KT Series

KT series Paperless Recorder

PANGU

Add : Building 7, No.31, Xianxing Road, Xianlin industrial Park, Yuhang District,Hangzhou,Zhejiang,P.R.CHINA
Tel :   86-571-87770830 87770831 87770832
Fax: 86-571-87770820
Email:hzpg@vip.163.com
Http://www.pangu.com.cn

WWW.PANGU.COM.CN

HANGZHOU PANGU AUTOMATION SYSTEM CO.,LTD

PANGU盘古

Company Introduction

Hangzhou Pangu Automation System Co., Ltd is a national high-tech enterprises,has been focusing on the paperless recorder, flow meter, temperature controller,electromagnetic flow converter design, manufacturing, as the main work of national standard paper recorder, the industry leader.

Hangzhou Pangu has a composition by industry leader in professional, efficient R & D, manufacturing team, is one of the current domestic paperless recorder industry's most influential companies.

The company has dozens of paperless recorder related patents. Products have been widely used in petroleum, chemical, electric power, metallurgy, building materials, thermal power, food, pharmaceutical, environmental protection and municipal industry. English version of paperless recorder also exported to India,Pakistan, Malaysia, Turkey, Thailand, Russia, South Korea, Taiwan and other countries and regions.
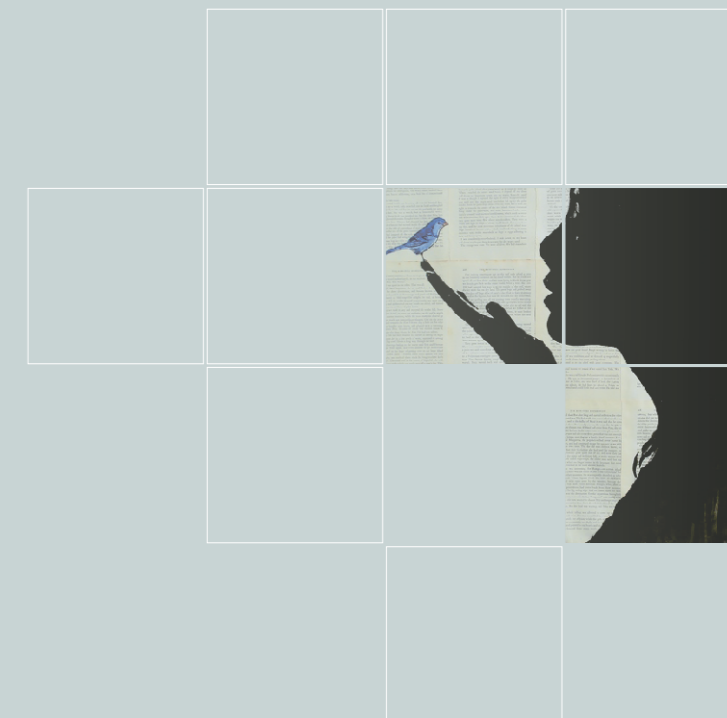
Hangzhou Pangu has been committed to provide the best products to customers,let the Pangu manufacturing products become synonymous with excellent quality.

Let **"**Made in China**"** become synonymous with excellent quality!

Content

contents

Product Introduction

The breakthrough of PANGU KT Series

KT Series

It took ten years for Pangu Automation System Co. to develop KT Series paperless recorder, the first domestic recorder series with U disk, SD card dual card backup function with verified CE certificate. It also has the following functions: U disk data dump, SD card's mass storage, Chinese-English display switching, curve horizontal curve selectable display mode or vertical curves, universal signal input, high precision, low temperature drift, anti-interference.

Instrument structure

Rubber control button provides long service life!

Aluminum sealed enclosure and internal shield to ensure the instrument is working properly in harsh environments!

Basic function

Universal input, isolation between circuits, low temperature drift, anti-interference!

Massive storage, circulating memory!

U disk data dump, SD card's massive storage!

Multiple communication: RS485 and GPRS!

Display and operation

Curve horizontal curve selectable display mode or vertical curves!

Multiple presentation ways: curve, bar chart, numbers, overview!

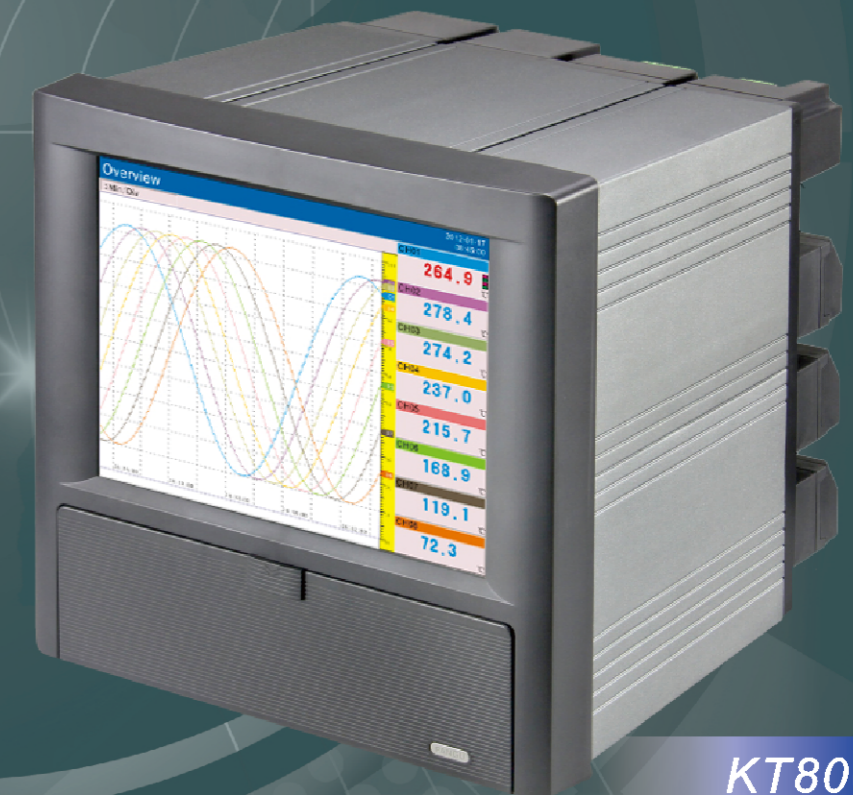Easy exchange between Chinese and English display!

Applied app

Upper computer management app:DMR!

Data collection, overview, analyze and output available!

Technical index and chart type

Main technical index and chart type instruction!
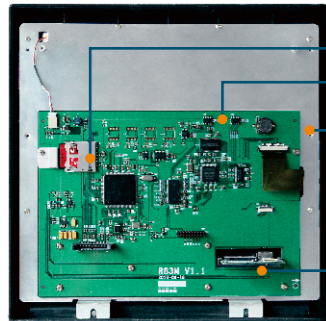
Instrument installation and connection!

KT800

Design craft and functional features of all parts
(header, body, terminal, etc.).

[Mainboard]

32-bit ARM microprocessor with massive independent SDRAM storage
Ethernet PHY drive, system control display, mass storage, high integration level, excellent performance

Massive storage
Main board
Shield plate
Dual card dump (USB & SD)

[Rubber touching board]

Rubber button with comfortable operating experience, micro-switching extend service life.

Rubber button

Sensitive switching button

[Aluminum body]

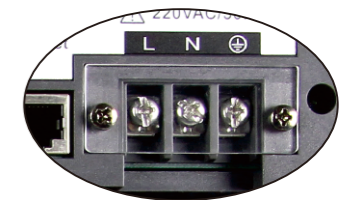Large aperture with a stretch forming.

KT800

[Communication module]

Support Modbus/TCP real time Ethernet communication.
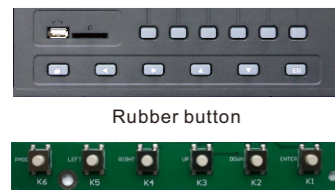RS232 and RS485 communication module switching.

Switch

[Terminal lid]

Safety proof: safety designs following the EN61010-1:2001 standard.

[Terminal]

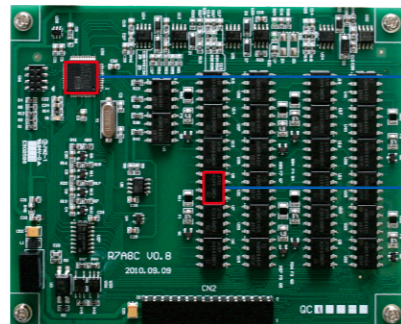Terminal connector(default)

Pluggable terminal block（optional,H2）

[Body shielding]

Aluminum sealed body with front and back board shield to protect the instrument from interference.

[Input board]

Provide 24 bite high precision Σ-Δ A/Dconversion chip, high performance optic electronic isolation switch with input signal isolation

24bite high precision Σ-Δ A/Dconversion chip

High performance optic electronic isolation switch

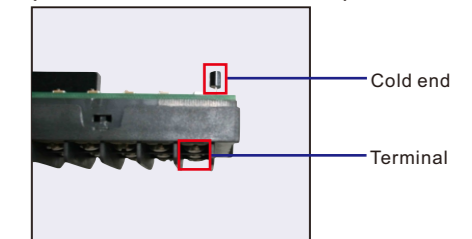## [Simple assembling input terminal]

For maintenance and changing the instrument, you only need to take apart the body parts, but not the terminal or signal line.

[Cold end design]

The cold end is designed close to the terminal to keep a same temperature between the terminal and the cold end, which proves the precision of the thermocouple.
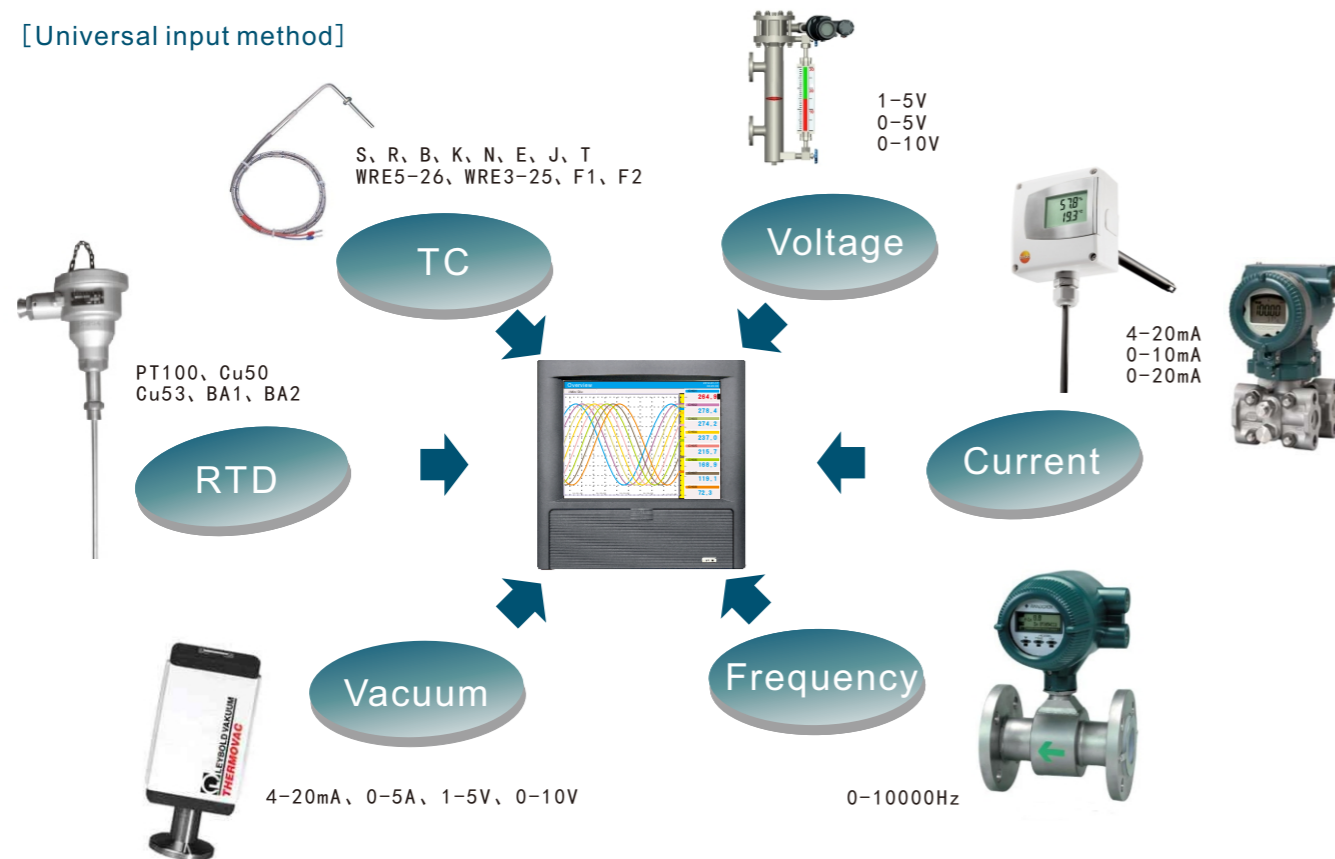
Cold end

Terminal

Universal input method , isolated input signal, 24VDC transmitter power output
Low temperature drift, anti-interference, remarkable performance under mal-condition
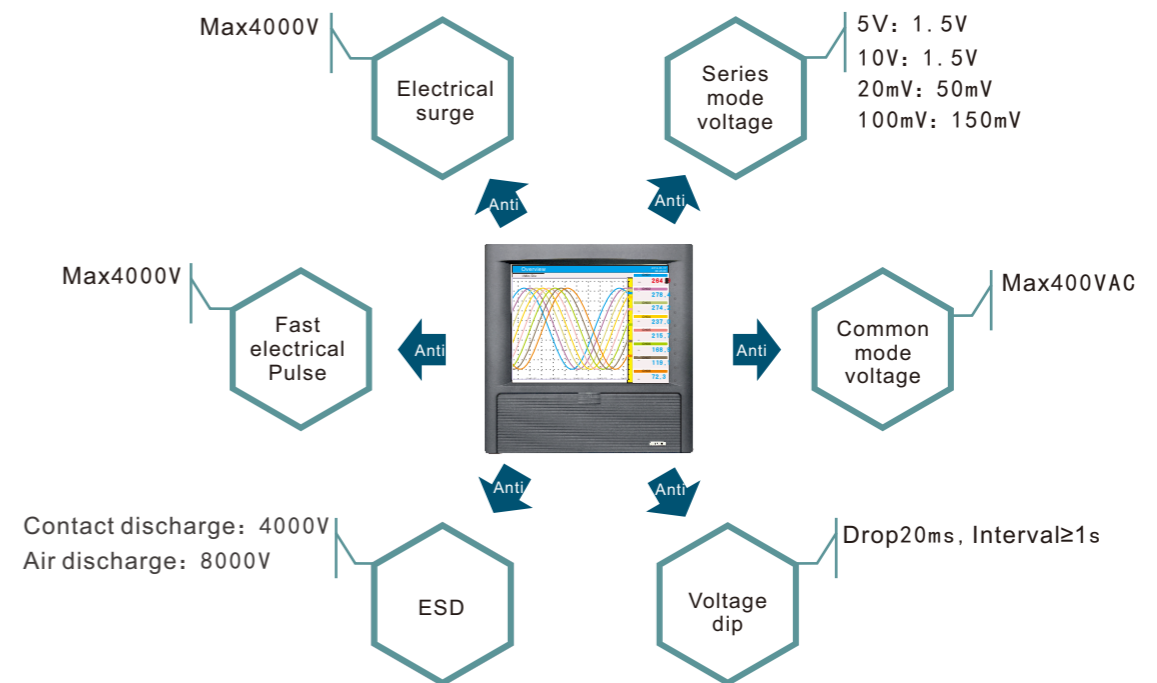
◇ Input function

[Universal input method]

S、R、B、K、N、E、J、T
WRE5-26、WRE3-25、F1、F2

TC

Voltage

1-5V
0-5V
0-10V

PT100、Cu50
Cu53、BA1、BA2

4-20mA
0-10mA
0-20mA

RTD

Current

Vacuum

Frequency

4-20mA、0-5A、1-5V、0-10V

0-10000Hz

[Low temperature drift]
Low temperature drift coefficient.The testing result of input signal won't be influenced under different place and season.

Target200℃

Real tested 200℃

operating environment
-10℃

Target200℃

Real tested 200℃

operating environment
45℃

[Channel segregation]
Every signal input channel is isolated with the isolated voltage:400VAC
The anti-interference blend membrane proves the stable measurement of the meter under all conditions.

A
B
C

A/Dconvert

A
B
C

A
B
C

Input measurement circuit conceptual graph

◇ EMC

[Comply with safety and EMC regulation]
KT series has passed district EMC(electromagnetic compatibility)test and has got CE certificate.
Safety verification: EN61010-1:2001
Electromagnetic compatibility: EN61326-1:2006
                                                EN61000-3-2:2006
                                                EN61000-3-3:2008

Max4000V

Electrical surge

Series mode voltage

5V：1.5V
10V：1.5V
20mV：50mV
100mV：150mV

Anti

Anti

Max4000V

Fast electrical Pulse

Anti

Anti

Common mode voltage

Max400VAC

Anti

Anti

Contact discharge：4000V
Air discharge：8000V

ESD

Voltage dip

Drop20ms，Interval≥1s

◇ Output function

[24VDC transmitter power output]
Output voltage：24V±5%
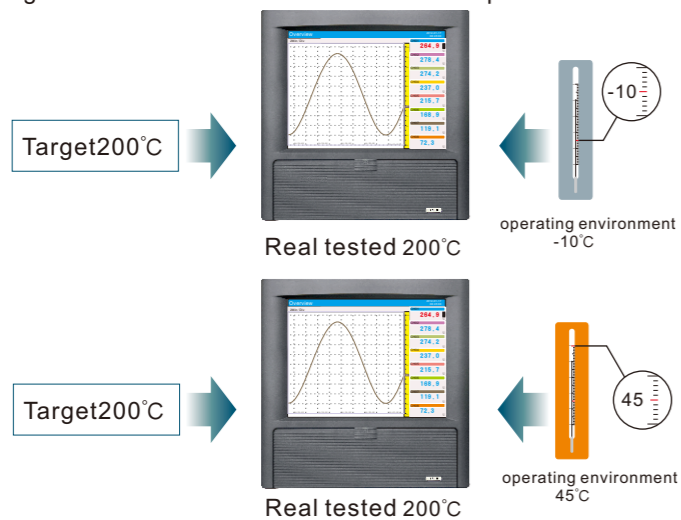Max output current：65mA
（Over current protection：about 90mA）

Distribution
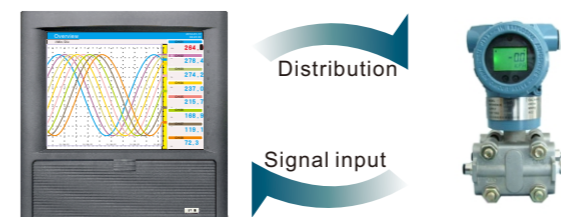
Signal input

[Analog output]
Output type：4-20mA
Permitted impedance：≤750Ω

Analog output

Continuous and batch record modes
Real time data record
U disk and SD card real time data backup and dump
Simple configuration mode

◇ Vacuum operation

[Ordinary vacuum operation]
The Semaphore has a linear relationship with vacuum degree.

[Subsection vacuum operation]
It is divided into several sections according to the magnitude of vacuum degree. The semaphore of each endpoint has a linear relationship with the logarithm of the vacuum degree. The semaphore of the same period has a linear relationship with the vacuum degree.
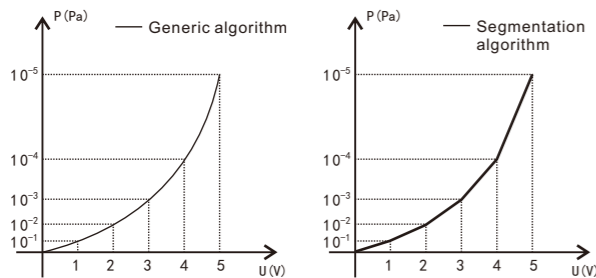
◇ Record function

[Data content]
The recorded data can show the real time value, minimum value and maximum value of the every recording interval.
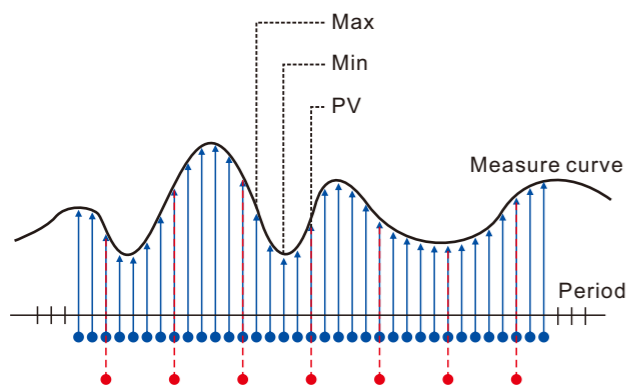
● : PV
● : Interrecord gap

[Inner storage: fifo memory]
Turn on the circular storage mode, the fifo mode can always make sure the file being preserved automatically at the inner storage thus it can maintain the latest data.
When the storage is full, the old data will be deleted automatically to make room for the new data. This can ensure the long time continuous use.

◇ Alarm

Alarm type: HIAL(H), LOAL(L)
          Incremental alarm(I) , Decrement alarm(D)
Alarm number: every channel can set four independent different types of alarm.

Upper limit alarm（H）   Lower limit alarm（L）

Incremental alarm（I）   Reduction alarm（D）
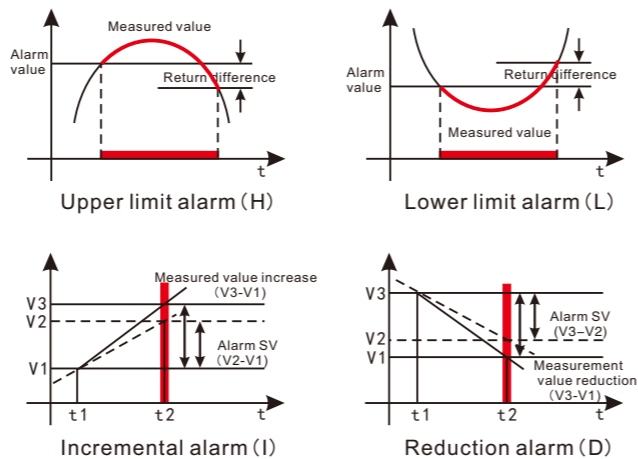
[Record mode]
The record mode is updated from ordinary monofile continuous record to multifile batch record. It also has various trigger conditions: (switching value, power on, manual,timer, alarm,relay).

Former record   KT Series

Circulating memory mode
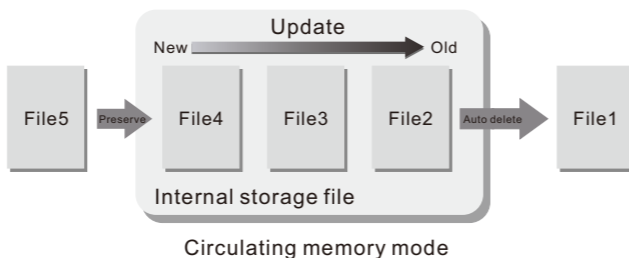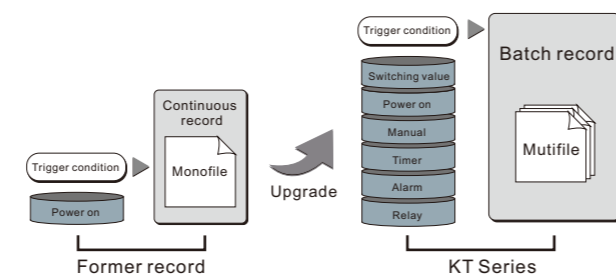
◇ Backup and dump

[External SD card port]
As an external storage media, SD card can extend the volume of the memory.
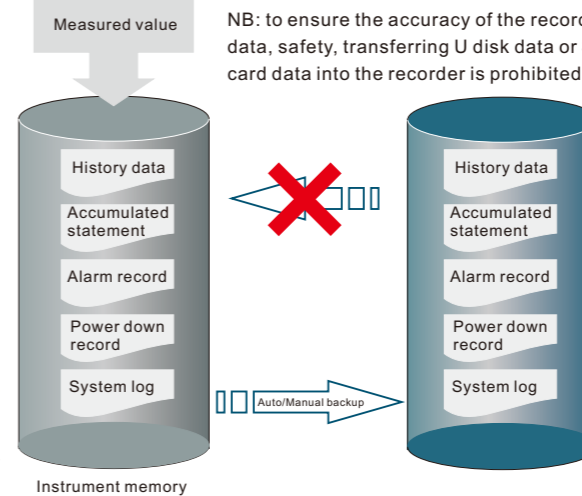
[External u disk port]
U disk port: easy data transfer.

[Auto backup]
It will backup the external SD card automatically
Massive storage
Prolonged record time
If being counted one calculation per second, the record time can upon one year.

NB: to ensure the accuracy of the recording data, safety, transferring U disk data or SD card data into the recorder is prohibited.

[Data back and dump]
Using SD card and u disk to upload the data into computer. Through the software in upper computer DMR to analyze and preserve data.
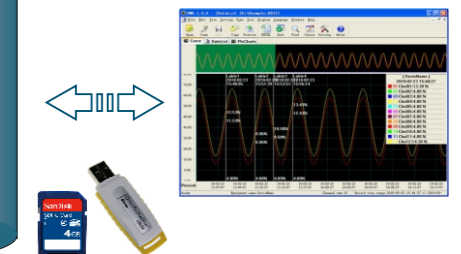
[Convenient configuration]
The configuration data can be uploaded into the computer through U disk and SD card, and then we can preserve or modify the data at the management software in upper computer. The modified configuration parameter can be transferred into the instrument via U disk and SD card. It can help save a lot of time of the operator by using this convenient configuration mode.
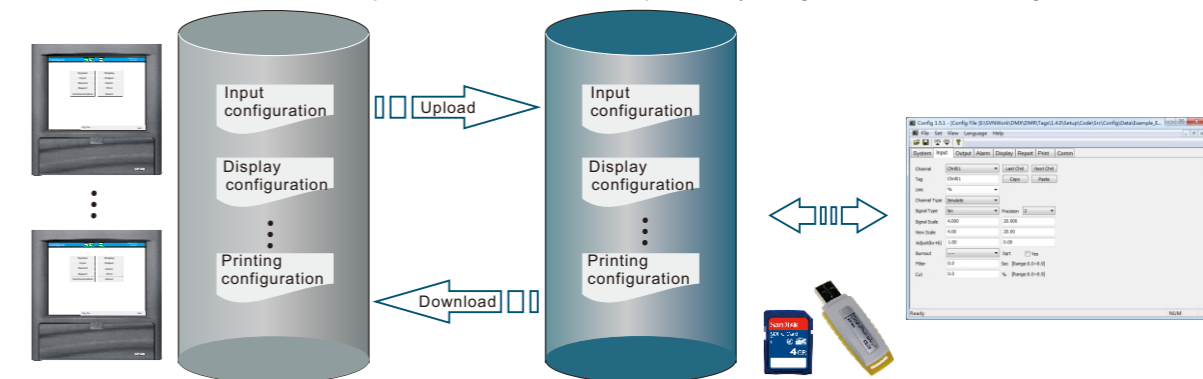
Basic function -Export data by printing and communication

It has two ways of printing: auto and manual, which can print real time data and history data. Connected to the computer via 485 and GPRS network.

Applied app –Upper computer management software DMR

DMR is special designed for KT series.
History data inquiry, data analyze, printing and export

◇ Print

The instrument is connected to the micro printer which can print the real time data automatically, history data, history curve or accumulative statement manually.

Manual printing

Auto printing

Data printing
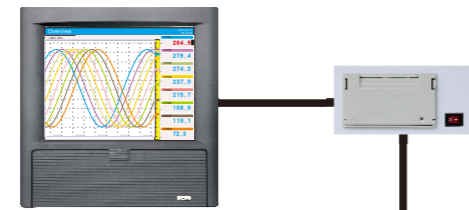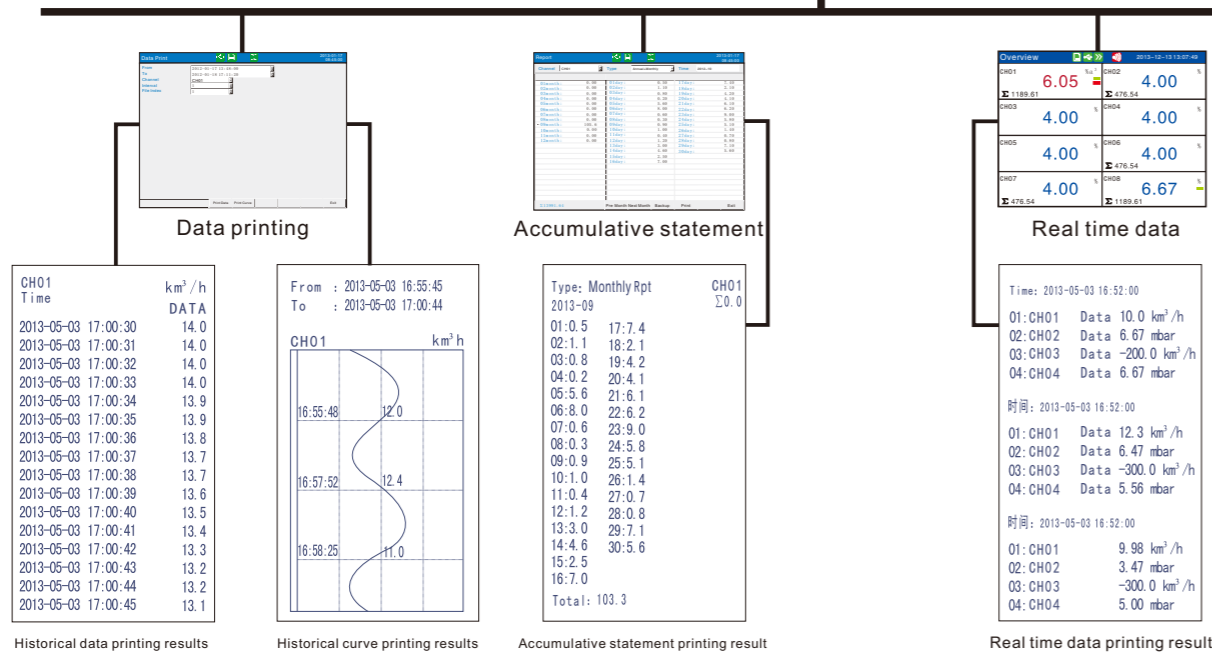
Accumulative statement

Real time data

Historical data printing results

Historical curve printing results

Accumulative statement printing result

Real time data printing result

◇ Communication

Via RS232C/RS485, 485net, GPRS, the instrument can be connected to the computer to realize the communication.

485 Network

232/485Module

GPRS Network

Ethernet

GPRS   GPRS   GPRS
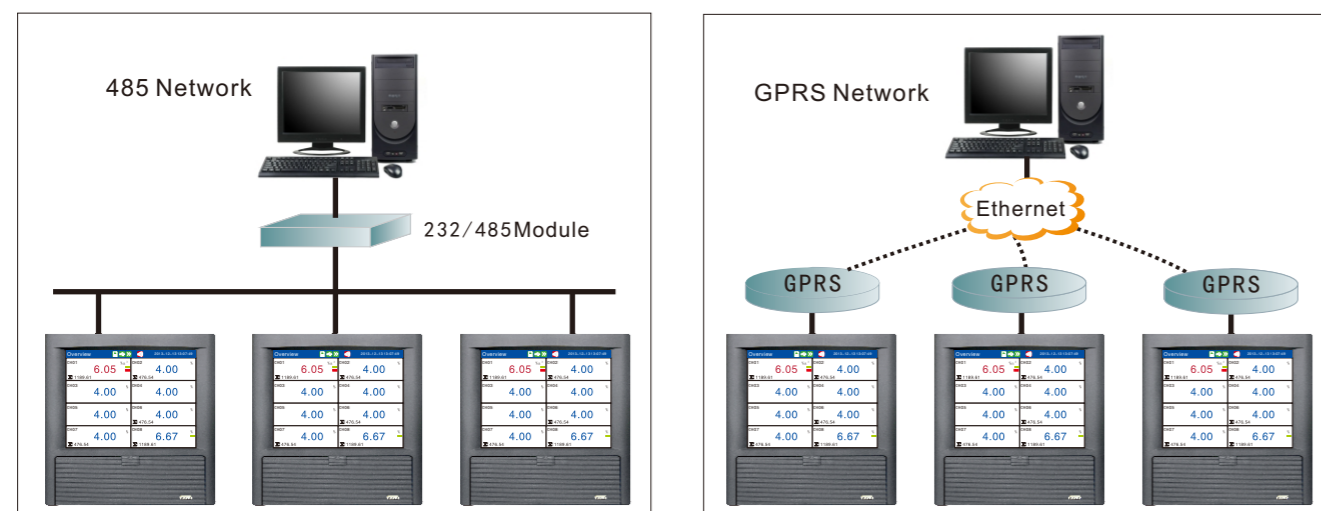
◇ Basic function

Ways of data collecting: U disk, SD card, serial communication. Using DMR for data browse,analyze,print and export.

Browse

Analyze

Print

Excel export

U disk

Serial communication

Data acquisition

Data processing
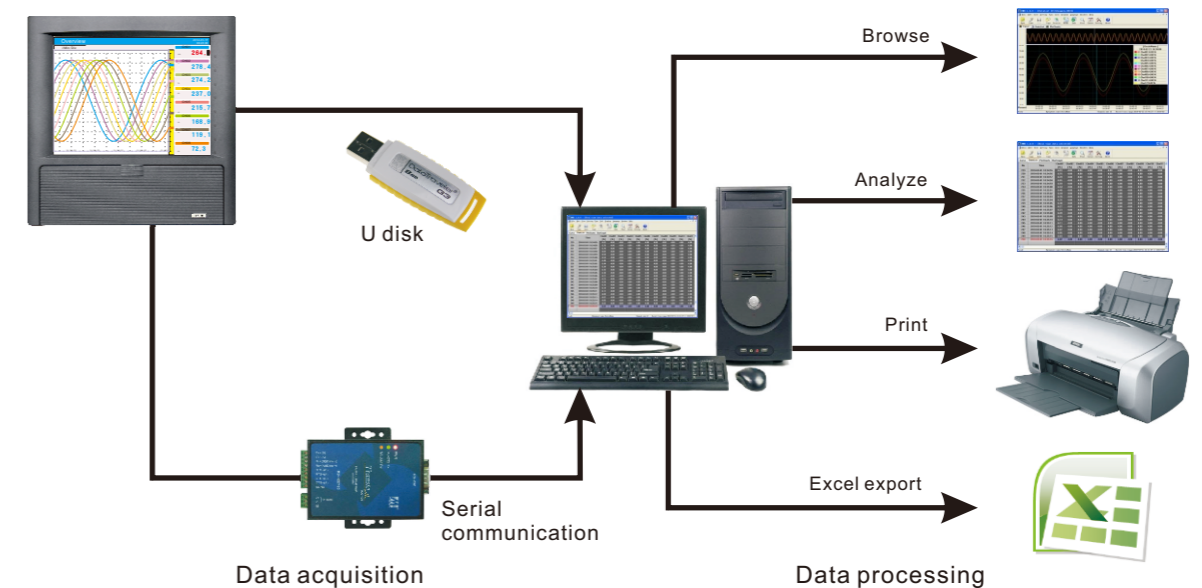
- History data browse and analyze
  The collected data can be browsed and analyzed by curve or list.
  Curve browse includes curve zoom, selective display;Data analyze includes statistics, joint file, data printing.
- Data analyze
  The software provides three kinds of data analyze: peak value,valley value, mean value.
  Transfinite statistics, measuring the exceeding time of the upper limit and lower limit.
  Pulse statistics, measuring the number of the impulse waveform in a certain time.
- Joint file
  DRM can joint different files into one so that it's very convenient to browse and analyze the data which is backup in different time period.
- Data printing
  It provides three different types of chart for data presentation:curve, list and circle

◇ Real time data collecting

DRM applies RS232 or RS485 to realize single point communication with KT series. The collected data will be presented in curve or data list.
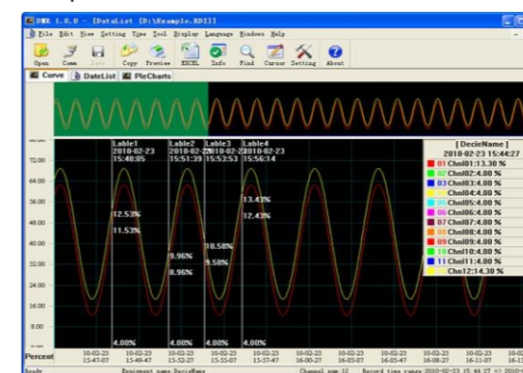
Timing curve

◇ Configuration

Simple configuration mode to reduce the configuration time.

Configuration picture

KT 800 Color paperless recorder

Product overview
Display
Technical index

◇ Product overview

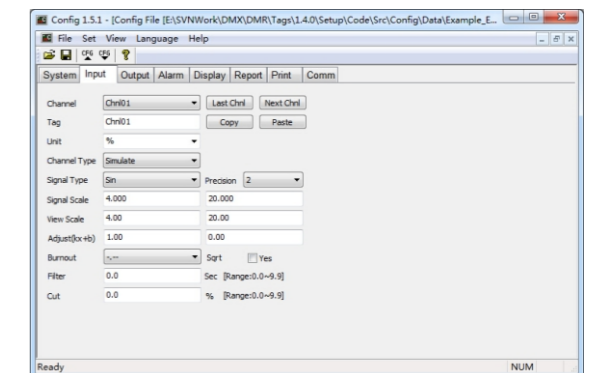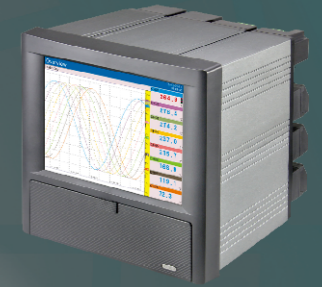Maximum 48 channel universal input color paperless recorder, can input standard current, voltage, frequency standard, MV, thermocouple, thermal resistance and so on many kinds of signal.Has sensor distribution output, relay alarm output, transmitter output, flow totalizer, cumulative reports, mass storage, historical data storage, on–site printing, serial communications and Ethernet communications.
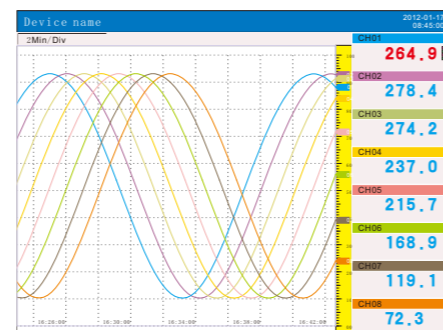
◇ Display
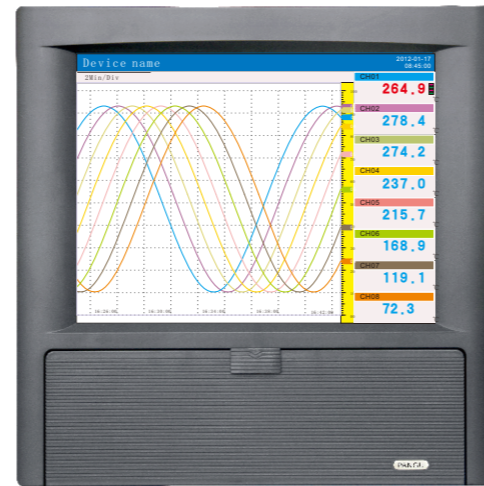
Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
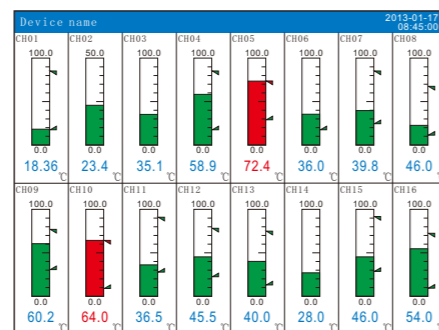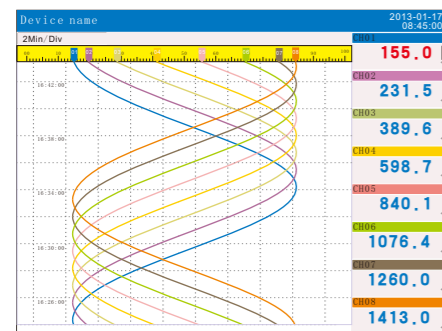
Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
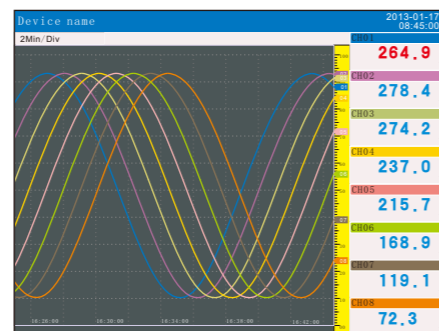
Timing curves (crosswise)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
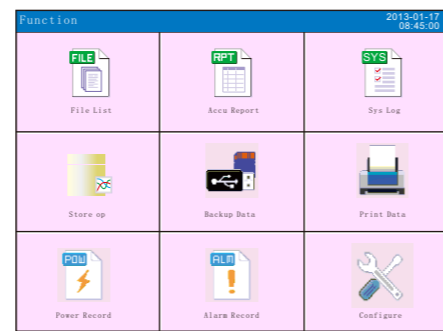
Timing curves (lengthways)
Free choice of vertical and horizontal paper feed and custom curve colors.

Historical curves
Historical data can be represented in curves.

Menu
Present inquiry and backup content.

◇ Technical index

Structure

Installation method	Embedded installation (vertical)
Installation angle	Uppermost 30 degrees of backward inclination
Mounting plate thickness	2-10mm
External size	288(W)×288(H)x254(D)
Net weight	<7.5Kg(Optional component not included)

Power

Nominal voltage: 220VAC
Voltage range: 100VAC ～ 240VAC
Rated frequency: 50Hz
Consumption: ≤50W(Optional function included)

Input

Input channel：　8、16、24、32、40、48Channel
Measurement period：　1sec
Signal type：Direct current(I)、Direct voltage(V)、
　　　　　　TC、RTD、FR
Input signal type and measurable range：

Signal type	Signal type	Measurable range	Accuracy(25℃)	Input resistance
I	4~20mA	4.00mA~20.00mA	±0.2%	≤300Ω
	0~20mA	0.00mA~20.00mA	±0.2%	≤300Ω
	0~10mA	0.00mA~10.00mA	±0.2%	≤300Ω
V	1~5V	1.000V~5.000V	±0.2%	1MΩ
	0~5V	0.000V~5.000V	±0.2%	1MΩ
	0~10V	0.000V~10.000V	±0.2%	1MΩ
	20mV	0.00mV~20.00mV	±0.2%	10MΩ
	100mV	0.00mV~100.00mV	±0.2%	10MΩ
R	400Ω	0.0Ω~400.0Ω	±0.2%	---
RTD	PT100	−200.0℃~650.0℃	±0.4℃	---
	Cu50	−50.0℃~150.0℃	±0.4℃	---
	Cu53	−50.0℃~150.0℃	±0.4℃	---
	BA1	−200℃~650℃	±0.4℃	---
	BA2	−200℃~650℃	±0.4℃	---
TC	S	−50℃~1768℃	±2℃	10MΩ
	R	−50℃~1768℃	±2℃	10MΩ
	B	500℃~1820℃	±2℃	10MΩ
	K	−200℃~1372℃	±1℃	10MΩ
	N	−200℃~1300℃	±1℃	10MΩ
	E	−200℃~1000℃	±1℃	10MΩ
	J	−200℃~1200℃	±1℃	10MΩ
	T	−200℃~385℃	±1℃	10MΩ
	WRE5−26	0℃~2310℃	±2℃	10MΩ
	WRE3−25	0℃~2310℃	±2℃	10MΩ
	F1	700℃~2000℃	±2℃	10MΩ
	F2	700℃~2000℃	±2℃	10MΩ
FR	FR	0Hz~10000Hz	±1Hz	---
	FR.	0.0Hz~3000.0Hz	±0.1Hz	---

Frequency input

Low level：　　　0~2V
High level：　　　4~24V
Duty cycle：　　　10%~90%
Drive current：　　Min 5mA

Analog input board card

Resolution ratio:　　16 bite
Sample rate:　　　1 per second
Signal terminal pressure:　Min −24VDC,Max +24VDC
Series of common mode voltage(50Hz)：
　　　　　　　5V:　　1.5V
　　　　　　　10V:　　1.5V
　　　　　　　20mV:　50mV
　　　　　　　100mV:150mV
Sensor break line detection:
Thermocouple, thermal resistance sensor disconnection.
4~20mA, input current lower than 2mA.
Does no adapt to other signals.

Display

Displayer:　　10.4 inches TFT color LCD display（800×600Point）.
Display unit : 8 units.
Bit number:　7 characters or 15 letters(numbers).
Unit: 3 characters or 7 letters(or numbers).
Status display: picture name, board card status, alarm status, SD card status,
　　　　　　USB status, circular display status, time.
Picture: measuring data(showed in digital, bar or curve), historical curve,
　　　　　function menu (file list, storage manipulation ,data backup, print,
　　　　　cumulative statement).
Curve : presented in crosswise or vertical curves, costume color function available.
Historical curve: shows the storage data, which can be magnified 1/2/4/8 /16/32 times.
Frame rate: 1 second.

Memory recording time

Batch record mode, see the relation between time length and inter–record gap in below:If channel numbers are reduced, the recording time will become longer. The upmost recording gap setting is 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
8channel	36d	72d	1y	6y	12y	30y
48channel	6d	12d	2m	1y	2y	5y

24VDC transmitter power output

Circuit :　　　6channel (3circuits was segregated)
Output voltage: 24V±5%
Output current: 65mA (over current protection: about 90m A)

Alarm

Alarm number: 4 alarms every channel.
Alarm type: HIAL(H), LOAL(L), Incremental alarm(I) , Decrement alarm(D).
Alarm delaying time: 0~10 seconds.
Alarm output: the alarm will be output to the internal relay.
Display: when alarming, the corresponding picture will show the alarming status, and
　　　　the alarm logo will be present in status bar.
Alarm log: the alarm history will be showed in alarming list.

Transportation and storage conditions

Temperature:　　−10℃ ~ 60℃
Humidity:　　　0% ~ 95%(no dew formation)

◇ Additional specification

Analog output（/T4,T8 ）

Output channel:　4 or 8 channels
Output type:　　4 ~ 20mA
Load:　　　　　≤750Ω

Alarm output relay（/A12,/A24,/A36 ）

Output points:　　12、24、36
Contact capacity: 250VAC/3A，30VDC/3A(resistive load)
Contact type:　　normally open contact
Relay sharing:　　operable (shared by multi channels)

Communication (/C2,/C3)

Connection:　　　RS232C(/C2) or RS485(/C3)
Protocol:　　　　Modbus–RTU protocol
Transmission speed:1200/2400/4800/9600/19200/38400/57600/115200
Byte swap:　　　2–1 4–3、1–2 3–4、4–3 2–1、3–4 1–2

Print function(/MP)

Printer:　　　　　penal micro printer
Printing content: real time data, historical data, accumulative report
Printing method: manual print, time print

Ethernet(/E)
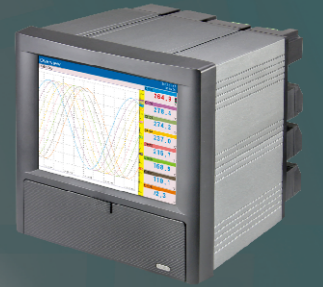
Protocol: Modbus–TCP
Port number: 1

USB function(/U)

Protocol: compatible USB 2.0 protocol
Port number: 1

SD card function(/S)

Protocol: compatible SD protocol
Port number: 1

◇ Selective table

Type	Function code	Specification code	Instruction
KT808			8 channel input*1
KT816			16 channel input*1
KT824			24 channel input*1
KT832			32 channel input*1
Function Type	R		Recording function
	F		Temperature and pressure compensation
	AS		Compliance with FDA 21 CFR Part 11
Additional specification	/T□	4	4 channel 4-20mA signal output
		8	8 channel 4-20mA signal output
	/A□	12	12 normally open contact output*2
		24	24 normally open contact output*2
	/C□	2	RS232 communication
		3	RS485 communication
	/MP		Micro printer terminal *3
	/U		USB function
	/S		SD card function
	/L		Accumulate/ report

Type	Function code	Specification code	Instruction
KT840			40 channel input*1
Function Type	R		Recording function
	F		Temperature and pressure compensation
	AS		Compliance with FDA 21 CFR Part 11
Additional specification	/T4	4	4 channel 4-20mA signal output
	/A□	12	12 normally open contact output*2
		24	24 normally open contact output*2
	/C□	2	RS232 communication
		3	RS485 communication
	/MP		Micro printer terminal *3
	/U		USB function
	/S		SD card function
	/L		Accumulate/ report

Type	Function code	Specification code	Instruction
KT848			48 channel input*1
Function Type	R		Recording function
	F		Temperature and pressure compensation
	AS		Compliance with FDA 21 CFR Part 11
Additional specification	/A□	12	12 normally open contact output*2
		24	24 normally open contact output*2
	/C□	2	RS232 communication
		3	RS485 communication
	/MP		Micro printer terminal *3
	/U		USB function
	/S		SD card function
	/L		Accumulate/ report

◇ Customized function

Specification code	Instruction
/M1	Extend memory 1GB
/E	Ethernet communication
/H2	Plug the signal terminal

*1 The default input for analog universal input, please contact to the
manufacture to custom frequency input if needed.
*2 Please contact to the manufacture to custom no.36 alarm.
*3 Only support special micro printer.

◇ Product accessories (sold separately)

Product	Type	Specification
U disk	860207	8GB
SD card reader	860301	USB connection
SD card	860307	8GB
Communication circuit	862007	RS232 communication connect(1.5m)
	862006	RS485 communication connect(1.5m)
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR Machine data management software

◇ Installation dimension(mm)

◇ Terminal connection diagram

KT 600 Color paperless recorder

Product overview
Display
Technical index

◇ Product overview

Maximum 16 channel universal input color paperless recorder, can input standard current, voltage, frequency standard, MV, thermocouple, thermal resistance and so on many kinds of signal.Has a sensor distribution output, relay alarm output, transmitter output, flow totalizer / reports, historical data storage, on−site printing and serial communication functions.

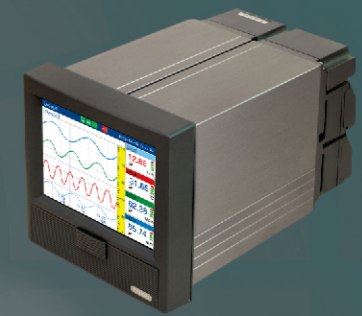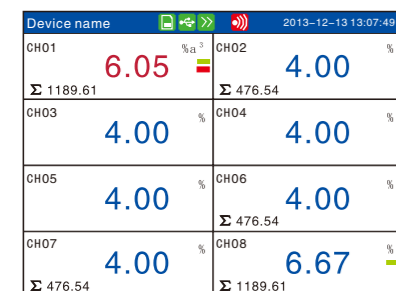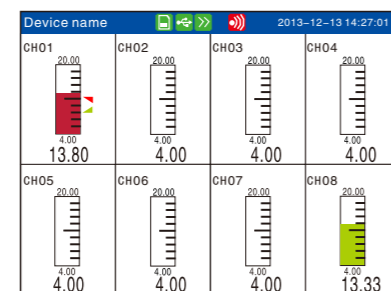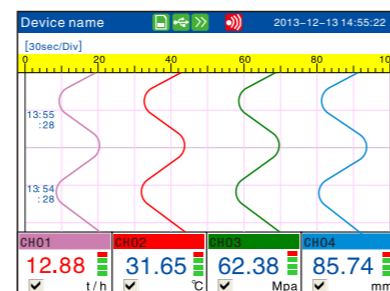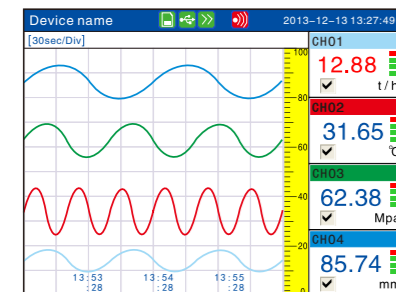## ◇ Display

Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
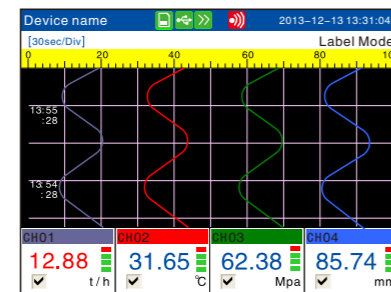
Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
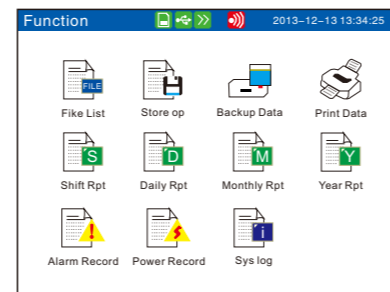
Timing curves (lengthways)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
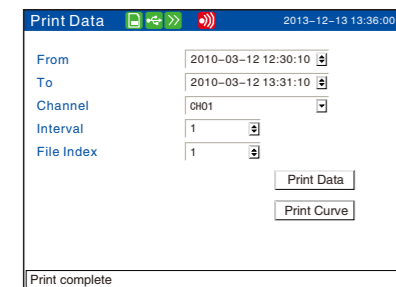
Timing curves (crosswise)
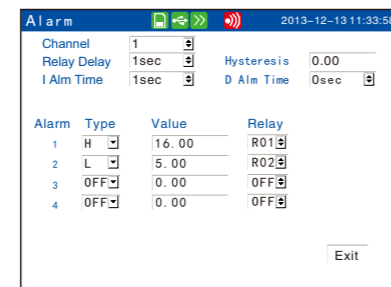Free choice of vertical and horizontal paper feed and custom curve colors.

Historical curves
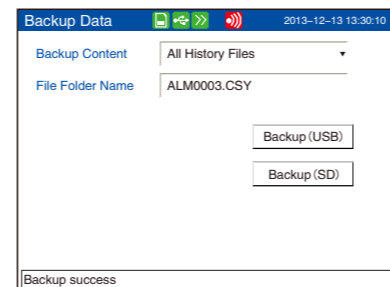Historical data can be represented in curves.

Menu
Present inquiry and backup content.

Data printing
Print the chosen period historical data in curves.

Alarm configuration
Every channel can set four random alarm points.

Data backup
Backup the chosen period historical data to U disk and SD card in files.

◇ Technical index

Structure

Installation method	Embedded installation (vertical)
Installation angle	Uppermost 30 degrees of backward inclination
Mounting plate thickness	1~10mm
External size	144(W) × 144(H)x249(D)
Net weight	< 2.6Kg (Optional component not included)

Power

Nominal voltage: 220VAC
Voltage range: 100VAC ~ 240VAC
Rated frequency: 50Hz
Consumption: ≤20W(Optional function included)

Input

Input channel：   1–16channel
Measurement period：1sec
Signal type：Direct current(I)、Direct voltage(V)、
             TC、RTD、FR
Input signal type and measurable range：

Signal type	Signal type	Measurable range	Accuracy(25℃)	Input resistance
I	4–20mA	4.00mA–20.00mA	± 0.2%	≤300Ω
	0–20mA	0.00mA–20.00mA	± 0.2%	≤300Ω
	0–10mA	0.00mA–10.00mA	± 0.2%	≤300Ω
V	1–5V	1.000V–5.000V	± 0.2%	1MΩ
	0–5V	0.000V–5.000V	± 0.2%	1MΩ
	0–10V	0.000V–10.000V	± 0.2%	1MΩ
	20mV	0.00mV–20.00mV	± 0.2%	10MΩ
	100mV	0.00mV–100.00mV	± 0.2%	10MΩ
R	400Ω	0.0Ω–400.0Ω	± 0.2%	---
RTD	PT100	–200.0℃–650.0℃	± 0.4℃	---
	Cu50	–50.0℃–150.0℃	± 0.4℃	---
	Cu53	–50.0℃–150.0℃	± 0.4℃	---
	BA1	–200℃–650℃	± 0.4℃	---
	BA2	–200℃–650℃	± 0.4℃	---
TC	S	–50℃–1768℃	± 2℃	10MΩ
	R	–50℃–1768℃	± 2℃	10MΩ
	B	500℃–1820℃	± 2℃	10MΩ
	K	–200℃–1372℃	± 1℃	10MΩ
	N	–200℃–1300℃	± 1℃	10MΩ
	E	–200℃–1000℃	± 1℃	10MΩ
	J	–200℃–1200℃	± 1℃	10MΩ
	T	–200℃–385℃	± 1℃	10MΩ
	WRE5–26	0℃–2310℃	± 2℃	10MΩ
	WRE3–25	0℃–2310℃	± 2℃	10MΩ
	F1	700℃–2000℃	± 2℃	10MΩ
	F2	700℃–2000℃	± 2℃	10MΩ
FR	FR	0Hz–10000Hz	± 1Hz	---
	FR.	0.0Hz–3000.0Hz	± 0.1Hz	---

Frequency input

Low level：   0~2V
High level：   4~24V
Duty cycle：   10%~90%
Drive current: Min 5mA

Analog input board card

Resolution ratio: 16 bite
Sample rate: 1 per second
Signal terminal pressure: Min –24VDC,Max +24VDC
Series of common mode voltage(50Hz)：
                    5V: 1.5V
                    10V: 1.5V
                    20mV: 50mV
                    100mV:150mV
Sensor break line detection:
Thermocouple, thermal resistance sensor disconnection.
4–20mA, input current lower than 2mA.
Does no adapt to other signals.

Display

Displayer: 5.6 inches TFT color LCD display (320 × 234Point) .
Display unit : 8 units.
Bit number: 7 characters or 15 letters(numbers).
Unit: 3 characters or 7 letters(or numbers).
Status display: picture name, board card status, alarm status, SD card status,
                USB status, circular display status, time.
Picture: measuring data(showed in digital, bar or curve), historical curve,
                function menu (file list, storage manipulation ,data backup, print,
                cumulative statement).
Curve : presented in crosswise or vertical curves, costume color function available.
Historical curve: shows the storage data, which can be magnified 1/2/4/8 /16/32 times.
Frame rate: 1 second.

Memory recording time

Batch record mode, see the relation between time length and inter–record gap in below:If channel numbers are reduced, the recording time will become longer. The upmost recording gap setting is 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
1channel	80d	160d	2.2y	13.2y	26.4y	66y
16channel	5d	10d	50d	300d	1.6y	4y

24VDC transmitter power output

Circuit :   4channel
Output voltage: 24V ± 5%
Output current: 65mA (over current protection: about 90m A)

Alarm

Alarm number: Each channel can be set up to 4 alarm.
Alarm type: HIAL(H), LOAL(L), Incremental alarm(I) , Decrement alarm(D).
Alarm delaying time: 0–10 seconds.
Alarm output: the alarm will be output to the internal relay.
Display: when alarming, the corresponding picture will show the alarming status, and
                the alarm logo will be present in status bar.
Alarm log: the alarm history will be showed in alarming list.

Transportation and storage conditions

Temperature: –10℃ ~ 60℃
Humidity: 0% ~ 95%(no dew formation)

◇ Additional specification

Analog output (/T1,/T2,/T3

Output channel: 1–4 channels
Output type: 4 – 20mA
Load: ≤750Ω

Alarm output relay (/A6,/A8,/A12)

Output points: 6、8、12
Contact capacity: 250VAC/3A，30VDC/3A(resistive load)
Contact type: normally open contact
Relay sharing: operable (shared by multi channels)

Communication (/C2,/C3)

Connection: RS232C(/C2) or RS485(/C3)
Protocol: Modbus–RTU protocol
Transmission speed:1200/2400/4800/9600/19200/38400/57600/115200
Byte swap: 2–1 4–3、1–2 3–4、4–3 2–1、3–4 1–2

Print function (/C4)

Printer: penal micro printer
Printing content: real time data, historical data, accumulative report
Printing method: manual print, time print

Ethernet(/E)

Protocol:Modbus–TCP
Port number: 1
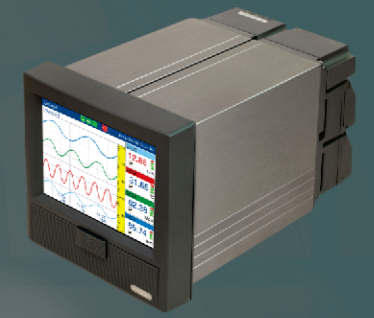
USB function (/U)

Protocol: compatible USB 2.0 protocol
Port number: 1

SD card function (/S)

Protocol: compatible SD protocol
Port number: 1

KT 600 Color paperless recorder

Selective table
Installation dimension
Terminal connection chart

◇ Selective table

Type	Function code	Specification code		Instruction
KT601				1 channel input
KT602				2 channel input
KT603				3 channel input
KT604				4 channel input
KT605				5 channel input
KT606				6 channel input
KT607				7 channel input
KT608				8 channel input
Function Type	R			Recording function
	F			Temperature and pressure compensation
Additional specification		/T□	1~4	1-4 channel 4-20mA signal output
		/A□	6	6 normally open contact output
			8	8 normally open contact output
			12	12 normally open contact output
		/C□	2	RS232 communication
			3	RS485 communication
			4	Micro printer terminal *1
		/U		USB function
		/S		SD card function
		/L		Accumulate/ report

Type	Function code	Specification code		Instruction
KT609				9 channel input
KT610				10 channel input
KT611				11 channel input
KT612				12 channel input
Function Type	R			Recording function
	F			Temperature and pressure compensation
Additional specification		/A□	6	6 normally open contact output
			8	8 normally open contact output
			12	12 normally open contact output
		/C□	2	RS232 communication
			3	RS485 communication
			4	Micro printer terminal *1
		/U		USB function
		/S		SD card function
		/L		Accumulate/ report

Type	Function code	Specification code		Instruction
KT613				13 channel input
KT614				14 channel input
KT615				15 channel input
KT616				16 channel input
Function Type	R			Recording function
	F			Temperature and pressure compensation
Additional specification		/A□	6	6 normally open contact output
			8	8 normally open contact output
		/C□	2	RS232 communication
			3	RS485 communication
			4	Micro printer terminal *1
		/U		USB function
		/S		SD card function
		/L		Accumulate/ report

◇ Customized function

Specification code		Instruction
/A□	1~12	1~12 Channel Frequency input, with 12V power*2
/FC□	1~12	1~12 Channel Frequency input, with 24V power*2
/PT		Anti-corrosion paint protection
/P1		24VDC power supply
/E		Ethernet communication

*1 Only support special micro printer.
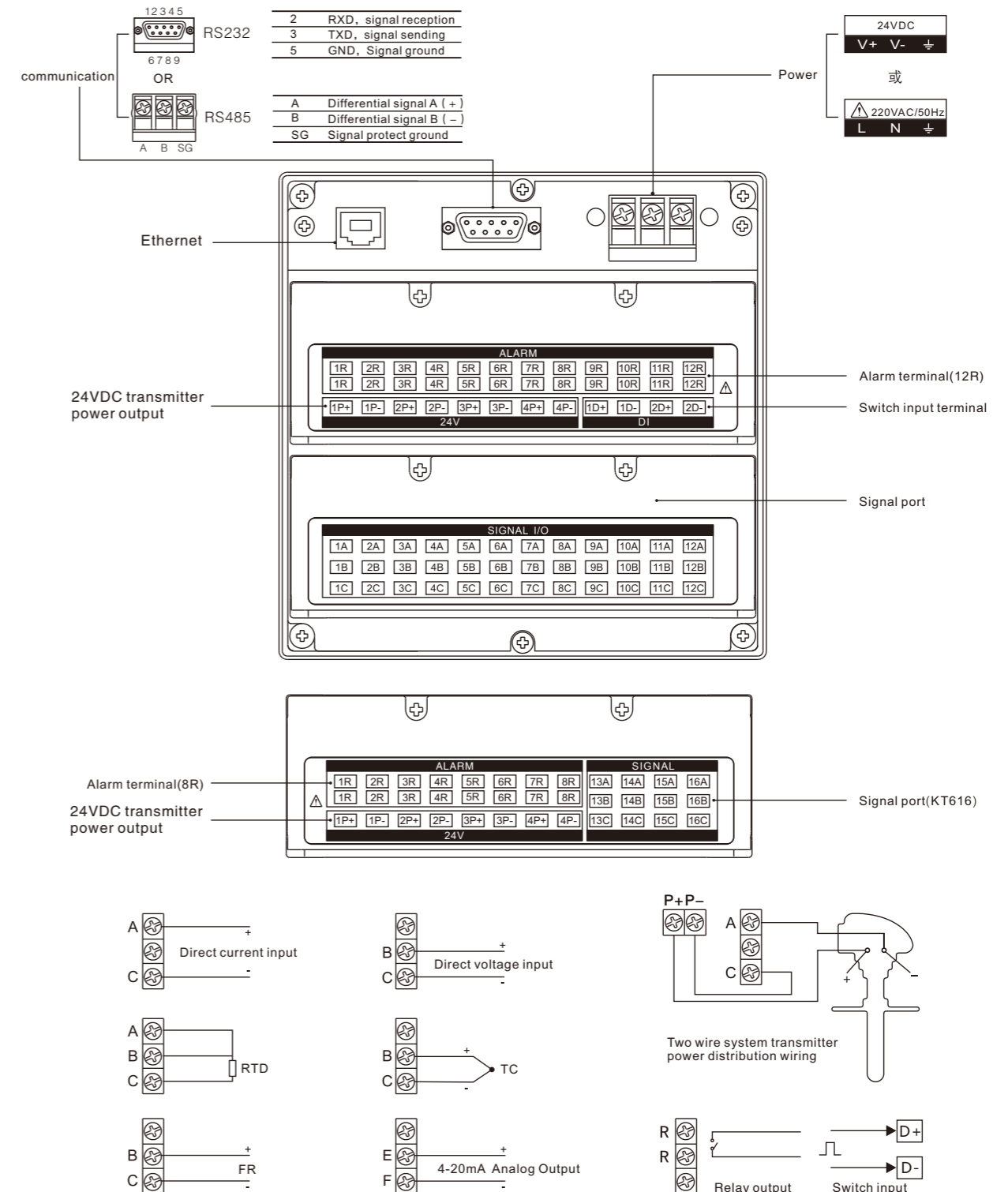*2 Please contact to the manufacture to custom frequency input channel.

◇ Product accessories (sold separately)

Product	Type	Specification
U disk	860207	8GB
SD card reader	860301	USB connection
SD card	860307	8GB
Communication circuit	862007	RS232 communication connect(1.5m)
	862006	RS485 communication connect(1.5m)
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR Machine data management software

◇ Installation dimension(mm)

◇ Terminal connection diagram

2	RXD，signal reception
3	TXD，signal sending
5	GND，Signal ground

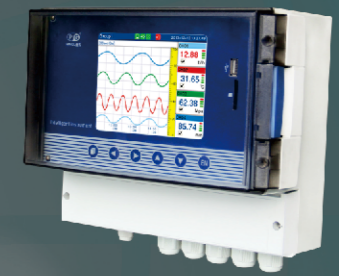| A	Differential signal A（＋）
B	Differential signal B（－）
SG	Signal protect ground

KT600P Waterproof color paperless recorder
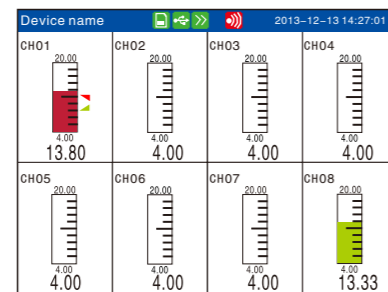
Product overview
Display
Technical index

◇ Product overview

KT600P maximum 16 road input type waterproof color paperless recorder, wall hanging type structure, input current, voltage, frequency standard standard, MV, thermocouple, thermal resistance and so on many kinds of signal.Has a sensor distribution output, relay alarm output, flow totalizer / reports, historical data storage, on–site printing and serial communication functions.
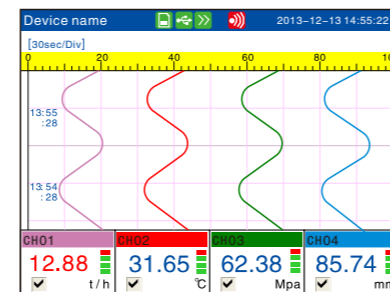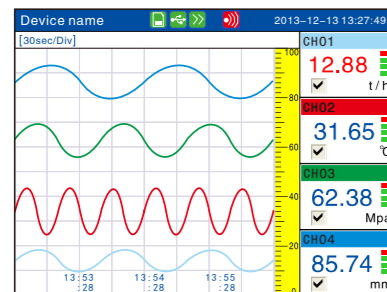
◇ Display

Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
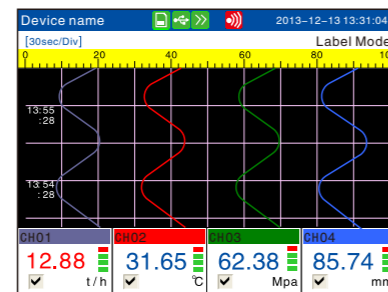
Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
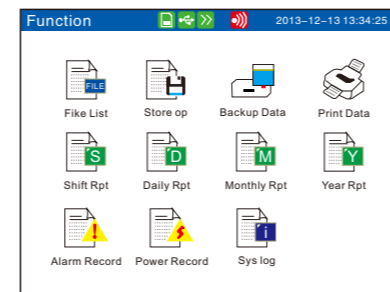
Timing curves (lengthways)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
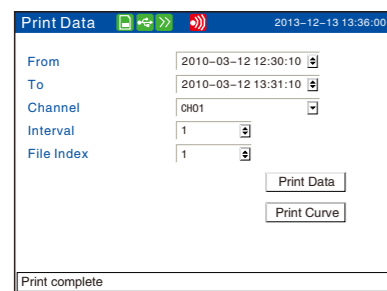
Timing curves (crosswise)
Free choice of vertical and horizontal paper feed and custom curve colors.
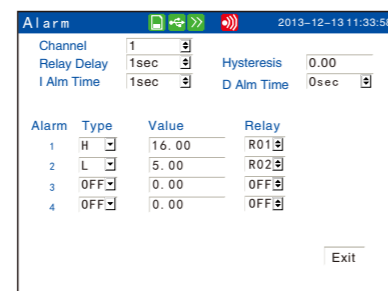
Historical curves
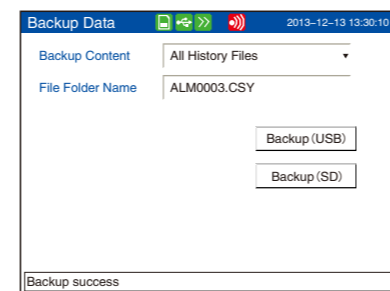Historical data can be represented in curves.

Menu
Present inquiry and backup content.

Data printing
Print the chosen period historical data in curves.

Alarm configuration
Every channel can set four random alarm points.

Data backup
Backup the chosen period historical data to U disk and SD card in files.

◇ Technical index

Structure

Installation method	Wall mount installation
External size	280(W)×242(H)×157(D)
Net weight	<2.5Kg(optional component not included)

Power

Nominal voltage: 220VAC
Voltage range: 100VAC ~ 240VAC
Rated frequency: 50Hz
Consumption: ≤20W(Optional function included)

输入部分

Input channel： 4\8\12\16 channel
Measurement period：1sec
Signal type： Direct current(I)、Direct voltage(V)、TC、RTD、FR
Input signal type and measurable range：

Signal type	Signal type	Measurable range	Accuracy(25℃)	Input resistance
I	4~20mA	4.00mA~20.00mA	±0.2%	≤300Ω
	0~20mA	0.00mA~20.00mA	±0.2%	≤300Ω
	0~10mA	0.00mA~10.00mA	±0.2%	≤300Ω
V	1~5V	1.000V~5.000V	±0.2%	1MΩ
	0~5V	0.000V~5.000V	±0.2%	1MΩ
	0~10V	0.000V~10.000V	±0.2%	1MΩ
	20mV	0.00mV~20.00mV	±0.2%	10MΩ
	100mV	0.00mV~100.00mV	±0.2%	10MΩ
R	400Ω	0.0Ω~400.0Ω	±0.2%	–––
RTD	PT100	−200.0℃~650.0℃	±0.4℃	–––
	Cu50	−50.0℃~150.0℃	±0.4℃	–––
	Cu53	−50.0℃~150.0℃	±0.4℃	–––
	BA1	−200℃~650℃	±0.4℃	–––
	BA2	−200℃~650℃	±0.4℃	–––
TC	S	−50℃~1768℃	±2℃	10MΩ
	R	−50℃~1768℃	±2℃	10MΩ
	B	500℃~1820℃	±2℃	10MΩ
	K	−200℃~1372℃	±1℃	10MΩ
	N	−200℃~1300℃	±1℃	10MΩ
	E	−200℃~1000℃	±1℃	10MΩ
	J	−200℃~1200℃	±1℃	10MΩ
	T	−200℃~385℃	±1℃	10MΩ
	WRE5~26	0℃~2310℃	±2℃	10MΩ
	WRE3~25	0℃~2310℃	±2℃	10MΩ
	F1	700℃~2000℃	±2℃	10MΩ
	F2	700℃~2000℃	±2℃	10MΩ
FR	FR	0Hz~10000Hz	±1Hz	–––
	FR.	0.0Hz~3000.0Hz	±0.1Hz	–––

Frequency input

Low level： 0~2V
High level： 4~24V
Duty cycle： 10%~90%
Drive current： Min 5mA

Analog input board card

Resolution ratio: 16 bite
Sample rate: 1 per second
Signal terminal pressure: Min −24VDC,Max +24VDC
Series of common mode voltage(50Hz)：
　　　　　　　5V: 1.5V
　　　　　　　10V: 1.5V
　　　　　　　20mV: 50mV
　　　　　　　100mV:150mV
Sensor break line detection:
Thermocouple, thermal resistance sensor disconnection.
4–20mA, input current lower than 2mA.
Does no adapt to other signals.

Display

Displayer: 5.6 inches TFT color LCD display (320×234Point) .
Display unit : 8 units.
Bit number: 7 characters or 15 letters(numbers).
Unit: 3 characters or 7 letters(or numbers).
Status display: picture name, board card status, alarm status, SD card status, USB status, circular display status, time.
Picture: measuring data(showed in digital, bar or curve), historical curve, function menu (file list, storage manipulation ,data backup, print, cumulative statement).
Curve : presented in crosswise or vertical curves, costume color function available.
Historical curve: shows the storage data, which can be magnified 1/2/4/8 /16/32 times.
Frame rate: 1 second.

Memory recording time

Batch record mode, see the relation between time length and inter–record gap in below:If channel numbers are reduced, the recording time will become longer. The upmost recording gap setting is 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
1 channel	80d	160d	2.2y	13.2y	26.4y	66y
16channel	5d	10d	50d	300d	1.6y	4y

24VDC transmitter power output

Circuit : 4channel
Output voltage: 24V±5%
Output current: 65mA (over current protection: about 90m A)

Alarm

Alarm number: Each channel can be set up to 4 alarm.
Alarm type: HIAL(H), LOAL(L), Incremental alarm(I) , Decrement alarm(D).
Alarm delaying time: 0–10 seconds.
Alarm output: the alarm will be output to the internal relay.
Display: when alarming, the corresponding picture will show the alarming status, and the alarm logo will be present in status bar.
Alarm log: the alarm history will be showed in alarming list.

Transportation and storage conditions

Temperature: −10℃ ~ 60℃
Humidity: 0% ~ 95%(no dew formation)

◇ Additional specification

Alarm output relay (/A6,/A8,/A12)

Output points: 6、8、12
Contact capacity: 250VAC/3A，30VDC/3A(resistive load)
Contact type: normally open contact
Relay sharing: operable (shared by multi channels)

Communication (/C2,/C3)

Connection: RS232C(/C2) or RS485(/C3)
Protocol: Modbus–RTU protocol
Transmission speed:1200/2400/4800/9600/19200/38400/57600/115200
Byte swap: 2–1 4–3、1–2 3–4、4–3 2–1、3–4 1–2

Print function (/C4)

Printer: penal micro printer
Printing content: real time data, historical data, accumulative report
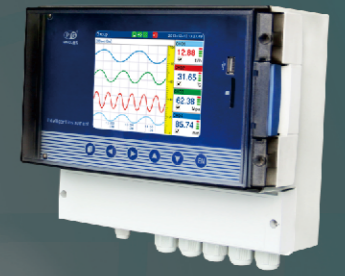Printing method: manual print, time print

USB function (/U)

Protocol: compatible USB 2.0 protocol
Port number: 1

SD card function (/S)

Protocol: compatible SD protocol
Port number: 1

KT600P Waterproof color paperless recorder

Selective table
Installation dimension
Terminal connection chart

◊ Selective table

Type	Function code	Specification code		Instruction
KT604				4 channel input
KT608				8 channel input
KT612				12 channel input
Function Type	P			Waterproof function
Additional specification		/A□	6	6 normally open contact output
			8	8 normally open contact output
			12	12 normally open contact output
		/C□	2	RS232 communication
			3	RS485 communication
			4	Micro printer terminal *1
		/U		USB function
		/S		SD card function
		/L		Accumulate/ report

Type	Function code	Specification code		Instruction
KT616				16 channel input
Function Type	P			Waterproof function
Additional specification		/A□	6	6 normally open contact output
		/C□	2	RS232 communication
			3	RS485 communication
			4	Micro printer terminal *1
		/U		USB function
		/S		SD card function
		/L		Accumulate/ report

*1 Only support special micro printer.

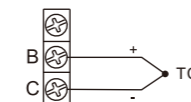## ◊ Customized function

Product	Type	Specification
U disk	860207	8GB
SD card reader	860301	USB connection
SD card	860307	8GB
Communication circuit	862007	RS232 communication connect(1.5m)
	862006	RS485 communication connect(1.5m)
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR Machine data management software

◊ Installation dimension(mm)

280
242
157
190
240

◊ Terminal connection diagram

LCD
Intelligent Instrument
power terminal
USB terminal
SD card slot
Button
Input/output terminal
Screw installation hall

power terminal   Input/output terminal

L N

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
|1A|1B|1C|3A|3B|3C|5A|5B|5C|7A|7B|7C|9A|9B|9C|11A|11B|11C|R1|R1|R3|R3|R5|R5|R7|R7|R9|R9|R11|R11|P1+|P1-|P2+|P2-|P3+|P3-|

|2A|2B|2C|4A|4B|4C|6A|6B|6C|8A|8B|8C|10A|10B|10C|12A|12B|12C|R2|R2|R4|R4|R6|R6|R8|R8|R10|R10|R12|R12|D+|D-|RA|TB|G| |
| 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 |

A C Direct current input
B C Direct voltage input
P+ P− A C Two wire system transmitter power distribution wiring

A B C RTD
B C TC

B C FR
E F 4-20mA Analog Output
R R Relay output   D+ D- Switch input

KT500 Blue screen paperless recorder

◇ Product overview

Maximum 16 channel universal input Blue screen paperless recorder, can input standard current, voltage, frequency standard, MV, thermocouple, thermal resistance and so on many kinds of signal.Has a sensor distribution output, relay alarm output, transmitter output, flow totalizer / reports, historical data storage, on−site printing and serial communication functions.

◇ Display

Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
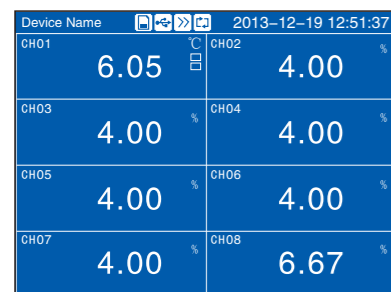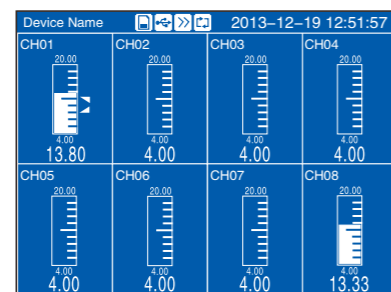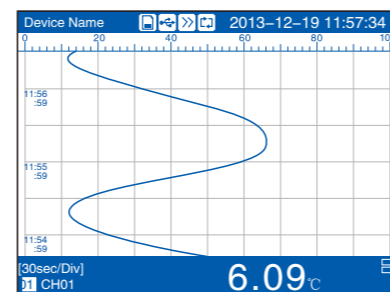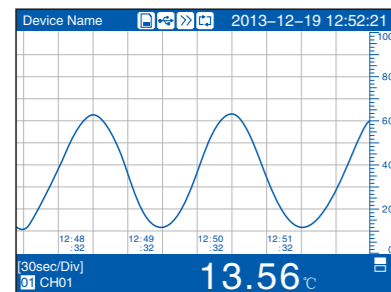
Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
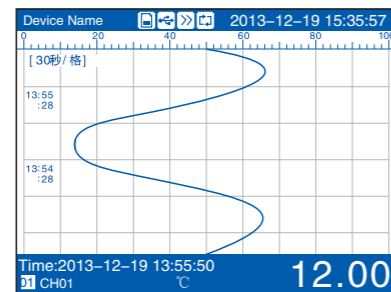
Timing curves (lengthways)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
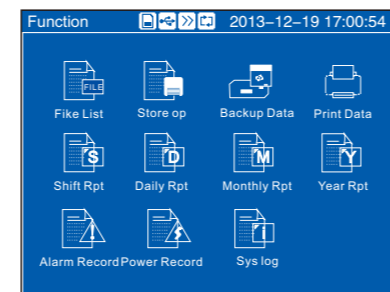
Timing curves (crosswise)
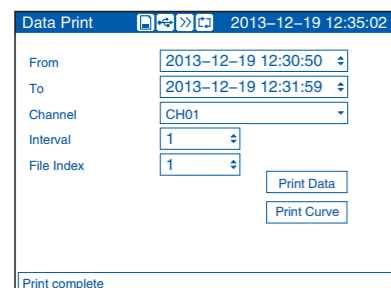Free choice of vertical and horizontal paper feed and custom curve colors.

Historical curves
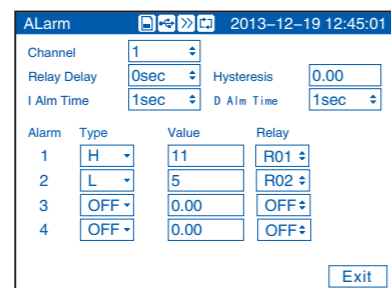Historical data can be represented in curves.

Menu
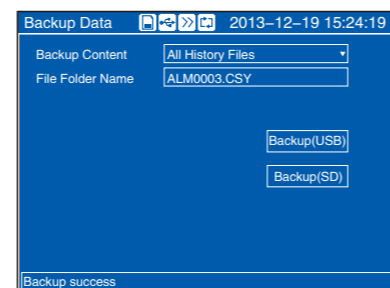Present inquiry and backup content.

Data printing
Print the chosen period historical data in curves.

Alarm configuration
Every channel can set four random alarm points.

Data backup
Backup the chosen period historical data to U disk and SD card in files.

◆ Technical index

Structure

Installation method	Embedded installation (vertical)
Installation angle	Uppermost 30 degrees of backward inclination
Mounting plate thickness	1∼10mm
External size	144(W) × 144(H)x249(D)
Net weight	< 2.6Kg (Optional component not included)

Power

Nominal voltage:　　220VAC
Voltage range:　　　100VAC ∼ 240VAC
Rated frequency:　　50Hz
Consumption:　　　　≤20W(Optional function included)

Input

Input channel：　　　1∼16channel
Measurement period：1sec
Signal type：Direct current(I)、Direct voltage(V)、
　　　　　　　TC、RTD、FR
Input signal type and measurable range：

Signal type	Signal type	Measurable range	Accuracy(25℃)	Input resistance
I	4∼20mA	4.00mA∼20.00mA	±0.2%	≤300Ω
	0∼20mA	0.00mA∼20.00mA	±0.2%	≤300Ω
	0∼10mA	0.00mA∼10.00mA	±0.2%	≤300Ω
V	1∼5V	1.000V∼5.000V	±0.2%	1MΩ
	0∼5V	0.000V∼5.000V	±0.2%	1MΩ
	0∼10V	0.000V∼10.000V	±0.2%	1MΩ
	20mV	0.00mV∼20.00mV	±0.2%	10MΩ
	100mV	0.00mV∼100.00mV	±0.2%	10MΩ
R	400Ω	0.0Ω∼400.0Ω	±0.2%	−−−
RTD	PT100	−200.0℃∼650.0℃	±0.4℃	−−−
	Cu50	−50.0℃∼150.0℃	±0.4℃	−−−
	Cu53	−50.0℃∼150.0℃	±0.4℃	−−−
	BA1	−200℃∼650℃	±0.4℃	−−−
	BA2	−200℃∼650℃	±0.4℃	−−−
TC	S	−50℃∼1768℃	±2℃	10MΩ
	R	−50℃∼1768℃	±2℃	10MΩ
	B	500℃∼1820℃	±2℃	10MΩ
	K	−200℃∼1372℃	±1℃	10MΩ
	N	−200℃∼1300℃	±1℃	10MΩ
	E	−200℃∼1000℃	±1℃	10MΩ
	J	−200℃∼1200℃	±1℃	10MΩ
	T	−200℃∼385℃	±1℃	10MΩ
	WRE5−26	0℃∼2310℃	±2℃	10MΩ
	WRE3−25	0℃∼2310℃	±2℃	10MΩ
	F1	700℃∼2000℃	±2℃	10MΩ
	F2	700℃∼2000℃	±2℃	10MΩ
FR	FR	0Hz∼10000Hz	±1Hz	−−−
	FR.	0.0Hz∼3000.0Hz	±0.1Hz	−−−

Frequency input

Low level：　　　　0∼2V
High level：　　　　4∼24V
Duty cycle：　　　　10%∼90%
Drive current：　　Min 5mA

Analog input board card

Resolution ratio:　　　16 bite
Sample rate:　　　　　1 per second
Signal terminal pressure:　Min −24VDC,Max +24VDC
Series of common mode voltage(50Hz)：
　　　　　　　5V:　　　1.5V
　　　　　　　10V:　　　1.5V
　　　　　　　20mV:　50mV
　　　　　　　100mV:150mV
Sensor break line detection:
Thermocouple, thermal resistance sensor disconnection.
4∼20mA, input current lower than 2mA.
Does no adapt to other signals.

Display

Displayer:　　5.6 inches blue LCD display（320×234Point）.
Display unit : 8 units.
Bit number:　7 characters or 15 letters(numbers).
Unit: 3 characters or 7 letters(or numbers).
Status display: picture name, board card status, alarm status, SD card status,
　　　　　　　　USB status, circular display status, time.
Picture: measuring data(showed in digital, bar or curve), historical curve,
　　　　　　function menu (file list, storage manipulation ,data backup, print,
　　　　　　cumulative statement).
Curve : presented in crosswise or vertical curves, costume color function available.
Historical curve: shows the storage data, which can be magnified 1/2/4/8 /16/32 times.
Frame rate: 1 second.

Memory recording time

Batch record mode, see the relation between time length and inter−record gap in below:If channel numbers are reduced, the recording time will become longer. The upmost recording gap setting is 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
1channel	80d	160d	2.2y	13.2y	26.4y	66y
16channel	5d	10d	50d	300d	1.6y	4y

24VDC transmitter power output

Circuit :　　　　4channel
Output voltage: 24V±5%
Output current: 65mA (over current protection: about 90m A)

Alarm

Alarm number: Each channel can be set up to 4 alarm.
Alarm type: HIAL(H), LOAL(L), Incremental alarm(I) , Decrement alarm(D).
Alarm delaying time: 0∼10 seconds.
Alarm output: the alarm will be output to the internal relay.
Display: when alarming, the corresponding picture will show the alarming status, and
　　　　　the alarm logo will be present in status bar.
Alarm log: the alarm history will be showed in alarming list.

Transportation and storage conditions

Temperature:　　−10℃ ∼ 60℃
Humidity:　　　　0% ∼ 95%(no dew formation)

◇ Additional specification

Analog output（/T1,/T2,/T3）

Output channel:　1∼4 channels
Output type:　　　4∼20mA
Load:　　　　　　≤750Ω

Alarm output relay（/A6,/A8,/A12）

Output points:　6、8、12
Contact capacity: 250VAC/3A，30VDC/3A(resistive load)
Contact type:　　normally open contact
Relay sharing:　　operable (shared by multi channels)

Communication（/C2,/C3）

Connection:　　　　RS232C(/C2) or RS485(/C3)
Protocol:　　　　　Modbus−RTU protocol
Transmission speed:1200/2400/4800/9600/19200/38400/57600/115200
Byte swap:　　　　2−1 4−3、1−2 3−4、4−3 2−1、3−4 1−2

Print function（/C4）

Printer:　　　　　　penal micro printer
Printing content: real time data, historical data, accumulative report
Printing method: manual print, time print
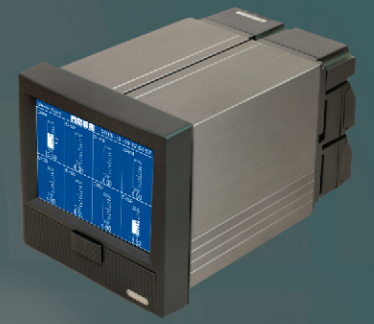
Ethernet(/E)

Protocol:Modbus−TCP
Port number: 1

USB function（/U）

Protocol: compatible USB 2.0 protocol
Port number: 1

SD card function（/S）

Protocol: compatible SD protocol
Port number: 1

◇ Selective table

Type	Function code	Specification code		Instruction
KT501				1 channel input
KT502				2 channel input
KT503				3 channel input
KT504				4 channel input
KT505				5 channel input
KT506				6 channel input
KT507				7 channel input
KT508				8 channel input
Function Type	R			Recording function
	F			Temperature and pressure compensation
Additional specification	/T□	1~4		1-4 channel 4-20mA signal output
	/A□	6		6 normally open contact output
		8		8 normally open contact output
		12		12 normally open contact output
	/C□	2		RS232 communication
		3		RS485 communication
		4		Micro printer terminal *1
	/U			USB function
	/S			SD card function
	/L			Accumulate/ report

Type	Function code	Specification code		Instruction
KT509				9 channel input
KT510				10 channel input
KT511				11 channel input
KT512				12 channel input
Function Type	R			Recording function
	F			Temperature and pressure compensation
Additional specification	/A□	6		6 normally open contact output
		8		8 normally open contact output
		12		12 normally open contact output
	/C□	2		RS232 communication
		3		RS485 communication
		4		Micro printer terminal *1
	/U			USB function
	/S			SD card function
	/L			Accumulate/ report

Type	Function code	Specification code		Instruction
KT513				13 channel input
KT514				14 channel input
KT515				15 channel input
KT516				16 channel input
Function Type	R			Recording function
	F			Temperature and pressure compensation
Additional specification	/A□	6		6 normally open contact output
		8		8 normally open contact output
	/C□	2		RS232 communication
		3		RS485 communication
		4		Micro printer terminal *1
	/U			USB function
	/S			SD card function
	/L			Accumulate/ report

◇ Customized function

Specification code		Instruction
/A□	1~12	1~12 Channel Frequency input, with 12V power*2
/FC□	1~12	1~12 Channel Frequency input, with 24V power*2
/PT		Anti–corrosion paint protection
/P1		24VDC power supply
/E		Ethernet communication

*1 Only support special micro printer.
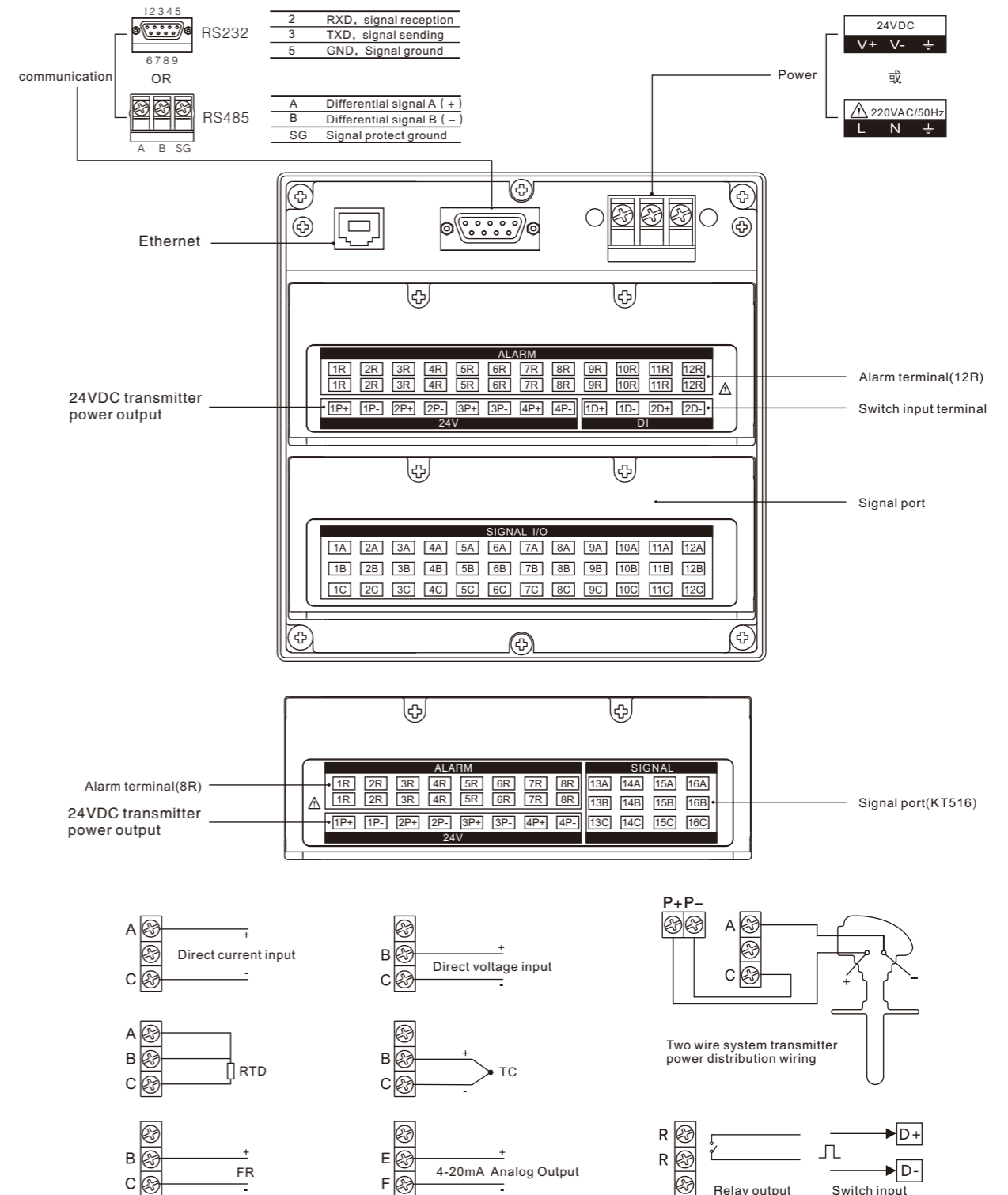*2 Please contact to the manufacture to custom frequency input channel.

◇ Product accessories (sold separately)

Product	Type	Specification
U disk	860207	8GB
SD card reader	860301	USB connection
SD card	860307	8GB
Communication circuit	862007	RS232 communication connect(1.5m)
	862006	RS485 communication connect(1.5m)
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR Machine data management software

◇ Installation dimension(mm)

149.7

149.7

219   30

136

138⁺¹·⁰

138⁺¹·⁰

◇ Terminal connection diagram

communication

1 2 3 4 5
RS232

6 7 8 9
OR

RS485
A B SG

2	RXD，signal reception
3	TXD，signal sending
5	GND，Signal ground

A	Differential signal A（+）
B	Differential signal B（－）
SG	Signal protect ground

Power

24VDC
V+ V- ⏚

或

220VAC/50Hz
L N ⏚

Ethernet

24VDC transmitter power output

ALARM

1R 2R 3R 4R 5R 6R 7R 8R 9R 10R 11R 12R
1R 2R 3R 4R 5R 6R 7R 8R 9R 10R 11R 12R
1P+ 1P- 2P+ 2P- 3P+ 3P- 4P+ 4P- 1D+ 1D- 2D+ 2D-
24V   DI

Alarm terminal(12R)
Switch input terminal

SIGNAL I/O

1A 2A 3A 4A 5A 6A 7A 8A 9A 10A 11A 12A
1B 2B 3B 4B 5B 6B 7B 8B 9B 10B 11B 12B
1C 2C 3C 4C 5C 6C 7C 8C 9C 10C 11C 12C

Signal port

Alarm terminal(8R)
24VDC transmitter power output

ALARM   SIGNAL
1R 2R 3R 4R 5R 6R 7R 8R 13A 14A 15A 16A
1R 2R 3R 4R 5R 6R 7R 8R 13B 14B 15B 16B
1P+ 1P- 2P+ 2P- 3P+ 3P- 4P+ 4P- 13C 14C 15C 16C
24V

Signal port(KT516)

P+ P-

A Direct current input
B Direct voltage input
A B C RTD
B C TC
B C FR
E F 4-20mA Analog Output
A C Two wire system transmitter power distribution wiring
R R Relay output   D+ D- Switch input

KT200 Monochrome paperless recorder
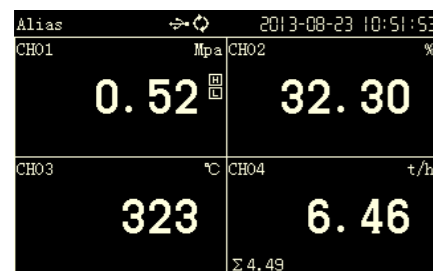
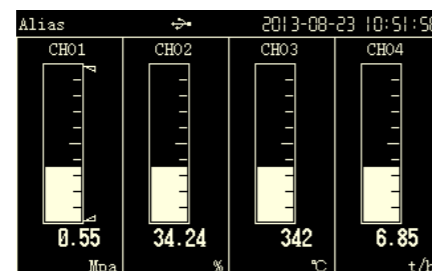Product overview
Display
Technical index

◇ Product overview

Maximum 4 channel universal input Monochrome paperless recorder, can input standard current, voltage, frequency standard, MV, thermocouple, thermal resistance and so on many kinds of signal.Has a sensor distribution output, relay alarm output, transmitter output, flow totalizer / reports, historical data storage, on−site printing and serial communication functions.
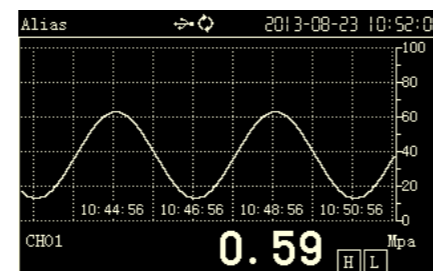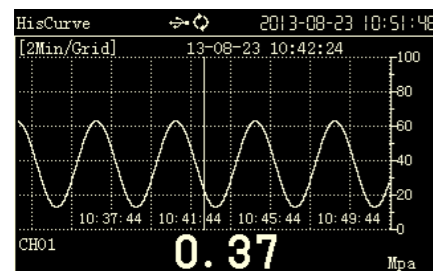
◇ Display

Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
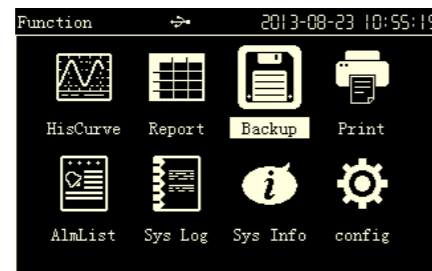
Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
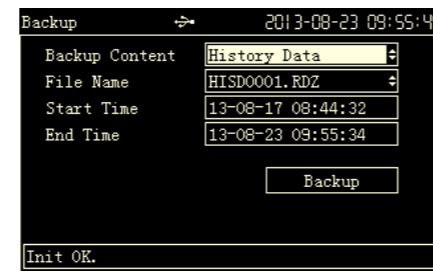
Timing curves (lengthways)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
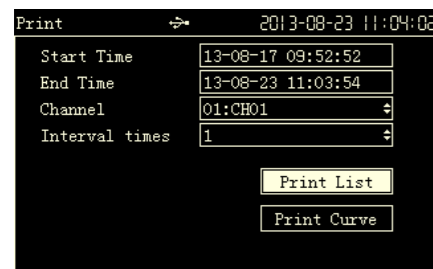
Historical curves
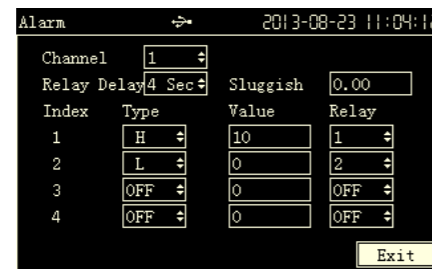Historical data can be represented in curves.

Menu
Present inquiry and backup content.

Data backup
Backup the chosen period historical data to U disk and SD card in files.

Data printing
Print the chosen period historical data in curves.

Alarm configuration
Every channel can set four random alarm points.

Configuration backup
Free input and output of configuration information, easy configuration setting.

◇ Technical index

Structure

Installation method	Embedded installation (vertical)
Installation angle	Uppermost 30 degrees of backward inclination
Mounting plate thickness	1~10mm
External size	160(W) × 80(H)x110(D)
Net weight	< 0.5Kg(Optional component not included)

Power

Nominal voltage: 220VAC
Voltage range: 100VAC ~ 240VAC
Rated frequency: 50Hz
Consumption: ≤10W(Optional function included)

Input

Input channel： 1−4channel
Measurement period：1sec
Signal type：Direct current(I)、Direct voltage(V)、
TC、RTD、FR
Input signal type and measurable range：

Signal type	Signal type	Measurable range	Accuracy(25℃)	Input resistance
I	4−20mA	4.00mA−20.00mA	±0.2%	≤300Ω
	0−20mA	0.00mA−20.00mA	±0.2%	≤300Ω
	0−10mA	0.00mA−10.00mA	±0.2%	≤300Ω
V	1−5V	1.000V−5.000V	±0.2%	1MΩ
	0−5V	0.000V−5.000V	±0.2%	1MΩ
	0−10V	0.000V−10.000V	±0.2%	1MΩ
	20mV	0.00mV−20.00mV	±0.2%	10MΩ
	100mV	0.00mV−100.00mV	±0.2%	10MΩ
R	400Ω	0.0Ω−400.0Ω	±0.2%	−−−
RTD	PT100	−200.0℃−650.0℃	±0.4℃	−−−
	Cu50	−50.0℃−150.0℃	±0.4℃	−−−
	Cu53	−50.0℃−150.0℃	±0.4℃	−−−
	BA1	−200℃−650℃	±0.4℃	−−−
	BA2	−200℃−650℃	±0.4℃	−−−
TC	S	−50℃−1768℃	±2℃	10MΩ
	R	−50℃−1768℃	±2℃	10MΩ
	B	500℃−1820℃	±2℃	10MΩ
	K	−200℃−1372℃	±1℃	10MΩ
	N	−200℃−1300℃	±1℃	10MΩ
	E	−200℃−1000℃	±1℃	10MΩ
	J	−200℃−1200℃	±1℃	10MΩ
	T	−200℃−385℃	±1℃	10MΩ
	WRE5−26	0℃−2310℃	±2℃	10MΩ
	WRE3−25	0℃−2310℃	±2℃	10MΩ
	F1	700℃−2000℃	±2℃	10MΩ
	F2	700℃−2000℃	±2℃	10MΩ
FR	FR	0Hz−10000Hz	±1Hz	−−−
	FR.	0.0Hz−3000.0Hz	±0.1Hz	−−−

Frequency input

Low level： 0~2V
High level： 4−24V
Duty cycle： 10%~90%
Drive current: Min 5mA

Analog input board card

Resolution ratio: 16 bite
Sample rate: 1 per second
Signal terminal pressure: Min −24VDC,Max +24VDC
Series of common mode voltage(50Hz)：
5V: 1.5V
10V: 1.5V
20mV: 50mV
100mV:150mV
Sensor break line detection:
Thermocouple, thermal resistance sensor disconnection.
4−20mA, input current lower than 2mA.
Does no adapt to other signals.

Display

Displayer: 3.5 inches LCD display（320×200Point）.
Display unit : 4 units.
Bit number: 7 characters or 15 letters(numbers).
Unit: 3 characters or 7 letters(or numbers).
Status display: picture name, board card status, alarm status, SD card status, USB status, circular display status, time.
Picture: measuring data(showed in digital, bar or curve), historical curve, function menu (file list, storage manipulation ,data backup, print, cumulative statement).
Curve : presented in crosswise or vertical curves, costume color function available.
Historical curve: shows the storage data, which can be magnified 1/2/4/8 /16/32 times.
Frame rate: 1 second.

Memory recording time

Continuous recording mode, the recording time length relationship table and the recording interval:
The recording interval can be set up to 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
Time length	3d	6d	1m	6m	1y	2.5y

24VDC transmitter power output

Circuit : 1 channel
Output voltage: 24V±5%
Output current: 65mA (over current protection: about 90m A)

Alarm

Alarm number: Each channel can be set up to 4 alarm.
Alarm type: HIAL(H), LOAL(L), Incremental alarm(I) , Decrement alarm(D).
Alarm delaying time: 0−10 seconds.
Alarm output: the alarm will be output to the internal relay.
Display: when alarming, the corresponding picture will show the alarming status, and the alarm logo will be present in status bar.
Alarm log: the alarm history will be showed in alarming list.

Transportation and storage conditions

Temperature: −10℃ ~ 60℃
Humidity: 0% ~ 95%(no dew formation)

◇ Additional specification

Analog output（/T1）

Output channel: 1 channels
Output type: 4 − 20mA
Load: ≤750Ω

Alarm output relay（/A2,/A4）

Output points: 2、4
Contact capacity: 250VAC/3A，30VDC/3A(resistive load)
Contact type: normally open contact
Relay sharing: operable (shared by multi channels)

Communication（/C2,/C3）

Connection: RS232C(/C2) or RS485(/C3)
Protocol: Modbus−RTU protocol
Transmission speed:1200/2400/4800/9600/19200/38400/57600/115200
Byte swap: 2−1 4−3、1−2 3−4、4−3 2−1、3−4 1−2

Print function（/C4）

Printer: penal micro printer
Printing content: real time data, historical data, accumulative report
Printing method: manual print, time print

Ethernet communication（/E）

Protocol: compatible USB 2.0 protocol
Port number: 1

USB function（/U）

Protocol: Modbus−TCP protocol
Port number: 1

KT200 Monochrome paperless recorder

Selective table
Installation dimension
Terminal connection chart

◇ Selective table

Type	Function code	Specification code	Instruction
KT201			1 channel input*1
KT202			2 channel input*1
KT203			3 channel input*1
KT204			4 channel input*1
Function Type	R		Recording function
Additional specification		/T1	1 channel 4-20mA signal output
		/A□ 2	2 normally open contact output
		/A□ 4	4 normally open contact output
		/C□ 2	RS232 communication
		/C□ 3	RS485 communication
		/C□ 33	Double RS485 communication
		/C□ 4	Micro printer terminal *2
		/U	USB function
		/L	Accumulate/ report

◇ Customized function

Specification code	Instruction
/PT	Anti–corrosion paint protection
/P1	24VDC power supply

*1 Please contact to the manufacture to custom frequency input channel.
*2 Only support special micro printer.
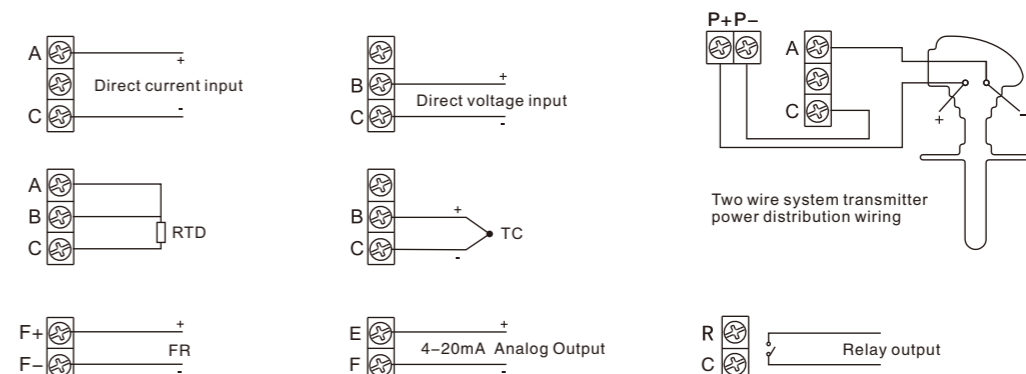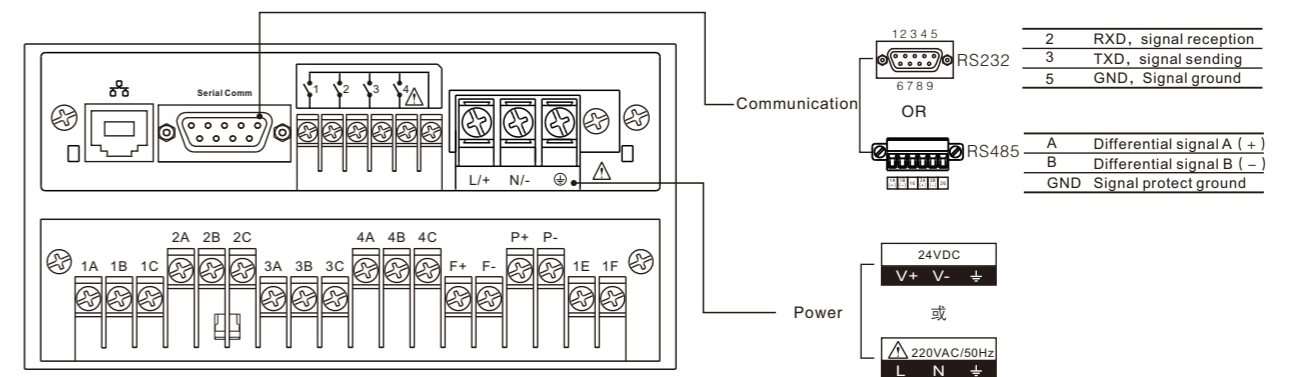*3 Ethernet communication and printer interface can not be selected at the same time.

◇ Product accessories (sold separately)

Product	Type	Specification
U disk	860207	8GB
Communication circuit	862007	RS232 communication connect(1.5m)
	862006	RS485 communication connect(1.5m)
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR Machine data management software

◇ Installation dimension(mm)

◇ Terminal connection diagram

2	RXD，signal reception
3	TXD，signal sending
5	GND，Signal ground

A	Differential signal A（＋）
B	Differential signal B（－）
GND	Signal protect ground

Direct current input
Direct voltage input
Two wire system transmitter power distribution wiring
RTD
TC
FR
4–20mA Analog Output
Relay output
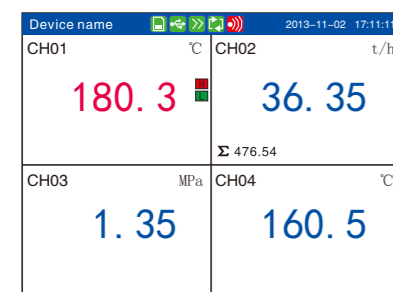
KT 100 Color paperless recorder
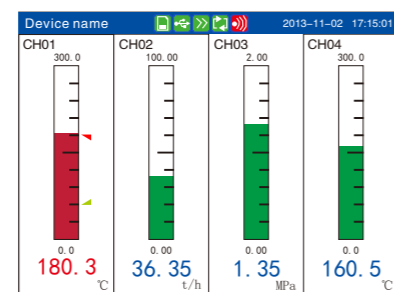
Product overview
Display
Technical index

◇ Product overview

Maximum 4 channel universal input color paperless recorder, can input standard current, voltage, frequency standard, MV, thermocouple, thermal resistance and so on many kinds of signal.Has a sensor distribution output, relay alarm output, transmitter output, flow totalizer / reports, historical data storage, on-site printing and serial communication functions.
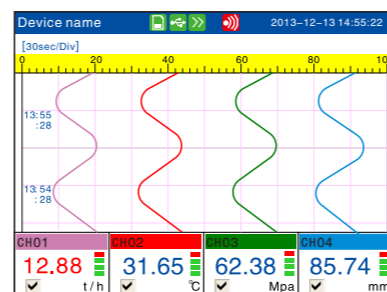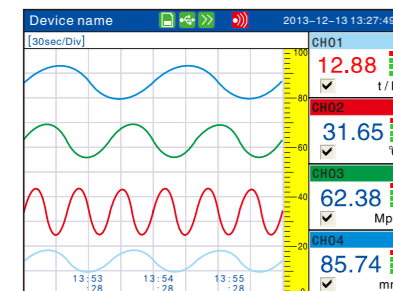
◇ Display

Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
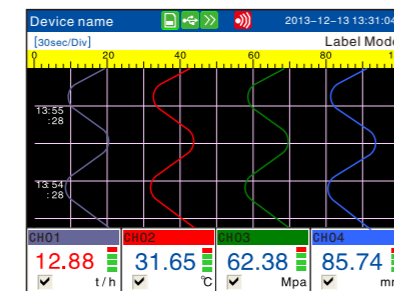

Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
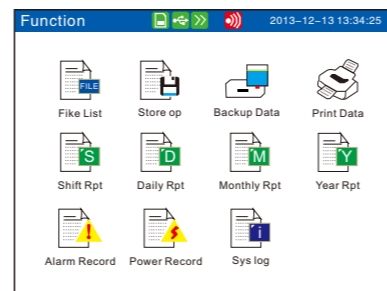

Timing curves (lengthways)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
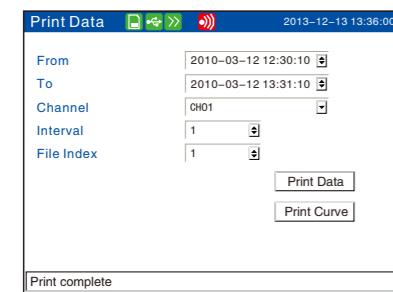

Timing curves (crosswise)
Free choice of vertical and horizontal paper feed and custom curve colors.
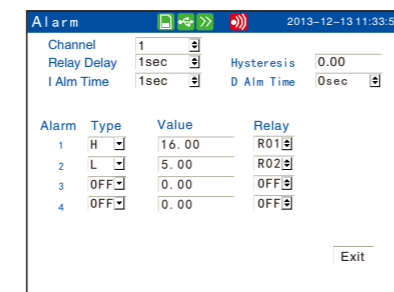

Historical curves
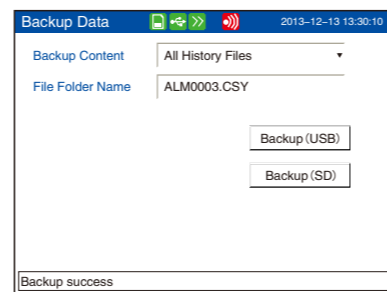Historical data can be represented in curves.

Menu
Present inquiry and backup content.

Data printing
Print the chosen period historical data in curves.

Alarm configuration
Every channel can set four random alarm points.

Data backup
Backup the chosen period historical data to U disk and SD card in files.

◇ Technical index

Structure

Installation method	Embedded installation (vertical)
Installation angle	Uppermost 30 degrees of backward inclination
Mounting plate thickness	1~10mm
KT100R External size	96(W) × 96(H)x123(D)
KT100H External size	160(W) × 80(H)x118(D)
Net weight	< 0.8Kg(Optional component not included)

Power
Nominal voltage: 220VAC
Voltage range: 100VAC ~ 240VAC
Rated frequency: 50Hz
Consumption: ≤10W(Optional function included)

Input
Input channel：   1~4channel
Measurement period：1sec
Signal type：Direct current(I)、Direct voltage(V)、
          TC、RTD、FR
Input signal type and measurable range：

Signal type	Signal type	Measurable range	Accuracy(25℃)	Input resistance
I	4~20mA	4.00mA~20.00mA	±0.2%	≤300Ω
	0~20mA	0.00mA~20.00mA	±0.2%	≤300Ω
	0~10mA	0.00mA~10.00mA	±0.2%	≤300Ω
V	1~5V	1.000V~5.000V	±0.2%	1MΩ
	0~5V	0.000V~5.000V	±0.2%	1MΩ
	0~10V	0.000V~10.000V	±0.2%	1MΩ
	20mV	0.00mV~20.00mV	±0.2%	10MΩ
	100mV	0.00mV~100.00mV	±0.2%	10MΩ
R	400Ω	0.0Ω~400.0Ω	±0.2%	---
RTD	PT100	-200.0℃~650.0℃	±0.4℃	---
	Cu50	-50.0℃~150.0℃	±0.4℃	---
	Cu53	-50.0℃~150.0℃	±0.4℃	---
	BA1	-200℃~650℃	±0.4℃	---
	BA2	-200℃~650℃	±0.4℃	---
TC	S	-50℃~1768℃	±2℃	10MΩ
	R	-50℃~1768℃	±2℃	10MΩ
	B	500℃~1820℃	±2℃	10MΩ
	K	-200℃~1372℃	±1℃	10MΩ
	N	-200℃~1300℃	±1℃	10MΩ
	E	-200℃~1000℃	±1℃	10MΩ
	J	-200℃~1200℃	±1℃	10MΩ
	T	-200℃~385℃	±1℃	10MΩ
	WRE5~26	0℃~2310℃	±2℃	10MΩ
	WRE3~25	0℃~2310℃	±2℃	10MΩ
	F1	700℃~2000℃	±2℃	10MΩ
	F2	700℃~2000℃	±2℃	10MΩ
FR	FR	0Hz~10000Hz	±1Hz	---
	FR.	0.0Hz~3000.0Hz	±0.1Hz	---

Frequency input
Low level：   0~2V
High level：   4~24V
Duty cycle：   10%~90%
Drive current: Min 5mA

Analog input board card
Resolution ratio: 16 bite
Sample rate: 1 per second
Signal terminal pressure: Min -24VDC,Max +24VDC
Series of common mode voltage(50Hz)：
               5V: 1.5V
               10V: 1.5V
               20mV: 50mV
               100mV:150mV
Sensor break line detection:
Thermocouple, thermal resistance sensor disconnection.
4~20mA, input current lower than 2mA.
Does no adapt to other signals.

Display
Displayer: 3.5 inches TFT color LCD display (320 × 240Point) .
Display unit : 4 units.
Bit number: 7 characters or 15 letters(numbers).
Unit: 3 characters or 7 letters(or numbers).
Status display: picture name, board card status, alarm status, SD card status,
               USB status, circular display status, time.
Picture: measuring data(showed in digital, bar or curve), historical curve,
          function menu (file list, storage manipulation ,data backup, print,
          cumulative statement).
Curve : presented in crosswise or vertical curves, costume color function available.
Historical curve: shows the storage data, which can be magnified 1/2/4/8 /16/32 times.
Frame rate: 1 second.

Memory recording time
Batch record mode, see the relation between time length and inter-record gap in below:If channel numbers are reduced, the recording time will become longer. The upmost recording gap setting is 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
1 Channel	12d	24d	4m	2y	4y	10y
4 Channel	3d	6d	1m	6m	1y	2y

24VDC transmitter power output
Circuit :   1 channel
Output voltage: 24V ± 5%
Output current: 65mA (over current protection: about 90m A)

Alarm
Alarm number: Each channel can be set up to 4 alarm.
Alarm type: HIAL(H), LOAL(L), Incremental alarm(I) , Decrement alarm(D).
Alarm delaying time: 0~10 seconds.
Alarm output: the alarm will be output to the internal relay.
Display: when alarming, the corresponding picture will show the alarming status, and
          the alarm logo will be present in status bar.
Alarm log: the alarm history will be showed in alarming list.

Transportation and storage conditions
Temperature: -10℃ ~ 60℃
Humidity: 0% ~ 95%(no dew formation)

◇ Additional specification

Analog output (/T1)
Output channel: 1 channels
Output type: 4~20mA
Load: ≤750Ω

Alarm output relay (/A2,/A4)
Output points: KT100R has 2 points,KT100H has 2or4 points
Contact capacity: 250VAC/3A，30VDC/3A(resistive load)
Contact type: normally open contact
Relay sharing: operable (shared by multi channels)

Communication (/C2,/C3)
Connection: RS232C(/C2) or RS485(/C3)
Protocol: Modbus-RTU protocol
Transmission speed:1200/2400/4800/9600/19200/38400/57600/115200
Byte swap: 2-1 4-3、1-2 3-4、4-3 2-1、3-4 1-2

Print function (/C4)
Printer: penal micro printer
Printing content: real time data, historical data, accumulative report
Printing method: manual print, time print

USB function (/U)
Protocol: compatible USB 2.0 protocol
Port number: 1

SD card function (/S)
Protocol: compatible SD protocol
Port number: 1

KT 100 Color paperless recorder

Selective table
Installation dimension
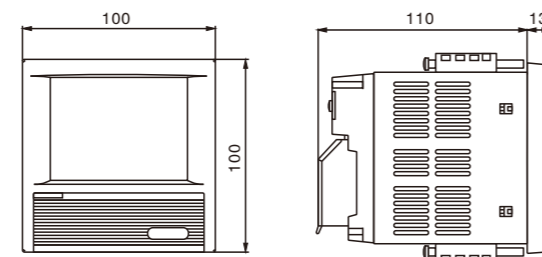Terminal connection chart

◇ KT100R Selective table

Type	Function code	Specification code		Instruction
KT101				1 channel input*1
KT102				2 channel input*1
KT103				3 channel input*1
KT104				4 channel input*1
Function Type	R			Recording function
Additional specification	/T1			1 channel 4-20mA signal output
	/A2			2 normally open contact output
	/C□	2		RS232communication
		3		RS485communication
		4		Micro printer terminal *2
	/U			USB function
	/S			SD card function
	/L			Accumulate/ report

◇ KT100H Selective table

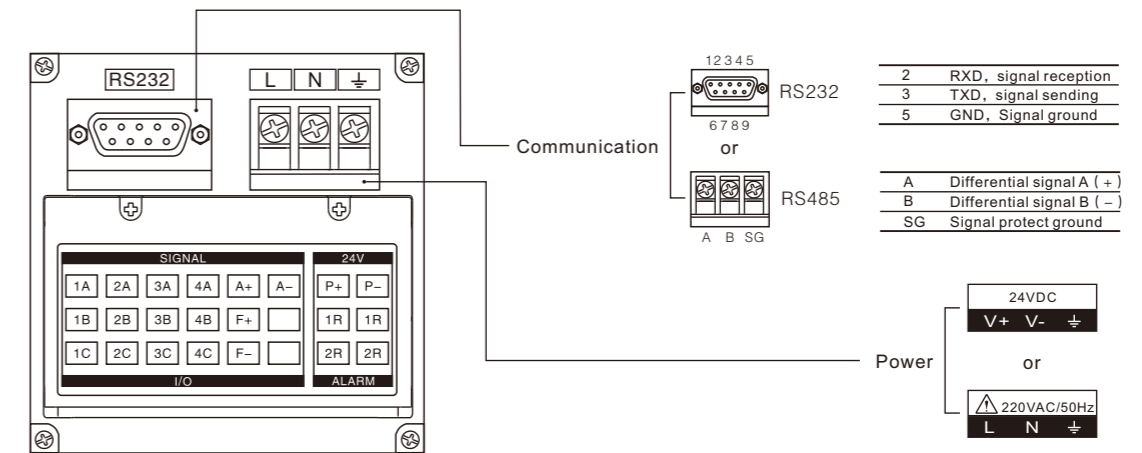| Type	Function code	Specification code		Instruction
KT101				1 channel input*1
KT102				2 channel input*1
KT103				3 channel input*1
KT104				4 channel input*1
Function Type	H			Recording function
Additional specification	/T1			1 channel 4-20mA signal output
	/A□	2		2 normally open contact output
		4		4 normally open contact output
	/C□	2		RS232 communication
		3		RS485 communication
		4		Micro printer terminal *2
	/U			USB function
	/S			SD card function
	/L			Accumulate/ report

◇ Product accessories(sold separately)

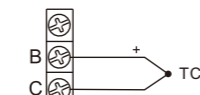| Product	Type	Specification
U disk	860207	8GB
SD card reader	860301	USB connection
SD card	860307	8GB
Communication circuit	862007	RS232 communication connect(1.5m)
	862006	RS485 communication connect(1.5m)
Power filter	863101	220VAC/1:1/50W
Software	864801	MDMR Machine data management software

◇ Customized function

规格代码	说明
/PT	防腐漆保护
/P1	24VDC供电

*1 频率信号使用专用通道，1路。
*2 只支持盘古专用微型打印机。

◇ KT100R Installation dimension(mm)

100

110   13

100

90×90

92 +0.5 −0

92 +0.5 −0

◇ KT100H Installation dimension(mm)

160

105   13

80

75

150

152 +1.0 −0

76 +1.0 −0

◇ Terminal connection diagram

KT100R Terminal arrangement

2	RXD，signal reception
3	TXD，signal sending
5	GND，Signal ground

A	Differential signal A（＋）
B	Differential signal B（－）
SG	Signal protect ground

24VDC
V+   V−   ⏚
or
⚠ 220VAC/50Hz
L   N   ⏚

Power

Communication

RS232

RS485

KT100H Terminal arrangement

24VDC
V+   V−   ⏚
or
⚠ 220VAC/50Hz
L   N   ⏚

Power

Communication

RS232

RS485

Direct current input

Direct voltage input

Two wire system transmitter power distribution wiring

RTD

TC

FR

4~20mA Analog Output

Relay output
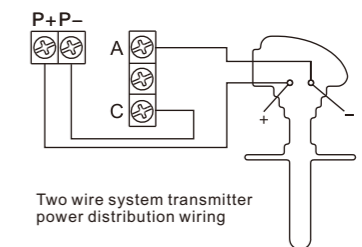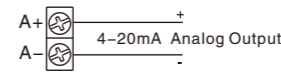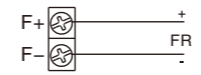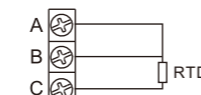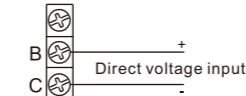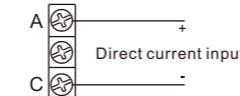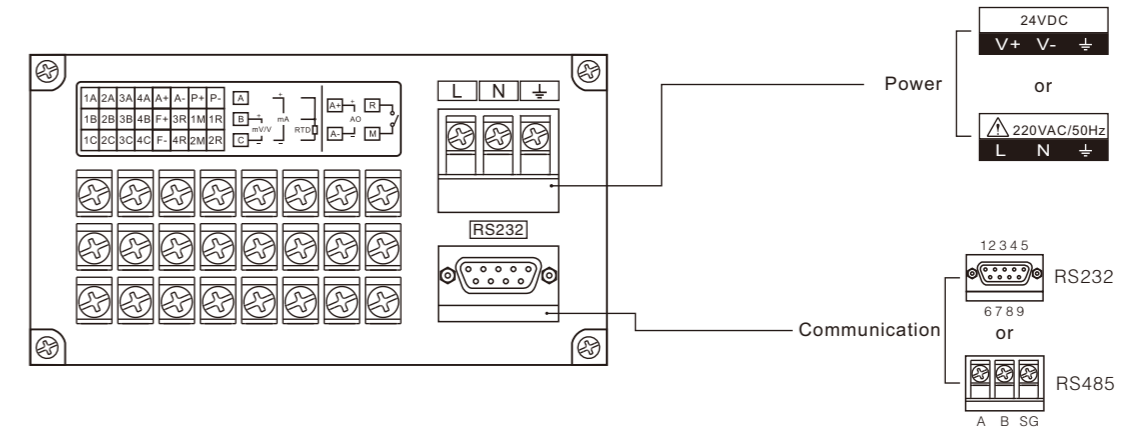
KT400 Paper recorder

Product overview   Display
Technical index   Selective table
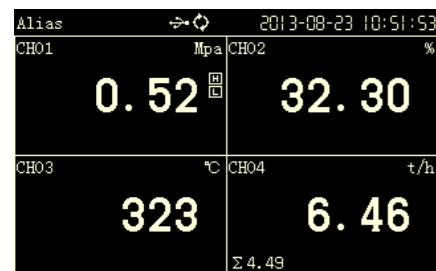Installation dimension   Terminal connection chart

◇ Product overview

KT400 paper recorder support 4 universal input, input DC current, DC voltage, frequency, MV, thermocouple, thermal resistance and so on many kinds of signal. Sensor with power output, relay alarm output, transmission output,flow accumulative calculating/report, historical data dump, present printing function. Under certain occasions such as when present data are needed, it's better to use PANGU KT400 paper recorder. User can print historical data, historical curves, timing data, accumulative report according to their need. See printing type in KTP micro printer.
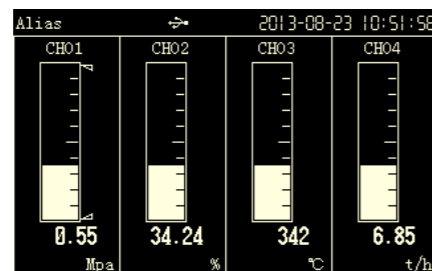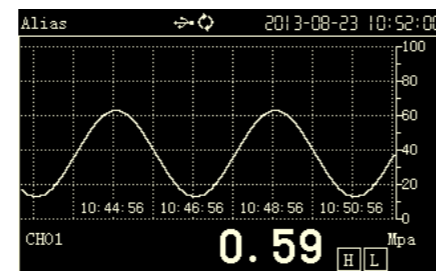
◇ Display

Digital display
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in digital form.
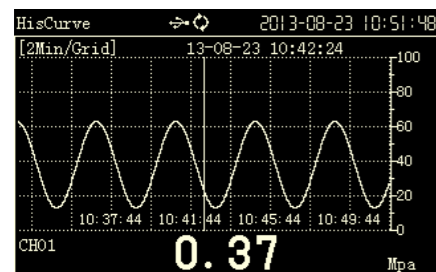
Bar
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in bar chart.
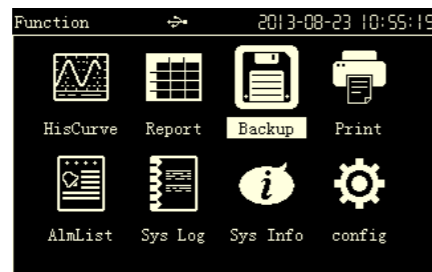
Timing curves (lengthways)
Measured values, channel number, engineering unit, alarm status and accumulative message,all of them will be displayed in timing curves.
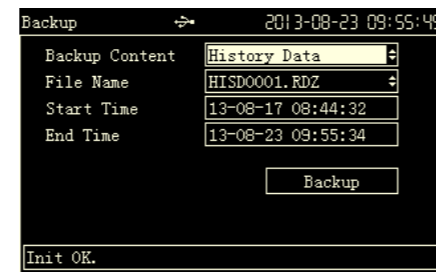
Historical curves
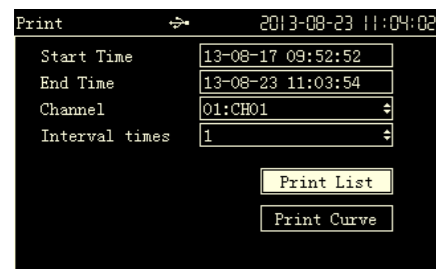Historical data can be represented in curves.
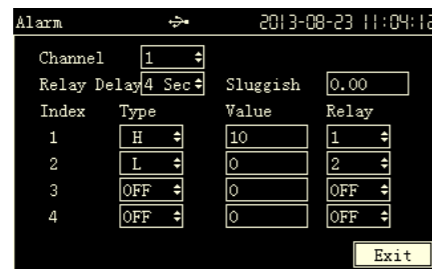
Menu
Present inquiry and backup content.

Data backup
Backup the chosen period historical data to U disk and SD card in files.
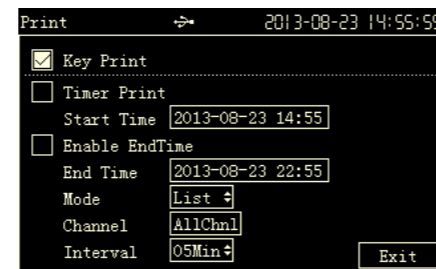
Data printing
Print the chosen period historical data in curves.

Alarm configuration
Every channel can set four random alarm points.

Print Configuration
Setting button print and regular print, print real–time data for each channel.

◇ Technical index

Structure

Installation method	Embedded installation (vertical)
Installation angle	Uppermost 30 degrees of backward inclination
Mounting plate thickness	1~10mm
External size	160(W) × 164(H)x110(D)
Net weight	< 1.5Kg(Optional component not included)

Power

Nominal voltage: 220VAC
Voltage range: 100VAC ~ 240VAC
Rated frequency: 50Hz
Consumption: ≤25W(Optional function included)

Print function

Printer: micro penal printer
Print content: timing data, historical data, accumulative report
Print type: manual print, time print

Memory recording time

Continuous recording mode, the recording time length relationship table and the recording interval:
The recording interval can be set up to 30 minutes.

Record gap	1s	2s	10s	1min	2min	5min
Time length	3d	6d	1m	6m	1y	2.5y

Other functions

The same with KT200.

◇ Selective table

Type	Function code	Specification code		Instruction
KT401				1 channel input
KT402				2 channel input
KT403				3 channel input
KT404				4 channel input
Function Type	R			Recording function
Additional specification		/T1		1 channel 4-20mA signal output
		/A□	2	2 normally open contact output
			4	4 normally open contact output
		/U		USB function
		/L		Accumulate/ report

◇ Product accessories(sold separately)

Product	Type	Specification
U disk	860207	8GB
Power filter	863101	220VAC/1:1/50W
Printing paper	861001	Applied to KT400R、KTP series
Print ribbon	861101	Applied to KT400R、KTP series

◇ Installation dimension(mm)

160   89   18

164   158

150   152

160
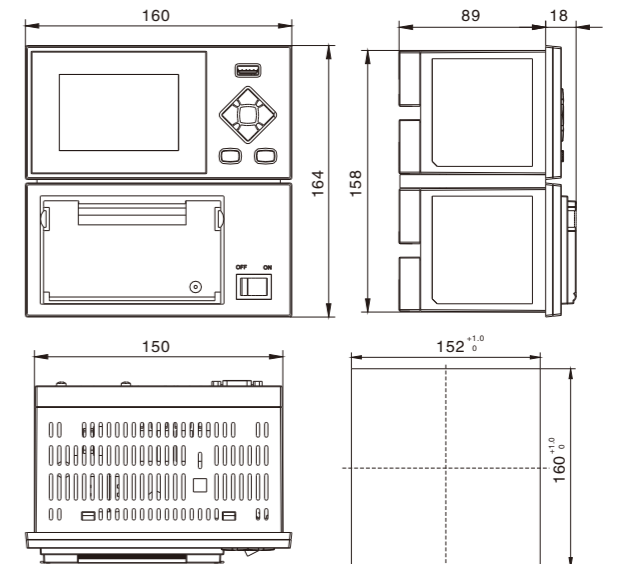
◇ Terminal connection diagram
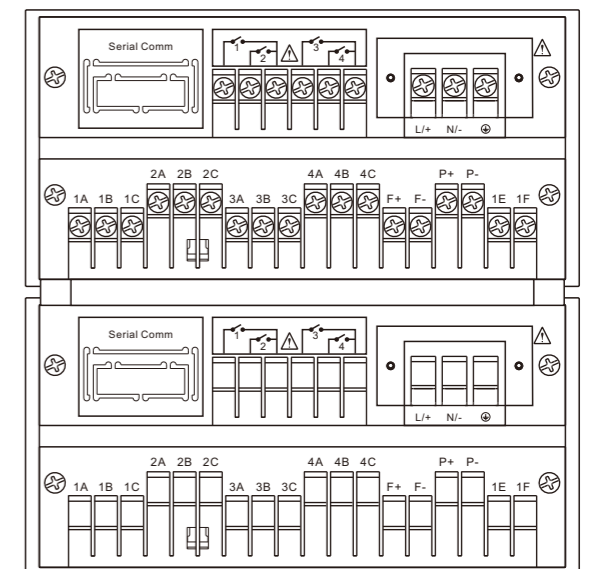
NB: the connection method are the same with KT200

KTP Micro printer

◇ Product overview

KTP disk installed wide line printer is the KT series instruments supporting products. Plate mounting structure of the printer can be mounted directly on the instrument panel, the front panel for paper, the installation is very convenient to use.

◇ Technical index

- The wide line high speed printing, printing density of 240 point / line, print contentclear and rich.
- With no paper recorder supporting the use of.
- The RS232 serial connection.
- It can print data and curve.
- The former paper type, convenient use and maintenance.
- The AC220 AC power supply, power consumption is less than or equal to 15W.
- Printing paper：ordinary white paper, the maximum diameter φ40mm, paper width 57.5 ± 0.5mm..
- Ribbon: ERC–09 cartridge。
- External size：160(W) × 80(H) × 100(D)mm。
- Hole size：152(W) × 76(H)mm。

◇ Type style

CH01	km³/h
Time	
	DATA
2013-05-03 17:00:30	14.0
2013-05-03 17:00:31	14.0
2013-05-03 17:00:32	14.0
2013-05-03 17:00:33	14.0
2013-05-03 17:00:34	13.9
2013-05-03 17:00:35	13.9
2013-05-03 17:00:36	13.8
2013-05-03 17:00:37	13.7
2013-05-03 17:00:38	13.7
2013-05-03 17:00:39	13.6
2013-05-03 17:00:40	13.5
2013-05-03 17:00:41	13.4
2013-05-03 17:00:42	13.3
2013-05-03 17:00:43	13.2
2013-05-03 17:00:44	13.2
2013-05-03 17:00:45	13.1

Historical data print result

From : 2013-05-03 16:55:45
To : 2013-05-03 17:00:44

CH01 km³ h

16:55:48 12.0

16:57:52 12.4

16:58:25 11.0
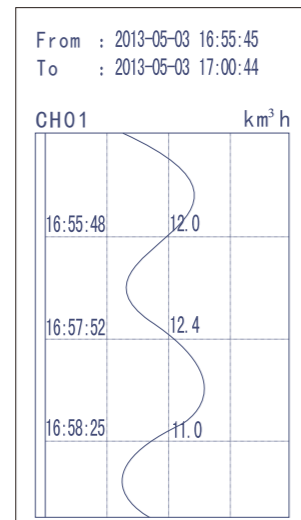
Historical curve print result

Type: Monthly Rpt CH01
2013-09 Σ0.0

01:0.5	17:7.4
02:1.1	18:2.1
03:0.8	19:4.2
04:0.2	20:4.1
05:5.6	21:6.1
06:8.0	22:6.2
07:0.6	23:9.0
08:0.3	24:5.8
09:0.9	25:5.1
10:1.0	26:1.4
11:0.4	27:0.7
12:1.2	28:0.8
13:3.0	29:7.1
14:4.6	30:5.6
15:2.5	
16:7.0	

Total: 103.3

Accumulative report print result

Time: 2013-05-03 16:52:00

01:CH01 Data 10.0 km³/h
02:CH02 Data 6.67 mbar
03:CH03 Data -200.0 km³/h
04:CH04 Data 6.67 mbar

时间：2013-05-03 16:52:00

01:CH01 Data 12.3 km³/h
02:CH02 Data 6.47 mbar
03:CH03 Data -300.0 km³/h
04:CH04 Data 5.56 mbar

时间：2013-05-03 16:52:00

01:CH01 9.98 km³/h
02:CH02 3.47 mbar
03:CH03 -300.0 km³/h
04:CH04 5.00 mbar

Timing data print result