

## SX 5000 Paperless Recorder

### Product Overview

SX5000 Paperless Recorder blue-screen paperless recorder has 16-channel universal input function. It can input the standard current, standard voltage, frequency, millivolt, thermocouple, thermal resistance and other signals. It also has some other functions, including isolated power distribution output of sensors, relay alarm output, transmitter output, flow accumulation, temperature and pressure compensation, transfer storage of historical data, printing, Ethernet and remote communication.



### Functions & Features

#### System

- Using the latest large-scale integrated circuit.
- Using high-speed & high-performance 32-bit ARM microprocessor, it can detect, record, display and alarm 16 channels signals simultaneously.
- 5.6 inch 320x 234 dot-matrix TFT high brightness and blue screen LCD, CCFL backlight, clear picture, brilliant color, and wide viewing angles.
- Fully isolated universal input, which can input a variety of signals. It can be configured by software without jumper.
- New switching power supply, which can function properly within the range of 85VAC ~ 265 VAC.
- Integrated hardware real-time clock, which can run accurately in case of power down.
- Provide isolated 24VDC power distribution for transmitter.
- Large capacity storage of FLASH memory chips to store historical data, which will never lose data in case of power-down.
- 12-way relay alarm output. (SX5016 max has 8 relay outputs)

#### Signals

- You can input a variety of standard signals: standard current, standard voltage, frequency, millivolt, thermocouple, thermal resistance.
- Signal full-scale accuracy:  $\pm 0.2\%$ .
- Optoelectronic devices are used between channels and they are completely isolated.
- Providing standard 4-20mA for transmitter output.

#### Software

- Use password to protect configuration data.
- Easy menu configuration. It can configure freely and display the engineering tag number and engineering units.
- Engineering quantities display wide range of values. It can show five digits: -9999~ 19999, and it also supports the display of vacuum scientific notation.
- Indicate the low limit alarm, low limit alarm, high limit alarm, high high limit alarm of all channel simultaneously. It can record up to recent 15 alarms.
- Each channel all supports flow accumulation function, and provides hourly report, 8-hour shift report, 12-hour shift report, daily and monthly reports and other reports.
- Trend display mode can select horizontal trend or vertical trend.
- It can realize 12 groups temperature and pressure compensation. It can support orifice flow meter, vortex flow meters to realize compensation on steam, water, common gas etc.
- 5 groups of trend combination are provided, and each group can be free to choose channel, free and the color of trends.

- It has a powerful T6 input method which is easy to operate. It supports numbers, characters, special symbols, subscripts and superscripts input, etc.

**Communication**

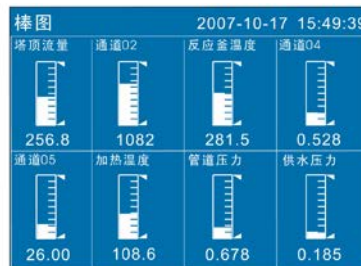
- Standard serial communication interface: RS-485 or RS-232C.
- It supports the standard Modbus-RTU communication protocol, providing a variety of data types, such as the percentage, engineering quantities, accumulation and so on. In addition to supporting our company's data management software, it also supports some popular professional configuration software, such as the iFIX, MCGS, etc.
- Use USB2.0 interface for transfer storage and backup of history records. It can support maximum 8G USB flash drives.
- It supports the FAT32 file system. Windows can automatically identify the backup data files without format conversion.
- It can connect with an external micro-printer, so you can manually print data and trends, and automatically print real-time on a regular basis to meet the needs of the user to print on the filed.
- Ethernet is available upon request from customers.

**Display Screen**



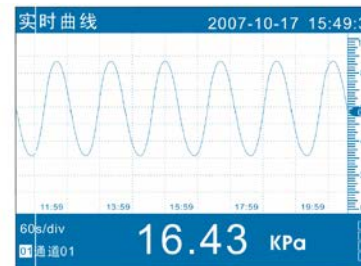
- Overview -

In addition to displaying the test values, digital display can also display the tag number of channels, industrial units, alarm status, and accumulation information.



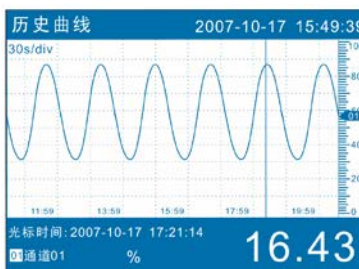
- Bar -

It is convenient and visualized to use bar graph to display the test value. Meantime, it also displays the tag number of channels, industrial units and alarm state information.



- Trend -

Horizontal trend to display values, combine freely the trends and trend colours.



- History -

It can re-appear the historical data stored in memory. Horizontal and vertical display types can be selected.

通道	报警时间	消报时间	类型
01	2007-10-17 14:22:03	2007-10-17 14:22:08	LL
02	2007-10-17 14:24:03	2007-10-17 14:25:08	HH
03	2007-10-17 14:27:03	2007-10-17 14:27:08	LL

- Alarm Summary -

It can display the recent alarm time, and the time to remove the alarms.



- Flow -

It can display flow, temperature, pressure. On one display in the flow metering system, it can also display frequency, DP and density.

**Main Specifications**

**Structure**

- Installation: Install the embedded instrument panel (vertical instrument panel)
- Installation Angle: It is allowed a maximum 30 degrees tilt back in installation.
- Dashboard thickness: 1-10 mm
- Dimensions: 144 (W) \* 144 (H) \* 220 (D) mm
- Net Weight: Less than 2.6 kg (exclusive accessories)

**Input section**

Input points 1-12 channels, 16 channels  
 Measuring period: 1 second  
 Input Type Current, Voltage, Resistance, RTD, thermocouple, frequency

Input type and measuring range:

Input Type	Signal Type	Measuring range	Accuracy	Input Impedance
Current	4-20mA	4.00mA-20.00mA	±0.2 %	≤300 Ω
	10mA	0.00mA-10.00mA	± ±0.2 %	≤300 Ω
Voltage	1-5V	1.000-5.000V	±0.2 %	1M Ω
	0-5V	0.000-5.000V	±0.2 %	1M Ω
	0-10V	0.000-10.000V	±0.2 %	1M Ω
	20mV	0.00-20.00 mV	±0.2 %	10M Ω
	100mV	0.00-100 mV	±0.2 %	10M Ω
Resistance	400 Ω	0.0-400.0 Ω	±0.2 %	---
RTD	PT100	-200.0-650.0 °C	±0.4°C	---
	Cu50	-50.0-150.0 °C	±0.4°C	---
	Cu53	-50.0-150.0 °C	±0.4°C	---
	BA1	-200-650.0 °C	±0.4°C	---
	BA2	-200-650.0 °C	±0.4°C	---
Thermocouple	S	-50-1768 °C	±2°C	10M Ω
	R	-50-1768 °C	±2°C	10M Ω
	B	500-1820 °C	±2°C	10M Ω
	K	-200-1372 °C	±1°C	10M Ω
	N	-200-1300 °C	±1°C	10M Ω
	E	-200-1000 °C	±1°C	10M Ω
	J	-200-1200 °C	±1°C	10M Ω
	T	-200-385 °C	±1°C	10M Ω
	WRE5-26	0-2310 °C	±2°C	10M Ω
	WRE3-25	0-2310 °C	±2°C	10M Ω
	F1	700-2000°C	±2°C	10M Ω
	F2	700-2000°C	±2°C	10M Ω
Frequency	Fr	0-10000 Hz	±1Hz	---

**Input Frequency**

Low level: 0-2V  
 High level: 4-24 V

**Analogy Input Board**

Resolution ratio: 16 bit  
 sampling rate: 1second  
 Signal terminal withstand Voltage Min:-24V DC, Max: 24VDC

Sensor Open Circuit Test: RTD, Thermocouple open circuit  
 4-20mA input current less than 2mA  
 Others signals are not applied to.

Sensor Open Circuit Response: RTD, Thermocouple open circuit  
 4-20mA 2 second  
 1-5V 2 second  
 RTD 4 second  
 Thermocouple 4 second

**Display**

Display: 5.6-inch LCD display (320×234points)  
 Display colour: Blue/white  
 Tag No.: 10 characters (Numbers)  
 Unit: 7 characters (Numbers)  
 Status display: Display screen name, card status, alarm status, USB device status, circular display status, year, month, day, hour, minute, seconds  
 Display screen: Measuring data display(overview, digital display, bar graph display, the trend display),the historical trend display, the information display (alarm information, the accumulative reports),functional screen (data backup, printing)  
 Overview display: Display all the channels and alarm  
 Trend display: Vertical or horizontal  
 History trend: It can display the data stored in memory, it can zoom in 1/2/4/8/16/32 times  
 Alarm: It can record 15 alarms

**Temperature and Pressure compensation (Only available on SX5000F)**

Measuring devices: Orifice plate, Vortex flow meter(frequency)  
 Medium: Steam, Water, gas  
 Steam temperature: 0-600°C  
 Steam pressure: 0.1-22Mpa  
 Steam status: Automatically check saturated steam or overheated steam  
 Water temperature: 0-150°C  
 Water Pressure: 0.6-1.6Mpa  
 Gas compressibility coefficient: Automatically check air, oxygen and nitrogen, others are manually set.  
 Vortex flow meter factor: 0.00000-999,999

**Storage Function**

External Storage

Media: U disk  
 Format: FAT32  
 Mode: File  
 Capacity: 8GB

Internal Storage

Media: Flash memory  
 Format: Binary system  
 Mode: Continuous record  
 Capacity:

1-12 channels

Intervals	1 second	2 second	5 second	10 second	15 second	30 second	1 minute	2 minute	4 minute
Time	3 days	6 days	15 days	30 days	45 days	90 days	180 days	360 days	720 days

16 channels

Intervals	1 second	2 second	5 second	10 second	15 second	30 second	1 minute	2 minute	4 minute
Time	40 hours	3 days	8 days	16 days	24 days	48 days	96 days	192 days	384 days

**Alarm**

The number of alarms: Each channel has max 4 alarms  
 alarm type: High high alarm,high alarm,low low alarm,low alarm  
 Alarm delay time: 0-10s  
 Alarm output: Alarm outputs to the internal relay  
 Display: When alarm occurs, the corresponding screen displays the alarm status; the status display section displays the alarm icon.  
 Alarm information: Alarm log in the alarm display

**Clock**

Clock: Hardware clock(keep running after power off)  
 Range: Year 2001-2099  
 Accuracy:  $\pm 10\text{ppm}(0-50^\circ\text{C})$ ,exclude the delay(within 1s) caused by power on the meter

**Power supply**

Rated voltage: 220VAC  
 Allowable range: 100-240VAC  
 Rated Frequency: 50Hz  
 Consumption:  $\leq 20\text{W}$

**24V DC Power supply for transmitter**

Output Voltage: 24V DC  
 Max output current: 65mA DC (overload protect current: around 90mA)  
 Output points: 4 loops

**Frequency Input Power Supply**

Output Voltage: 12VDC,24V DC  
 Max output current: 30mA DC  
 Output points: The same as frequency input

**Transport and Storage Conditions**

Ambient temperature:  $-10-60^\circ\text{C}$   
 Ambient humidity: 0%-95%( Non-condensate)

**Standard Operation Conditions**

Power supply voltage: 220V AC/50Hz  
 Power supply frequency: 50Hz  
 Ambient temperature:  $0-50^\circ\text{C}$   
 Ambient humidity: 0%-85%  
 Warm-up time: At least 30 minutes after power on  
 Installs position: Indoor

**Additional Specification****Analog Output (/T1, T2,T3,T4)**

Output Channels: 1-4 channels  
 Signal type: 4-20mA  
 Maximum load: 750 $\Omega$   
 Note: SX5009-SX5016 no 4-20mA output

**Alarm output relay (/A2,/A4)**

Output points: 1-12 channel:1-12 points; 16 channel:8 points  
 Electric shock capacity: 250VAC/3A, 30VDC/3A(load resistance)  
 Output Type: Normal open  
 Relay Operation: Or operation (channels shared)

**Communication RS232C/RS485 (/C2./C3)**

Physic level: RS-232、RS485(option)  
 Protocol: MODBUS-RTU  
 Communication rate: 1200/2400/4800/9600/19200/38400/57600  
 Bytes wap: 2-1 4-3,1-2 3-4,4-3 2-1,3-4 1-2

**Print function (/ C4)**

Printer: Panel-type micro printer  
 Print content: Real-time data, historical data, accumulative reports  
 Printing method: Manual print, regular print

**USB Interface (/ U)**

USB interface specification: Compatible USB2.0 protocol  
 Interface Number: 1

**Accumulation/Report Function(/L)**

Accumulation Points: The same as input channels, each channel can have accumulation  
 Range: 0-999,999,999  
 Types: Hour report, 8 hour report,12 hours report, day report+ month report

Report length:

Report Type	Length
Hour	16 days
8 hours	128 days
12 hours	192 days
Day +month	1 year

**Instrument 24VDC Power supply (/P1)**

Power supply voltage 20VDC-28VDC  
 Consumption ≤20W

**Model Selection**

**1-12 Channels Input Model Selection**

Model	Function Code	Specification Code	Description
SX5001			Signal Input 1 channels
SX5002			Signal Input 2 channels
SX5003			Signal Input 3 channels
SX5004			Signal Input 4 channels
SX5005			Signal Input 5 channels
SX5006			Signal Input 6 channels
SX5007			Signal Input 7 channels
SX5008			Signal Input 8 channels
SX5009			Signal Input 9 channels
SX5010			Signal Input 10 channels
SX5011			Signal Input 11 channels
SX5012			Signal Input 12 channels
Function code	R		Record Function
	F		Temperature & Pressure compensation
Additional Specification	/T□	1-4	4-20mA output 1-4 channels *1
	/A□	1-12	Normal open contact output relays 1-12 channels
	/C□	2	RS232
		3	RS485
		4	Micro printer interface *2
	/U		USB interface
/L		Accumulation/ report	

\*1 SX5009-SX5016 no 4-20mA output

\*2 Dedicated micro printer

**16 Channels Input Model Selection**

Model	Function Code	Specification Code	Description	
SX5016			Signal Input 16 channels	
Function code	R		Record Function	
	F		Temperature & Pressure compensation	
Additional Specification		/A8	Normal open contact output relays 1-12 channels	
		/C□	2	RS232
			3	RS485
			4	Micro printer interface *2
		/U	USB interface	
/L	Accumulation/ report			

**Customization Function**

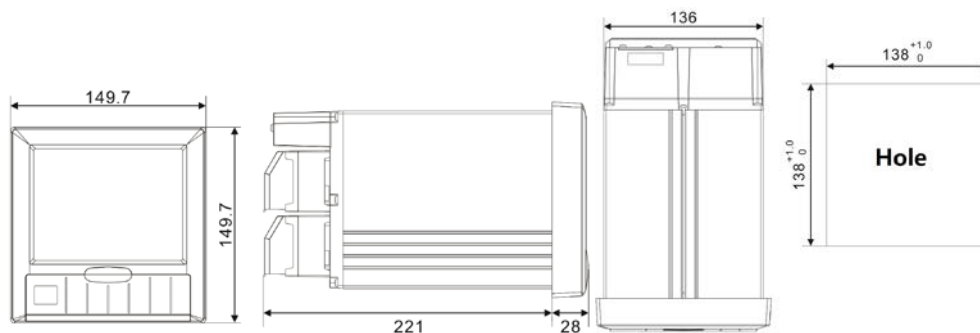
Specification	Description
/FB□	1-12 Frequency input 8-40 channels, with 12 VDC power supply to transmitters *3
/FC□	1-12 Frequency input 8-40 channels, with 24 VDC power supply to transmitters *3
/PT	anti-corrosion paint
/P1	24V DC power supply
/E	Ethernet function

\*3 Contact SILVER to choose the frequency inputs channels.

**Accessories (sold separately)**

Product	Model	Specification
USB Flash disk	860206	8 GB
Communication conversion module	862101	Active RS232/RS485 conversion module
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR multi-machine data management software

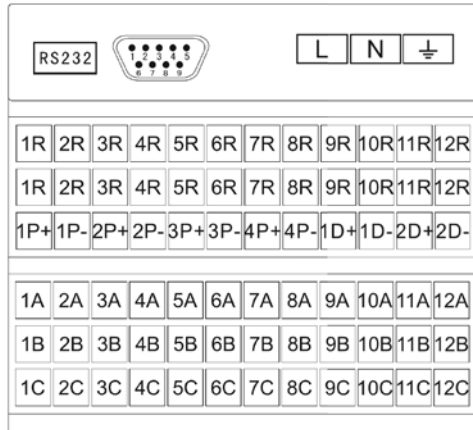
**Installation Dimensions (Unit: mm)**



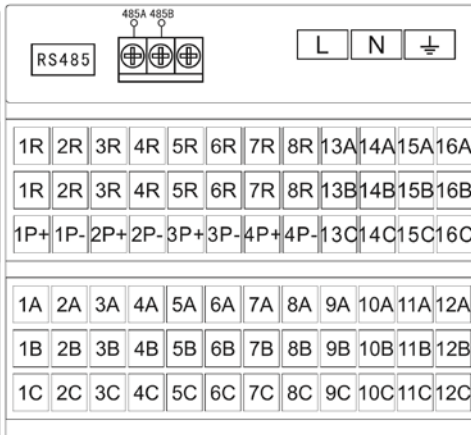


**Terminal Wiring**

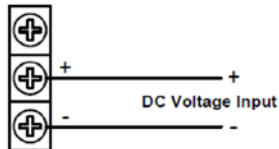
**SX5001-SX5012 Terminal**



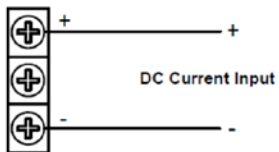
**SX5016 Terminal**



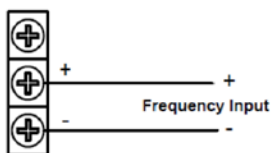
**DC Voltage Input**



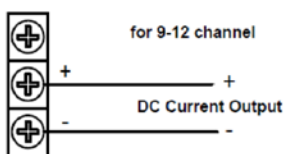
**DC Current Input**



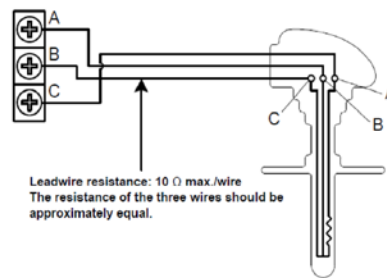
**Frequency Input**



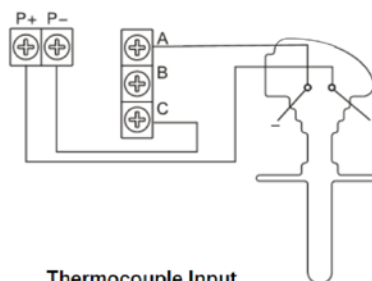
**DC Current Output**



**Resistance Temperature Detector Input**



**2-wire transmitter wiring**



**Thermocouple Input**

