User manual – KH300

1、Preface

1.1、Preface

Please read this manual before you use the instrument.

1.2、Parts list

Part name	amount	y/n
Main machine	1	y
Bracket	2	y
U disk	1	If U selected
CD	1	y
Manual	1	y

1.3、Notice

- When you open the package,please check the appearance and the type to make sure it is the one you customized.If there are any problems please contact us immediately.
- Please understand the connecting and operation before the installation
- Please use the instrument in good condition.To avoid the dangerous you'd better not to open if by yourself,if there are any problems,please contact us at first.
- Don't use the organic solvents to clean the LCD screen or sharped by objects-extruded,it will damage the screen.
- The instrument should be detected once a year , if it is out of the range error, it mostly lead by the moisture ,dust or corrosion. You can clean and dry it to solve the above problem. If don't ,please contact our technicians.

2、General

2.1、Brief feature

5.6 inch TFT color LCD, wide visual angle, high lightness and contrast.
Flexible setup function and a powerful statistics analysis function, easy operation
Multiple channels input, photoelectric isolation for different channels
TC and RTD input with nonlinear amendment, high precision and stable performance.
Huge capacity storage and long recording time. The standard storage is 8 MB. It can be increased by as per customer's requirement.

2.2、Technical data

- Input specification

TC : K、S、E、J、T、B、N
RTD : Cu50、Pt100、Cu100
Linear voltage : 0 - 5V、1 - 5V and etc.
Linear current : 0 - 10mA、4 - 20mA and etc. (Need to connect with 500Ω or 250Ω precision resistor if no any speical requirment when placing order)

- Measure range

K (-50 ~ 1300℃)、S (-50 ~ 1700℃)、T (-200 ~ 350℃) 、E (0 ~ 800℃)、
J (0 ~ 1000℃)、B (300 ~ 1800℃)、N (0 ~ 1300℃)
Cu50 (-50 ~ 150℃) 、Pt100 (-200 ~ 600℃)、Cu100 (-50 ~ 150℃)

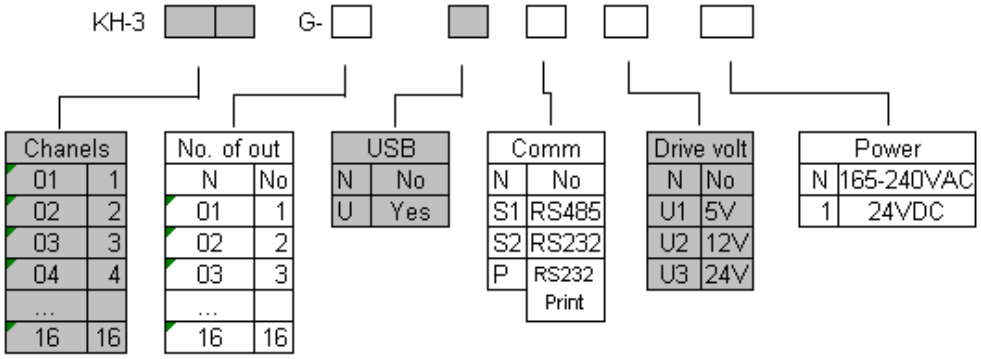
Linear input：-29999 - 29999, up to customer

Measure precision : 0.2 grade ----- RTD, linear voltage, linear current, TC input and copper resistance or freezing point compensation
0.2%FS±2.0℃ ----- TC input and measure temperature for compensating cold terminal by meter interior component
Respond time ≤1 s (setup filtering parameter is zero)
Alarm function: high limit, very high limit, low limit, very low limit, up to 16 alarming output, can be used repeatly.

- Power consumption ≤45W
- Ambient temperature : 0 - 50℃
- Ambient humidity : ＜85%RH
- Dimension : 144×144×250
- Power : 165 - 240VAC，-15%，+10% / 50 - 60Hz

2.3、Type definition

The types definition of recorders as followings chart :



3、Installation

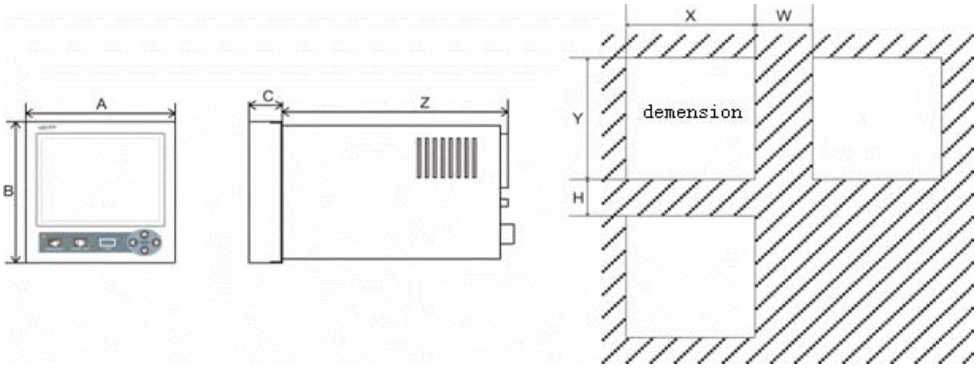
3.1、Installation ambient

1.Ambient temperature : 0 - 50
2.Ambient humidity: 10%-85% (no dew)
3.Keep away from sunlight, steam, caustic gas and electromagnetism.
4.The thickness of steel plate for setting the meters must no less than 4mm, otherwise it will lead to shake.
5.Please keep the good venting around meters.

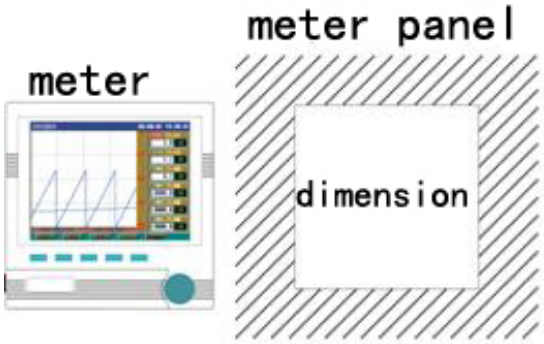
3.2、Installation dimension (unit : mm)

Please see below chart:

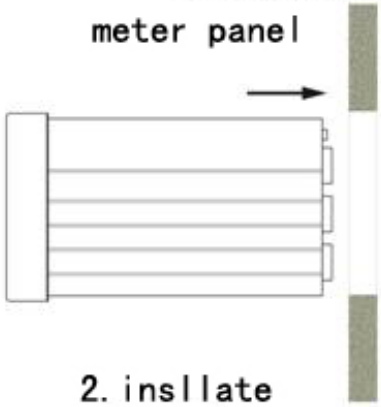
A	B	C	Z	X	Y	W	H
144	144	32	218	138	138	>100	>100



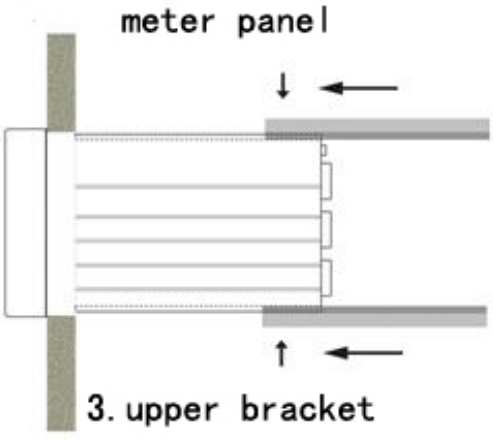
3.3 Installation method



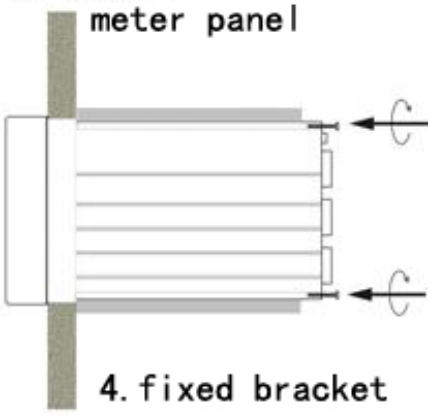
1. dimension



2. insllate

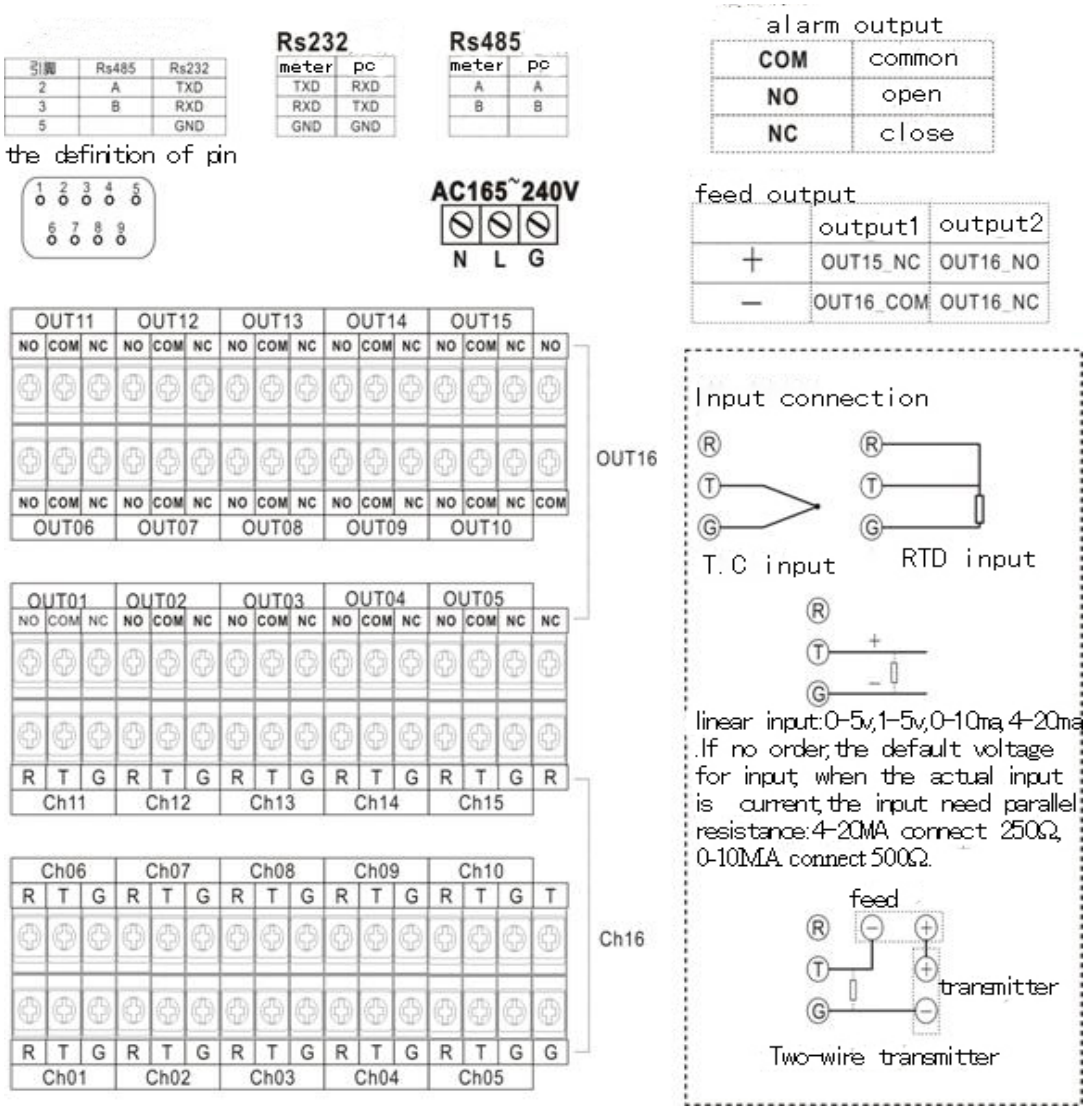


3. upper bracket



4. fixed bracket

3.4 Terminal description



3.5、Connection description

3.5.1 Power connection

Power connection: N-N, L-L, G-Gnd

power voltage: AC165~240V

3.5.2 Alarm output connection

There are 3 terminals for each alarm output: COM,NC,NO.

COM ---- common terminal

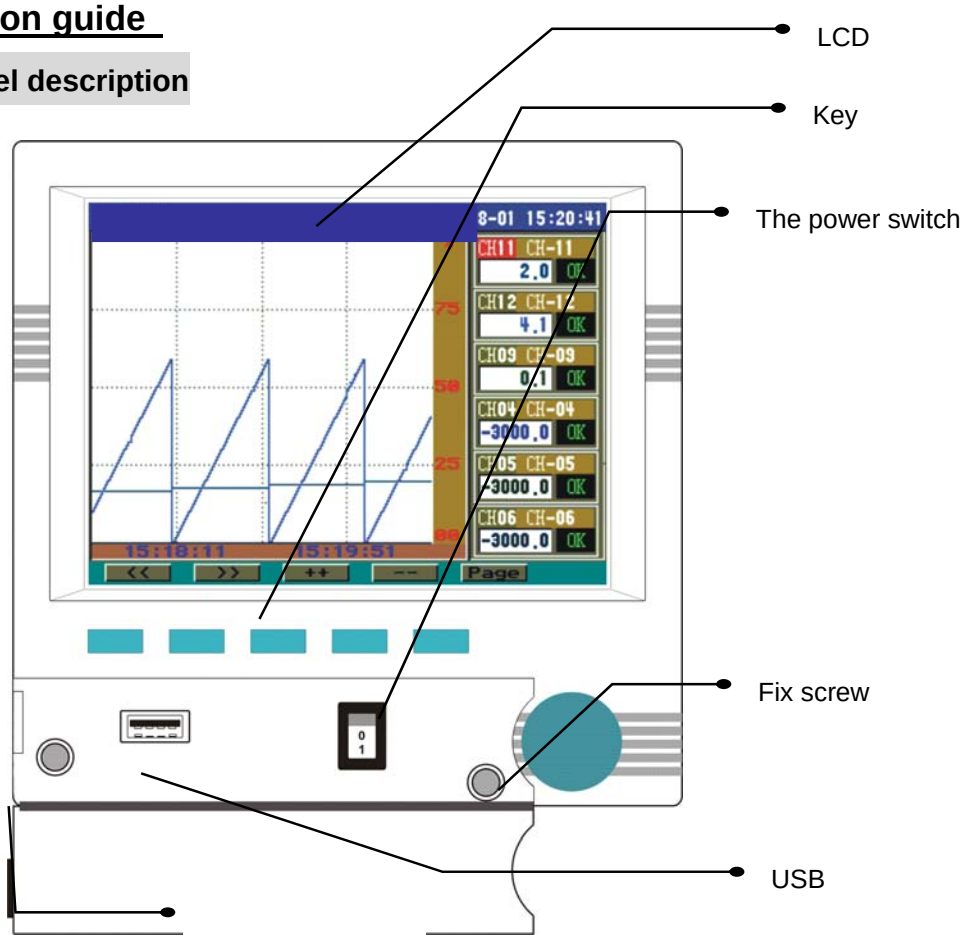
NC ---- normally close terminal

NO---- normally open terminal

The capacity of relay is 3A/220VAC，please use intermediate relay when the load is bigger than the rated power。

4、Operation guide

4.1、Panel description



4.2、Key operation

>> : cursor right/down ;

<< : cursor left /up ;

++ : add ;

-- : subtract ;

Page : switch the interface ;

Ent : enter ; digit select

4.3、Configuration

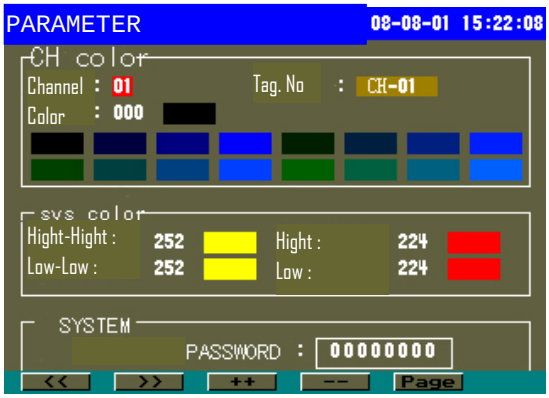
When startup the instrument wait few seconds until the system will recall the last memory parameters. During this you can see on the display the soft version for your recorder .
After initializing the recorder is in the recordein mode.
Using Page you can scroll into the main screens.
The name of the screen is displayed in the left-up corner as bellow :

Real Time Curve Page Multi-Channel Page Single Channel Page Bargraph

History Curve Page PARAMETER Page Real Time Curve

4.4、PARAMETER menu

Using [Page] go to PARAMETER screen.



Press [<<] or [>>] to move cursor to the parameter you want to change.
Press [++] or [--] to change the value of parameter.

Adjustable parameters in PARAMETER screen :

Chanel Select the channel you want to change the settings.

Press [>>]

Color Change the color of selected channel in normal state (no alarm).

Press [>>]

Hight-Hight Change the color of the selected channel in case of VERY HIGH alarm.

Press [>>]

Hight Change the color of the selected channel in case of HIGH alarm.

Press [>>]

Low_Low Change the color of the selected channel in case of VERY LOW alarm.

Press [>>]

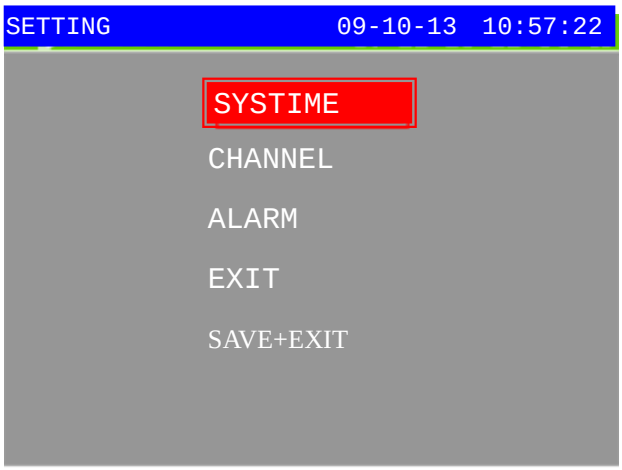
Low Change the color of the selected channel in case of LOW alarm.

Press [>>]

Password Use [++] and [--] to insert the correct password and then press [Page]

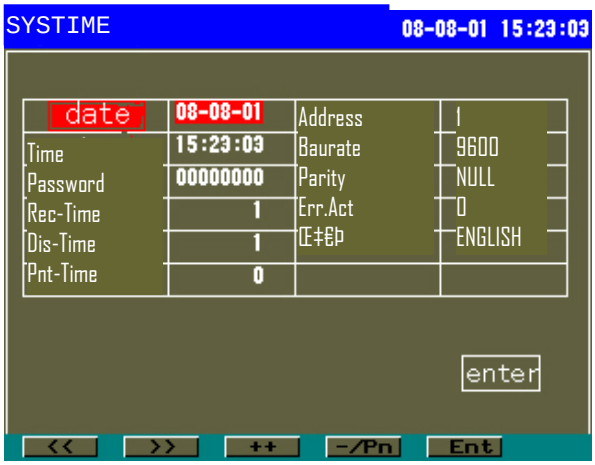
In this moment you have acces to SETTING screen.

4.5、SETTING menu



Use << or >> to select the menu you want to change settings.
Then press Ent to go into relevant menu:

SYSTIME



Err.Act.	Single Channel	History Curve
0	3275,1 / -3000,0	OPEN / HH --- / LL
1	0 / -3000	0 / OK --- / LL
2	.-2000 / -3000	.-2000 / LL --- / LL
3	3275,1 / -3000,0	OPEN / HH --- / LL
4	0 / -3000	0 / OK --- / LL
5	.-2000 / -3000	.-2000 / LL --- / LL
6	3275,1 / -3000,0	OPEN / HH --- / LL
7	0 / -3000	0 / OK --- / LL
8	.-2000 / -3000	.-2000 / LL --- / LL

Press << or >> to move cursor to the parameter you want to change.
Press ++ or -- to change the value of parameter.

Adjustable parameters in SYSTIME screen :

Date Change the date.

Press >>

Time Change the time.

Press >>

Password Change the password.

Press >>

Rec-Time Change the recording interval. (s)

Press >>

Dis-Time Change the display trend refresh interval. (s)

Press >>

Pnt-Time Change the printing interval (valid only for recorders with print port). (s)

Press >>

Address Change the communication addres in case of RS485 network.

Press >>

Baudrate Change the baudrate in case of RS485 network.

Press >>

Parity Change the parity in case of RS485 network.

Press >>

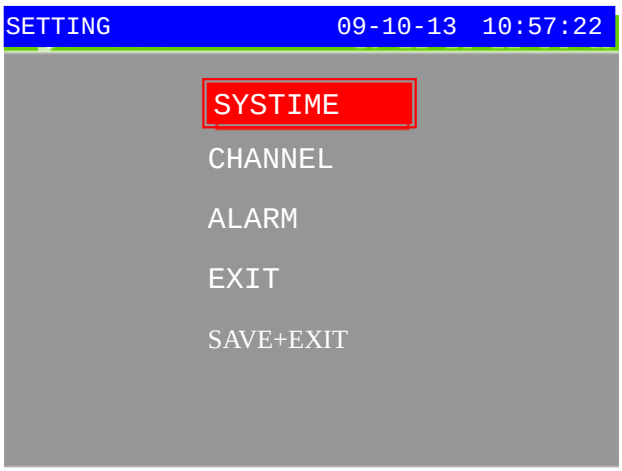
Err.Act. Change the behaviour in case of alarm.

Press >>

[E‡€þ Change the menu language.

Press >>

Enter Back to SETTING menu.



Use << or >> to select the menu you want to change settings.
Then press Ent to go into relevant menu:

Channel

Channel Select the channel you want to change settings.

Press >>

Tag.NO Change the destination of the channel (as sensor no.).

Press >>

CopyFrom Copy the same settings from specified channel.

Press >>

Input Set the input sensor.

Press >>

Decimal Set the decimal places to be displayed.

Press >>

Disp.Hi Set the maximum limit of the graph **(recommended value = 100)**.

Press >>

Disp.Lo Set the minim limit of the graph **(recommended value = 0)**.

Press >>

Filter Set the filter time to this input. (s)

Press >>

Unit Set the measurement unit.

Press >>

C.jc. Cold junction compensation.

Press >>

Adjust Calibration of input by adding this value.

Press >>

Low Cut Set the “0 to display” limit. Values lower than this value will force the display to 0.

Press >>

Tot.Dec. Set the TOTALISER decimal point.

Press >>

Total.K Set the TOTALISER multiplier constant for instantaneous value (k x CH1Value = TOTAL).

Press >>

Multiple Calibration of input by multiplying with this value.

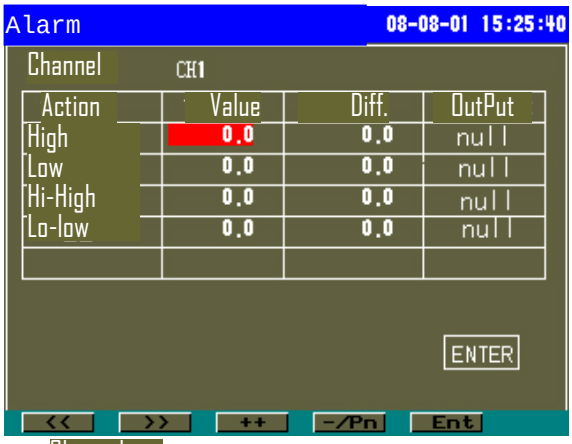
Press >>

mAoutput Set the output channel for analogue output 4-20mA.

Press >>

Enter Back to SETTING menu.

Alarm



Channel — Select the channel you want to change settings.

Press >>

High — Change the value of alarm in case of HIGH alarm.

Press >>

Value---- — Change the value of HIGH alarm.

Press >>

Diff.---- — Change the value of hysteresis for HIGH alarm.

Press >>

OutPut---- — Change the Output relay for alarm.

Press >>

Low — Change the value of the selected channel in case of LOW alarm.

Press >>

Value---- — Change the value of LOW alarm.

Press >>

Diff.---- — Change the value of hysteresis for LOW alarm.

Press >>

OutPut---- — Change the Output relay for alarm.

Press >>

Hi-Hight Change the value of the selected channel in case of VERY HIGH alarm.

Press >>

Value---- Change the value of VERY HIGH alarm.

Press >>

Diff.---- Change the value of hysteresis for VERY HIGH alarm.

Press >>

OutPut---- Change the Output relay for alarm.

Press >>

Lo_Low Change the value of the selected channel in case of VERY LOW alarm.

Press >>

Value---- Change the value of VERY LOW alarm.

Press >>

Diff.---- Change the value of hysteresis for VERY LOW alarm.

Press >>

OutPut---- Change the Output relay for alarm.

Press >>

Enter Back to SETTING menu.

4.6、Example for setting of input channel

Change “K” type input to “T” type input .

Press Page more times , until you see PARAMETER screen.

PARAMETER

Press << 、>> to move the cursor to Password . Then press ++ or -- to insert the right password. Then press Page . You will see the SETTING screen

SETTING

Press << 、 >> to move the cursor to Channel menu. Press Ent .

Channel

Channel >> Tag.NO >> CopyFrom >> Input

Then press ++ or -- to select the input.

Then press >> more times until you move the cursor on Enter .

SETTING

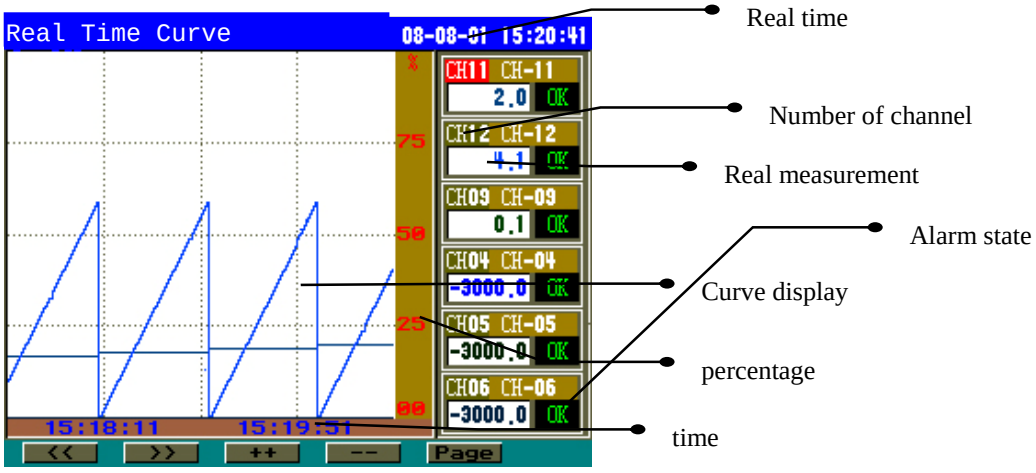
Press << 、 >> more times to move the cursor to SAVE+EXIT .

Press Ent to go back to REAL TIME CURVE menu.

Real Time Curve

5、Screen description

5.1、Real Time Curve display

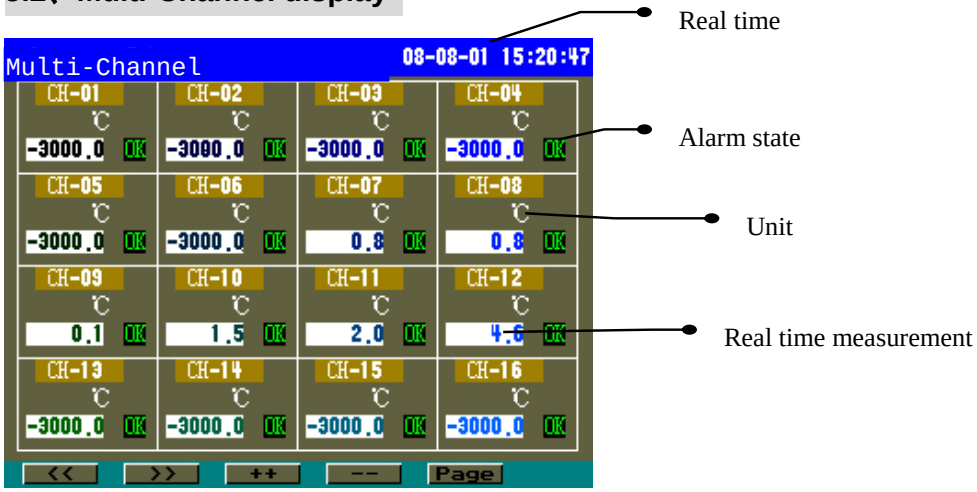


The measurement and real curve of six channels can display on one interface at same time. Press << or >> to move cursor, press ++ or -- to amend the channel number of curve. press Page to switch the next interface.

Alarming state description：

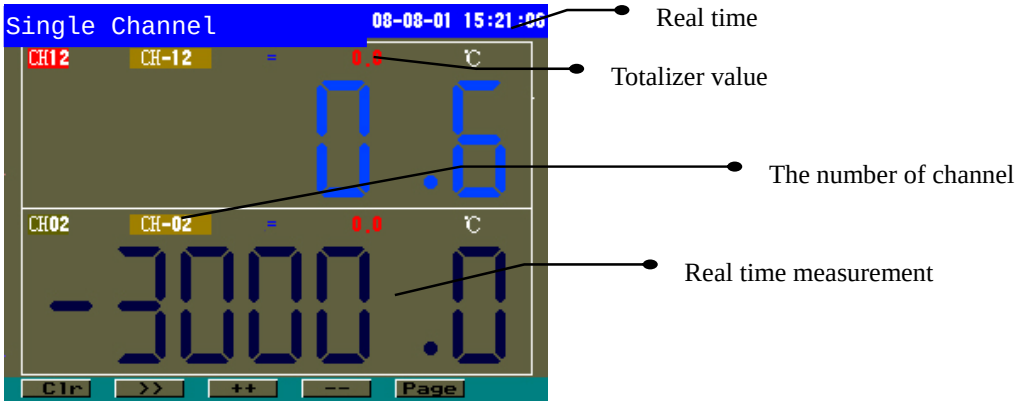
“OK”: normal, no alarming
“LA”: lower alarm limit
“HA”: upper alarm limit
“LL”: bottom lower alarm limit
“HH”: top upper alarm limit.

5.2、Multi-Channel display



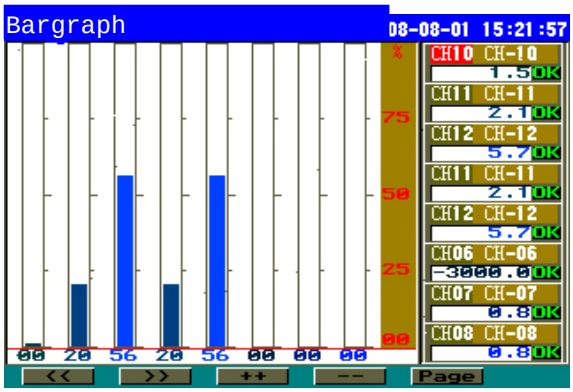
Press Page to switch the next display.

5.3、Single Channel display



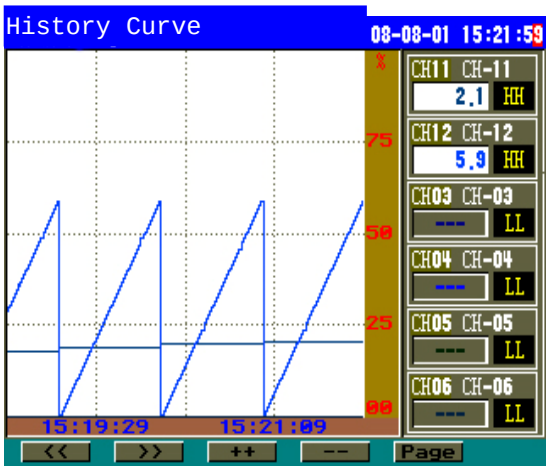
Press << or >> to move cursor
Press ++ or -- to amend the channel number. Press Clr to delet the Totalizer Value.
Press Page to switch the next display.

5.4、Bargraph display



Press << or >> to move cursor
Press ++ or -- to amend the channel number.
Press Page to switch the next display.

5.5、History curve



Press << or >> to move cursor
Press ++ or -- to amend the channel number or history time of the curve.
Press Page to switch the next display.

6、System configuration parameter setup

There are two kinds system configuration parameter: ***common parameter*** and ***channel parameter***. Common parameter is the only system parameter or parameter which is suitable for all different channels. Such as time, date, recording interval, display interval. Channel parameter is the independent parameter for each channel. Such as input type, measure range, alarm etc.

6.1 Common parameter

Default	Parameter	Range	Description
	Date	valid date value	System real date
	Time	valid time value	System real time
000000	Password	character	System password is provided to prevent system parameter not be changed viciously.
1	Record interval	1~3600 (s)	Record total time is longer when the interval time is bigger. And vice versa. When the variation of measured object is slow, this parameter can be set bigger, otherwise it can be set smaller. Mostly, this suitable value should be the half of measured variation time or smaller.
1	Display interval	1~3600 (s)	Graph refresh is slow when the interval time is big. The range of relevant time of curve is big too. And vice versa.
0	Print interval	1-30000s	The unit is “s” : It don’t print when the value is “0”
1	Local address	0~255	Local address must be difference when there are multi-communication.
9600	Baud rate	2400 、 4800 、 9600、19200	It is communication speed. The baud rate must be same as host computer (Such as PC) when there are multi-communication.
	Language	English, Chinese	Language switch

6.2. Channel parameter

Default	Channel	Range	Description
none	number of channel	CH1~CH16	the relevant channel of current parameter
		character	number
	CopyFrom	CH1~CH16	Move the cursor to this menu and input the number of channel which will be copied, then press Ent, the parameter of source channel will be copied to current channel. All the parameter include alarm parameter are same between source channel and current channel. After finishing setting, the number of channel will become to current channel no .automatically
K	Input	K、S、B、T、E、J、N、_1_、Pt1b、Cu50 、 Cu1b 、 0-5V 、 1-5V 、 0-10mA, 4-20mA、	_1_ : remaining input type for TC _2_ : remaining input type for RTD _3_ : remaining input type for linear input
1	Decimal	0-4	The decimal point .
100	Disp.Hi	-20000 ~ 20000	The range of TC and RTD is constant. This parameter and upper limit of range can be used together to make real time curve. When there is linear input, the parameter also as the lowest limit of range. When the input signal is temperature, the value has a precision with 0.1.
0	Disp.Lo	-20000 ~ 20000	The range of TC and RTD is constant. This parameter and lowest limit of range can be used together to make real time curve. When there is linear input the parameter also as the upper limit of range. When the input signal is temperature, the value with precision up to 0.1.
0	Filter	0 ~ 99	When the digitals flop because of the interference of input signal, the user can setup this parameter to make it smooth. The measured value is more stable when filter coefficient is bigger, but the response is slower if the filter is bigger.
˚C	Unit	character string	engineering unit
YES	C.jc.	NO (none) YES	This parameter only valid for the first channel. Setup it in other channels just control whether it use TC cold Junction temperature compensation. NO: none compensation, YES: (measure temperature component compensation) Cu50 (RTD Cu50 compensation)
0,0	Adjust	-10000~ 10000	It can be used to correct the static error of measure value. In the mostly instance it is 0. It will be set when there has the static error or some special request. When the input signal is temperature the value has a precision with 0.1.
0.0	Low Cut	-10000~ 10000	It is used to select the values not significant . Bellow this value the displayed value is considered zero.
2	Tot.Dec.	0~ 4	Number of decimals for Totalizer.
0,00	Total.K	0~ 30000	Multiplier constant for Totalizer.
0,0000	Multiple	-2,0000~ 2,0000	Multiplier for operation formula calibration.
0	mAoutput	0~ 16	Analogue output for appropriate input.

6.3. Alarm parameter

Default	Parameter	Range	Description
	Number of channel	CH1~CH6	The relevant channel of current parameter
0,0	Low	-20000 ~ 20000	Alarmworks when measured value is smaller than defined value.
0,0	High	-20000 ~ 20000	Alarm works when measured value is bigger than defined value.
0,0	Lo-Low	-40000	Alarm works when measured value is smaller than defined value. (bottom lower alarm)
0,0	Hi-High	-40000	Alarm works when measured value is bigger than defined value. (top upper allarm
0,0	Lower return difference limit	0 ~ 2000	Hysteresis
0,0	Upper return difference limit	0 ~2000	Hysteresis
0,0	Bottom lower return difference limit	0 ~ 2000	Hysteresis
0,0	Top upper return difference limit	0 ~ 2000	Hysteresis
NULL	Lower alarm limit output point	None Output 1~ 16	The lower alarm limit output position of relevant channel. None: no output The relevant output is invalid when the TC or RTD is open.
NULL	Upper alarm limit output point	None Output 1~ 16	The upper alarm limit output position of relevant channel. None: no output The relevant output is invalid when the TC or RTD is open.
NULL	Bottom lower alarm limit output point	None Output 1~ 16	The bottom lower alarm limit output position of relevant channel. None: no output The relevant output is invalid when the TC or RTD is open.
NULL	Top upper alarm limit output point	None Output 1~ 16	The top upper alarm limit output position of relevant channel. None: no output The relevant output is invalid when the TC or RTD is open.

7、Function description

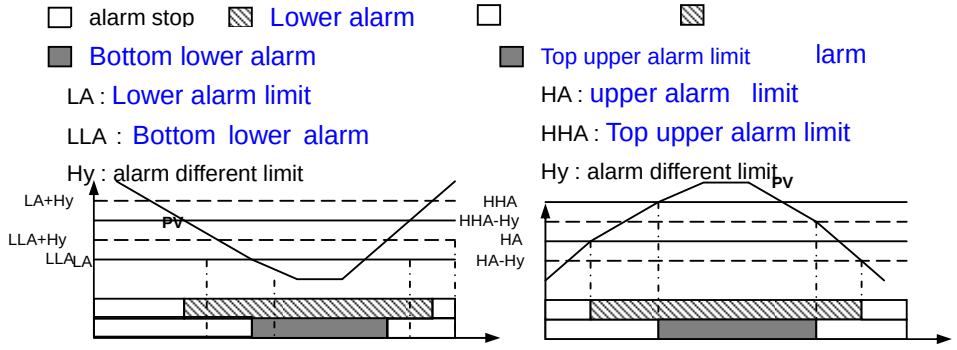
7.1、Digital filter

When the digitals flop because of the interference of input signal, the user can setup this parameter to make it smooth.

The measure value is more stable when filter coefficient is bigger, but the response is slow if the filter is bigger.

7.2、Alarm output

Lower alarm limit and bottom lower alarm limit upper alarm limit and top upper alarm limit



8、Data output and analysis

8.1、Data output

1、 Insure the file format of U disk is ‘FAT16’. If not, please format it to ‘FAT16’.

2、 Insure there is enough room in U disk, it must bigger than 8MB which is the standard meter storage.

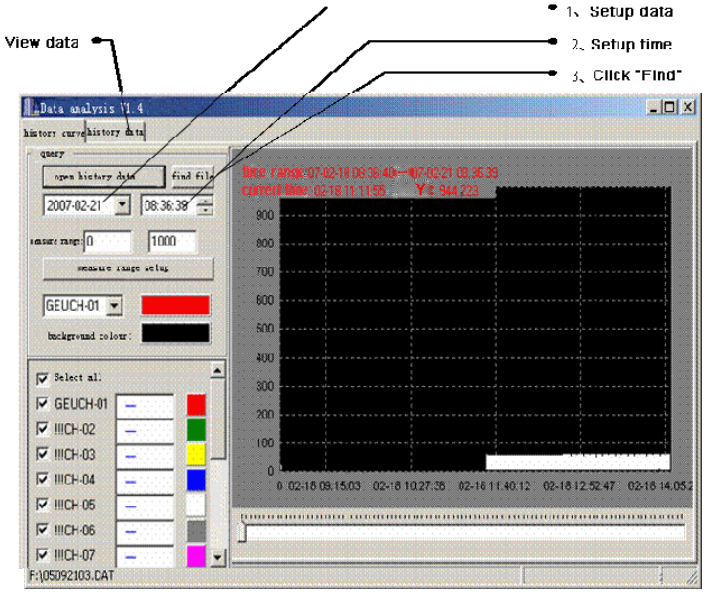
3、 Please insert the U disk into USB interface which at the front panel of meter, the meter will create a file in U disk which be named according to current date such as 021008.dat, the data will be save in it. Please don’t take U disk out during the file storage process to avoid affecting the normal work of meter. If there is something wrong in the storage process, please take U disk out and confirm it meet above requirement of point 1 and 2. If there is something wrong with the screen display, please press  to refresh the display.

4、 Please take U disk out when the ‘data output’ menu display OK.

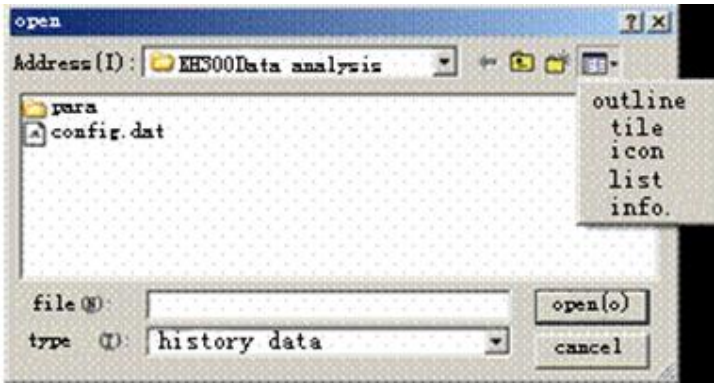
8.2、Data analysis software

1、 Please insert the U disk into computer to analyze data. If you want to save the data please copy it to computer.

2、 Run the analysis software, Click “file” >> “open…”

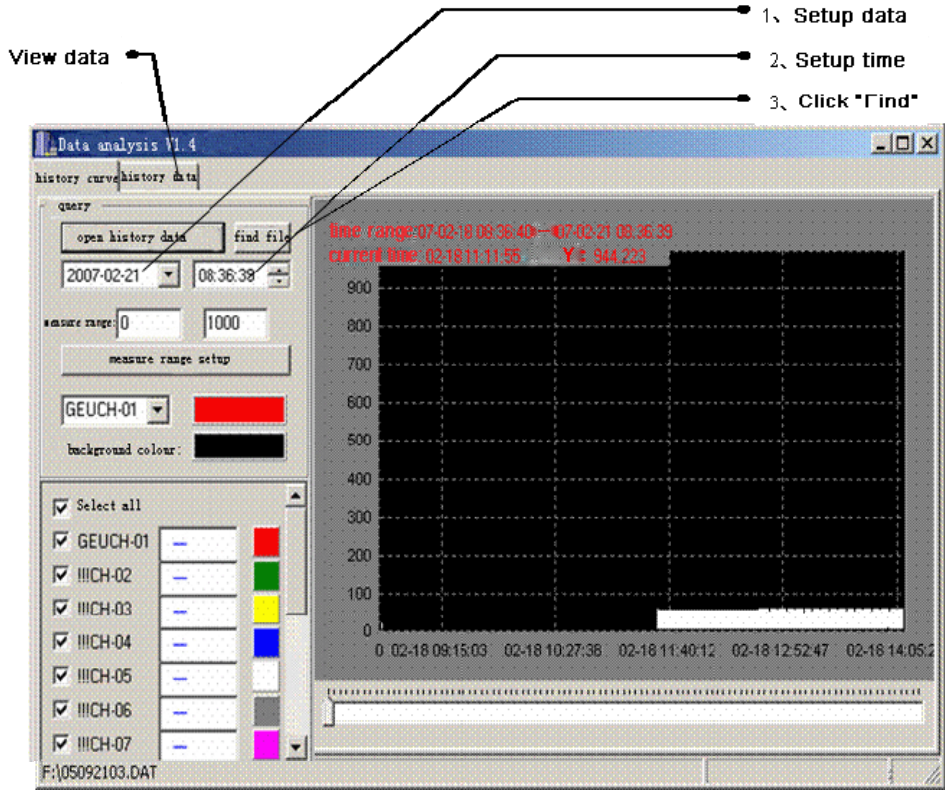


3、 Select the data file.

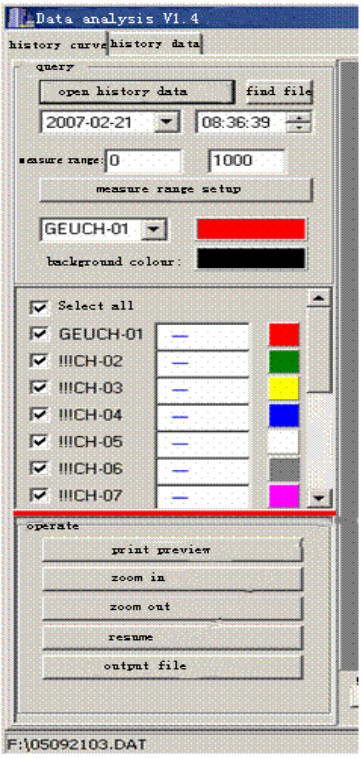


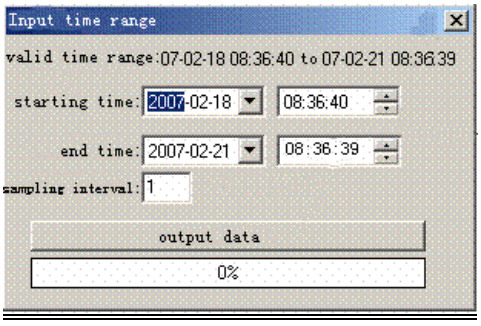
4、Click ‘open’ menu, find the data of specified time, also can output the data.

5、Setup time and date and find the wanted data.



6. data output





9、Communication

9.1、The way of communication

KH300 has serial communication. It communicate with computer by RS232 or RS485, the meter can be operated through computer, thereby achieve DCS control.

Communication agreement apply MODBUS standard agreement, it has powerful compatibility and stable communication. Up to 255 meters can be connected on one communication bus line (the repeater is required) . Password = 000000 .

MODBUS-RTU

Asynchronous communication