Sensor Co.,LTD

PRODUCT OVERVIEW

DISPLAY & CONTROL INSTRUMENTS

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D7100 Series LCD English Character Display Controller/Paperless Recorder Operation Instruction

I. Introduction

D7100 LCD English Character Display Controller/Paperless Recorder adopts computer structure in design: new microprocessor with flash memory to enhance the performance of data storage; 3.5" dot matrix LCD screen (black characters on white screen) of high definition (128*64); concept of WINDOWS in English has been introduced while data compression technology is used; the embedded operation system capable of USB data transfer enables up to 720 days of data storage. The instrument has fully adopted surface-mount technology and heavy protection and isolation have been considered in design for anti-jamming and high reliability. Synchronous input of 4-channel universal signals can be made while input channels are isolated from each other. It also features alarm control, analog transmission, and RS 485/232 communication output etc., making it to be a full-featured English character display instrument.

II. Technical Parameters

Measurement input	
Input signal	Current: 0-20mA, 0-10mA, 4-20mA, 0-10mA (extraction), 4-20mA (extraction) Input impedance: ≤100Ω Maximum limit of input current: ≤ 30mA
	Voltage: 0-5V, 1-5V, 0-10V (customized), 0-5V (extraction), 1-5V (extraction), 0-20mV, 0-100mV Input impedance: ≥ 500KΩ
	Thermal resistance: Pt100, Cu50, Cu53, Cu100, BA1, BA2
	Linear resistance: 0-400Ω
	Thermocouple: B, S, K, E, T, J, R, N, F2, Wre3-25, Wre5-26
Output	
Output signal	Analog output: 4-20mA (load resistance ≤ 480Ω), 0-20mA (load resistance ≤ 480Ω) 0-10mA (load resistance ≤ 960Ω), 1-5V (load resistance ≥ 250KΩ) 0-5V (load resistance ≥ 250KΩ), 0-10V (load resistance ≥ 4KΩ) (customized)
	Alarm output: relay control output: AC220V/2A, DC24V/2A (resistive load)
	Feed output: DC24V±1, load current ≤ 50mA
	Communication output: RS485/RS232 communication interface, configurable baud rate in the range of 1200-9600bps, standard MODBUS RTU communication protocol adopted, communication distance up to 1km for RS-485 and 15m for RS-232.
Comprehensive parameters	
Measurement precision	0.2%FS±1d
Setting mode	Light touch control panel for digital setting, the value of which will be stored permanently even in case of power failure; setting value locked and protected with password

Display mode	3.5” backlit dot matrix LCD screen (black characters on white screen) of high definition (128*64) English characters, digits, process curves, and bar graphs may be displayed; pages turning-up/down, search of historical data, and change of time scale of curves can be achieved by operating proper keys on the panel.
Recording interval	9 options for your choice: 1s, 2s, 4s, 6s, 15s, 30s, 60s, 120s, and 240s
Storage time	3 days (interval of 1s) – 720 days (interval of 240s)
Printing control	Printing interface: RS-232C; SP-A40SH printer of serial interface may be connected.
Operating environment	Ambient temperature: 0-50℃; relative humidity: ≤ 85RH; isolated from strongly corrosive gas
Power supply	AC 100-240V (switch power), 50-60HZ; DC 20-29V (switch power)
Power consumption	≤ 5W
Structure	- Standard snap-in structure

III. Order Specification

Model Selection

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Paperless Recorder (1) (2) (3) (4) (5)

①Input channel		**③Alarm output (Note 1)**	
Code	Input channel	Code	Alarm channel (relay contact output)
01	1-channel	X	No output
02	2-channel	1	1-limit alarm
03	3-channel	2	2-limit alarm
04	4-channel	3	3-limit alarm
		4	4-limit alarm
		5	5-limit alarm
		6	6-limit alarm
②Specification		**④Power supply**	
Code	Width*height*depth	Code	Voltage range
A	160*80*110mm (horizontal)	A	AC/DC 100~240V(AC/50-60Hz)
B	80*160*110mm (vertical)	D	DC20~29V
C	96*96*110mm (square)		

⑤Auxiliary functions
(all functions below may be selected as separated with “/”; those not required may be omitted)

Transmission output (Note 1)		**Communication output**	
Code	Output channel	Code	Communication interface (communication protocol)
1	1-channel transmission output	D1	RS-485 communication interface (Modbus RTU)
2	2-channel transmission output	D2	RS232 communication interface (Modbus RTU)
3	3-channel transmission output	D3	RS2321: printing interface
4	4-channel transmission output		

Feed output	
Code	Feed output (output voltage)
1P	1-channel feed output
2P	2-channel feed output
	For example, “2P (12/24) means 12V feed output and 24V feed output for channel 1 and 2 respectively.

Applicable to instruments with recording function			
USB data transfer		Expansion function	
Code	Data transfer	Code	Expansion function
U	USB card storage (1GB USB flash disk)	SD	SD card expansion (8GB)

Note: 1.Transmission output and alarm output may be combined, provided that transmission output + alarm output ≤6.

★Input signal type (please mark the signal type after the selected model when ordering)

Signal type	Measurement range	Signal type	Measurement range
B	400~1800℃	0-400Ω Linear resistance	-9999~99999
S	-50~1600℃	0-350Ω (Internal reserved parameter)	-9999~99999
K	-100~1300℃	30~350Ω (Internal reserved parameter)	-9999~99999
E	-100~1000℃	0~20mV	-9999~99999
T	-100.0~400.0℃	0-100 mV	-9999~99999
J	-100~1200℃	0~20 mA	-9999~99999
R	-50~1600℃	0~10 mA	-9999~99999
N	-100~1300℃	4~20mA	-9999~99999
F2	700~2000℃	0~5V	-9999~99999
Wre3-25	0~2300℃	1~5V	-9999~99999
Wre5-26	0~2300℃	0~10V (customized)	-9999~99999
Cu50	-50.0~150.0℃	0~10 mA extraction	-9999~99999
Cu53	-50.0~150.0℃	4~20 mA extraction	-9999~99999
Cu100	-50.0~150.0℃	0~5V extraction	-9999~99999
Pt 100	-200.0~650.0℃	1~5V extraction	-9999~99999
BA1	-200.0~650.0℃		
BA2	-200.0~600.0℃		

★Output signal type (please mark the signal type after the selected model when ordering)

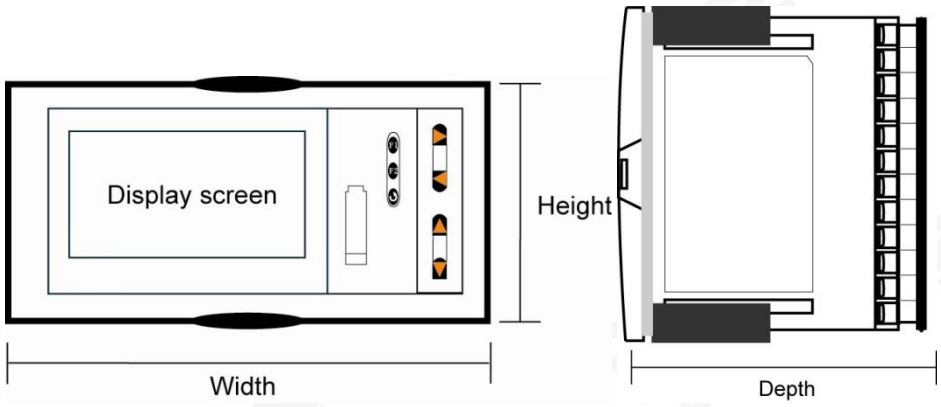
Signal type	4-20mA	1-5V	0-10 mA	0-5V	0-20 mA	0-10V(customized)
Load resistance (RL)	RL≤480Ω	RL≥250KΩ	RL≤960Ω	RL≥250KΩ	RL≤480Ω	RL≥4KΩ

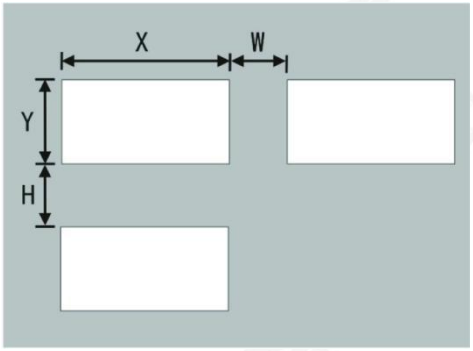
IV. Installation

1. Installation position and climate

The instrument shall be installed away from motors or transformers to avoid impact, shock, and electromagnetic interference. Keep it on a level basis during installation. The ambient temperature of the installation site shall be between 0℃ and 50℃, and the relative humidity shall not exceed 85%RH, where no condensate, corrosive gas, or combustible gas would be generated.

2. Dimension (mm)





	Dimension			Hole Size		Minimum Distance Between Instruments	
Type	Width	Height	Depth	X	Y	W	H
A	160	80	110	152+0.5	76+0.5	38	34
B	80	160	110	76+0.5	152+0.5	34	38
C	96	96	110	92+0.5	92+0.5	38	38

3. Installation

(1) Installing the instrument on mounting board

Drill installation holes of proper size according to the instrument requirements and put the seal ring on the back of instrument. Then insert the instrument right to the installation hole and install the attaching clamps to back of the board to fix top and bottom surface of the instrument and push two clamps forward so that the instrument could be fixed on the board. Take the protective film off the screen. (If multiple instruments would be installed on one board, minimum distance between instruments as specified in table above shall be considered to ensure adequate heat dissipation and space for installation.)

(2) How to take the core out of enclosure

Core of the instrument may be taken out of the enclosure. Push aside two buckles on each side of the front panel, and pull front panel outward to separate the core and enclosure. For reassembly, insert core into the enclosure tightly and fasten them with buckles for reliability.

(3) Installation instructions

★Cable selection, instrument installation, and electrical wiring must comply with VD0100 “Relevant Rules on Circuit Installation under 1,000V” or relevant local rules;

★Electrical wiring must be completed by professionals;

★Fuse shall be used in load circuit to protect the circuit and ensure that the relay contract will be open in the case of short circuit or circuit exceeding the maximum capacity of relay;

★Separate wiring shall be made for input, output, and power supply respectively and parallelism shall be avoided;

★No other load shall be connected to the power terminal of the instrument;

★Shielded twisted wires shall be used for sensor and communication.

(4) Standard wiring instructions

★DC signal input (process input)

1. In order to reduce electrical interference, wires carrying low-voltage DC signal and for sensor input shall be far away from high-voltage-bearing wires. Failing the same, shielded wires shall be used and grounded at the same point;

2. Any device connected between sensor and terminals may influence measurement accuracy due to resistance or current leakage.

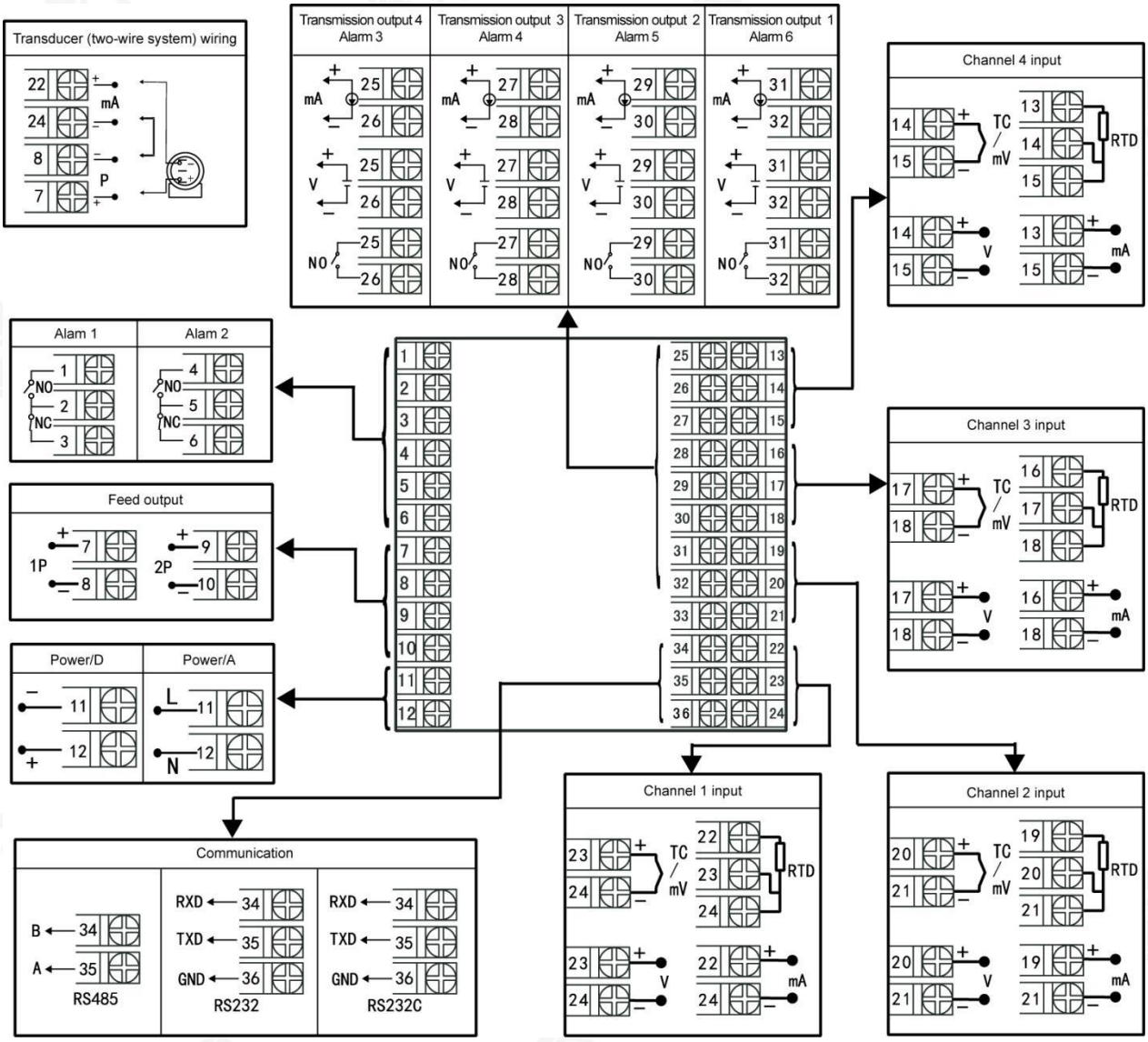
★Thermocouple or pyrometer input

Compensating lead wires appropriate to the thermocouple shall be used as extension wires, which must be shielded.

★RTD (platinum resistance) input

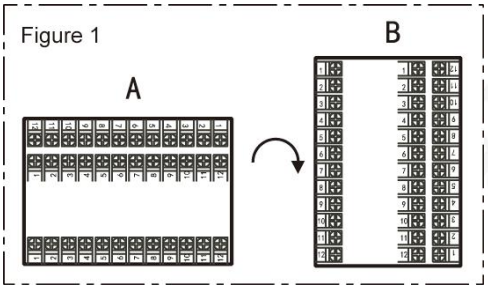
The resistance of three wires must be the same and shall not exceed 15Ω each.

(5) Wiring diagram



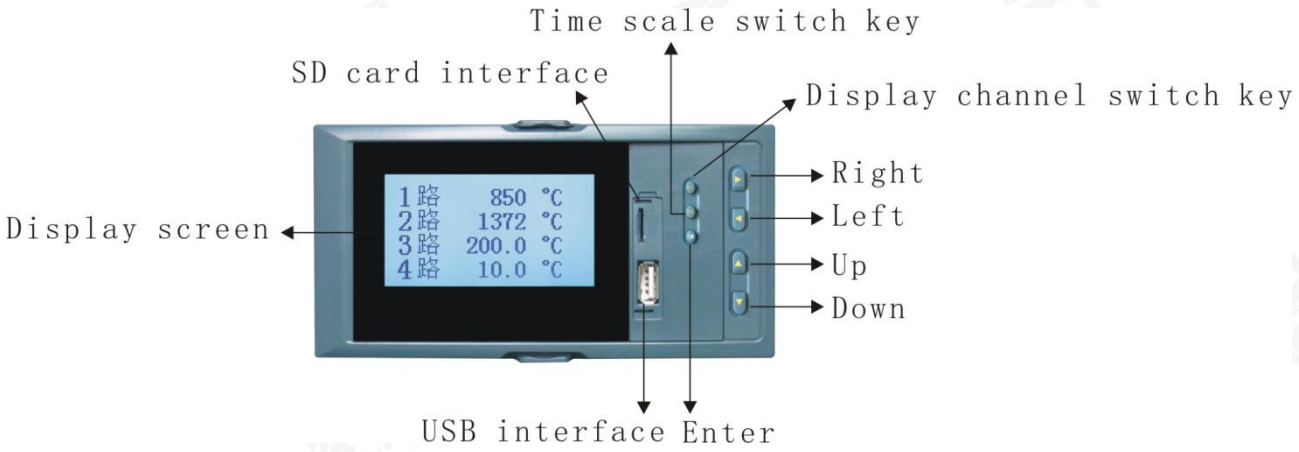
Note 1: in the above diagram, if one group of terminals has different functions, only one of them may be available. For example, RS485 and RS232 are on the same group of terminals, so only one of them may be selected.

Note 2: the wiring terminal directions at rear cover of horizontal and vertical instruments are different; see Figure 1.



V. Operation

1. Panel configuration



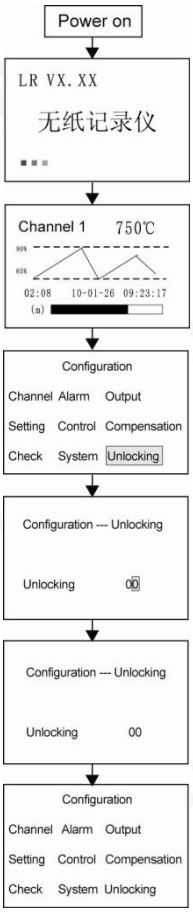
Name		Description
Operation keys	Enter	Menu page: to confirm item selection on the menu Parameter change: to confirm new set parameter Curve display: to enter configuration page combined with "▲" key Historical data display: to confirm the retrospective time to be modified in the next step Parameter setting: to move position of decimal point combined with "◀" key
	▼ Down	Menu page: to move the cursor down Parameter change: to decrease the number before the cursor Measured value display: to turn display pages of the same channel Retrospective time change: to decrease time value before the cursor
	▲ Up	Menu page: to move the cursor up Parameter change: to increase the number before the cursor Retrospective time change: to increase time value before the cursor
	◀ Left	Menu page: to move the cursor left Parameter change: to move the cursor left Retrospective time change: to move the cursor left Historical data display: to search historical data backward from current time, or to stop the forward search of historical data
	▶ Right	Menu page: to move the cursor right Parameter change: to move the cursor right Retrospective time change: to move the cursor right Historical data display: to search historical data forward from current time, or to stop the backward search of historical data
	F1	Measured value display: to switch display between different channels End of setting: to enter measured value display
	F2	Real-time curve or historical curve display: to change time scale of curve display

2. Operation

(1) Power-on

Turn on the instrument while ensuring it's properly wired. The system would take several seconds or minutes for initialization and self-inspection. Please wait a moment.

(2) Unlocking



Power-on self-inspection

Real-time curve display

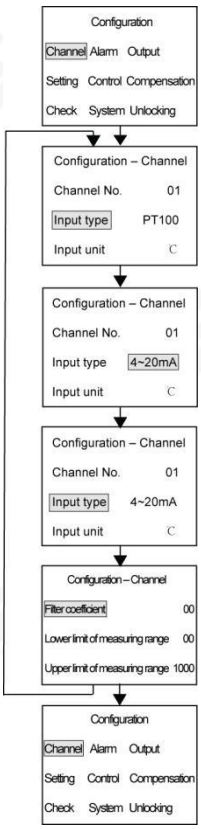
Press ◡ and ▲ to enter configuration page.
Move the cursor to “Unlocking”.

Press “ ◡ ” to enter “Unlocking” setting.
Enter password with “ ▲ ”, “ ▼ ”, “ ▶ ”, and “ ◀ ” for unlocking (preset as 0)
Note: if the correct password is input, it will display the mark “ √ ”.

Press “ ◡ ” to enter the password, and press “ F1 ” to return to the menu.

Start configuration parameters setting upon unlocking.
Note: If it returns to the display screen during setting, the password shall be entered again for unlocking.

(3) Parameters setting (unlocked)



Move the cursor to the target item (take “channel” for example)
Press “ ◡ ” to enter channel parameters setting

Move the cursor to the parameter to be changed
For example, “Input type PT100”
Press “ ◡ ” to confirm the parameter to be changed

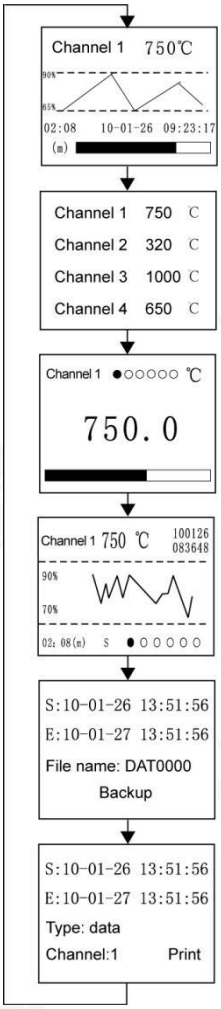
Press “ ▲ ” and “ ▼ ” to change the target parameter
For example, “Input type 4-20mA”

Press “ ◡ ” to save the new parameter

Press “ ▼ ” to enter filter coefficient setting and go through the above process.
Setting of other parameters is the same as above.

Upon completion, press “ F1 ” to return to configuration page.
Press “ ▲ ”, “ ▼ ”, “ ▶ ”, and “ ◀ ” to set parameters of next item.

(4) Display operation



Real-time curve display

Press " F1 " to switch to real-time curve display of channel 2-4 (if channel 2-4 input signals are available)

Press " ▼ " to switch to measurement display of each channel

Press " F1 " to switch to real-time bar graph display of channel 2-4 (if channel 2-4 input signals are available)

Press " ▼ " to switch to retrospective display

Press " F1 " to switch to retrospective display of channel 2-4 (if channel 2-4 input signals are available)

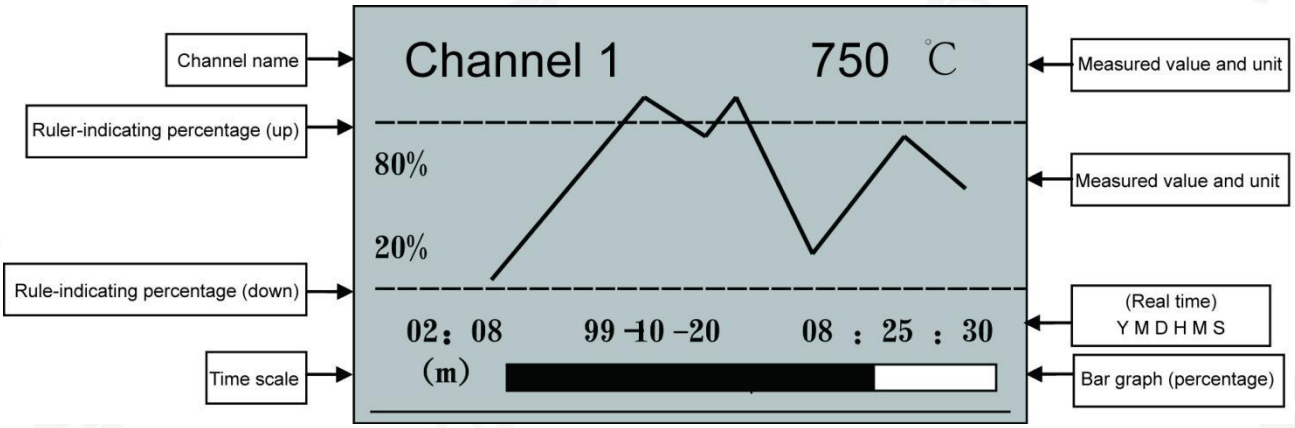
Press " ▼ " to switch to data backup page

Press " ▼ " to switch to data printing page (provided that the printing function is activated)

b. Instructions for display of dynamic measurement process:

1) Real-time curve display

(Main Image)



1: Time scale 02:08 (m) indicates that the screen shows the curve for a length of 2 minutes and 8 seconds.

If it shows 02:08 (h), then it indicates that the screen shows the curve for a length of 2 hours and 8 minutes.

If the recording interval is higher than 15 seconds, the unit of time scale will automatically switch from (m) to (h).

2: Press " F2 " to alternate time scale units to expand or shorten the length of historical data curve.

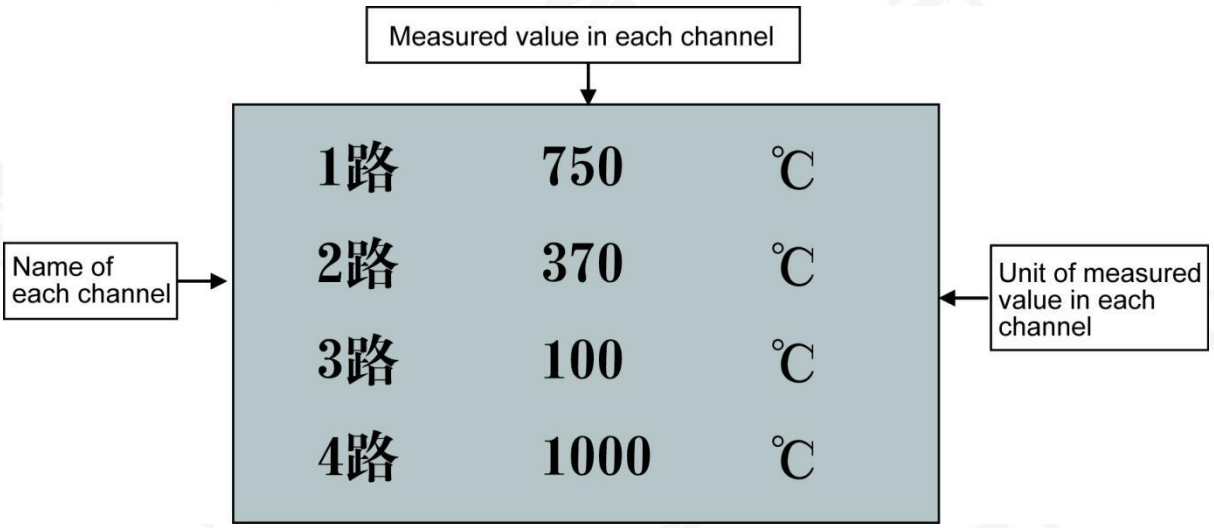
3: Rule-indicating percentage will change with fluctuation of process curve to give the best display performance.

4: Channel name is defined with value of “Channel 1 name”, “Channel 2 name”, “Channel 3 name”, and “Channel 4” name in "System” configuration.

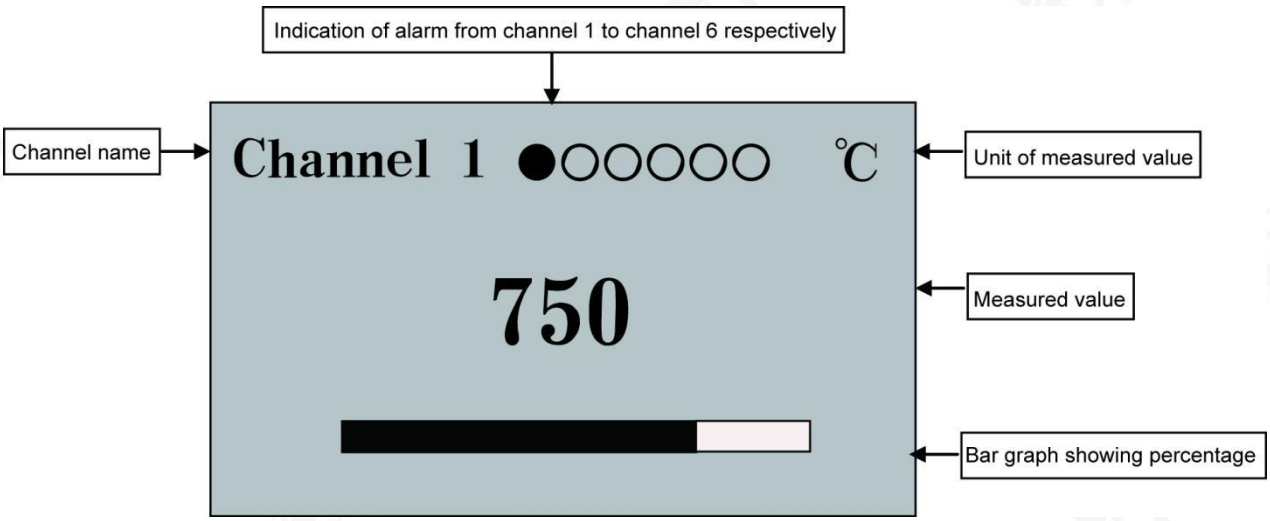
5: Press “ F1 ” in real-time curve display to switch to real-time curve display of channel 1, channel 2, channel 3, or channel 4.

2) Real-time data measurement display

Press “ ▼ ” to switch from real-time curve display to measurement display



Press F1 again to show the alarm bar graph below:



1: Alarm 1, 2, 3, 4, 5, or 6 above may be defined to correspond to any input channel (channel 1, 2, 3, or 4) based on user’s needs through setting alarm contact in alarm configuration. Alarm at upper limit or lower limit may be set.

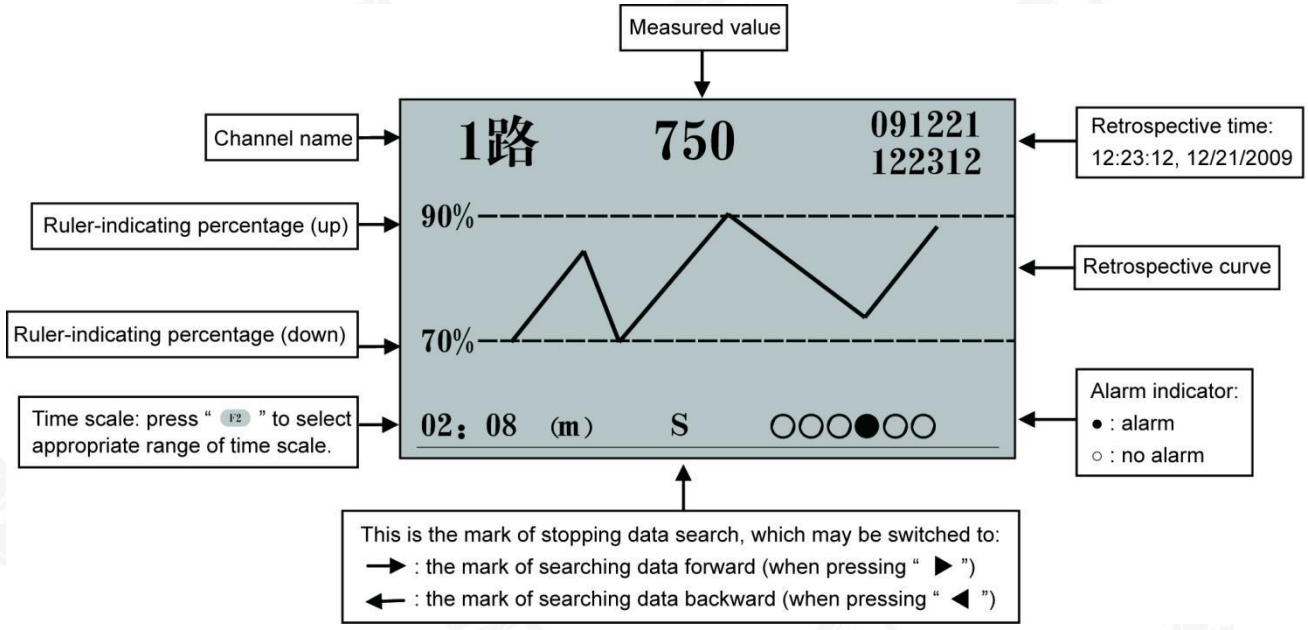
2: ● means the relay operates (alarm)

○ means the relay does not operate (no alarm)

3: Press “ F1 ” in the alarm bar graph to alternate between alarm bar graph of channel 1, channel 2, channel 3, and channel 4.

3) Retrospective display

Press “ ▼ ” to switch from real-time data measurement to historical data retrospective display



Note: instructions on historical data retrospective operation: (when the image above is displayed)

(1) Press " ▶" to search historical data forward from current display and press " ◀" to stop the search. Press " ◀" to search historical data backward from current display and press " ▶" to stop the search.

(2) Press " F2 " to change time scale to expand or shorten the length of historical data curve.

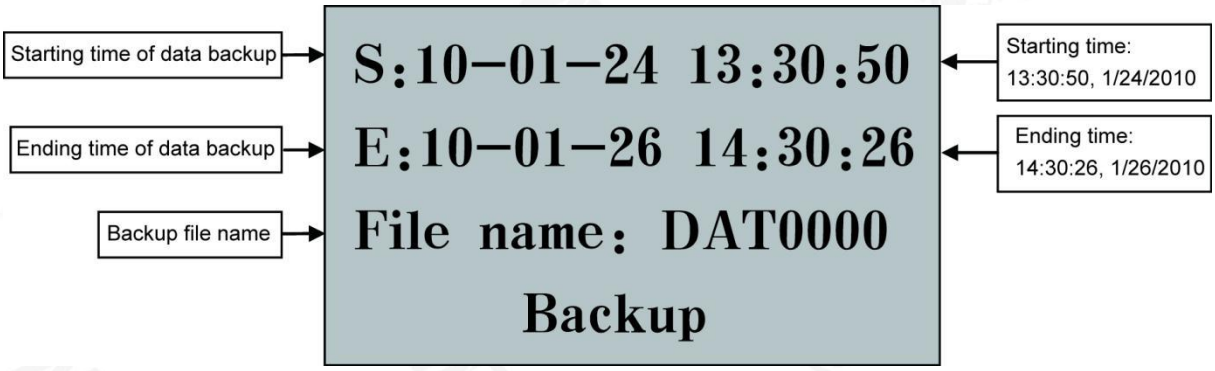
(3) Press " ↺ " to return the cursor to time display area on the right above corner, and press " ◀" and " ▶" to move the cursor and press " ▲ " and " ▼ " to increase/decrease value of year, month, date, hour, minute, and second. Press " ↺ " again for confirmation, and historical data curve of selected time will be shown on the screen.

(4) Relation between historical curve and historical data: the historical data will be at the intersection of historical curve and right frame of screen.

(5) Press " F1 " in the historical data retrospective display image to alternate between channel 1, channel 2, channel 3, and channel 4.

4) Data backup display

Press " ▼ " to switch from historical data retrospective display to data backup display



Instructions on data backup operation:

Plug the USB disk into the USB interface, and move the cursor to the right position with " ◀" and " ▶" and use " ▲ " and " ▼ " to increase/decrease value of year, month, date, hour, minute, and second. After modification, move the cursor to "Backup" and press " ↺ " for confirmation, and the screen will display "transferring", indicating that it's backing up data (the duration of data copy depends on data quantity and USB disk performance). When "transferring" disappears, the backup process comes to the end, when the USB disk could be plugged off.

The backup file copied to the USB disk would be in the format of *.PLR, which can only be read with master

computer software of New Hong Run, which may be used to view and print historical data and curves and export the same to be Excel files for processing.

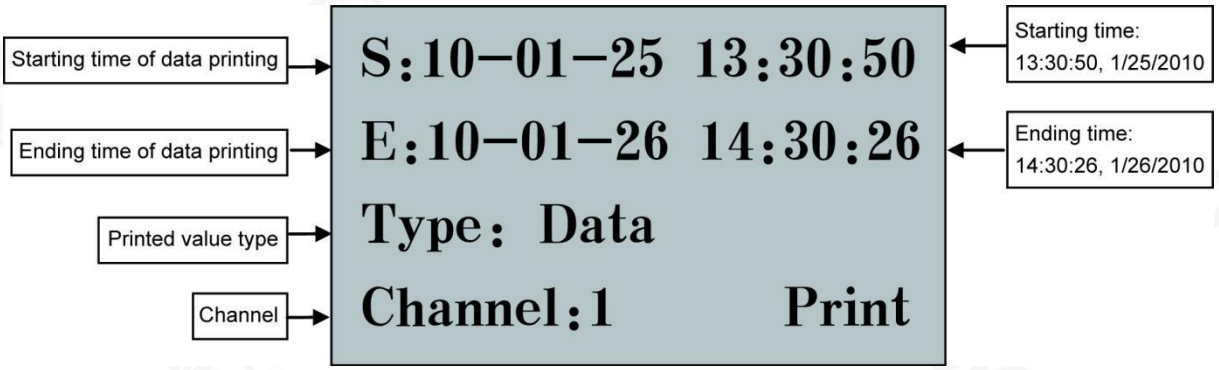
Plug SD card into SD interface, and when the time runs to 00:00:00, it will automatically save data of current day to the SD card. During data storage, the starting time will automatically run to 00:00:00 and ending time run to 23:59:59, and it will display “SD” on the screen. When the data storage is over, “SD” will disappear and the file will be named with current date.

Note: USB disk an SD card must be in the format of FAT or FAT32.

It’s suggested to use USB disks and SD cards of following brands: Kingston, Unis, and Sony etc.

5) Data printing display (available when printer function is activated)

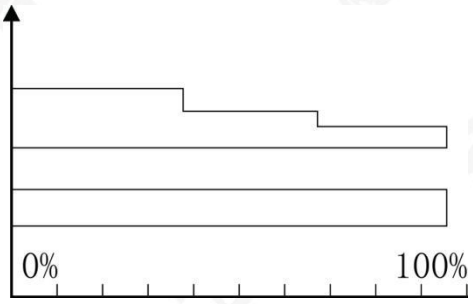
Press “ ▼ ” to switch from data backup display to data printing



1. Manual printing

1) When the printer in system configuration is set as “AS”, it will print the data or curve of current channel within the set time length; use “ ◀ ” and “ ▶ ”, “ ▲ ” and “ ▼ ” to change value of time, type, and channel; after that, move the cursor to “Print” and press “ ↵ ” for confirmation, and the screen will display "printing”, indicating that it starts to print data or curves.

Format of curve printing:



Channel 1: ℃

Start: 10-07-24 10-00-00

End: 10-07-24 09-58-00

Format of data printing:

100724142610: 625 ---------- measured value at the time of ending

100724142609: 625

100724142608: 625

100724142607: 656

100724142606: 687

100724142605: 750

100724142604: 750

100724142603: 812

100724142602: 812

100724142601: 875 ---------- measured value at the time of starting
Channel 1: ℃ ---------- channel name

2) When the printer in system configuration is set as “TS”, it will print data of all channels at current time; use “◀” and “▶”, “▲” and “▼” to change value of time, type, and channel, and set the type as “Data”; after that, move the cursor to “Print” and press “ ” for confirmation, and the screen will display "printing”, indicating that it starts to print data. Format of printing:

Alarm: ○○○○○● ----------Alarm status: ○: no alarm ●: alarm
Channel 4: - 250℃ ----------Measured value of channel 4
Channel 3: - 250℃ ----------Measured value of channel 3
Channel 2: - 250℃ ----------Measured value of channel 2
Channel 1: - 250℃ ----------Measured value of channel 1
Time: 10-02-23 14-36-02 ----------Date and time
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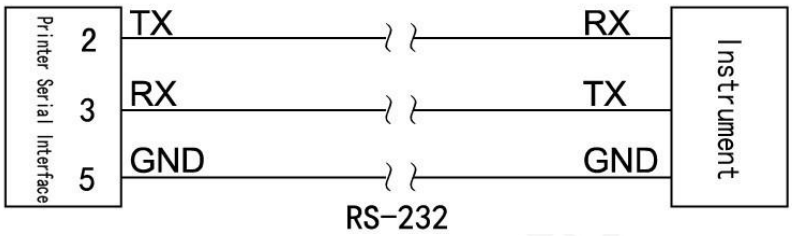
2. Timed printing

Set interval of timed printing in system configuration; when the interval of measurement equals to interval of time printing, it will automatically control the printer for timed printing with the same format as shown above.

3. Alarm printing

When the alarm function is actuated in system configuration, in case of any alarm, it will automatically control the printer for alarm printing with the same format as shown above.

Connection between instrument and serial-interface printer:



Note: baud rate of the instrument and printer must be the same (baud rate setting of the instrument could be referred to in Level 2 Parameters Setting and that of the printer could be referred to in printer instructions).

VI. Parameters Description

1) “Channel” parameters

Name	Range	Description	Preset Value
Input channel	01	Number of the first input channel (unchangeable)	01
Input type	See table of input types	Input signal type (see table of input signal types)	4-20mA
Input unit	See unit of values	Engineering unit of displayed value (see Note 1)	℃
Filter coefficient	0-19	Unit: second	0
Lower limit of measuring range	-9999 ~ 99999	Lower limit of measuring range (see Note 2 for decimal point setting)	0
Upper limit of measuring range	-9999 ~ 99999	Upper limit of measuring range (see Note 2 for decimal point setting)	1000
Upper limit of bar graph	-9999 ~ 99999	Lower limit of displayed value	0

Lower limit of bar graph	-9999 ~ 99999	Upper limit of displayed value	1000
Signal cutoff	-25.0 ~ 100.0	Percentage of small signal cutoff (see Note 3)	-25.0
Input channel	02	Number of the second input channel (unchangeable)	02
Input type	See table of input types	Input signal type (see table of input signal types)	4-20mA
Input unit	See unit of values	Engineering unit of displayed value (see Note 1)	℃
Filter coefficient	0-19	Unit: second	0
Lower limit of measuring range	-9999 ~ 99999	Lower limit of measuring range (see Note 2 for decimal point setting)	0
Upper limit of measuring range	-9999 ~ 99999	Upper limit of measuring range (see Note 2 for decimal point setting)	1000
Upper limit of bar graph	-9999 ~ 99999	Lower limit of displayed value	0
Lower limit of bar graph	-9999 ~ 99999	Upper limit of displayed value	1000
Signal cutoff	-25.0 ~ 100.0	Percentage of small signal cutoff (see Note 3)	-25.0
Input channel	03	Number of the third input channel (unchangeable)	03
Input type	See table of input types	Input signal type (see table of input signal types)	4-20mA
Input unit	See unit of values	Engineering unit of displayed value (see Note 1)	℃
Filter coefficient	0-19	Unit: second	0
Lower limit of measuring range	-9999 ~ 99999	Lower limit of measuring range (see Note 2 for decimal point setting)	0
Upper limit of measuring range	-9999 ~ 99999	Upper limit of measuring range (see Note 2 for decimal point setting)	1000
Upper limit of bar graph	-9999 ~ 99999	Lower limit of displayed value	0
Lower limit of bar graph	-9999 ~ 99999	Upper limit of displayed value	1000
Signal cutoff	-25.0 ~ 100.0	Percentage of small signal cutoff (see Note 3)	-25.0
Input channel	04	Number of the fourth input channel (unchangeable)	04
Input type	See table of input types	Input signal type (see table of input signal types)	4-20mA
Input unit	See unit of values	Engineering unit of displayed value (see Note 1)	℃
Filter coefficient	0-19	Unit: second	0
Lower limit of measuring range	-9999 ~ 99999	Lower limit of measuring range (see Note 2 for decimal point setting)	0
Upper limit of measuring range	-9999 ~ 99999	Upper limit of measuring range (see Note 2 for decimal point setting)	1000
Upper limit of bar graph	-9999 ~ 99999	Lower limit of displayed value	0
Lower limit of bar graph	-9999 ~ 99999	Upper limit of displayed value	1000
Signal cutoff	-25.0 ~ 100.0	Percentage of small signal cutoff (see Note 3)	-25.0

Note 1: Unit of values (if special units are required, they shall be specified in the order.)

No.	0	1	2	3	4	5	6	7	8	9	10	11	12
Unit	℃	Kgf	Pa	KPa	MPa	mmHg	mmH_2O	bar	Kg/h	t/h	l/h	m/h	m^3/h
No.	13	14	15	16	17	18	19	20	21	22	23	24	25
Unit	Nm^3/h	MJ/h	GJ/h	Kg/m	t/m	l/m	m/m	m^3/m	Nm^3/m	MJ/m	GJ/m	Kg/s	t/s
No.	26	27	28	29	30	31	32	33	34	35	36	37	38

Unit	l/s	m/s	m^3/s	Nm^3/s	MJ/s	GJ/s	kg	t	L	m	m^3	Nm^3	MJ
No.	39	40	41	42	43	44	45	46	47	48			
Unit	GJ	V	KV	A	KA	KW	HZ	%	PH	mm			

Note 2: decimal point setting: if it's required to display value with decimal places in the setting of measuring range, press " ↺ " and " ◀" to move the decimal place from right to left.

When the point moves to the first decimal place in the right, it will display value with one decimal place, and when the point moves to the second, it will display value with two decimal places.

For example, if upper limit of measuring range is set as "1.0", the instrument will display "1.0", and if it's set as "1.00", the instrument will display "1.00". Number of decimal places of upper limit of measuring range shall be set first, and that of lower limit will follow the same rule as upper limit.

Negative range setting: move the cursor to the first place in the left, and press " ▼ " so that the instrument will display "0", and then press " ▼ " again – the negative mark "-"will be displayed.

Note 3: Small signal cutoff: if the measured value < (upper limit of measuring range – lower limit of measuring range)* small signal cutoff percentage + lower limit of measuring range, the measured value will be displayed as lower limit of measuring range. (This function only serves voltage and current signals)

2) "Alarm" parameters

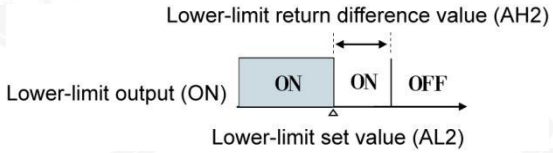
Name	Range	Description	Preset Value
Alarm channel	01	Number of the first alarm channel (unchangeable)	01
Input channel	1 – Channel 1 2 – Channel 2 3 – Channel 3 4 – Channel 4	Input channel corresponding to the alarm (1~4)	01
Alarm type	NO: no alarm AL: lower limit alarm AH: upper limit alarm	Alarm type	AH
Alarm value	-9999 ~ 99999	Set alarm point (see Note 4)	50
Alarm return difference	0 ~ 99999	Alarm return difference point (see Note 4)	00
Alarm channel	02	Number of the second alarm channel (unchangeable)	02
Input channel	1~4	Input channel corresponding to the alarm (1~4)	01
Alarm type	(Ditto)	Alarm type	AL
Alarm value	-9999 ~ 99999	Set alarm point (see Note 4)	50
Alarm return difference	0 ~ 99999	Alarm return difference point (see Note 4)	0
Alarm channel	03	Number of the third alarm channel (unchangeable)	03
Input channel	1~4 (ditto)	Input channel corresponding to the alarm (1~4)	02
Alarm type	(Ditto)	Alarm type	AH
Alarm value	-9999 ~ 99999	Set alarm point (see Note 4)	50
Alarm return difference	0 ~ 99999	Alarm return difference point (see Note 4)	0
Alarm channel	04	Number of the fourth alarm channel (unchangeable)	04
Input channel	1~4 (ditto)	Input channel corresponding to the alarm (1~4)	02
Alarm type	(Ditto)	Alarm type	AL
Alarm value	-9999 ~ 99999	Set alarm point (see Note 4)	50
Alarm return difference	0 ~ 99999	Alarm return difference point (see Note 4)	0
Alarm channel	05	Number of the fifth alarm channel (unchangeable)	05
Input channel	1~4 (ditto)	Input channel corresponding to the alarm (1~4)	03

Alarm type	(Ditto)	Alarm type	AH
Alarm value	-9999 ~ 99999	Set alarm point (see Note 4)	50
Alarm return difference	0 ~ 99999	Alarm return difference point (see Note 4)	0
Alarm channel	06	Number of the sixth alarm channel (unchangeable)	06
Input channel	1~4 (ditto)	Input channel corresponding to the alarm (1~4)	03
Alarm type	(Ditto)	Alarm type	AL
Alarm value	-9999 ~ 99999	Set alarm point (see Note 4)	50
Alarm return difference	0 ~ 99999	Alarm return difference point (see Note 4)	0

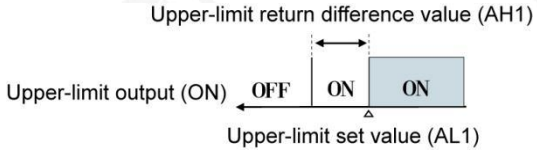
Note 4: alarm output mode: (return difference for alarm/control output to prevent frequent operation of output relay during fluctuation at critical alarm point)

Output status:

★ The measured value increases from a low value:



★ The measured value decreases from a high value:



3) “Output” parameters

Name	Range	Description	Preset Value
Output channel	01	Number of the first output channel (unchangeable)	01
Input channel	1-1st input channel 2-2nd input channel 3-3rd input channel 4-4th input channel	Input channel corresponding to the output (1-4)	01
Output type	No: no output Current: 0~20mA, 0~10mA, 4~20mA Voltage: 0~5V, 1~5V, 0~10V	Type of transmission output signal (any special requirement shall be specified)	4~20mA
Lower limit of output	-9999 ~ 99999	Displayed value of lower limit of output	0
Upper limit of output	-9999 ~ 99999	Displayed value of upper limit of output	1000
Output channel	02	Number of the second output channel (unchangeable)	02
Input channel	1~4 (ditto)	Input channel corresponding to the output (1-4)	01
Output type	Ditto	Type of transmission output signal (any special requirement shall be specified)	4~20mA
Lower limit of output	-9999 ~ 99999	Displayed value of lower limit of output	0
Upper limit of output	-9999 ~ 99999	Displayed value of upper limit of output	1000
Output channel	03	Number of the third output channel (unchangeable)	03
Input channel	1~4 (ditto)	Input channel corresponding to the output	01

		(1-4)	
Output type	Ditto	Type of transmission output signal (any special requirement shall be specified)	4~20mA
Lower limit of output	-9999 ~ 99999	Displayed value of lower limit of output	0
Upper limit of output	-9999 ~ 99999	Displayed value of upper limit of output	1000
Output channel	04	Number of the fourth output channel (unchangeable)	04
Input channel	1~4 (ditto)	Input channel corresponding to the output (1-4)	01
Output type	Ditto	Type of transmission output signal (any special requirement shall be specified)	4~20mA
Lower limit of output	-9999 ~ 99999	Displayed value of lower limit of output	0
Upper limit of output	-9999 ~ 99999	Displayed value of upper limit of output	1000

4) “Setting” (★): this item will not be open to users for display/recording instrument, which may be omitted during parameters setting.

5) “Control” (★): this item will not be open to users for display/recording instrument, which may be omitted during parameters setting.

6) “Compensation” (★): this item will not be open to users for display/recording instrument, which may be omitted during parameters setting.

7) “Check” parameters

Name	Range	Description	Preset Value
Input channel	01	Input channel 1 to be checked (unchangeable)	01
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Input channel	02	Input channel 2 to be checked (unchangeable)	02
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Input channel	03	Input channel 3 to be checked (unchangeable)	03
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Input channel	04	Input channel 4 to be checked (unchangeable)	04
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Output channel	01	Output channel 1 to be checked (unchangeable)	01
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Output channel	02	Output channel 2 to be checked (unchangeable)	02
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Output channel	03	Output channel 3 to be checked (unchangeable)	03
Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1
Output channel	04	Output channel 4 to be checked (unchangeable)	04

Zero	0.000~1.999	Zero value of this channel	0
Percentage	0.000~1.999	Gain percentage of this channel	1

8) “System” parameters

Name	Range	Description	Preset Value
Password	0~999999	Parameter locking password	0
Date	(AD) M D, Y	Real-time date	Real-time date
Time	H M S	Real time	Real time
Zero value of cold junction compensation	0.000~1.999	Actual zero value of cold junction compensation	0
Percentage of cold junction compensation	0.000~1.999	Gradient of cold junction compensation circuit	1
Equipment address	1~255	Address number for communication	1
Baud rate	1200, 2400, 4800, 9600	Data transmission rate of the communication interface	9600
Printer	NO, AS, TS	Printing mode: NO: no printing function AS: in manual printing of data, it will print measured value of selected channel within the set time length TS: in manual printing of data, it will print measured value of all channels at current time	NO: no
Printing interval	1- 2000 minutes	Timed printing interval	10
Starting time	H M	Starting time of timed printing	Real time
Alarm printing	ON/OFF	ON: alarm printing OFF: no printing	OFF
Recording interval	1 – 240 seconds	Data recording interval	1 second
Channel 1 name	00: channel 1 01: temperature 02: pressure 03: flow 04: liquid level 05: others	To define display subjects of the 1st input channel	0
Channel 2 name	00: channel 2 01: temperature 02: pressure 03: flow 04: liquid level 05: others	To define display subjects of the 2nd input channel	0
Channel 3 name	00: channel 3 01: temperature 02: pressure 03: flow 04: liquid level 05: others	To define display subjects of the 3rd input channel	0
Channel 4 name	00: channel 4 01: temperature 02: pressure 03: flow 04: liquid level 05: others	To define display subjects of the 4th input channel	0

VII. Communication Setting

The instrument is capable of communication with master computer which may complete parameters setting, data collection, and monitoring of slave computer. Combined with industrial computer software, dynamic display, instrument data setting, graph generation, data storage, and printing can be realized in English Windows system. Real-time data and curves collection as well as historical data and curves recording can also be achieved with our

master computer management software, where historical data and curves can be exported to be Excel files for processing.

Communication: RS-485/RS-232 serial interface communication, baud rate between 1200 and 9600bps for choice;

Data format: 1 start bit, 8 data bits, 1 stop bit (see details in CD)

Wiring method: