely, please observe the safety precautions described here when operating.

## **About**

- Please submit this manual to the operator for reading.
- Before operating, please read this manual carefully and have a deep understanding of the products.
- This manual only describes the functions of the product, and the company does not guarantee that the product will be suitable for a special purpose of users.

## **Matters needing attention in protection, safety and transformation of this product**

- In order to ensure the safe use of this product and the system controlled by it, please follow the instructions and precautions described in this manual when operating. If the operating instructions are violated, the protection function provided by this product may be damaged. For the quality, performance, function and product safety problems caused by the above situation, the company does not assume any responsibility.
- When installing a lightning protection device for this product and its control system, or designing and installing a separate safety protection circuit for this product and its control system, it needs the help of other equipment.
- If you need to replace the parts of the product, please use the model specifications specified by our company.
- This product is not suitable for systems directly related to personal safety. Such as nuclear power equipment, equipment using radioactive energy, railway system, aviation machinery, marine equipment, aviation equipment and medical equipment. If applied, users are responsible for using additional equipment or systems to ensure personal safety.
- Do not modify this product.

The following safety signs are used in this manual:

Danger signs, if proper preventive measures are not taken, will lead to serious personal injury, instrument damage or major property losses and other accidents.



Warning signs to remind you to pay special attention to important information related to products or special parts of this manual.



- Before turning on the power supply of this product, please confirm whether the power supply voltage of the instrument is the same as that of the instrument.
- The supply voltage is consistent.
- Please do not operate this machine in places with flammable gas, explosive gas and steam.
- It is very dangerous to use this product in such an environment.
- In order to prevent electric shock and misoperation, good grounding protection must be carried out.
- Be sure to do a good job in lightning protection engineering facilities, share grounding network for equipotential grounding, shielding, reasonable wiring, proper use of surge protectors, etc.
- Some internal components have high voltage, so please do not open the front panel to avoid electric shock.
- Be sure to cut off the power supply before carrying out various inspections to avoid electric shock accidents.
- Please check the condition of the terminal screw regularly. If it is found to be loose, please tighten it before putting it into use.
- Never disassemble, process, modify or repair the instrument without authorization, otherwise it may lead to abnormal action, electric shock or fire accident.
- Please use dry cotton cloth to wipe the instrument. Alcohol, gasoline or other organic solvents are not allowed. Beware of all kinds of liquid splashing on the instrument. If the instrument falls into the water, please cut off the power immediately, otherwise there will be leakage, electric shock and even fire accidents.

- Please check the grounding protection status regularly. If you think that the grounding protection and fuse protection measures are not perfect, please do not run.
- The ventilation holes on the instrument shell should be kept unobstructed to avoid failure, abnormal action, shortened service life and fire due to high temperature.
- Please strictly follow the instructions in this manual, otherwise the protective device of the instrument may be damaged.



- Do not use the instrument if it is damaged or deformed when unpacking.
- When installing, avoid dust, thread ends, iron filings or other substances from entering the instrument, otherwise abnormal action or failure will occur.
- During operation, if it is necessary to modify the configuration, signal output, start and stop, the operation safety should be fully considered, and wrong operation may lead to failure or even damage of the instrument and the controlled equipment.
- All parts of the instrument have a certain life span, so it is necessary to carry out regular maintenance to ensure long-term use.
- When scrapping this product, treat it as industrial garbage to avoid environmental pollution.
- Please turn off the power switch when not using this product.
- If you find smoke from the instrument, smell peculiar smell and make abnormal noise, please turn off the power switch immediately and cut off the power supply at the same time, and get in touch with our company in time.

## **Disclaimer**

- Our company does not make any guarantee for the terms beyond the warranty scope of this product.
- When using this product, our company will not be responsible for the instrument damage or parts loss and some unpredictable damage directly or indirectly caused by improper operation by users.

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# 1 Product overview

## 1.1 Introduction

This product is an industrial paperless recorder with 18 channels universal input and 96mm\*96mm panel size. It supports industrial signals such as current, voltage, thermocouple, thermal resistance and frequency (customized), realizes signal data recording function, with the shortest recording interval of 1 second, and can quickly transfer historical data through USB equipment. Channel data is displayed in real time in the form of numerical value, bar chart and curve.

## 1.2 Features

- 18 universal signal inputs and 4 relay outputs.
- 6 channels of current transmission output and 1 loop of DC 24V output.
- HD 3.5-inch color LCD screen.
- 128Mb memory, 900,000 historical records.
- 256 alarm, power failure and operation logs.
- High-speed USB interface, supporting large-capacity USB flash drive.
- Built-in bilingual, free to switch.
- Support Chinese tag configuration.

## 2 Specification

### 2.1 Input

Table1 Input

Category	Signal	Scale	Accuracy/25°C
Current	(4~20)mA	(4.00~20.00)mA	±0.2%
	(0~10)mA	(0.00~10.00)mA	±0.2%
	(0~20)mA	(0.00~20.00)mA	±0.2%
Voltage mV	20mV	(-20.00~20.00)mV	±0.2%
	100mV	(0.00~100.00)mV	±0.2%
Voltage V	(0~5)V	(0.000~5.000)V	±0.2%
	(0~10)V	(0.00~10.00)V	±0.2%
	(1~5)V	(1.000~5.000)V	±0.2%
TC	K	(-200~1372)°C	±2°C
	S	(-50~100)°C	±4°C
		(100~1768)°C	±3°C
	B	(250~500)°C	±5°C
		(500~1820)°C	±3°C
	J	(-210~1000)°C	±2°C
	R	(-50~100)°C	±4°C
		(100~1768)°C	±3°C
	N	(-200~1300)°C	±3°C
	T	(-200~400)°C	±2°C
	E	(-200~1000)°C	±2°C
	WRe3-25	(0~2315)°C	±5°C
	WRe5-26	(0~2310)°C	±5°C
F1	(700~2000)°C	±2°C	
F2	(700~2000)°C	±2°C	
RTD	Pt100	(-200.0~650.0)°C	±0.5°C
	Cu50	(-50.0~140.0)°C	±0.5°C
	Cu53	(-50.0~150.0)°C	±0.5°C
	Cu100	(-50.0~150.0)°C	±0.5°C

## 2.2 Output

Table2 Output

Alarm	4-loop of normal open relay, 250VAC,3A,30VDC,3A(Resistive load)
Transmit	6-loop(4~20)mA output,load $\leq$ 750 $\Omega$ ,accuracy 0.2%
DC24V output	1-loop 24VDC $\pm$ 10% output ,maximum 30mA
Comm	1 RS485 interface, Modbus RTU protocol

## 2.3 Power supply

Table3 Power supply

Power supply	AC: (100~240)VAC,50Hz DC: 24VDC $\pm$ 10%
Consumption	$\leq$ 10W

## 2.4 Specification

Table4 Specification

Panel size	96mm $\times$ 96mm
Mounting hole	92mm $\times$ 92mm
Screen	3.5-inch color screen,320 $\times$ 240 resolution
Weight	450 grams
Channel	18-channel universal input(Exclusion Fr)
Accuracy	0.2%F.S
Sampling period	1s
EFT	Power EFT 1000V, Signal EFT 500V
ESD	Contact discharge 4000V Air discharge 8000V
Limit voltage	AC220V,between PE with input terminal1500V DC24V,between PE with input terminal500V Between segregation input terminal 1000V
Insulation resistance	AC220V,DC test voltage 500V,20M $\Omega$ DC24V,DC test voltage 100V,5M $\Omega$

## 2.5 Work environment

Table5 Work environment

Temperature	(-10~+60C)°C
Humidity	0~85% (No condensation)

## 2.6 Other data

Table6 Other data

USB	USB2.0
Preheating	30 minutes after power-on
Record interval	1s/2s/5s/10s/15s/30s/1m/2m/5m/10m/30m/1h
Memory	128Mb,900k records
Other record	256 alarm records, 256 power-down records, 256 operation logs
Mounting	Panel-mounting, indoor, panel protection gradeIP40

### 3 Product dimension

Unit:mm

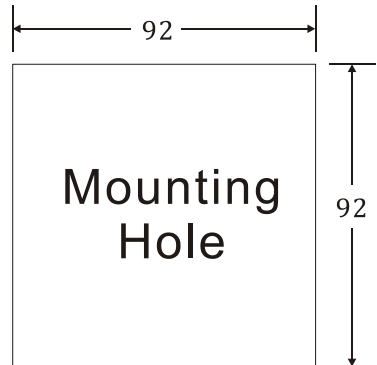
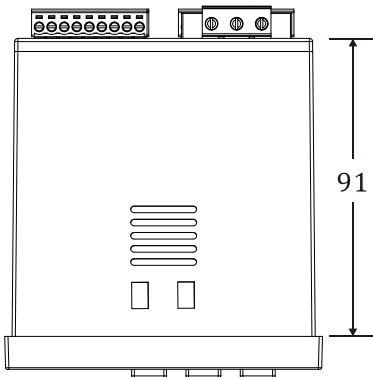
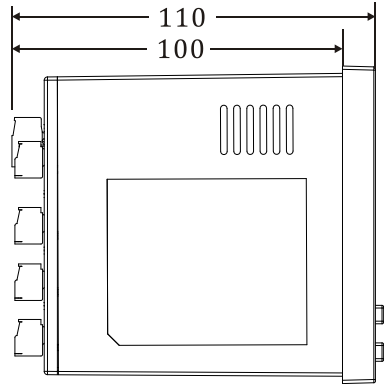
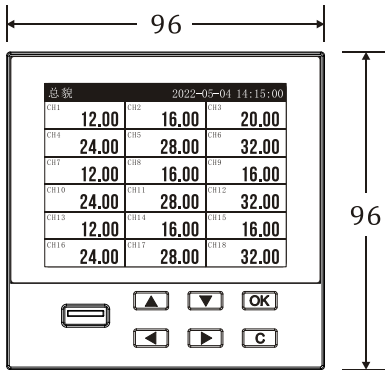


Figure1 Production size

## 4 Installation

### 4.1 Unpacking

After receiving the instrument, please first check whether the outer packaging is in good condition. When unpacking, do not apply too much force to the box. The box should face upwards, open it from the seal, carefully take the instrument out of the box, and make sure that the shell is not deformed, damaged or cracked. You can check the equipment and other items in the box according to the packing list of the whole machine.

### 4.2 Installation conditions

Explain the installation place and method of this product, please be sure to read this part when installing.

#### **Relevant installation precautions:**

- The installation method of this product is tray-mounted.
- Please install it indoors, away from wind, rain and direct sunlight.
- In order to prevent the internal temperature of this product from rising, please install it in a well-ventilated place.
- When installing this product, please do not tilt left and right, and try to install it horizontally (it can be tilted backward  $< 30$ ).

#### **Avoid the following places during installation:**

- Places where the ambient temperature exceeds  $60^{\circ}\text{C}$  when working.
- Places where the ambient humidity exceeds 85%RH when working.
- Near the electromagnetic source.
- Places with strong mechanical vibration.
- A place where the temperature changes greatly and it is easy to condense.
- Places with a lot of oil smoke, steam, moisture, dust or corrosive gases.

### 4.3 Mounting

This recorder is installed in indoor disc mode, and the opening size is 92mm × 92mm:

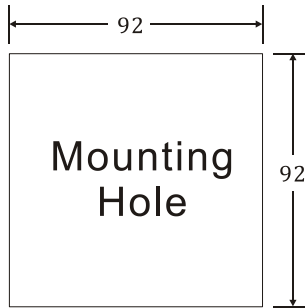


Figure2 Mounting hole

## 5 Electrical connections

The analog signal input channel of this product is universal isolated input, which does not contain frequency signal (need to be customized).

Note: Please operate when the recorder is powered off, and make sure that the ground wire is connected before wiring.

### 5.1 Terminals

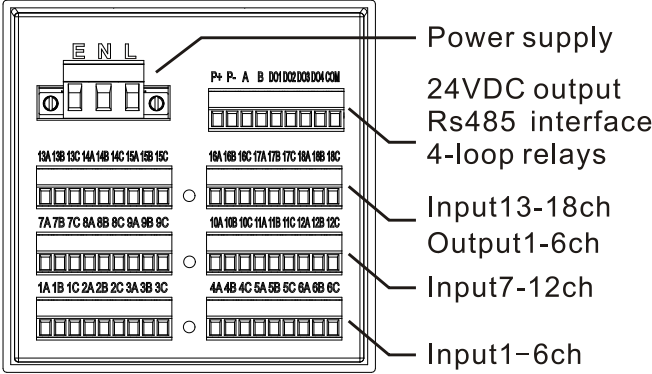


Figure3 Terminals

### 5.2 Power supply connection

- L/+,N/-: (1)220VAC/110VAC, L and N, no polarity
- (2)24VDC, + and -, please check polarity

E: Earth

### 5.3 Signal input connection

Each channel of the recorder has ABC three terminals, 1A, 1B and 1C are the first channel, 2A, 2B and 2C are the second channel, and so on. The voltage V, voltage mV, current mA, thermal resistance and thermocouple are electrically connected as shown below. For signal setting, you need to log in the configuration, enter the [Input] configuration classification, and set the channel signal type, range, unit, etc.



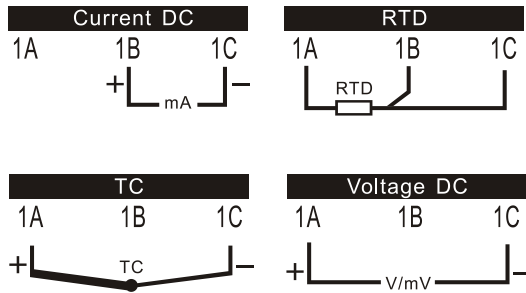


Figure4 Signal connections

### 5.4 Relay connection

DO1-DO4 are relay output contacts, COM is the common terminal, and the electrical wiring is shown in the figure. Configuration settings enter the alarm configuration classification.

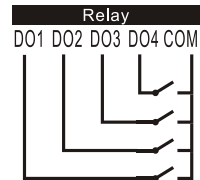


Figure5 Relay connections

### 5.5 RS485 connection

A and B are 485A+ 485B- respectively. Configuration settings enter the Communication configuration category.

### 5.6 Transmitter connection

Channel 13-18 is a transmission output channel, corresponding to channel 1-6; (4~20)mA current output terminals are B+ and C-. Configuration settings enter the [Transfer] configuration classification.

### 5.7 24VDC output connection

P+ and P- are DC 24V distribution, and the wiring is shown in the figure.

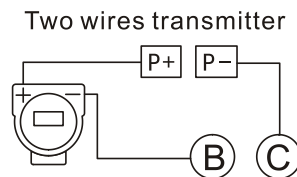


Figure6 Two wires connection

## 6 Function

### 6.1 Recording

The recorder records that sample data in real time according to the recording interval, and the interval can be selected as 1 second, 2 seconds, 5 seconds, 10 seconds, 15 seconds, 30 seconds, 1 minute, 2 minutes, 5 minutes, 10 minutes, 30 minutes and 1 hour; The default is 5 seconds.

The internal memory of the recorder can store 900k records, which are stored cyclically. According to the number of channels, the interval, the recording time is calculated as follows:

Table7 Duration of historical data

	1ch	2ch	3-4ch	5-8ch	9-12ch	13-16ch	17-18ch
1s	200days	100days	50days	25days	16.5days	12.5days	10days
5s	1000days	500days	250days	125days	82.5days	62.5days	50days
10s	2000days	1000days	500days	250days	165days	125days	100days
1m	12000days	6000days	3000days	1500days	990days	750days	600days

Notice:

- (1) If the recording interval is changed, the historical data will not be lost.
- (2) If the channel signal or range is changed, the historical data will change according to the range.
- (3) If the power is not used, no historical data will be generated.

### 6.2 Other recording

At the same time, the recorder records channel alarm, instrument power failure and operation logs, each with 256 records, which are stored circularly. Alarm record includes alarm channel, type, status and time.

Instrument power failure includes power failure time, power-on time and duration.

Operation log includes entering configuration, modifying configuration, etc.

## 7 Operation

### 7.1 Panel operation

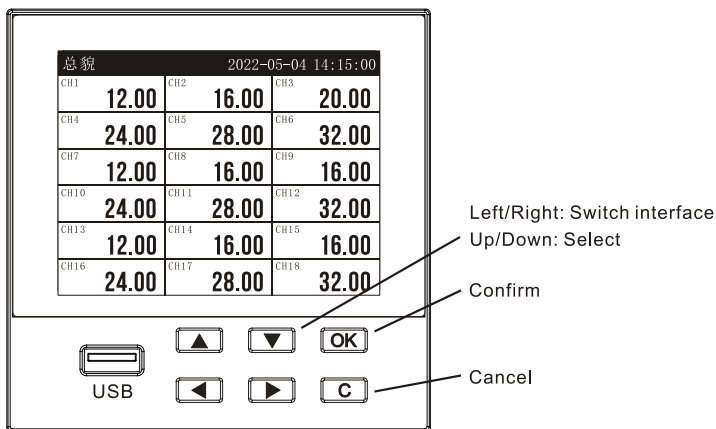


图 7 显示与操作单元

## 7.2 Interface

### 7.2.1 Login

Press[Left and Right Keys]to switch to the function query interface, press[Up and Down Keys]to select configuration settings, and press[Enter Keys]to enter the login interface.

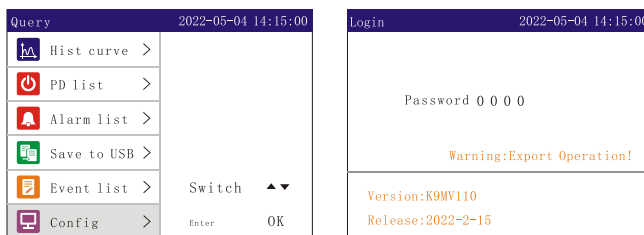

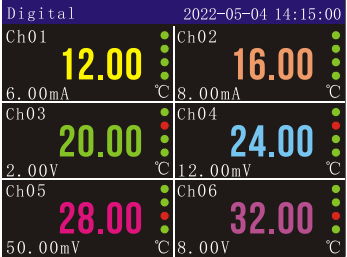
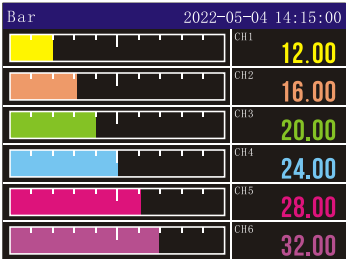
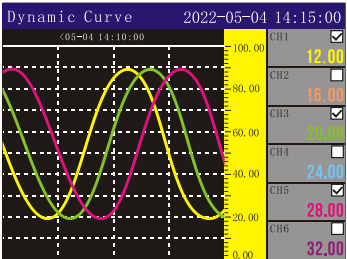
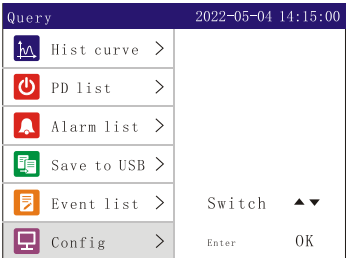


Figure8 Config login

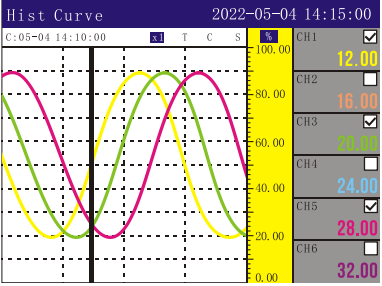
Enter the password and press [Enter] to enter the configuration interface. The initial password is 0000; After setting, press [Cancel] to exit, and select Save to exit according to the prompt.

## 7.2.2 Running interface

Run the display interface as follows. Press [Left and Right Keys] to switch the interface.

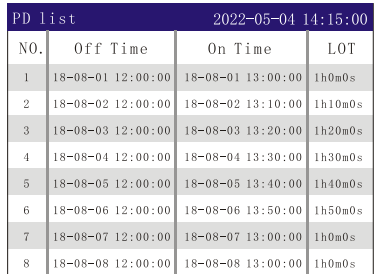
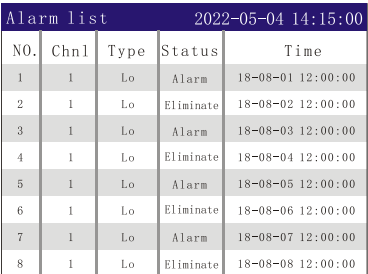
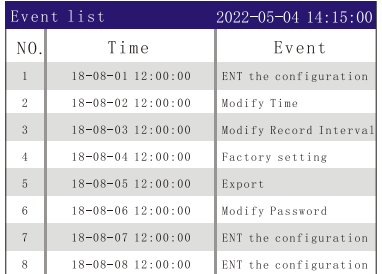
Overview	Digital view
	 <p>Function: [Enter key] can show or hide the signal value.</p>
Bar view	Real curve
	
Functions	<p>Function: [Up and Down Keys] Toggles the selection cursor.</p> <p>[Enter key] displays hidden curves.</p> <p>Scale switching: move the cursor to the scale, and press [Enter] to switch the scale, and select percentage% and channel scale.</p>
 <p>Function: [Up and Down Keys] to switch menus.</p> <p>[Enter] to enter the corresponding function.</p>	

### 7.2.3 Historical curve interface

Historical curve	Description
	<p>Function:</p> <p>[Left and Right Keys] Move the recall cursor and press and hold fast forward.</p> <p>[Up and Down Keys] Select Functions and Channels</p> <p>[Enter] to execute the corresponding function.</p> <p>X1 scaling curve 1/2/4/8 times</p> <p>T set the recall jump time.</p> <p>C display hidden recall cursor</p> <p>S switch display every 6 channels.</p>

Scale switching: move the cursor to the scale, press [Enter] to switch, and select the percentage% and channel scale.

### 7.2.4 Power-switch/Alarm and Logs

Power-switch	Alarm																																																																																	
 <table border="1"> <thead> <tr> <th>NO.</th> <th>Off Time</th> <th>On Time</th> <th>LOT</th> </tr> </thead> <tbody> <tr><td>1</td><td>18-08-01 12:00:00</td><td>18-08-01 13:00:00</td><td>1h0m0s</td></tr> <tr><td>2</td><td>18-08-02 12:00:00</td><td>18-08-02 13:10:00</td><td>1h10m0s</td></tr> <tr><td>3</td><td>18-08-03 12:00:00</td><td>18-08-03 13:20:00</td><td>1h20m0s</td></tr> <tr><td>4</td><td>18-08-04 12:00:00</td><td>18-08-04 13:30:00</td><td>1h30m0s</td></tr> <tr><td>5</td><td>18-08-05 12:00:00</td><td>18-08-05 13:40:00</td><td>1h40m0s</td></tr> <tr><td>6</td><td>18-08-06 12:00:00</td><td>18-08-06 13:50:00</td><td>1h50m0s</td></tr> <tr><td>7</td><td>18-08-07 12:00:00</td><td>18-08-07 13:00:00</td><td>1h0m0s</td></tr> <tr><td>8</td><td>18-08-08 12:00:00</td><td>18-08-08 13:00:00</td><td>1h0m0s</td></tr> </tbody> </table>	NO.	Off Time	On Time	LOT	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	 <table border="1"> <thead> <tr> <th>NO.</th> <th>Chnl</th> <th>Type</th> <th>Status</th> <th>Time</th> </tr> </thead> <tbody> <tr><td>1</td><td>1</td><td>Lo</td><td>Alarm</td><td>18-08-01 12:00:00</td></tr> <tr><td>2</td><td>1</td><td>Lo</td><td>Eliminate</td><td>18-08-02 12:00:00</td></tr> <tr><td>3</td><td>1</td><td>Lo</td><td>Alarm</td><td>18-08-03 12:00:00</td></tr> <tr><td>4</td><td>1</td><td>Lo</td><td>Eliminate</td><td>18-08-04 12:00:00</td></tr> <tr><td>5</td><td>1</td><td>Lo</td><td>Alarm</td><td>18-08-05 12:00:00</td></tr> <tr><td>6</td><td>1</td><td>Lo</td><td>Eliminate</td><td>18-08-06 12:00:00</td></tr> <tr><td>7</td><td>1</td><td>Lo</td><td>Alarm</td><td>18-08-07 12:00:00</td></tr> <tr><td>8</td><td>1</td><td>Lo</td><td>Eliminate</td><td>18-08-08 12:00:00</td></tr> </tbody> </table>	NO.	Chnl	Type	Status	Time	1	1	Lo	Alarm	18-08-01 12:00:00	2	1	Lo	Eliminate	18-08-02 12:00:00	3	1	Lo	Alarm	18-08-03 12:00:00	4	1	Lo	Eliminate	18-08-04 12:00:00	5	1	Lo	Alarm	18-08-05 12:00:00	6	1	Lo	Eliminate	18-08-06 12:00:00	7	1	Lo	Alarm	18-08-07 12:00:00	8	1	Lo	Eliminate	18-08-08 12:00:00
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3	1	Lo	Alarm	18-08-03 12:00:00																																																																														
4	1	Lo	Eliminate	18-08-04 12:00:00																																																																														
5	1	Lo	Alarm	18-08-05 12:00:00																																																																														
6	1	Lo	Eliminate	18-08-06 12:00:00																																																																														
7	1	Lo	Alarm	18-08-07 12:00:00																																																																														
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Logs	Description																																																																																	
 <table border="1"> <thead> <tr> <th>NO.</th> <th>Time</th> <th>Event</th> </tr> </thead> <tbody> <tr><td>1</td><td>18-08-01 12:00:00</td><td>ENT the configuration</td></tr> <tr><td>2</td><td>18-08-02 12:00:00</td><td>Modify Time</td></tr> <tr><td>3</td><td>18-08-03 12:00:00</td><td>Modify Record Interval</td></tr> <tr><td>4</td><td>18-08-04 12:00:00</td><td>Factory setting</td></tr> <tr><td>5</td><td>18-08-05 12:00:00</td><td>Export</td></tr> <tr><td>6</td><td>18-08-06 12:00:00</td><td>Modify Password</td></tr> <tr><td>7</td><td>18-08-07 12:00:00</td><td>ENT the configuration</td></tr> <tr><td>8</td><td>18-08-08 12:00:00</td><td>ENT the configuration</td></tr> </tbody> </table>	NO.	Time	Event	1	18-08-01 12:00:00	ENT the configuration	2	18-08-02 12:00:00	Modify Time	3	18-08-03 12:00:00	Modify Record 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	Modify Password	7	18-08-07 12:00:00	ENT the configuration	8	18-08-08 12:00:00	ENT the configuration	<p>There are 256 records of power-switch record, alarm record and operation log.</p> <p>[Left and Right Keys] Page browsing</p> <p>[Up and Down Keys] Single browse</p> <p>Press and hold the [OK] key to pop up the Clear dialog box.</p> <p>[C key] exit</p>																																																						
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## 7.3 Data export & USB operation

### 7.3.1 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.

### 7.3.2 Manual export

After the USB flash drive is inserted, the data transfer interface will automatically pop up, or enter through the function query interface, and press [Enter] to transfer data.

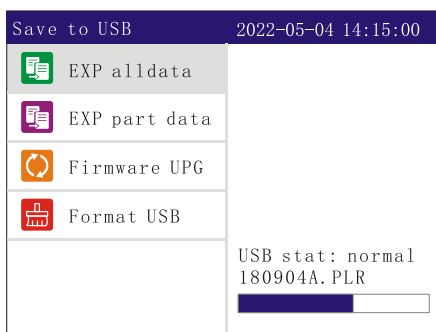


Figure9 Data export

- 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

## 7.4 Configuration

### 7.4.1 System






Config		2022-05-04 14:15:00	
 System	Time	22-05-04 14:15:00	
 Input	Language	English	
 Alarm	Password	0000	
 Comm	Record Interval	5S	
 AO	Save Time	00:00:00	
	Cold-junction	Auto 20.0°C	

Figure11 System

Table8 System configuration description

Date Time	System Date and Time
Language	English/Chinese
Password	0000
Record Interval	1s 2s 5s 10s 15s 30s 1m 2m 5m 10m 30m 1h; default 5s. <b>【 Note 】</b> About Record duration See appendix below
Save time	Auto backup time.
Cold-junction	Automatic or Manual.
Factory settings	Reset all parameter to default.
Export Config	Export configuration to USB Stick
Import Config	Import configuration from USB stick

## 7.4.2 Input






Config		2022-05-04 14:15:00
 System	Channel	01
 Input	Display	ON
 Alarm	Tag	Channel01
 Comm	Signal type	Current
 AO	Signal	4-20mA
	Unit	°C

Figure12 Input

Table9 Input configuration description

Channel	Channel index. Long press Enter key to copy current channel parameter to all channel.
Display	ON/OFF; Display switch.
Tag	Channel tag, maximum 16 characters.
Signal Type	Current/Voltage/mV/Voltage/V/TC/RTD/Simulation
Signal	See appendix Signal Type, default 4-20mA.
Unit	See appendix Channel Uni, default °C.
Decimal point	0-3, default 2.
Scale	-999999~999999, default 0.00-100.00.
K	Multiple, default 1.00.
B	Addition/Subtraction, default 0.00.
Burnout	####/Scale H/Scale L/Keep, default ####.
Filter	Inertial filter, 0.0-9.9s, default 0.0s.
Excision	Weak signal excision, 0.0-9.9%, default 0.0%.
Accu	OFF/ON; default OFF.
Accu K	When flux unit is X/h, K equals 1.0; When flux unit is X/min, K equals 60.
Accu Unit	Kg/t/L/m <sup>3</sup> /km <sup>3</sup> /Nm <sup>3</sup> /kNm <sup>3</sup> (Just display)
Clear Accu	Clear the accumulation

Table10 Signal types

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

Table11 Units

°C	°F	kg/h	t/h
m <sup>3</sup> /h	km <sup>3</sup> /h	L/h	Nm <sup>3</sup> /h
kNm <sup>3</sup> /h	bar	mbar	mmH <sub>2</sub> O
mmHg	Pa	kPa	MPa
atm	kgf/cm <sup>2</sup>	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 <sub>2</sub>
ppmH <sub>2</sub>	%O <sub>2</sub>	%LEL	NTU
ug/h	ug/kg	rpm	uS/cm
mS/cm	MOcm	r/min	pH
%RH	N	mg/L	g/L
kg/m <sup>3</sup>	kcal/m <sup>3</sup>	m/min	m/s
mg/m <sup>3</sup>	°	cm/min	

### 7.4.3 Alarm






Config		2022-05-04 14:15:00
 System	Channel	01
 Input	Status	ON
 Alarm	Relay delay	0S
 Comm	Backlash	0.0
 AO	Alarm Lo	0.0
		Relay00

Figure13 Alarm

Table12 Alarm Configuration Description

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

### 7.4.4 Communication






Config		2022-05-04 14:15:00
 System	Address	001
 Input	Baudrate	9600
 Alarm	Parity	None
 Comm	Byte swap	2143
 AO		

Figure14 Communication

Table13 Communication Configuration Description

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

## 7.4.5 Transmitter






Config		2022-05-04 14:15:00
 System	AO Channel	01
 Input	Src Channel	01
 Alarm		
 Comm		
 AO		

Figure15 Transmitter

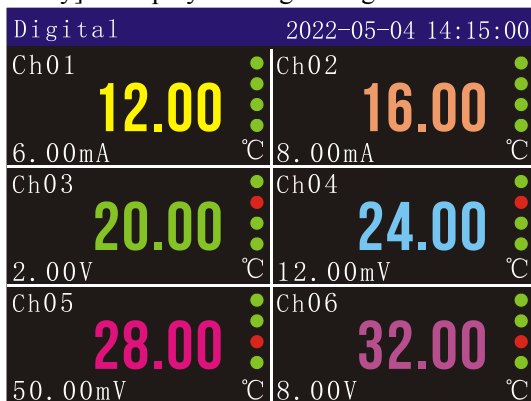
Table14 Transmitter Configuration Description

AO Channel	AO channel index
Src Channel	Source channel, 0 represents OFF.

## 8 Trouble shooting

### 8.1 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



### 8.2 No response of USB

Format the USB stick with FAT32, then try again.

### 8.3 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.

o

## 9 Warranty

Our company promises to customers that if there is any product quality problem during the warranty period, we will unconditionally maintain or replace the products with quality problems free of charge, and all non-customized products will be guaranteed to be returned within 7 days (excluding the damaged products).

### Disclaimer

During the warranty period, product failures due to the following reasons do not belong to the three guarantees service scope:

- (1) Product failure caused by improper use by customers.
- (2) The customer disassembled, repaired and modified the product by himself, resulting in product failure.

### After-sales service commitment:

- (1) We promise to respond to customers' technical questions within 2 hours after receiving them.
- (2) We promise to issue the test results within 3 working days after receiving the goods and the maintenance results within 7 working days.

## Appendix A Communication protocol

Table15 32bits float data(4XXXX: 03 Command)

Channel	Register	Channel	Register	Channel	Register
Chnl1	40001	Chnl7	40013	Chnl13	40025
Chnl2	40003	Chnl8	40015	Chnl14	40027
Chnl3	40005	Chnl9	40017	Chnl15	40029
Chnl4	40007	Chnl10	40019	Chnl16	40031
Chnl5	40009	Chnl11	40021	Chnl17	40033
Chnl6	40011	Chnl12	40023	Chnl18	40035

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

Table16 32bits signed long data (3XXXX: 04 Command)

Channel	Register	Channel	Register	Channel	Register
Chnl1	30001	Chnl7	30013	Chnl13	30025
Chnl2	30003	Chnl8	30015	Chnl14	30027
Chnl3	30005	Chnl9	30017	Chnl15	30029
Chnl4	30007	Chnl10	30019	Chnl16	30031
Chnl5	30009	Chnl11	30021	Chnl17	30033
Chnl6	30011	Chnl12	30023	Chnl18	30035


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)

## Appendix B Software

The USB flash drive dump file of recorder is opened by PLR.EXE, a special upper computer software for paperless recorder. The software installation package can be obtained from USB flash drive or the QR code below. The icon for opening the software is 



The software running interface is shown below. Please use the software help file for specific software use.

