SAFETY PRECAUTIONS

- The instrument apply to general industrial occasions, but keep protect the device separately when you has the special using purpose. Do not operate in explosive atmosphere but keep vantilate on the installation site.
- Use Rated voltage of the power supply, correct wiring, Proper grounding, do not touch the terminals on back of the device to keep of electric shock.
- In order to be safty, keep out of charged when installation, maintenace and remove.
- It need take shielding steps when the device is close to the occassions of Mains power, high electric field, high magnetic fields and Ac contactor .
- In order to avoid measuring error when the sensor is thermocouple pls use the compensating wire correspondingly, when the sensor is thermal resistance need use three sane copper conductor and the resistance is less than 10Ω.
- Use the soft cloth to clean the instrument but keep out of organic solvents such as alcohol and petro; Turn of the power, stop using when the instrument is in water.
- In order to keep machine well, regular maintenance and maintenance is needed
- When open the cartons the instrument is broken by transportaion pls contact with the manufaturer.
- When open the cartons pls check the packing list carefully as follows:

No.	Name	Unit	QTY	NOTE
1	Paperless recorder	pcs	1	
2	User Manual	book	1	
3	Mounting bracket （with screws）	pcs	2	
4	Application	set	1	
5	Standard Software（CD）	set	1	
6	U disk	pcs		optional
7	RS232C lines	pcs		optional
8	RS232C/485 convert modula	pcs		optional
9	RS232C/CAN convert modula	pcs		optional
10	Micro printer（accessory）	pcs		optional

CONTENTS

CHAPTER 1 TECHNICAL INDEX

■ SCREEN

SCREEN:128*64 dot matrix blue LCD screen
ACCURACY: REAL TIME DISPLAY:±0.2% F.S.
RECALL ACCURACY:±0.2% F.S.
Note: Thermocouple should minus the cold end error

■ PROCESSOR

Using high-performance ARM Cortex-M3 32 bit RISC cores can realize multi-channel collection, record, display and alarm at same time.

■ MEMORY MODULA

Use large parallel capacity NAND FLASH MEMORY chip to storage history data, using serial FRAM chip to storage key system configuration parameters.

■ INPUT FUNCTION

INPUT SPECIFICATIONS: Isolate universal input，support Max 4 channel analog input.
INPUT VOLTAGE:0-5V、1-5V、0-20mV、0-100mV
CURRENT INPUT:0-10mA、4-20mA（0-20mA Noted when place order）
INPUT RESISTANCE: Res
INPUT FREQUENCY:FREQENCY SIGNAL（PI）（frenquency range：0.5-5000HZ，The other can be customsized）
THERMAL RESISTANCE:PT100、Cu50、G53、Cu100、BA1、BA2 （ require three balance wire resistance, LEAD RESISTANCE<10Ω）
THERMOCOUPLE:S、B、K、T、R、E、N、J

RADIATION PYROMETER:F1、F2

RHENIUM:WRe3-25、WRe5-26

Note: Other signal input （such as switch value input（DI））or index number（such as PT1000）need noted when place order.

■ Out put function

POWER DISTRIBUTION: Transmitter Concentration distribution +24VDC，standard distribution ＜30mA（MAX load capacity can be customized ）,Supports a variety of specifications and concentration distribution（such as 12VDC、5VDC）

ANALOG OUTPUT：Max support 2 channel 4-20mA standar current anolog output，load capacity 750Ω（max），convenient for collection of indicating instrument or DCS/PLC，realize the long signal transmitter

OUTPUT OF RELY ALARM: Max support 4 channel rely alarm output,contact capacity 3A@220VAC/1A@30VDC,Can be configured on the High High Limit/ High Limit/Low Limit/Low Low Limit alarm

■ COMMUNICATION PRINTER

COMMUNICATION INTERFACE:RS232C or RS485，support Modbus RTU protocol，baud rate----（1200、2400、9600、19200、38400、57600bps）

PRINT INTERFACE:RS232C contact with the micro printer directly，baud rate ----1200bps

■ RECORDING FUNCTION

RECORDING CAPACITY:64/128/192/248MB（FLASH capacity can choose）

RECORDER INTERVAL:1sec to 240secs，divided into 11 levels：1s/2s/4s/8s/12s/24s/36s/60s/120s/180s/240s can be

choosed

TIME STORAGE LENGTH: The length of time data storage is related to the Flash capacity. Input point, recorder interval, thecomputation formulais as follows:（THE NUMERICAL UNITS to be consistent with the formula）:

$$\text{TIME STRORAGE LENGTH} = \frac{\text{FLASH CAPACITY(MB)}\times 1024\times 1024\times INTERVAL(SEC)}{CHANNELS\times 16\times 24\times 3600}(DAY)$$

■ DATA BACKUP

U DISK: Various data can be saved to the U disk. The capacity is from 256MB to 32GB

■ POWER SUPPLY

POWER: 220VAC，50HZ.Support 24VDC（22VDC-28VDC）powe supply，support 12VDC（11.2VDC-16VDC）power supply

NOTE：DC POWER SUPPORT NEED DECLARE WHEN PLACE ORDER

■ PROTECTION FUNCTION

POWER OFF PROTECTION:internal memory protect parameters and historical data forever even if power off.

CLOCK PROTECTION: Integrated hardware clock， run accurately when power off

■ ERROR PRECESION

THERMOCOUPLE CJC ERROR:±2℃

CLOCK ERROR: ±2 secs/day

■ WORKING ENVIRONMENT

AMBIENT TEMPERATURE:0～50℃（avoid direct sun light）

AMBIENT HUMIDITY:0～85%R.H(non-condensing)

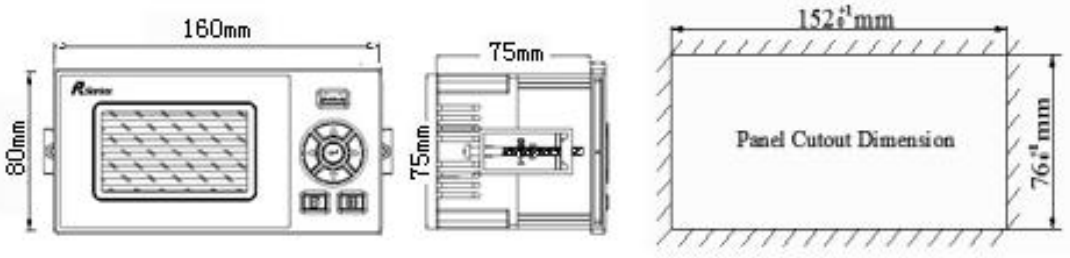
■ NET WEIGHT

WEIGHT: Approx 1.0 Kg

Note:Technical index is the universal index of the instrument, Functional configuration pls refer to the real machine

CHANPTER 2 INSTALLATION AND WIRING

■ INSTRUMENT DIMENSION



■ TERMINAL CONNECTION（REFER TO THE OBJECT）

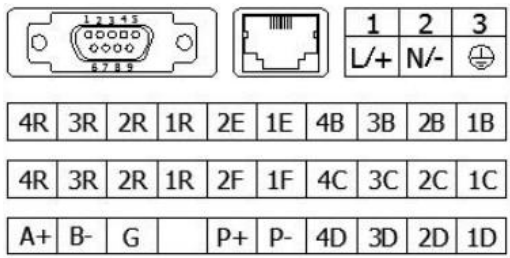


Figure 2-2

■ AC INPUT POWER WIRING

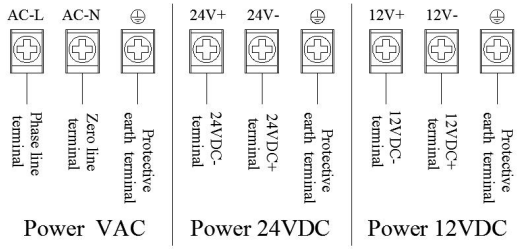


Figure 2-3

Note: The supply power of the Engineering field must in the limit of the withstand voltage of the instrument.

■ INPUT/OUTPUT SIGNAL WIRING

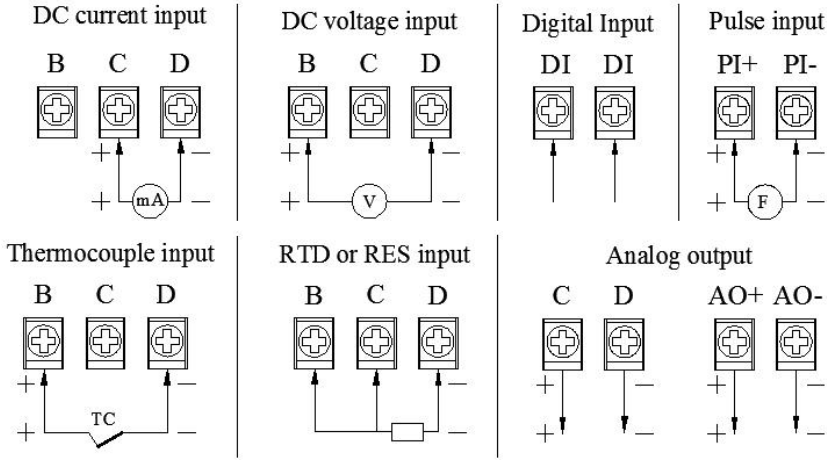


Figure 2-4

■ TRANSMITTER WIRING

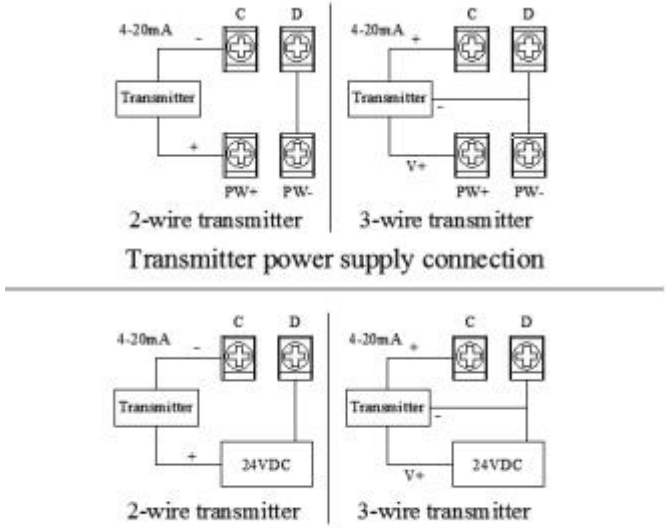


Figure 2-5

■ RELAY CONTACT OUTPUT WIRING

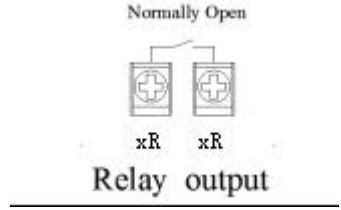


Figure 2-6

Note:Connection wire cross-sectional area:0.5～2.5mm^2, torque:50Nm. The instrument relay is normally open output mode.

■ COMMUNICATION INTERFACE DEFINITION AND WIRING

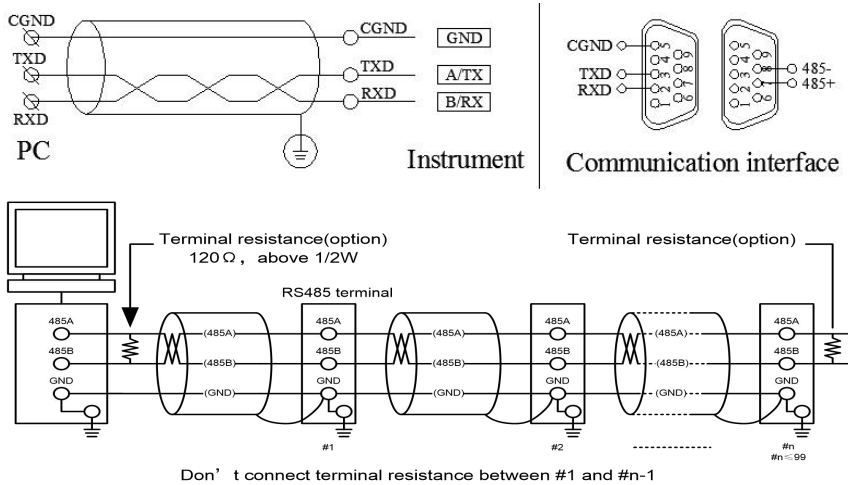


Figure 2-7

CHAPTER 3 USAGE PATTERS AND OPERATION

■ 『KEYBOARD FUNCTION』

Sign	Name	Description
	Key Menu	Used to switch operation screens or decimal places, etc.
	Key Left	Used to switch the channel or move the cursor forward, etc.
	Key Right	Used to switch the channel or move the cursor backward, etc.
	Key Up	Used to switch or increase the value,etc.
	Key Down	Used to switch or decrease the value,etc.
	Key Enter	Used to activate the input box
	Key Combination	Used to switch from operation mode to setting mode（Pressing for 1 second）

Figure 3-1

■ 『RUN MODE』

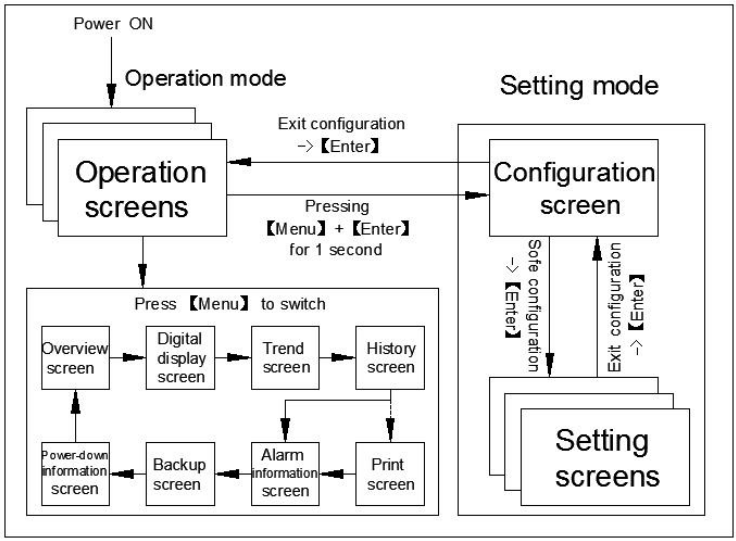


Figure 3-2

■ 『OVERVIEW SCREEN』

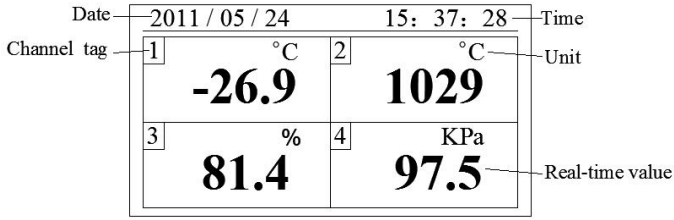


Figure 3-3

◆ Real-time value:display the engineering data of the channel engineering .

◆ Unit:display the engineering unit,can free configuration.

■ 『DIGITAL DISPLAY』

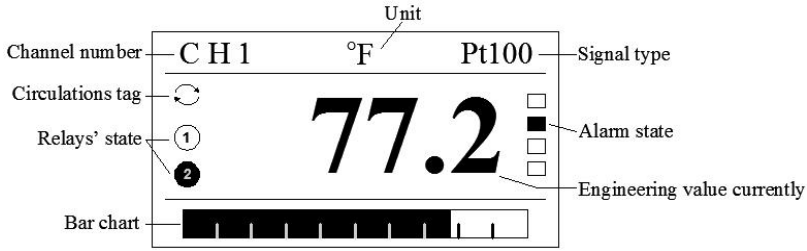


Figure 3-4

◆ Bar chart:filled area shows the present measrement percent of the range.

◆ Alarm status:From top to bottom respectively is upper limit/ limit /low limit/lower limit, □ Normal condition, ■ Transfinite alarm

◆ Relay output status:Relay out put dispaly, ❷ shows k2 relay action is in output alarm status, ① shows K1 relay no action status.

◆ Circulation state:in system configuration open auto switch , means switching cycle each channel's digital screen, Switching

interval is adjustable；No auto switch, no display.

■ 『CURRENT TREND』

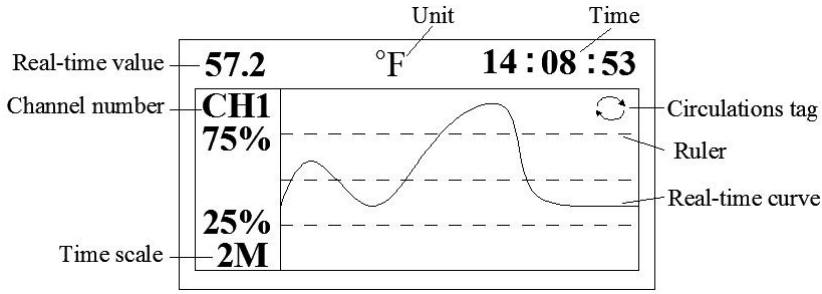


Figure 3-5

◆ Time scale:2M indicate the 2mins curve-segment.

◆ Real-time curve:Measure channel/computation data is correspondingly to the left end of the curve.

◆ Ruler:The weight scale of the screen curve, is correspondingly to the left screen percentage of the current screen and the component can be adjustable.

■ 『HISTROY TREND』

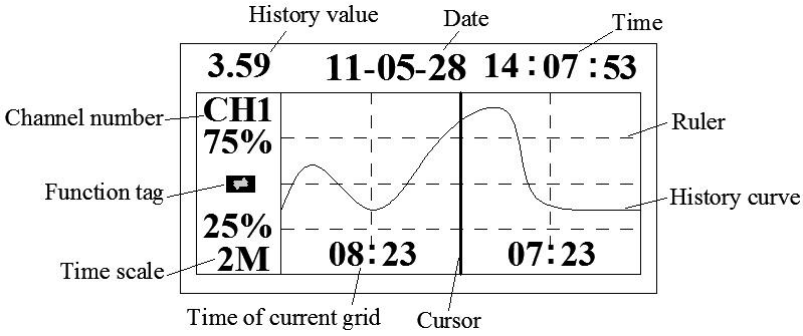
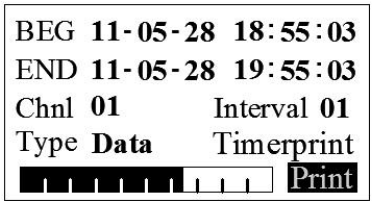


Figure 3-6

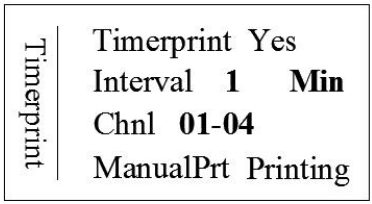
- Function tag:The present recall position,when the cursor is on ⇌,press【Enter】hidden/display cursors;press【Up】or【Down】 realize continuous and rapid recall history curve.
- Fixed point recall:When the cursor is at the position of the recall time,press 【Up】or【Down】adjust the number then press【Enter】can realize fixed point recall.

■ 『PRINT SCREEN』

Printing configuration:[print] for communication mode, in accordance with the『RUN MODE』operating switch:



ManualPrint



Timerprint

Figure 3-7

- Begin/end time:Begin time< end time< clock time.
- Print/stop: manual start/stop button.
- Channel/type:manual printing only print a single channel of historical data or curve, Timing printing can print multi-channel current data at the same time. Type be data and curve.
- Timing/manual printing button: manual switch/timing printing link button.
- Manual printing interval:the interval is according to unit recording interval.
- Regular print interval:regular print interval, the minimum interval of 1 min.
- Timed open print button:[open] when open, auto printing

after opening,no manual.

■ 『ALARM INFORMATION』

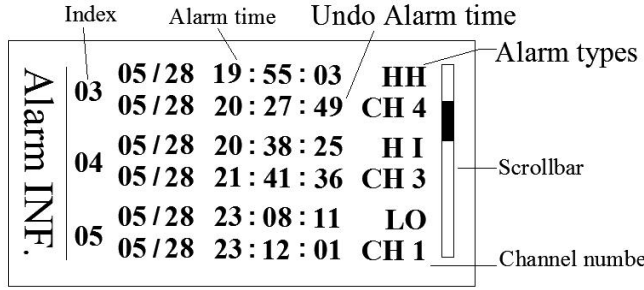


Figure 3-8

- ◆ Alarm index:Max keep 24 groups alarm information,singal channel can show 3 group information at most
- ◆ Alarm/Undo alarm time:Line first is alarm time, second line is Undo alarm time, no Undo alarm time is --/-- --:--:--
- ◆ Alarm types: High High Limit（HH）、High Limit（HI）、Low Limit（LO）、Low Low Limit（LL）
- ◆ Channel number:Current alarm information channel number
- ◆ Scrollbar:Current page

■ 『POWER INFORMATION』

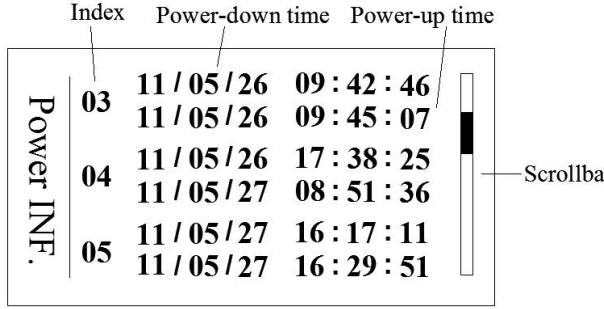


Figure 3-9

- Power-down index:Keep most 24 power-down/up information
- Power-down/up time:First line is power-down time, second line is power-up time
- Scrollbar:Current page

■ 『BACKUP HISTORY DATA』

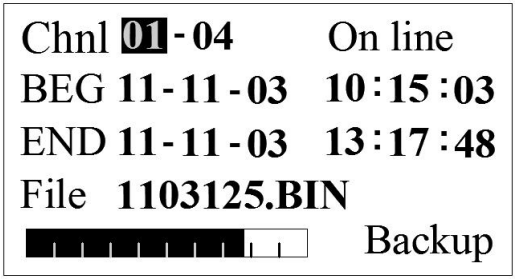


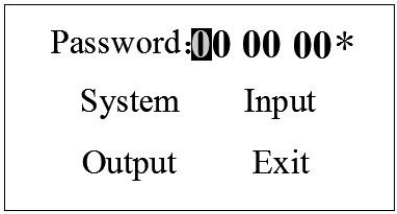
Figure 3-10

- Equipment:Show mode of U disk,on line,off line,fault state,can not detect U disk[off line],error in the back processing[fault]
- Channel:The number of backup channel，01-01 indicate backup 1 channel，01-04 indicate 1-4 channel need backup
- Begin: Need backup the start time of historical data
- End:Need backup the end time of historical data
- File:backup file name
- Progress bar: Show the current progress of the backup process
- Backup/reset/complete:Start, reset, backup complelet status button
- When the cursor is in the [BEG]or [END]Settings box, press 【Enter】 into quickly jump
- Such as an error in the way or need to copy again,put the cursor on [backup]button,press【Up】or【Down】choose to be[reset],press【Enter】then can into detecting the storage

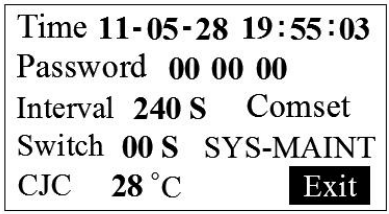
device again, when backup finish,[backup] or [reset] button come to be [complete],if need continue copy put the cursor on the [complete] button and press 【Up】or【Down】to choose [backup] and press【Enter】

CHAPTER 4 CONFIGURATION AND ASISTING OPERATION

■ 『CONFIGURATION』AND『SYSTEM CONFIGURATION』



Configuration screen



System configuration

Figure 4-1

- Hold on【Menu】 and【out】 1 sec later,enter in 『configuration』 screen
- 『Configuration』innitial password is [00 00 00],after enter in the correct password press【Enter】into classification menu, '*' no disappear indicate erro password or no press【Enter】 in confirm
- Time setting:System date and time set
- User password:User password authority set
- Record interval:Can be

1/2/4/8/12/24/36/60/120/180/240s.The longer the record interval is, the longer of record time, or the short the record interval is, the short of the record time, Usual, the rapid change of the measured signal, need choose the short record interval. Or opposite,when the measured signal changes slowly, can choose the long record interval.

- Auto switch:Use to auto switch current curve digital screen channel,start with 0S,indicate not auto switch,can adjust the numbers on secondary screen rapidly
- Cold junction compensation (CJC):has setting and external two mode. When cursor at [CJC], press【Enter】into『Cold setting』configuration to choose the two mode,[setting]the code data under setting can be adjustable,[external]the cold data mode can catch by atuo,system is under external mode
- System maintenance：Use to default Settings/ clear alarm information/power information and so on

■ 『COMMUNICATION CONFIGURATION』

In『system configuration』the [communication configuration] can set the different on line mode:

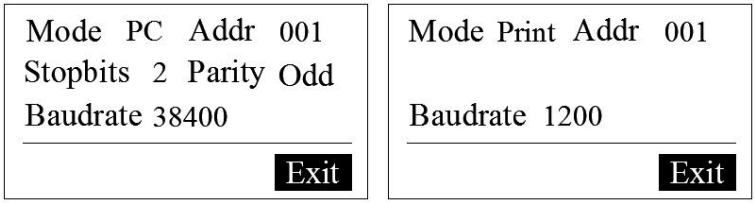


Figure 4-2

- Address:Communication address is a use of idetify in the network,it is the identification of the instrument in network; pc software use this to acess the instrument; in a same communication address the ip address can be setted in 1-255, can not be repeat
- Stopbits and parity:need the same setting of the pc software, defualt setting
- Baud rate:PC mode baud rate can be changed（must the same to pc software）,Printer mode baud rate can't be changed

■ 『INPUT CONFIGURATION』

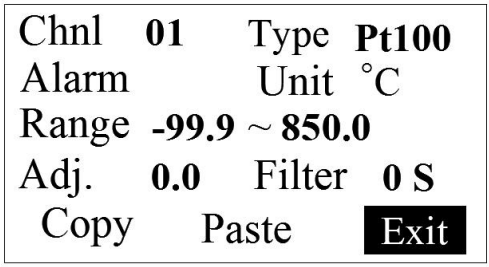


Figure 4-3.1

- Channel
  According to customer demand, 4 is the most
- Type
  It support several type message, and the analog signal support for universal input, change different signal types without change module ,only need change the terminal connection and set the right signal type. Instrument support a variety of signal types such as :0～20mV、0～100mV、0～5V、1～5V、0～10mA、0～20mA、4～20mA、Pt100、Cu50、Cu100、G53、BA1、BA2、B、E、N、R、J、K、S、T、WRe3-25、WRe5-26、F1、F2、PI、Res（resistance）
- Unit
  The instrument has the following engineering unit for choose: m3/h、m3/min、m3/s、L/h、L/min、L/s、t/h、t/min、t/s、kg/h、, kg/min、kg/s、℃、Pa、kPa、MPa、kgf/cm^2、Bar、mmH_2O、mmHg、%、ppm、r/min、ph、mm、Hz、kHz、mA、A、kA、mV、V、kV、VA、kVA、W、kW、MW、J、kJ、kg、kWh and so on
- Measurement range
  User-defined range scope, the high limit and low limit, can

configurate freely. Press【Menu】to adjust the decimal digits of measurement range , press【Enter】into『secondary screen』to rapid change the parameters

- Alarm setting

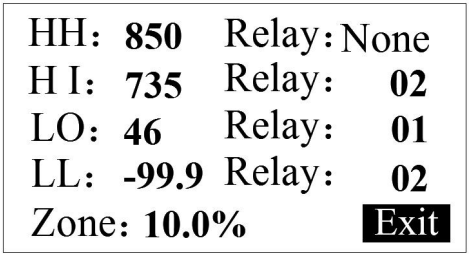


Figure 4-3.2

①**Alarm threshold:**HH、HI、LO、LL is refer to high high limit, high limit, low limit, low low limit alarm, the value under is correspondingly to the alarm shreshold, when actual value bigger than correspondingly limits, differentcial and diference , can appear or eliminate alarm signal.

②**Alarm contactor:**relay serial,such as contactor 01 is No.1 relay.When value of signal out of setting, corresponding contactor will have an action, close contactor. Choose "No"indicate no matter signal value over or not, the relay keey no action, still in alarm list has alarm data.

③**Alarm differntcial:**alarm differentcial is to avoid instrument repeat alarm at alarm edge, such as range at 0~100, upper alarm dot is80， lower alarm dot is 20, alarm difference is 5.0%, when happen high alarm, the range of instrument is less 80-100*5%=75, then cancel the alarm this time, the same, when happen lower alarm, the data range at 20+100*5%=25, then cancell the alarm this time.

- Adjust

  Allow the user adjust the deviation value, value =

measurement value +adjustable value, normally , set the adjustable value at 0

- Filter

  Filtering time constant setting, Filter setting method:

$$\text{Show value} = \frac{\text{Last value} \times \text{Input filter} + \text{Current value}}{\text{Input filter} + 1}$$

- Copy and paste function

  If the setting of each channel is the same, after one channel setting press cursor to [copy]，press enter, to copy next setting, press cursor to "channel" setting box, to change the channel, then press cursor to [paste],press enter can copy the function setting of the last into every setting box

■ 『OUTPUT CONFIGURAION』

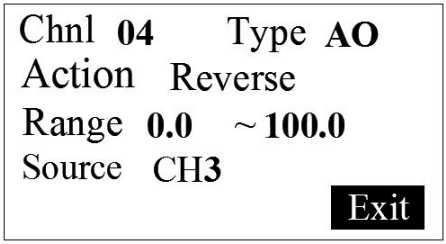


Figure 4-4

- **Action**：Under direct of AO【Analog Output】 ,Transmitting range high limit to the output 20mA, Transmitting range low limit of output 4 mA；Under reverse of AO, Transmitting range high limit of output 4 mA,Transmitting range low limit of output 20mA.
- **Signal source:**setting the transmitting output signal source channel, CH3 is the third channel.

■ 『SECONDARY SCREEN』

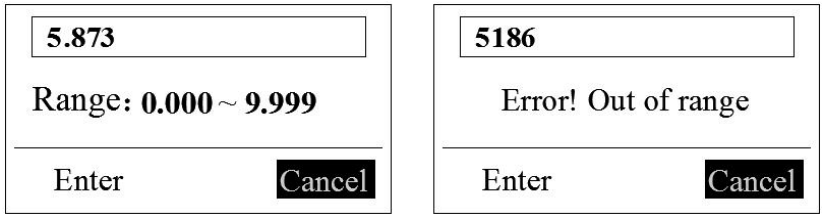


Figure 4-5

Secondary screen is mainly use to auto switch setting. Cold junction compensation setting. Alarm limit setting, measurment range limit setting and so on. Enter into secondary screen can quickly adjust multibit value, once the value is beyond the scope , the system will note you it is out of parameter ranget, key operate, please refer to『keyboard function』