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**User's  
Manual**

**SUP-R4000D  
USER'S MANUAL**

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IMA53-EZ01

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## Foreword

Thank you for purchasing the paperless recorder!

This manual is about the functions, settings, wiring methods, methods of operation, failure of treatment methods of the paperless recorder. To ensure correct use, please read this manual carefully and use properly before operation and keep this manual in a safe place for quick reference.

## Notice

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact us.
- Copying or reproducing all or any part of the contents of this manual without our permission is strictly prohibited.

## Revisions

First edition: Sep 2013

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## Safety Precautions

The following general safety precautions must be observed during all phases of operation. If the Instrument is used in a manner not specified in this manual, the protection provided by the Instrument may be impaired. We assume no liability for the customer's failure to comply with these requirements.

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### WARNING

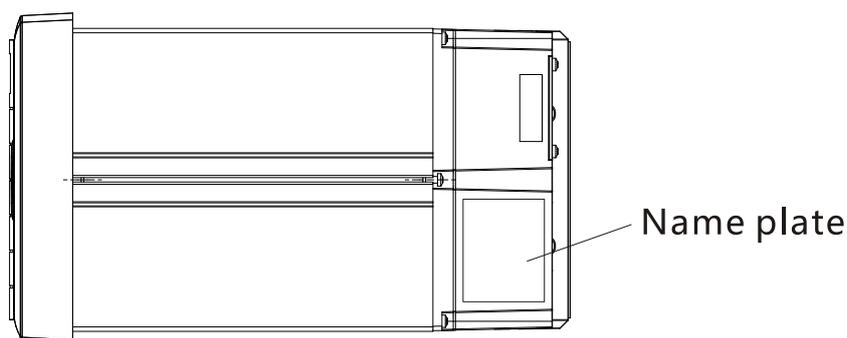
- **Power Supply**  
Before connecting the power cord, ensure that the power supply voltage matches the voltage rating for the instrument.
  - **Protective Grounding**  
Make sure to connect the protective grounding to prevent electric shock before turning ON the power.
  - **Necessity of Protective Grounding**  
Never cut off the internal or external protective grounding wire or disconnect the wiring of the protective grounding terminal. Doing so poses a potential shock hazard.
  - **Defect of Protective Grounding**  
Do not operate the instrument when the protective grounding or the fuse might be defective. Also, make sure to check them before operation.
  - **Do Not Operate in Explosive Atmosphere**  
Do not operate the instrument in the presence of flammable liquids or vapors. Operation of any electrical instrument in such an environment constitutes a safety hazard.
  - **Do Not Remove Covers**  
Some areas inside the instrument have high voltages. Do not remove the cover if the power supply is connected. The cover should be removed by our qualified personnel only.
  - **External Connection**  
Connect the protective grounding before connecting to the item under measurement or control unit.
  - **Damage to the protection**  
Using the instrument in a manner not specified in this manual can damage the instrument's protection.
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## Checking the Contents of the Package

Unpack the box and check the contents before operating the instrument. If some of the contents are not correct or missing or if there is physical damage, contact the dealer from which you purchased them.

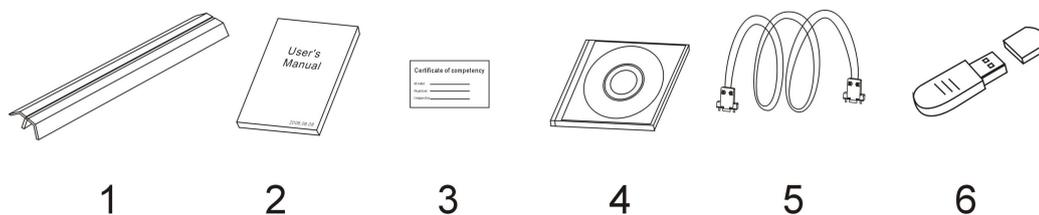
### Main Unit

There is a name plate on the up side of the instrument's body. Open the cover and check that the model name and suffix code given on the name plate match those on the order.



### Standard Accessories

The following standard accessories are supplied with the instrument. Make sure that all items are present and undamaged.



| Number | Part Name                       | Q'ty | Notes   |
|--------|---------------------------------|------|---|
| 1      | Mounting bracket                | 2    | For panel mounting  |
| 2      | User's Manual                   | 1    | This manual   |
| 3      | Certification                   | 1    | Manufacture Date  |
| 4      | Application (Standard Software) | 1    | Included only when the Communication or External storage is ordered.<br>For Windows 98/2000/XP/Windows ME<br>Provided on a CD-ROM |
| 5      | Communication Cord              | 1    | Included only when the Communication is ordered.1.5 meters.   |
| 6      | U Disk                          | 1    | Included only when the External storage is ordered.<br>Capacity and model of the USB Storage may vary.                            |

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## How to Use This Manual

### Structure of the Manual

This user's manual consists of the following sections:

| Chapter | Title and Contents   |
|---------|--|
| 1       | <b>Overview of Functions</b><br>Describes the functions of the instrument.   |
| 2       | <b>Before Using the Instrument</b><br>Describes the installation and wiring procedures.  |
| 3       | <b>Names of Parts/Run Mode/Common Operations</b><br>Describes the names of each part of the instrument, how to use the storage medium drive, run mode, and common key operations.  |
| 4       | <b>Switching Operation Screens</b><br>Describes how to use the operation screen such as the trend display and digital display. Describes the operations that can be performed using the arrow keys, page key and the enter key on the front panel. |
| 5       | <b>System Configurations</b><br>Describes the parameters of system running.  |
| 6       | <b>Input Channel Settings</b><br>Describes how to set input specifications such as the range, filter, and burnout.   |
| 7       | <b>Setting Alarms</b><br>Describes how to set alarms and relays.   |
| 8       | <b>Setting Analog Outputs</b><br>Describes how to set analog outputs specifications such as the output channel.  |
| 9       | <b>Data acquisition and Saving to External Storage Medium</b><br>Describes how to acquire the measured/computed data and how to save the data to the external storage medium.  |
| 10      | <b>Set Differential Pressure Compensation Parameters</b><br>Describes how to set differential pressure compensation in the process of flow use.  |
| 11      | <b>Setting Report Parameters</b><br>Describes how to set report parameters.  |
| 12      | <b>Communication Function</b><br>Describes how to use the optional computation function.   |
| 13      | <b>Initializing Data</b><br>Purge the accumulation and alarm report, resume factory setting.   |
| 14      | <b>Specifications</b><br>Lists the specifications of the Paperless Recorder.   |

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## Conventions Used in this Manual

### 1. Unit

|   |                |
|---|----------------|
| K | Denotes"1024"  |
| k | Denotes"1000"  |
| M | Denotes"1024K" |
| G | Denotes"1024M" |
| B | "Bytes"        |

### 2. Symbols (The following symbols are used in this manual)

**WARNING** Describes precautions that should be observed to prevent injury or death to the user.

**CAUTION** Describes precautions that should be observed to prevent damage to the instrument.

**Note** Provides important information for the proper operation of the instrument.

### 3. Notation regarding procedures

The following symbols are used during the explanation of operation

[ ] ..... Represent key's name. Example: [Page] [En]

『 』 ..... Indicate a reference item. Example: 『Input Channel Setting』

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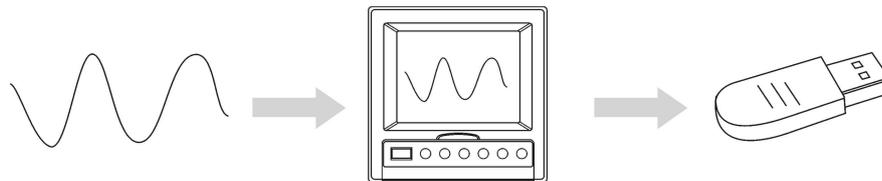
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# Chapter 1 Overview of Functions

## 1.1 Overview of the Instrument

Unlike conventional record that record data on charts, the Instrument displays the measured data acquired in the internal memory to a LCD in the form of waveforms, numerical values, and bar graphs. The measured data can also be saved to external storage media such as U Disk.



The data that have been saved to an external storage medium can be displayed on a PC using the standard software that comes with the package.

By using the RS232C or RS485 interface that comes standard with the Instrument, the data can be transferred to a PC (client function).

## 1.2 Functions of the Input Section

### Number of Measurement Channels/Scan Interval

The number of measurement channels can be selected from 1~16.  
 The scan interval of measurement is 1 second.

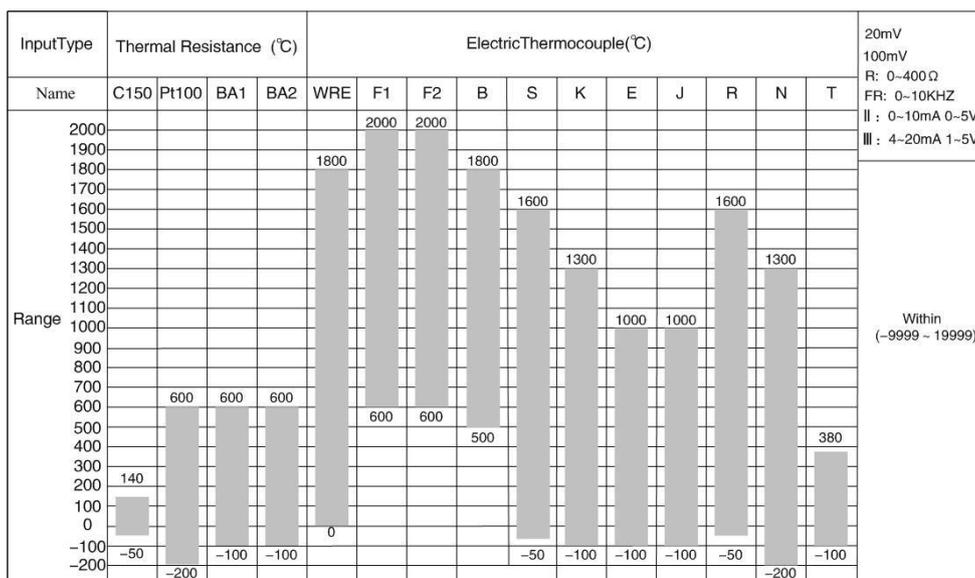
### Input Type and Computation

You can select the input type of a measurement channel as follows. You can also perform computation on the measured data such as the “square root,” and “small signal cutting.” For the procedure related to setting the different modes, see section 『System Configurations』

| Input Mode   | Signal Type                         |
|--------------|-------------------------------------|
| DC current   | 0-10mA<br>4-20mA                    |
| DC voltage   | 0-20mV<br>0-100mV<br>0-5V           |
| Resistance   | 0 - 400Ω                            |
| Thermocouple | S, B, K, T, E, J, R, N, F1, F2, WRE |
| RTC          | PT100, Cu50, BA1, BA2               |
| frequency    | 0 - 10000Hz                         |

### Input Range and Measurable Range

You can select the “Input range” that is appropriate for the input signal for “DC current,” “DC voltage,” “Resistance,” “Thermocouple,” “RTD,” and “Frequency.” For each “Input range,” a measurable range is defined.



## **Burnout**

When measuring temperature with a thermocouple / thermal resistance / 4-20mA / 1-5V signal, the instrument provides check burnout function. you can specify the measurement result to be set to maximum of measurable range, minimum of measurable range, last value or Error Flag\*1. For the setting procedure, see section 『Burnout』 .

\*1 when the burnout setting is Error Flag, the measured value is indicated as “#####”.

## **Reference Junction Compensation (RJC)**

When measuring the temperature using a thermocouple, the reference junction compensation can be used. Reference junction compensation current is installed. You can adjust the temperature that measured by the instrument. For the setting procedure, see section 6.6.

## **Filter**

The filter is used to suppress the effect noise that is riding on the signal. Filtering is provided on the standard products. The filter can be set on each channel. For the setting procedure, see section 6.4.

## 1.3 Display Function

### Common Items Related to the Display TFT Color LCD and the Screen Configuration

The instrument has a 5.6" TFT color LCD (234-by-320 dot resolution). The screen consists of the status display section and the data display section.



#### Status Display Section

Display the displayed screen name, date and time, I/O boards running condition, alarm condition, USB device condition (option), cycle display condition, and history trend condition. For details, see section 4.2.

#### Data Display Section

Display the operation screen such as the trend display, digital display, and bar graph display of the measured and alarm summary, print operation, and backup operation.

Display the setup screen for the setting mode when the Instrument is being configured. For details related to the setting mode, see section 3.4.

#### Group Display

The data displayed on the trend displays are the data of measurement or computation channels that are assigned to the group. Up to 4 channels can be assigned to a single group. For the procedure used to assign channels to groups, see section 5.4. Up to four groups can be registered. The groups are common to the trend displays. On the trend displays, the displayed groups can be automatically switched at 10s intervals.

## **Run Mode**

This mode is used for daily operation.

This mode is entered when the power is turned ON.

Displays various operation screens such as digital, bar graph, trend, historical trend, alarm summary, data print(option), and data backup display (option). Screens are switched by the PAGE key.

## **Setting Mode**

The various functions of the instrument are configured using the setting mode.

This screen is used to set the input range, filter, alarm, group, etc.

## 1.4 Storage Function

The measured/computed data are first acquired to the instrument's internal memory as display data. Then, the data are saved to the external storage medium manually when the external storage medium is inserted into the drive.

The capacity of the internal memory for acquiring display data is 6 MB. For detail, see sections 『 Date Saving and Saving to External Storage Medium 』

### External Storage Media and Internal Memory

The capacity of the internal memory for acquiring display data is 6 MB.

Various data can be saved to the U disk. The capacity is from 256MB to 1GB.

### Scan Interval and Saving Interval

The scan interval of signal is fixed at 1s. The measuring and computing are completed in every scan interval. Display data is generated by these data.

All measured or computed data sampled can be saved to internal memory by saving interval.

### Saving Data to Internal Memory

The display data are saved to internal memory continuously by saving interval.

If the instrument is unplugged, the data that lost while unplugged will be complemented by '0' when the power is turned ON.

### Saving Data to External Storage Media

Insert the storage medium to the drive when data is to be saved (referred to as manual save).

## 1.5 Alarm Function

This function generates an alarm when the measured/computed data meets a certain condition. When an alarm occurs, information notifying the alarm occurrence is displayed on the screen. In addition, a signal can be output from the relay output terminals on the rear panel of the instrument (Option). For details, see section 『Setting Alarms』.

### Alarm Indication

The alarm conditions are displayed as alarm icons in the status display section and through the trend, bar graph, overview and other screens. The detailed information about the alarms is displayed in the alarm summary.

### Number of Alarms

You can set up to four alarms for each channel.

### Alarm Conditions

The following eight conditions are available:

- High high alarm (HH)  
An alarm occurs when the measured value exceeds the alarm value.
- High alarm (H)  
An alarm occurs when the measured value exceeds the alarm value.
- Low alarm (L)  
An alarm occurs when the measured value falls below the alarm value.
- Low low alarm (LL)  
An alarm occurs when the measured value falls below the alarm value.

### Alarm Hysteresis

This applies to ultra upper (HH), upper (H), lower (L) and ultra upper (LL) limit alarms on measurement channels. A width (hysteresis) can be specified on the value used to set or release the alarm. This prevents the alarm from being set or released repetitively when the measured value is fluctuating around the alarm value. About setting the hysteresis, see section 7.2.

### Alarm Output Relay

If you are using a model with the optional alarm output relay, a contact signal can be generated according to the alarm conditions. For the procedure related to setting the alarm output relay, see section 7.2, “Alarm Setting.” For details, see section 7.1.

### Delay Alarm

An alarm occurs when the measured value remains above or bellows the alarm value for the specified time period (delay period).

## **1.6 Computation Function (Option)**

The Accumulation computation can be performed.

### **Accumulation Computation**

The accumulation computation is performed every second.

The accumulation computation can be performed on each measurement channel.

For detail, see section 『Accumulation Setting』

## 1.7 Analog Output Function (Option)

Measured and Computed data can be transmitted and output as an analog signal.

### Transmitter Output

The signal type of transmitter output is 4-20mA.

The instrument provides 4 channels transmitter output. The maximum load of each channel can be drover is 750Ω.

For detail, see section 『Analog Outputs Setting』

## 1.8 Communication Functions (Option)

The instrument can communicate with PC via serial cable. And also can print data or trend by micro printer.

### RS232C/RS485 Interface

RS232C or RS485 can be selected when the instrument communicates with PC.

By using the MODBUS-RTU protocol, measured/computed data written to the instrument's input register can be read by the PC.

The OPC software also provides for users, you can use it to connect the general HMI software like iFix, inTouch. Etc.

### Micro Printer

History Data, History Trend and Display Data can be printed using micro printer.

You can print history data and history manually.

Print display data will be automatic.

## **1.9 Other Functions**

### **24 VDC Power Supply for Transmitter (Option)**

Provide 24 VDC power to transmitters.

The instrument provides 4 channels power supply. The maximum current of each channel can be provided is 60mA.

## Chapter 2 Before Using the Instrument

### 2.1 Precautions on the Use of the Instrument

Read the following precautions before using the instrument and the external storage medium (U disk).

#### Handling Precautions

- Be careful when cleaning the instrument, especially any plastic parts. When cleaning, wipe with a dry, soft cloth. Do not use chemicals such as benzene or thinner, since these may cause discoloring and deformation.
- Keep electrically charged objects away from the instrument as this may cause malfunction.
- Do not apply volatile chemicals to the LCD monitor or panel keys. Do not allow rubber and vinyl products to remain in contact with the instrument for long periods of time. This may damage the instrument.
- Do not apply shock to the instrument.
- When not in use, make sure to turn OFF the power switch.
- If there are any symptoms of trouble such as strange odors or smoke coming from the instrument, immediately turn OFF the power and unplug the power cord. Then, contact your dealer or us.

#### Handling precautions of external storage media

- Take special care in handling external storage media as they are delicate products. For general precautions, see the instruction manual that came with the external storage medium.
- U disks may not operate properly under high or low temperature environment. If you are using the instrument in a low-temperature environment (less than 10 °C), let the instrument warm-up for at least 30 minutes beforehand.
- If you are using them in a high-temperature environment (greater than 40 °C), we recommend the external storage medium be inserted into the drive when saving the data and be removed after the data have been saved.
- Remove the external storage medium from the drive when turning ON/OFF the instrument.
- Do not remove the external storage medium while the access lamp is lit. Doing so can destroy the data on the medium.
- If you are using a commercially available U disk on instruments in the USB port, be careful of static electricity. The instrument may not operate properly if you touch the U disk that is inserted into the instrument when your body is charged with static electricity.

## 2.2 Installing the Instrument

### Installation location

Install the instrument in a location that meets the following conditions.

- Instrument panel  
The instrument is designed for panel mounting.
- Well-ventilated location  
To prevent overheating, install the instrument in a well-ventilated location. For the panel mount type, see section 『Dimensional Drawings』
- Minimum mechanical vibrations  
Choose an installation location with the minimum mechanical vibration.
- Horizontal  
Install the instrument horizontally (However, the instrument can be inclined up to 30 degrees backwards for panel mounting).

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#### Note

- Condensation may occur if the instrument is moved to another place where both the ambient temperature and humidity are higher, or if the temperature changes rapidly. In addition, measurement errors will result when using thermocouples. In this case, let the instrument adjust to the new environment for at least one hour before using the instrument.
  - The lifetime of the LCD may be shortened if the instrument is used in a high-temperature environment over a long period of time. When installing the instrument in a high-temperature environment (greater than 40°C), we recommend the backlight brightness of the LCD be set to a low setting.
- 

Do not install the instrument in the following places:

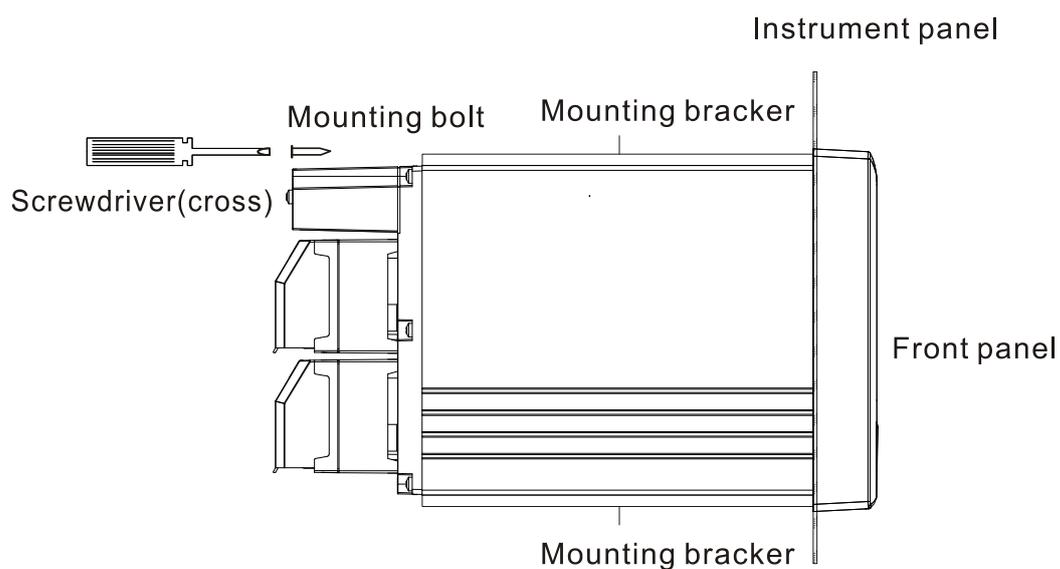
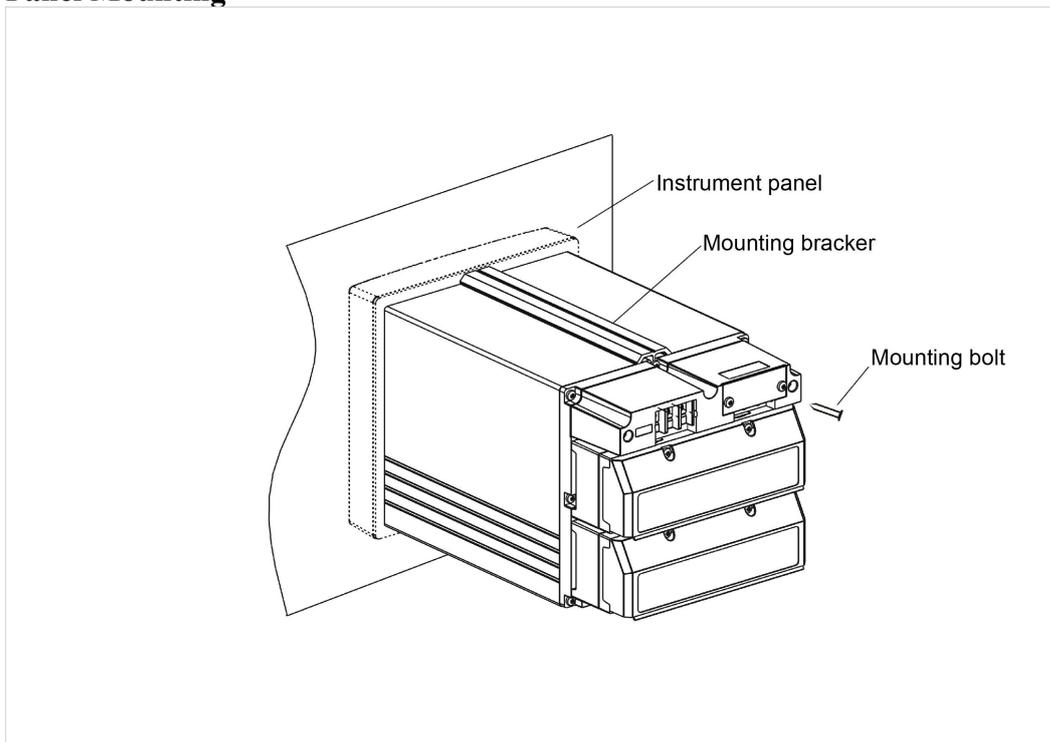
- In direct sunlight or near heat sources  
Install the instrument in a place with small temperature fluctuations near room temperature (23 °C). Placing the instrument in direct sunlight or near heat sources can cause adverse effects on the internal circuitry.
- Where an excessive amount of soot, steam, moisture, dust, or corrosive gases are present  
Soot, steam, moisture, dust, and corrosive gases will adversely affect the instrument. Avoid such locations.
- Near strong magnetic field sources  
Do not bring magnets or instruments that produce electromagnetic fields close to the instrument. Operating the instrument in strong magnetic fields can cause errors in the measurements.
- Bad angle for viewing the screen  
Because the instrument uses a 5.6" TFT color LCD, it is difficult to view the display from an extreme angle. Please install the instrument so that the monitor can be viewed from the front.

## Installation Procedure (Panel Mount Type)

The instrument should be mounted on a steel panel of thickness 2 mm to 26 mm.

1. Insert the instrument from the front side of the panel.
2. As shown in the figure below, mount the instrument to the panel using the mounting brackets that came with the package.
3. Use two brackets to support the top and bottom sides of the case.

### Panel Mounting



## 2.3 Input and Output Signal Wiring

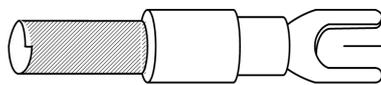
### CAUTION

If a strong tension is applied to the cable wired to the instrument, the terminals of the instrument and/or the cable can be damaged. In order to prevent tension from being applied directly on the terminals, fasten all wiring cables to the rear of the mounting panel.

### Precautions to be taken while wiring

Take the following precautions when wiring the input signal cables.

**It is recommended that crimp-on lugs (designed for 4 mm screws) with insulation sleeves be used on the lead wire ends.**



crimp-on lugs (designed for 4 mm screws) with insulation sleeves be used on the lead wire ends.

**Take measures to prevent noise from entering the measurement circuit.**

- Move the measurement circuit away from the power cable (power circuit) and ground cable.
- It is desirable that the item being measured does not generate noise. However, if this is unavoidable, isolate the measurement circuit from the item. Also, ground the item being measured.
- Shielded wires should be used to minimize noise caused by electrostatic induction. Connect the shield to the ground terminal of the instrument as necessary (make sure you are not grounding at two points).
- To minimize noise caused by electromagnetic induction, twist the measurement circuit wires at short, equal intervals.
- Make sure to earth ground the protective ground terminal through minimum resistance (less than 100  $\Omega$ ).

**When using the thermocouple input, take measures to stabilize the temperature at the input terminal.**

- Always use the input terminal cover.
- Do not use thick wires which may cause large heat dissipation (cross sectional area 0.5 mm<sup>2</sup> or less recommended).
- Make sure that the ambient temperature remains reasonably stable. Large temperature fluctuations can occur if a nearby fan turns ON or OFF.

**Connecting the input wires in parallel with other devices can cause signal degradation, affecting all connected devices.**

If you need to make a parallel connection, then

- Ground the instruments to the same point.
- Do not turn ON or OFF another instrument during operation. This can have adverse effects on the other instruments.
- RTD cannot be wired in parallel.

---

### WARNING

- To prevent electric shock, ensure the main power supply is turned OFF.
- 

### CAUTION

- Do not apply input signals that exceed the following values. This can damage the instrument.
    1. Maximum input voltage  
Voltage range of 0.2 VDC or less or thermocouples:  $\pm 5$  VDC  
Voltage range between 2 and 10 VDC:  $\pm 12$  VDC
    2. Maximum common mode noise voltage  
250 VACrms (50Hz)
- 

## Wiring Procedure

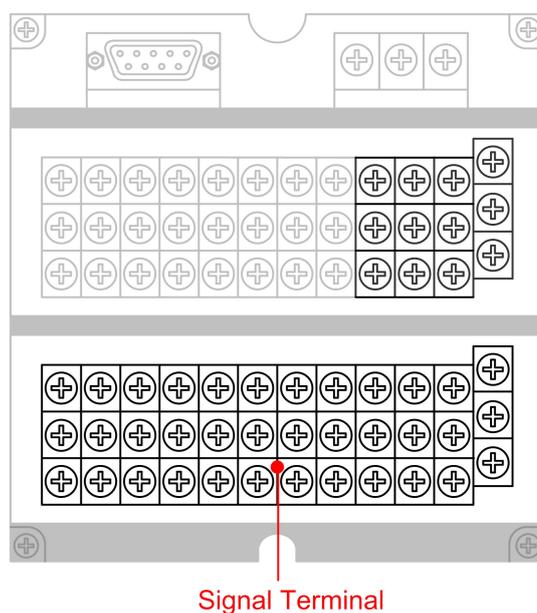
1. Turn OFF the instrument and remove the input terminal cover.
2. Connect the input signal wires to the input terminals.
3. Replace the input terminal cover and fasten it with screws.

---

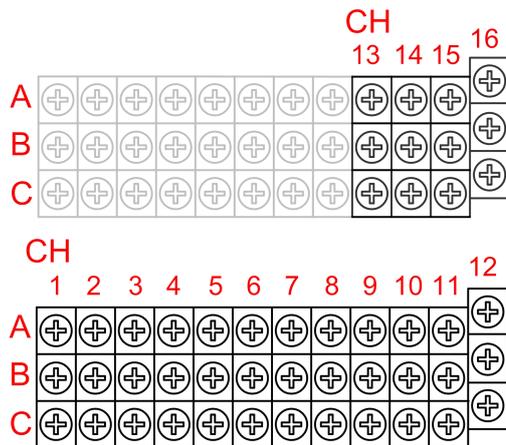
### NOTE

- For clamped input terminals, the following wires are recommended.  
Cross sectional area of the conductor or conductors
  - Single conductor: 0.14 mm<sup>2</sup> to 1.5 mm<sup>2</sup>
  - Stranded conductors: 0.14 mm<sup>2</sup> to 1.0 mm<sup>2</sup>  
Stripped cable length: approximately 5 mm
  - Input signal wires of diameter less than or equal to 0.3 mm may not be secured firmly for clamped input terminals. Fold over the conducting section of the wire, for example, to make sure that the wire is securely connected to the clamped input terminal.
- 

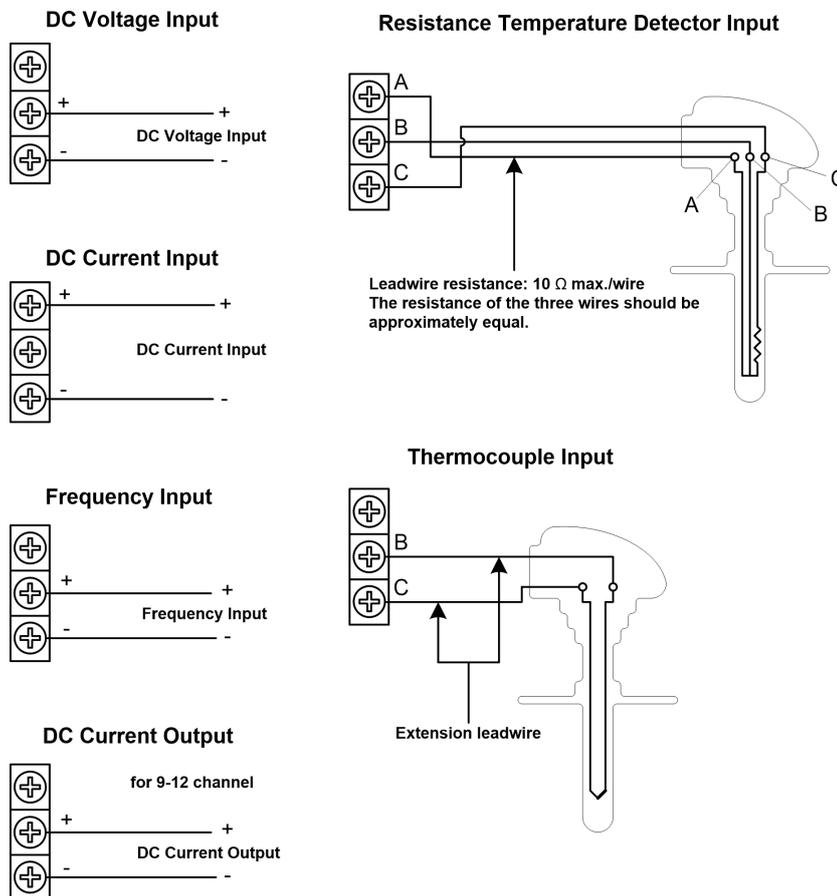
## Signal Terminal Position



### Terminal Arrangement

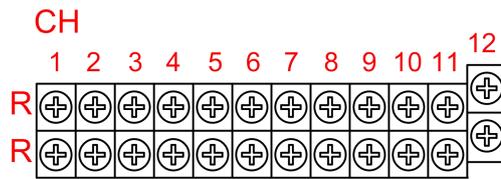


### Wiring Diagram





### Terminal Arrangement



### Contact Specifications

| Item                | Specification   |
|---------------------|---|
| Output Type         | Relay transfer contact (energize/de-energize switchable)                        |
| Output capacity     | 250 VAC (50 Hz), 3 A<br>30 VDC, 3 A (resistive load)                            |
| Dielectric strength | 500 VAC (50 Hz) for one minute between output terminals and the ground terminal |

## 2.5 Input Digital Signal Wiring (Option)

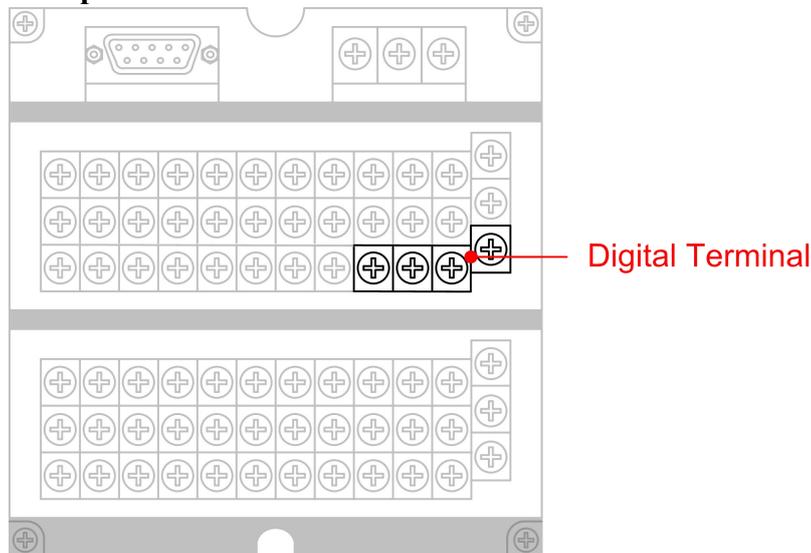
### Wiring Procedure

1. Turn OFF the instrument and remove the cover for the option terminal.
2. Connect the alarm output cables to the terminal.
3. Replace the terminal cover and fasten it with screws.

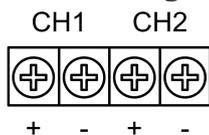
**CAUTION**

To prevent fire, use signal wires having a temperature rating of 70°C or more.

### Digital Input Terminal Position



### Terminal Arrangement



### Contact Specifications

| Item                | Specification   |
|---------------------|---|
| Input signal        | Voltage-free(dry)contact, open-collector(TTL or transistor)                           |
| Input conditions    | Signal width: above 250ms<br>Input voltage:<br>ON: 4VDC – 24VDC<br>OFF: 0VDC – 1VDC   |
| Input type          | Photocoupler isolation(one side common)<br>Internal isolation power source (24VDC±5%) |
| Dielectric strength | 30VDC for one minute between input terminals and the ground terminal.                 |

## 2.6 Connect Power Supply

### Precautions to be taken when wiring the power supply

To prevent electric shock and damage to the instrument, observe the following warnings.

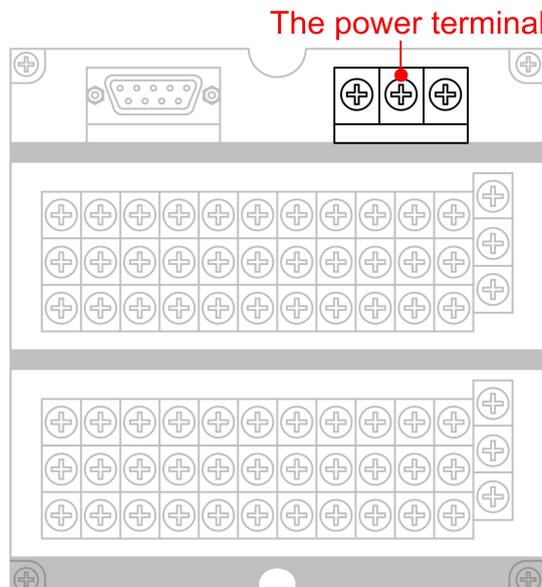
#### WARNING

- To prevent electric shock, ensure the main power supply is turned OFF.
- To prevent the possibility of fire, use 600 V PVC insulated wire (AWG18) or an equivalent wire for power wiring.
- Make sure to earth ground the protective earth terminal through a grounding resistance less than 100  $\Omega$  before turning ON the power.
- Use crimp-on lugs (designed for 4mm screws) for power and ground wiring termination.
- Make sure to provide a power switch (double-pole type) on the power supply line in order to separate the instrument from the main power supply. Put an indication on this switch as the breaker on the power supply line for the instrument.  
Switch Specification Rated current: 3A or more
- Connect a fuse (between 2A and 15A) to the power line.

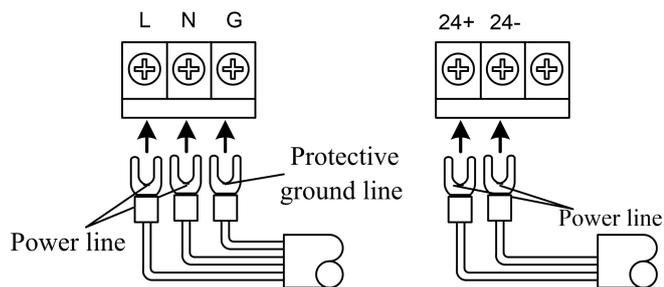
### Wiring Procedure

1. Connect the power supply wires and the protective ground wire to the power terminals.
2. Replace the terminal cover and fasten it with screws.

#### The position of power terminal:



### Terminal Arrangement



### Contact Specifications

| Power Supply | Specification   |
|--------------|---|
| 220V         | Input voltage: 85VAC ~ 265VAC<br>Input frequency: 50Hz ~ 60Hz |
| 24V          | Input voltage: 24VDC  |

## 2.7 24VDC Transmitter Power Wiring (Option)

### Transmitter power output

#### CAUTION

Never short-circuit the power supply terminals or apply an external voltage, otherwise damage to the instrument may result.

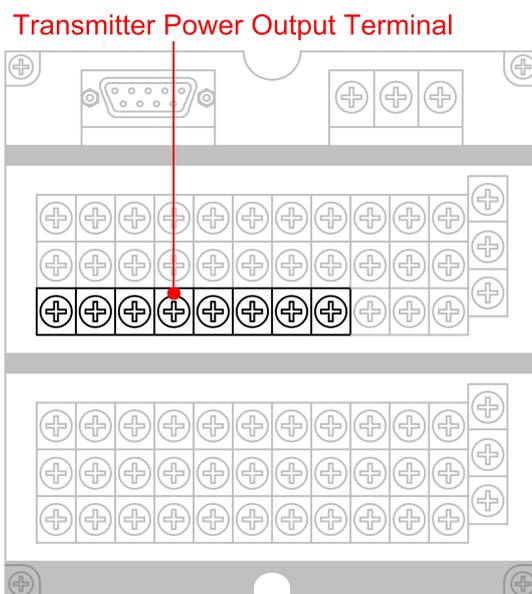
### Wiring Procedure

1. Turn OFF the instrument and remove the cover for the option terminal.
2. Connect the alarm output cables to the terminal.
3. Replace the terminal cover and fasten it with screws.

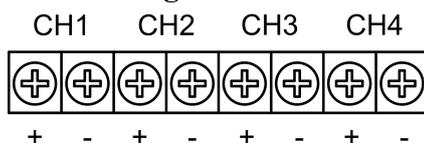
#### Note

Remove the cover for the option terminal can be expediently to wiring. To prevent contact badness, replace the terminal cover and fasten it with screws.

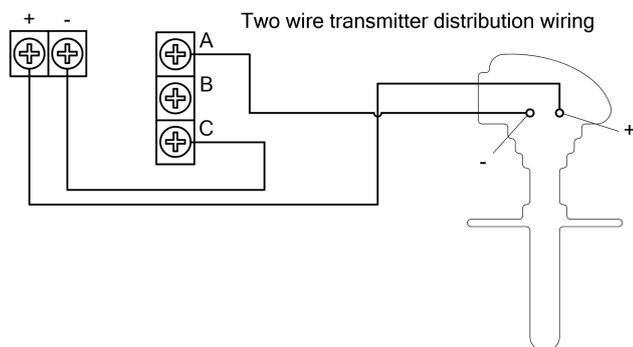
### Transmitter Power Output Terminal Position



### Terminal Arrangement



### Wiring Diagram



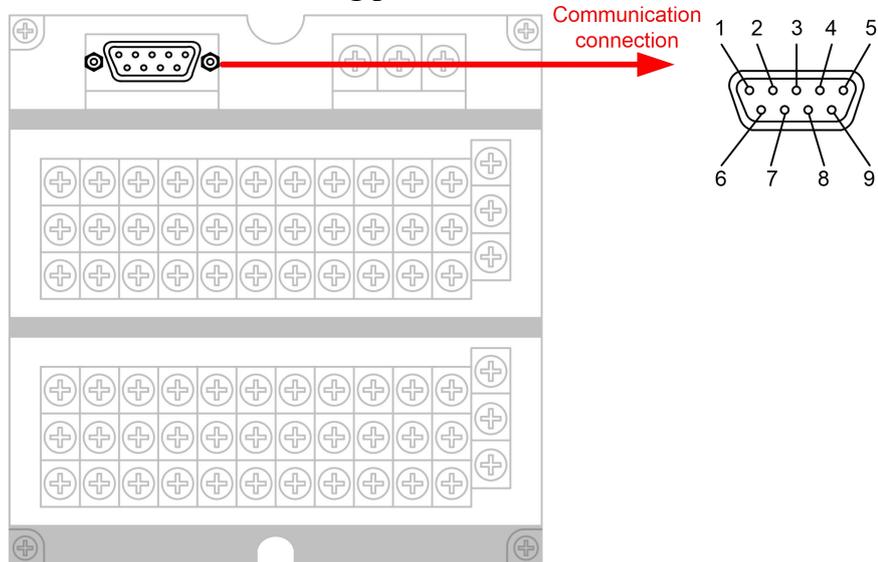
### 24VDC Transmitter Power Supply

|                        |   |
|------------------------|---|
| Loop                   | 4   |
| Output voltage         | 22VDC ~ 25VDC (rate output current)   |
| Maximum output current | 65mADC (over-loading protect current: about 90mADC)   |
| Maximum output current | $RL \leq (17 - \text{minimum circulate voltage}) / 0.02A$   |
| There into             | $RL \leq 750\Omega$<br>$17V = 22V - 5V$<br>22V: Minimum output voltage<br>5V: Maximum voltage drop (shunt resistance 250 $\Omega$ ) |

## 2.8 RS232C/RS485 Communication Wiring (Option)

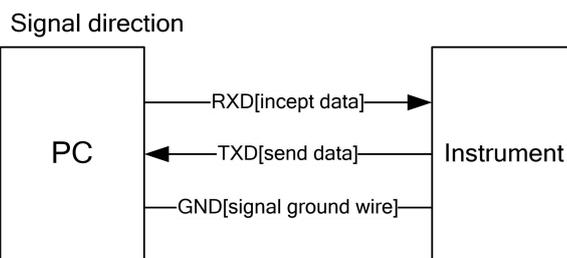
### Wiring Procedure

#### RS232 Communication wiring position

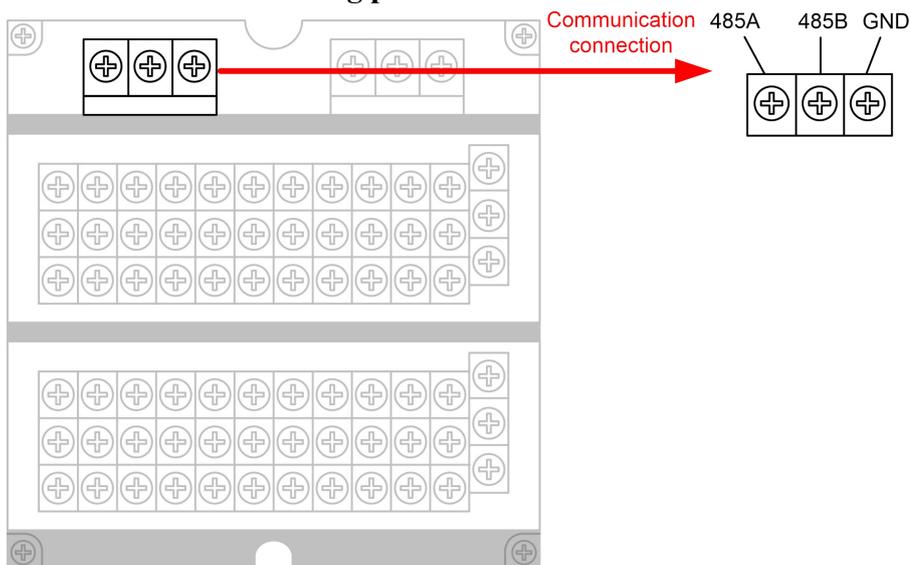


| Pin number | Signal Name | Description             |
|------------|-------------|-------------------------|
| 2          | RXD         | instrument receive data |
| 3          | TXD         | instrument send data    |
| 5          | GND         | Signal Ground           |

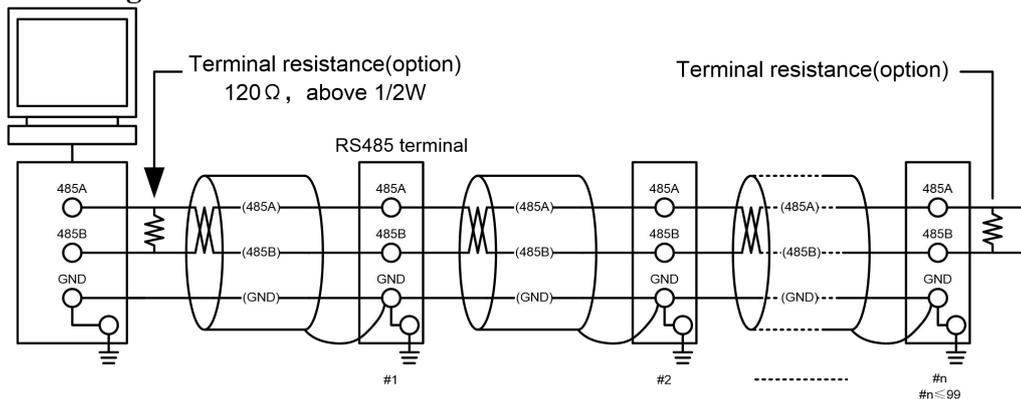
#### RS232C Wiring



### RS485 Communication wiring position



### RS485 Wiring



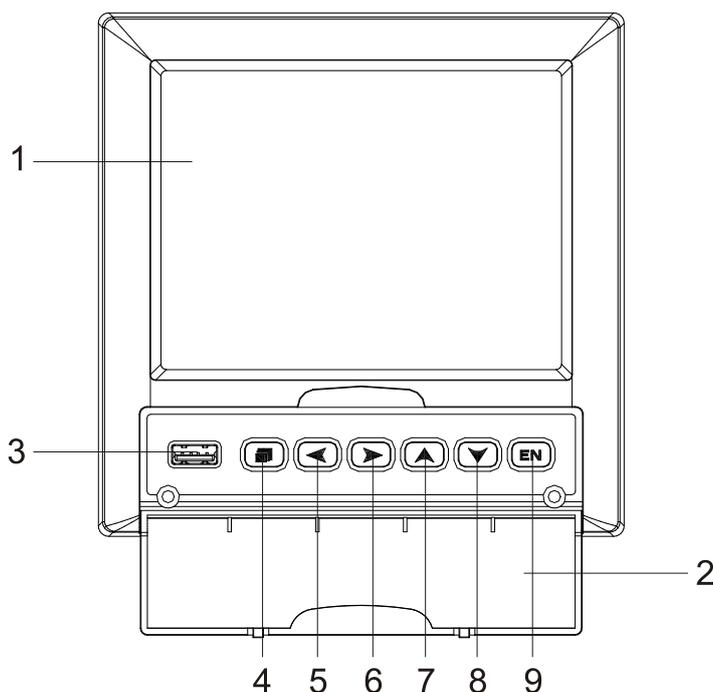
### Communication Specifications

| Item             | Specification   |
|------------------|---|
| Speed(baud rate) | 1200/2400/4800/9600/19200/38400/57600                                   |
| Data format      | Eight data bits, One stop bit<br>Optional checkout code (None/odd/even) |

## Chapter 3 Names of Parts/Run Mode/Common Operations

### 3.1 Names of Parts and Functions

#### Front Panel



**1. LCD**

Display various operation screens such as the trend display and the setup screen to configure the instrument.

**2. Front Cover**

Open this cover to access the keys or inserting or removing the external storage medium such as the USB disk. Open the cover by catching the center of the top edge of the cover and pulling it toward you.

Keep the cover closed at all times except when accessing the keys and the external storage medium.

**3. USB Port**

USB Port is used to insert or remove the external storage medium such as the U disk.

**4. PAGE key**

Used to switching operation display. Press this key down with ENTER key at the same time will becoming a combination key, used to enter the setting mode.

**5. LEFT key**

Used to move cursor (blue) to left in run mode and setting mode. In continues mode of the history trend screen, used to scrolls the waveform along the time axis.

**6. RIGHT key**

Used to move cursor (blue) to right in run mode and setting mode. In continues

mode on history trend display, used to scrolls the waveform along the time axis.

**7. UP key**

Used to increase the value that cursor indicated, and switches groups on the trend screen.

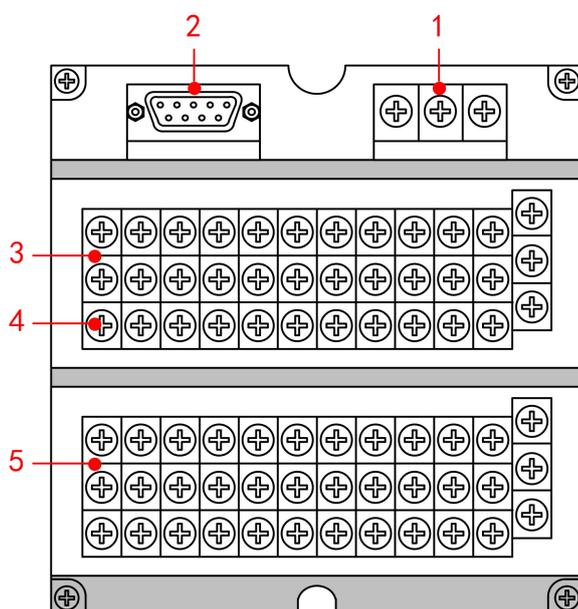
**8. DOWN key**

Used to decrease the value that cursor indicated, and switches compress ratio on the history trend screen.

**9. ENTER key**

Used to execute the function of button that cursor indicated. It also display the input keypad when the value that cursor indicated can be edited. On history trend screen, you can switch replay mode between continuous time mode and select time mode.

## Rear Panel



**1. Power terminals**

Connect the power cord.

**2. RS232 Port and RS485 Port**

RS-232 port or RS485 port depend on the specification. Connect the cable.

**3. Relay terminals**

Connect the relay output cable.

**4. 24 VDC Power Supply for Transmitter**

Provide 24 VDC power to transmitters.

**5. I/O signal terminals**

Connect the input signal cable of the item being measured or output signal cable.

Note: For the details, please refer to 『Before using the instrument』 chapter.

## 3.2 Inserting/Removing the External Storage Medium

This section describes the procedures to insert and remove the external storage medium. USB disk is the only type of media can be used.

For the handling procedure of the storage medium, see section 9.2.

### Procedure

#### Inserting the storage medium

1. Open the front cover. Insert the U disk into the USB port.
2. The instrument detects the existence of an external storage medium in the drive automatically. If the storage medium is detected, an external storage medium icon is displayed in the status display section of the screen.
3. Press PAGE key to display Backup screen, saving data to U disk. Success information will be displayed when backup ended.

---

#### CAUTION

- Keep the front cover closed during operation except when accessing the external storage medium. This will protect the storage medium and the drive from foreign particles such as dust.
  - Keep the metal face upper when inserting the U disk, otherwise can't insert.
  - If you are using a commercially available U disk, be careful of static electricity.
- 

#### Removing the storage medium

If the instrument is turned ON, check that the storage medium is not being accessed.

---

#### CAUTION

- The access lamp is lit while the storage medium is being accessed.
  - A message "Data are being saved to the medium." is displayed while data are being saved to the medium.
- 

### Specification

Formatting external storage media

Format the external storage medium before use.

Please use the PC to carry on the formatting for the USB flash drives, this product doesn't provide the formatted function.

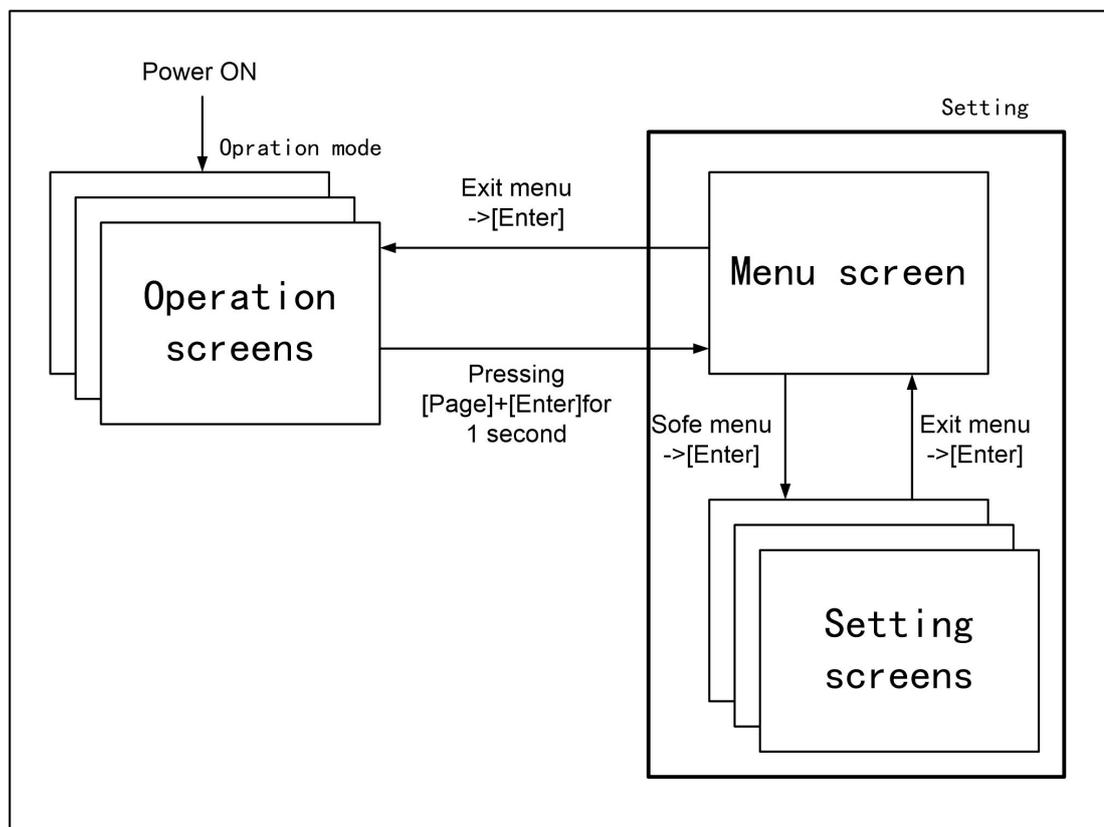
#### Option

| Parameters | Item                  |
|------------|-----------------------|
| USB port   | The USB 2.0 agreement |
| Content    | Maximum 4GB           |

### 3.3 Run Mode

There are two run modes: operating and setting. This section describes the functions and relationships of the two modes.

#### Mode Types



| Mode Type      | Description   | Possible operations  |
|----------------|---|--|
| Operation Mode | This mode is used for daily operation.<br>This mode is entered when the power is turned ON.<br>Back up data to the external storage.  | Monitoring operation<br>Data acquisition<br>Data printing<br>Operation related to the file on the external storage medium. |
| Setting Mode   | This mode is used to configure the operation such as input range and alarms.<br>This mode is entered by pressing the [Page] and [Enter] key for one second at the setting mode menu.<br>Measured data can't be displayed in this mode.<br>Operations such as measurements, alarm detection, and data acquisition are continued. | Settings of the functions.   |

## **Functions and Operations in the Operation Mode**

### **Operation screen**

Display various operation screens such as digital, trend, bar graph, historical trend, alarm summary, print and back up.

Screens are switched by the [Page] key. See section 4.1.

The operation screen with different key operating has the different functions. The concrete pressed key operation and the function please see section 4.1.

## **Functions of setting modes**

Use arrow keys and [En] key to set the instrument's functions.

See sections 5.1 to 12.4.

## 3.4 Configuring the functions

### Setting Mode

The setting mode is used to change the configuration of various functions.

---

**CAUTION**

---

Change some system parameters will affect the data acquisition. We suggest backing up data before the changed.

---

### Setting Items

User can carry out the following content in configuration mode:

- System Configurations
- Setting Analog Inputs
- Setting Analog Outputs
- Setting Display Parameters
- Setting Report Parameters
- Setting Alarms
- Communication Function
- Print Function
- Initializing Data

## 3.5 Common key operations

This section describes common key operations which are used often.

### Key operations in the setting mode

#### Entering the setting mode

1. Power on immediacy enter the setting mode
2. Select [Exit] to enter the setting mode in the configuration mode.

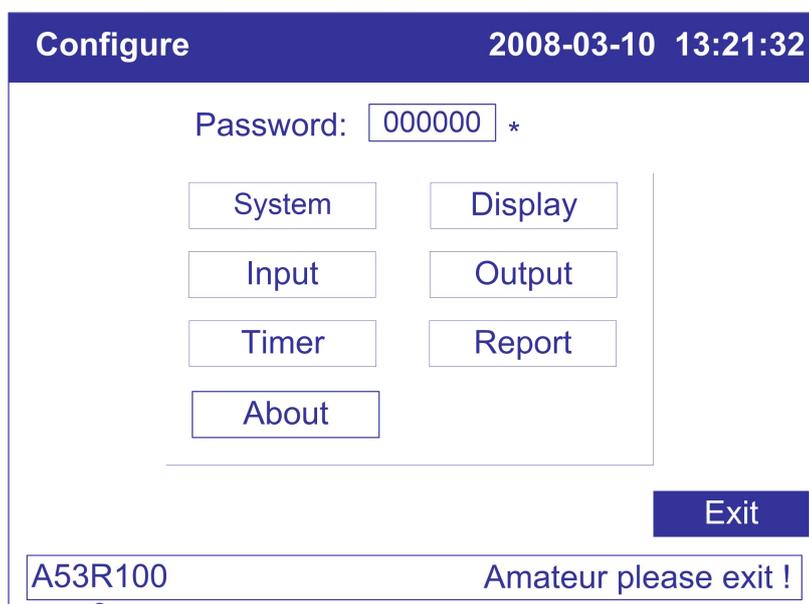
#### Switching the screens under the setting mode

Press [Page] to display each setting screen in turn.

### Key operations in the configuration mode

#### Entering the configuration mode

1. Under the setting mode, Press [Page] and [En] to enter the configuration screen.
2. Move the cursor and press the [En] to enter each configuration screen.



#### Selecting the parameter

Used [Left] and [Right] to move the cursor (blue) to the appropriate parameter or operation key.

#### Confirming operation

Press [En] to confirm the settings.

#### Modifying the parameter

There are two types of the revisable parameters, select input parameter and edit input parameter.

- Selecting input parameter(The right of the input frame has the sign ◆)

Used [Up] and [Down] to move the cursor to modify the appropriate parameter.

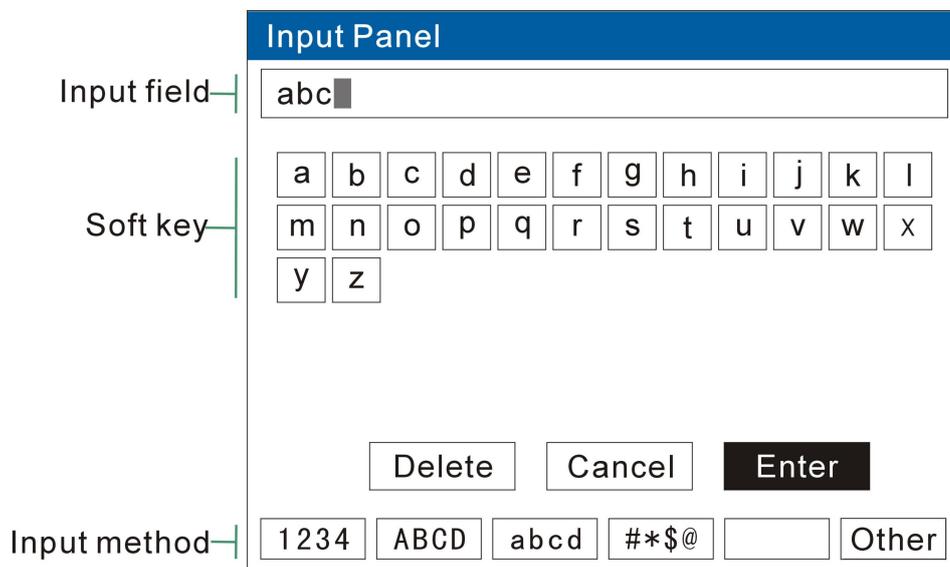
- Edit input parameter(The right of the input frame has no sign)

When the parameter can be edited, user can input Number, English (Caps), English, Symbol and Chinese.

Move the cursor to the edited parameter, press [En] to the input panel, user can do it.

## Input Number/English (Caps)/English/Symbol

Used in inputting range, unit, tag etc.



### Procedure

[Left][Right]: Move the cursor to the soft key or input method.

[Up][Down]: Move the cursor of the soft key.

[Page]: Switch the cursor's area. (Soft key /Input method).

[En]: Input the character to the input field, which under the place of cursor.

Cursor at [Delete]: Delete the last character in the input field.

Cursor at [Cancel]: Exit the input panel, cancel the editing.

Cursor at [Enter]: Exit the input panel, confirm the editing.

If the cursor at the input method area, you can switch it to the soft key area.

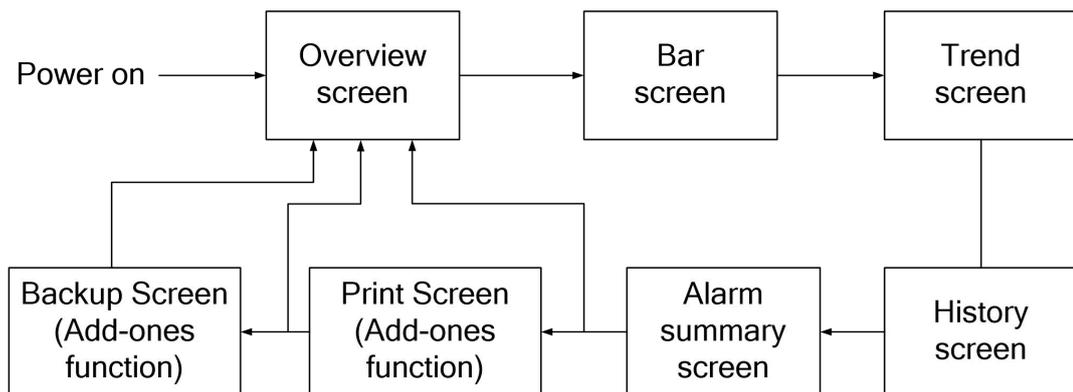
## Chapter 4 Switching Operation Screens

### 4.1 Switching operation screens

This chapter describes the screen (operation screen) used to display the measured / computed data.

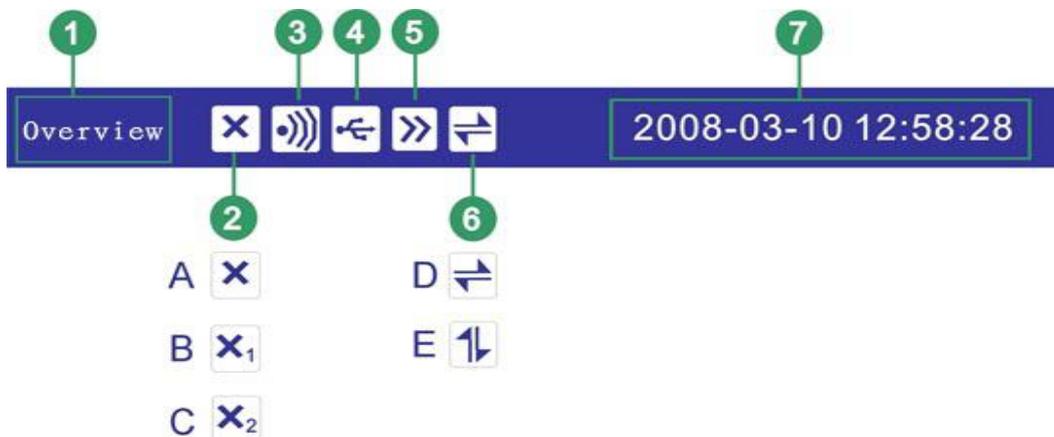
The operation screens are composed of Overview, Bar, Trend, History, Alarm summary, Print (Add-ones function) and Backup (Add-ones function).

Used the [Page] key can switch each screen.



## 4.2 Explanation of the status Display Section

The following information is displayed in the status display section during the operation mode and the configuration mode.



1. **Screen name**  
 Displayed the screen name, [Alias] is displayed during all channel display.

2. **Board card status flag**

|      |                                   |
|------|-----------------------------------|
| None | Work normal                       |
| A    | All Interior boards don't work    |
| B    | The board in Socket1 doesn't work |
| C    | The board in Socket2 doesn't work |

Note

When the instrument displayed this flag, there was something wrong with it, you should contact the Supplier.

3. **Alarm status flag**

Alarm icon: Relay exports the alarm.  
 None: Relay doesn't export the alarm.

4. **USB Equipment flag**

5. **Circulation display flag (Trend screen)**

Circulation icon: Circulation Display each group  
 None: Fixed screen, don't circulation.

6. **History trend status flag (History screen)**

|      |                    |
|------|--------------------|
| None | Not in this screen |
| D    | Continuous state   |
| E    | Fixed point state  |

7. **Current data and time**

### 4.3 Overview screen



1. Channel tag. See section 『Channel Tag and Unit Setting』
2. Engineering value. Blue is Normal, red is alarming

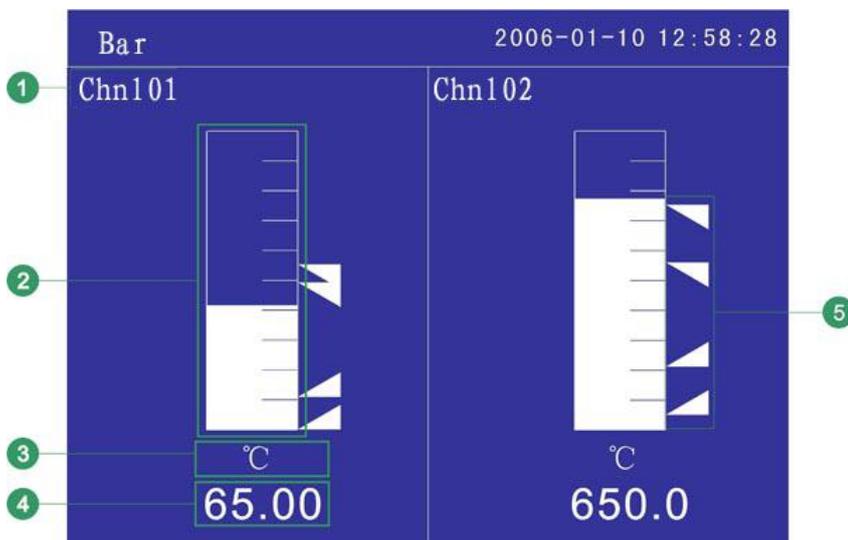
---

#### Note

- Measure the channel's data display  
When measuring data of measurement channel anomalies (see below), the screen shows measurements for #####.
  - Data exception  
4-20 mA : signal bellows 2 mA.  
The thermocouple burnout , the [burnout set] display #####.
- 

3. Channel accumulation value.
4. Channel unit. See section 『Channel Tag and Unit Setting』
5. Alarm symbol. From up to down, high high alarm, high alarm, low alarm, low low alarm. Green is normal, red is alarm.

## 4.4 Bar Graph Display



1. Channel tag. See section 『Channel Tag and Unit Setting』
2. Bar. Bar chart ruler has the length of 10 grids, and the length of filling color represents proportion in percent. Green is normal, red is alarm.
3. Channel unit. See section 『Channel Tag and Unit Setting』
4. Engineering value .Blue is normal, red is alarm.

---

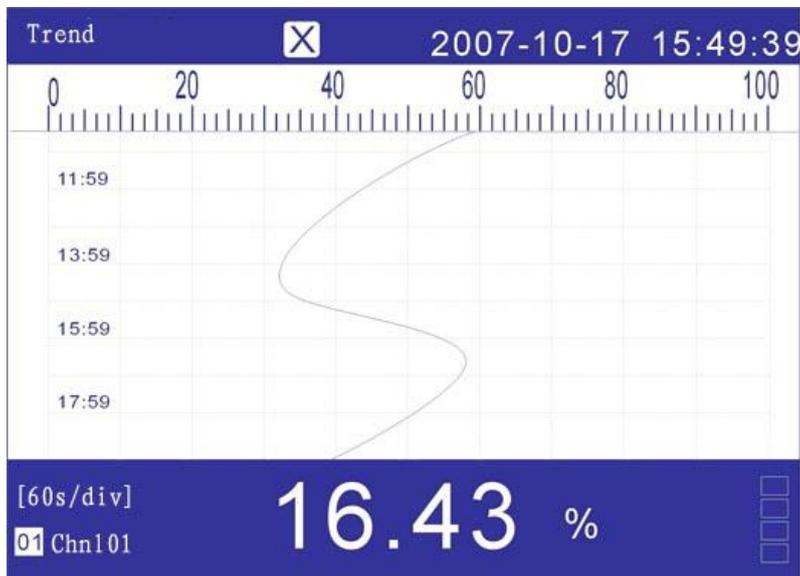
### Note

- Measure the channel's data display  
When measuring data of measurement channel anomalies (see below), the screen shows measurements for #####.
  - Data exception  
4-20 mA : signal bellows 2 mA.  
The thermocouple burnout , the [burnout set] display #####.
- 

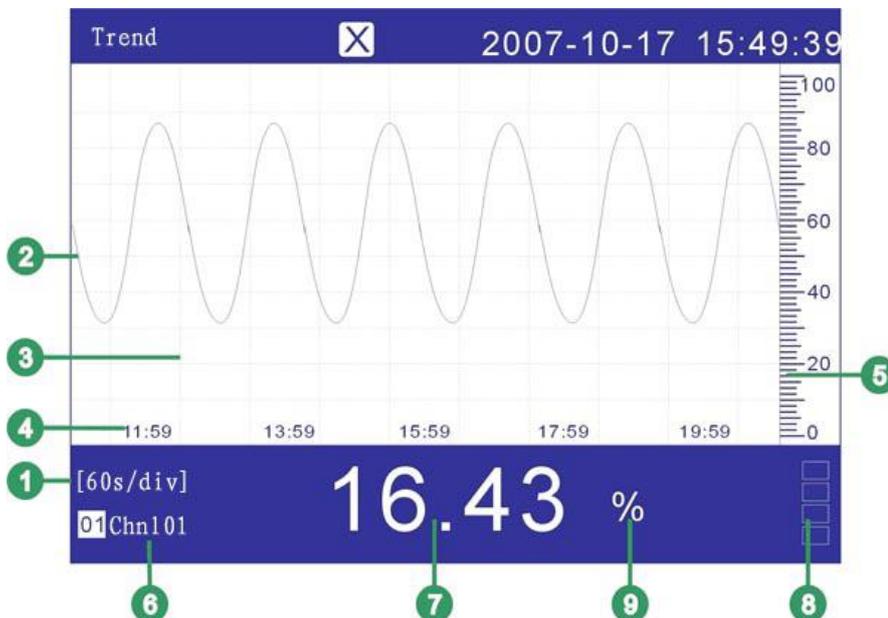
5. Alarm symbol. From up to down, high high alarm, high alarm, low alarm, low low alarm. Green is normal, red is alarm. Indications of each channel's alarm state.

## 4.5 Trend screen

### Trend display (Vertical)



### Trend display (Horizontal)



1. Trend cycle. Each grid means the length. The cycle is related with saving interval, each grid time length = saving interval  $\times$  30.
2. Data trend. Most display 4 trends at the same screen.
3. Grid. Estimate the time and data value.
4. Time of the current grid.
5. Scale. Display the percentage the trend.
6. Channel tag. Background color and this corresponding trend color are identical.
7. Engineering value.

---

### Note

- Measure the channel's data display  
When measuring data of measurement channel anomalies (see below), the screen shows measurements for #####.
  - Data exception  
4-20 mA : signal bellows 2 mA.  
The thermocouple burnout , the [burnout set] display #####.
- 

8. Alarm symbol. From up to down, high high alarm, high alarm, low alarm, low low alarm. Green is normal, red is alarm. Indications of each channel's alarm state.
9. Channel unit. See the section of 『Channel Tag and Unit Setting』

### Trends refurbish

On time axis of the instrument's LCD screen, every pixel stands for a record interval. Every record interval in trend moves once.

### Group circulation

When started the circulation display function, switched to next group display trend for every 10 seconds.

## Procedure

### Switch trend display group

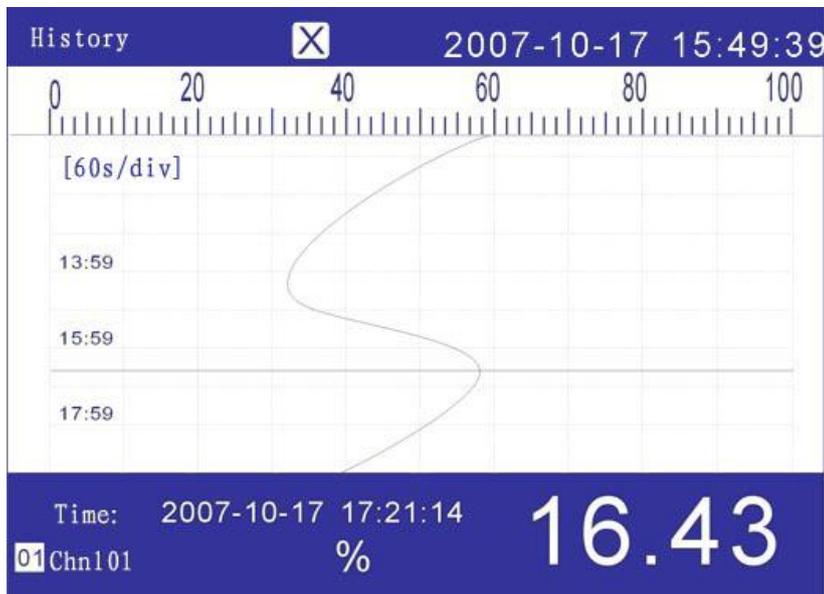
[Up] is used to switch to next effectual group display trend.

### Circular display the trend display channel

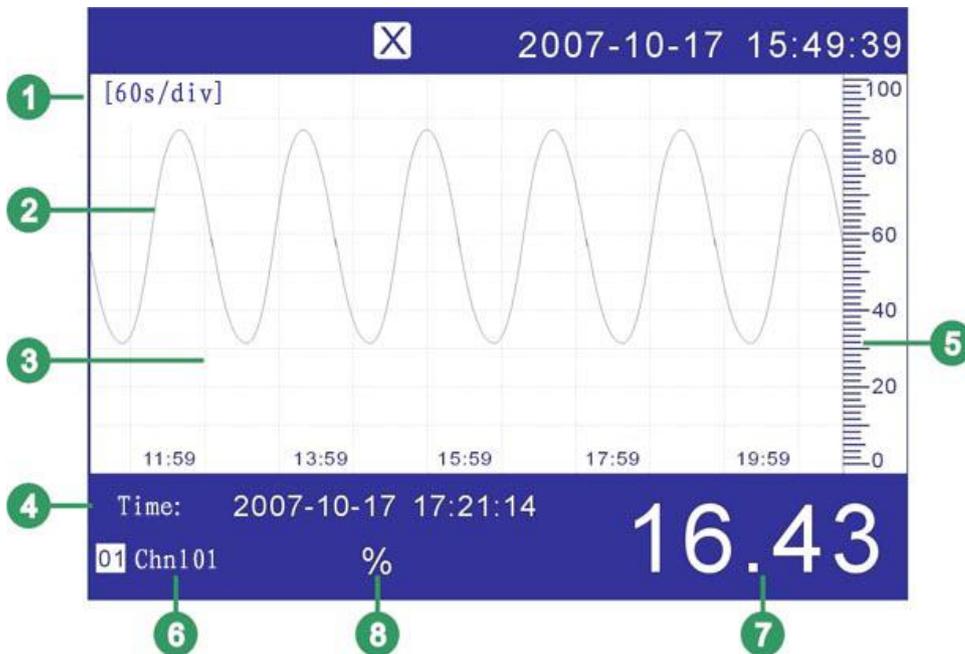
[En] is used to open or close display with circulation. When open this function, there will be an icon appeared in the state bar. See section 『Explanation of the status Display Section』 .

## 4.6 History screen

### Trend display (Vertical)



### Trend display (Horizontal)



1. Trend cycle. Each grid means the length. The cycle is related with saving interval, Time length = saving interval  $\times$  Zoom multiple  $\times$  30.
2. Data trend. Most display 4 trends at the same screen.
3. Grid. Estimate the time and data value.
4. Cursor time. The time of the trend.
5. Scale. Display the percentage the trend.

6. Channel tag. Background color and this corresponding trend color are identical.
7. Engineering value.
8. Channel unit. See the section of 『Channel Tag and Unit Setting』

## Procedure

There exist two methods to search historical data. One is continuous and the other is fixed point.

The current state tag, please see section of 『Explanation of the status Display Section』 .

Switch the continuous state and the fixed point state

Under the continuous state, press [En] to switch to the fixed point state.

Under the fixed point state, press [En] to switch to the continuous state.

### Continuous state

#### Switch channel trend

Within this state, uses [up] to display the next channel's trend.

#### Trend zoom

Under the continuous state, press [Down] to switch the trend zoom times, circulation switch between 1 times/ 2 times/ 4 times/ 8 times/ 16 times/ 32 times.

#### Operation

Uses [Left] and [Right] to move cursor so that forward or backward searching is available.

The trend moves 1/3 screen trend voluntarily when the trend cursor remove arrives at screen border.

### Fixed point state

#### Display or hide the trend

Within this state, uses [Left] and [Right] to move cursor (Black) and chooses the trend in channel to be displayed or hided by pressing [Down].

#### Operation

Uses [Left] and [Right] to move cursor. Set the data time to a desired point by using [Up] and [Down]. Press [En], the trend will be moved to the fixed point automatically.

## 4.7 Alarm summary

Displayed most 15 pieces alarm information, at the same time displayed the state of the relay.

| Chnl | Start               | Stop                | Type |
|------|---------------------|---------------------|------|
| 01   | 2007-10-17 14:22:03 | 2007-10-17 14:22:08 | LL   |
| 02   | 2007-10-17 14:24:03 | 2007-10-17 14:25:08 | HH   |
| 03   | 2007-10-17 14:27:03 | 2007-10-17 14:27:08 | LL   |

|    |    |    |    |    |    |    |    |    |     |     |     |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|
| 1R | 2R | 3R | 4R | 5R | 6R | 7R | 8R | 9R | 10R | 11R | 12R |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|

1. Channel tag. Displayed the alarm information.
2. Channel sequence number.
3. Alarm time. Displayed the alarm occur
4. Eliminate alarm time. Displayed the alarm
5. Alarm type. Displayed the alarm type.
6. This alarm time.
7. This eliminates alarm time.
8. This alarm type.
9. Relay state. Displayed 12 pieces of relay output state.

| Relay type | Normal open | Normal close |
|------------|-------------|--------------|
| Green      | Open        | Close        |
| Red        | Close       | Open         |

## 4.8 Report

There are four types of cumulative report (Hourly, 8Hourly, 12Hourly, Daily, Monthly)

### Report-Hourly

| Report-Hourly     |              | 2008-06-03 14:25:28 |  |
|-------------------|--------------|---------------------|--|
| 01: 0.00          | 09: 10259.00 | 17: 0.80            |  |
| 02: 0.00          | 10: 25.02    | 18: 0.00            |  |
| 03: 0.25          | 11: 0.25     | 19: 0.25            |  |
| 04: 0.00          | 12: 0.00     | 20: 0.00            |  |
| 05: 1.32          | 13: 1.32     | 21: 0.00            |  |
| 06: 0.79          | 14: 0.19     | 22: 0.79            |  |
| 07: 0.02          | 15: 0.70     | 23: 0.02            |  |
| 08: 0.21          | 16: 35.23    | 24: 45.01           |  |
| $\Sigma$ 10380.35 |              | Daily Sum: 10371.17 |  |
| Date: 2008-05-27  | Chnl: Chn101 | Print               |  |

#### 1. Query

Query report by setting the date, uses [Left] or [Right] key to move the cursor, Press [Up] or [Down] key to configure the time .The report displays 24 hours' accumulation values on the screen.

#### 2. Channel selection

Move the cursor to the edit box of channel, Press [Up] or [Down] key to select the channel.

#### 3. Print

Move the cursor to the button named "Print", press [En] to print the report of current screen.

## Report-8Hourly

| Report-8Hourly    |  |   | 2008-06-03 14:25:28                  |
|-------------------|--|---|--------------------------------------|
| 05-27:            | 0.00   | 0.00  | 0.00                                 |
| 05-28:            | 0.00   | 0.00  | 0.00                                 |
| 05-29:            | 0.00   | 0.00  | 0.00                                 |
| 05-30:            | 0.00   | 0.00  | 0.00                                 |
| 06-01:            | 0.00   | 0.00  | 11036.15                             |
| 06-02:            | 0.11   | 0.03  | 39.75                                |
| 06-03:            | 1.83   | 0.00  | 0.00                                 |
| $\Sigma$ 11080.35 |  |   |                                      |
| Data:             | 2008-05-27  | Chnl: Chn101   | <input type="button" value="Print"/> |

### 1. Query

Query report by setting the date, uses [Left] or [Right] key to move the cursor, Press [Up] or [Down] key to configure the time. Display the data of 7 days since the date of the settlement, 3 cumulative values for each day.

### 2. Channel selection

Move the cursor to the edit box of channel, Press [Up] or [Down] key to select the channel.

### 3. Print

Move the cursor to the button named "Print", press [En] to print the report of current screen.

## Report-12Hourly

| Report-12Hourly   |  |   | 2008-06-03 14:25:28   |
|-------------------|--|---|---|
| 05-27:            | 0.00   | 0.00  | 0.00  |
| 05-28:            | 0.00   | 0.00  | 0.00  |
| 05-29:            | 0.00   | 0.00  | 0.00  |
| 05-30:            | 0.00   | 0.00  | 0.00  |
| 06-01:            | 0.00   | 0.00  | 11036.15  |
| 06-02:            | 0.11   | 0.03  | 39.75   |
| 06-03:            | 1.83   | 0.00  | 0.00  |
| $\Sigma$ 11080.35 |  |   |   |
| Data:             | 2008-05-27  | Chnl:   | Chn101  <input type="button" value="Print"/> |

### 1. Query

Query report by setting the date, uses [Left] or [Right] key to move the cursor, Press [Up] or [Down] key to configure the time. Display the data of 7 days since the date of the settlement, 2 cumulative values for each day.

### 2. Channel selection

Move the cursor to the edit box of channel, Press [Up] or [Down] key to select the channel.

### 3. Print

Move the cursor to the button named "Print", press [En] to print the report of current screen.

## Report-Daily

| Report-Daily  |                   | 2008-06-03 12:58:28 |            |
|---------------|-------------------|---------------------|------------|
| 01: 2.00      | 12: 0.00          | 23: 0.00            |            |
| 02: 3.50      | 13: 0.00          | 24: 12.00           |            |
| 03: 0.00      | 14: 0.00          | 25: 51.00           |            |
| 04: 0.00      | 15: 0.00          | 26: 100.00          |            |
| 05: 0.00      | 16: 0.00          | 27: 0.00            |            |
| 06: 6.35      | 17: 172.00        | 28: 0.00            |            |
| 07: 0.00      | 18: 185.00        | 29: 0.00            |            |
| 08: 0.00      | 19: 204.10        | 30: 0.00            |            |
| 09: 0.00      | 20: 37.00         | 31: 10259.00        |            |
| 10: 4.20      | 21: 0.00          |                     |            |
| 11: 0.00      | 22: 0.00          |                     | Σ 11060.35 |
| Data: 2008-05 | Mon Sum: 11036.15 |                     |            |
| Chnl: Chn101  | Average: 356.00   |                     |            |
| Print         | Maximum: 10259.00 |                     |            |
| Monthly       | Minimum: 0.00     |                     |            |

- 1. Query**  
Query report by setting the date, uses [Left] or [Right] key to move the cursor, Press [Up] or [Down] key to configure the time. Display the data of 7 days since the date of the settlement, 2 cumulative values for each day.
- 2. Channel selection**  
Move the cursor to the edit box of channel, Press [Up] or [Down] key to select the channel.
- 3. Print**  
Move the cursor to the button named "Print", press [En] to print the report of current screen.
- 4. Report –Monthly**  
Move the cursor to the button named "Monthly", press [En] to display monthly report.
- 5. Stat.**  
Display the value of month sum, average, maximum and minimum

## Report-Monthly



The screenshot shows a terminal window with a dark blue background and white text. At the top left, it says 'Report-Monthly' followed by two icons. At the top right, it shows the date and time '2008-06-03 12:58:28'. The main content is a table of monthly values for 2007 and 2008. Below the table, it shows 'Annual Sum: 11037.40' and a large sum symbol followed by '11060.35'. At the bottom right, there are two buttons labeled 'Print' and 'Exit'.

| Year | Month | Value    |
|------|-------|----------|
| 2007 | 06    | 0.00     |
| 2007 | 07    | 0.00     |
| 2007 | 08    | 0.00     |
| 2007 | 09    | 0.00     |
| 2007 | 10    | 0.00     |
| 2007 | 11    | 0.00     |
| 2007 | 12    | 0.00     |
| 2008 | 01    | 0.00     |
| 2008 | 02    | 0.00     |
| 2008 | 03    | 0.00     |
| 2008 | 04    | 0.00     |
| 2008 | 05    | 11036.15 |
| 2008 | 06    | 1.25     |

Annual Sum: 11037.40

$\Sigma$  11060.35

Print Exit

1. Display cumulative value of 13 months before current month
2. Move the cursor to the [Print] key, press the [En] key to print the current screen.
3. Move the cursor to the [Exit] key, press the [En] key back to the screen of Report-Daily.

## Chapter 5 System Configurations

### 5.1 Setting the Date and Time

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [System] screen.

| System            |                     | 2008-03-10 13:21:32 |        |
|-------------------|---------------------|---------------------|--------|
| Alias:            | Overview            |                     |        |
| Date:             | 2008-03-10 13:21:32 | Password:           | 000000 |
| Interval:         | 2sec                | Address:            | 8      |
| Baudrate:         | 9600                | Parity:             | None   |
| RJC:              | 0.2                 | 20.2                |        |
| Alarm delay:      | 4sec                |                     |        |
| Language:         | English             |                     |        |
| Clear Report Data |                     | Clear Alarm Summary |        |
| Factory Setting   |                     | Exit                |        |

Setting system date and time

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [System] screen.  
Select [No] to cancel setting content, and exit [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

#### Caution

After setting system date / time, those historical data stored in instrument is invalid.  
New and effective data begins after setting system date / time.  
Before setting system date / time, please backup history data.

## 5.2 Setting the Alias

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [System] screen.

The screenshot shows the 'System' configuration screen with a dark blue header containing the text 'System' and '2008-03-10 13:21:32'. The main area is white with a blue border. At the top, there is a red-bordered box containing the text 'Alias: Overview'. Below this, several parameters are listed with dropdown menus: 'Date: 2008-03-10 13:21:32', 'Password: 000000', 'Interval: 2sec', 'Address: 8', 'Baudrate: 9600', 'Parity: None', 'RJC: 0.2', 'Alarm delay: 4sec', and 'Language: English'. At the bottom, there are three buttons: 'Clear Report Data', 'Clear Alarm Summary', and 'Factory Setting'. A dark blue 'Exit' button is located in the bottom right corner. A red line points from the text 'Setting alias' below the screen to the 'Alias: Overview' box.

About the input method of editing parameter, see section 『Common key operations』

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [System] screen.  
Select [No] to cancel setting content, and exit [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

## 5.3 Setting the system password

System password is needed when modifies configuration parameters, and is used to prevent system parameters from being changed by accident. It is made by 6 numbers.

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [System] screen.

The screenshot shows the 'System' configuration screen. At the top, it displays 'System' on the left and the date and time '2008-03-10 13:21:32' on the right. Below this, there are several configuration fields: 'Alias' (Overview), 'Date' (2008-03-10 13:21:32), 'Password' (000000), 'Interval' (2sec), 'Address' (8), 'Baudrate' (9600), 'Parity' (None), 'RJC' (0.2), 'Alarm delay' (4sec), and 'Language' (English). At the bottom, there are three buttons: 'Clear Report Data', 'Clear Alarm Summary', and 'Factory Setting'. A red box highlights the 'Password' field, and a red line points from the text 'Setting password' below to this field. A blue 'Exit' button is located at the bottom right of the screen.

Setting password

About the input method of editing parameter, see section 『Common key operations』

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [System] screen.  
Select [No] to cancel setting content, and exit [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

### Note

It is a unique password to modify configuration parameters. Once it is forgotten, it can not be modified those parameters.  
The initial password is 000000, after purchasing instrument, it is better for users to amend it as soon as possible and preserve it properly.

## 5.4 Setting Trend Direction

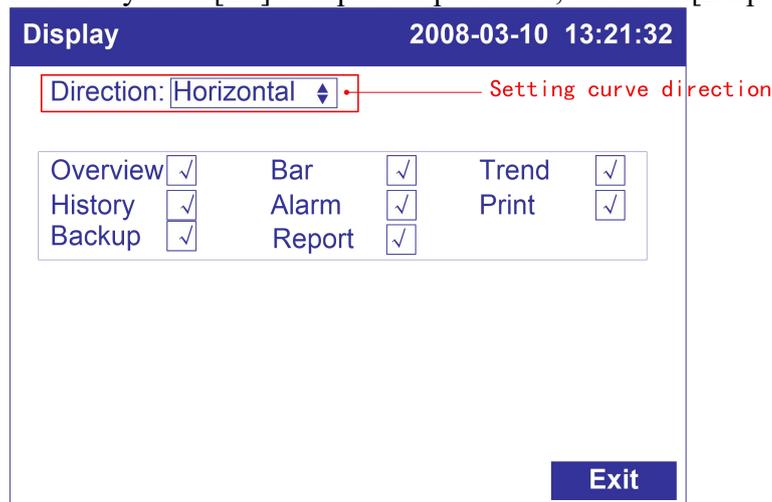
User can choose two directions of trends, horizontal and vertical. When the horizontal, the trend is from right to left; when vertical, it's from up to down.

User can set four trend groups and enable it to use. Each trend is composed of 1-4 trends, has 4 kind of different trend colors.

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.

Use arrow keys and [En] to input the password, enter the [Display] screen.



#### 1. Set the trend direction

Press arrow keys to choose the trend direction, horizontal or vertical. It's usable for Trend and History.

#### 2. Press arrow keys to show or hide the relevant screens.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Display] screen.

Select [No] to cancel setting content, and exit [Display] screen.

Select [Cancel] to continue setting parameters in [Display] screen.

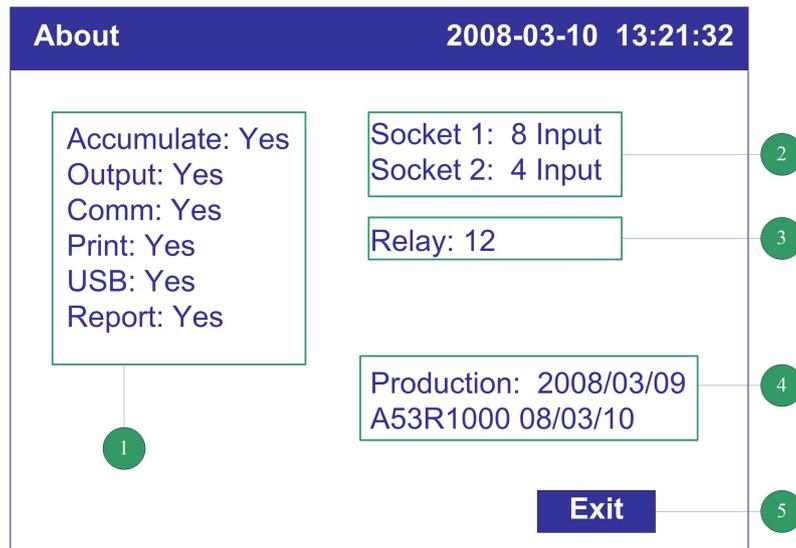
## 5.5 System Information

### Procedure

Press [Page] and [En] to enter configuration menu.

Use arrow keys and [En] to input the password, enter the [About] screen.

### Explanation



1. The Option Functions
2. The number and type of the hardware in-out channels.
3. The output loop of the relay
4. The Firmware issue date and version number
5. [Exit] soft key

## Chapter 6 Input Channel Settings

### 6.1 Input type and Scaling Setting

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

The screenshot shows the 'Input' configuration screen with the following settings:

- Channel: 1
- Type: 4-20mA
- Range: 4.00 20.00
- Vacuum: No
- Burnout Set: Error
- Accumulate: No
- Tag: ChnI01
- Unit: %
- Filter: 0.0s
- Cut: 0.0% Sqrt: No
- Frequency: 1
- Acc.Magnification: 1

|       | LL   | L    | H     | HH    | Zone |
|-------|------|------|-------|-------|------|
| Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 |
| Relay | 0    | 0    | 0     | 0     |      |

At the bottom, there are fields for K= 1.00 and B= 1.00, and buttons for Clear Acc, Copy01, and Exit.

#### 1. Input channel

Select the channel to set the parameter, which is limited of the input board channel's number.

#### 2. Channel type

Set the current channel's input signal type.

#### 3. Channel range

Set the current channel's input signal measuring range.

#### 4. Adjust value

Set the correct value, Display data=Measure data  $\times$  K + B.

#### Note

The high and low value should not be the same.  
The low value is -9999 and high range is 19999.

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

## Specification

### Measuring range

| Type       | Range   | Measuring range       |
|------------|---------|-----------------------|
| Current    | 4-20mA  | 4.00mA ~ 20.00mA      |
|            | 0-10mA  | 0.00mA ~ 10.00mA      |
| Volt       | 1-5V    | 1.000V ~ 5.000V       |
|            | 0-5V    | 0.000V ~ 5.000V       |
|            | 0-10V   | 0.000V ~ 10.000V      |
|            | 20mV    | 0.00mV ~ 20.00mV      |
|            | 100mV   | 0.00mV ~ 100.00mV     |
| Resistance | 350Ω    | 0.0Ω ~ 350.0Ω         |
| Frequency  | FR      | 0Hz ~ 10000Hz         |
| RTD        | PT100   | -200.0°C ~ 650.0°C    |
|            | Cu50    | -50.0°C ~ 140.0°C     |
|            | Cu53    | -50.0°C ~ 150.0°C     |
|            | BA1     | -100°C ~ 600°C        |
|            | BA2     | -100°C ~ 600°C        |
| TC         | S       | -100°C ~ 1600°C       |
|            | R       | -50°C ~ 1600°C        |
|            | B       | 500°C ~ 1800°C        |
|            | K       | -50°C ~ 1300°C        |
|            | N       | -200°C ~ 1300°C       |
|            | E       | -100°C ~ 1000°C       |
|            | J       | -100°C ~ 1000°C       |
|            | T       | -100°C ~ 380°C        |
|            | WRE5-26 | 0°C ~ 2310°C          |
|            | WRE3-25 | 0°C ~ 2315°C          |
|            | F1      | 600°C ~ 2000°C        |
|            | F2      | 600°C ~ 2000°C        |
| simulation | sin     | Set the range freely. |

See sections 6.5 and 6.6.

## 6.2 Input Vacuum Type and Scaling Setting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

The screenshot shows the 'Input' configuration screen with the following parameters:

- Channel: 1
- Type: 4-20mA
- Range: 4.00 20.00
- Vacuum: No
- Burnout Set: Error
- Accumulate: No
- Tag: Chn01
- Unit: %
- Filter: 0.0s
- Cut: 0.0%
- Sqrt: No
- Frequency: 1
- Acc. Magnification: 1

|       | LL   | L    | H     | HH    | Zone |
|-------|------|------|-------|-------|------|
| Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 |
| Relay | 0    | 0    | 0     | 0     |      |

At the bottom, there are fields for K= (1.00) and B= (1.00), and buttons for Clear Acc, Copy01, and Exit.

#### 1. Input channel

Select the channel to set the parameter, which is limited of the input board channel's number.

#### 2. Channel type

Set the current channel's input signal type.

#### 3. Channel range

Set the current channel's input signal measuring range.

#### 4. Set vacuum type

There are two vacuum types, normal arithmetic and subsection arithmetic. User can choose it base on vacuum transmitter signal.

#### 5. Adjust value

When the measuring mode is vacuum measure, the adjust value will be invalidated.

### Note

The high and low value should not be the same.

The low value is -9999 and high range is 19999. You can only change the index.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

## 6.3 Channel Tag and Unit Setting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

**Input** 2008-03-10 13:21:32

Channel: 1 Tag: Chn01

Type: 4-20mA Unit: %

Range: 4.00 20.00 Filter: 0.0s

Vacuum: No Cut: 0.0% Sqrt: No

Burnout Set: Error Frequency: 1

Accumulate: No Acc. Magnification: 1

|       | LL   | L    | H     | HH    | Zone |
|-------|------|------|-------|-------|------|
| Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 |
| Relay | 0    | 0    | 0     | 0     |      |

K=: 1.00 B=: 1.00 Clear Acc Copy01 Exit

- 1. Channel tag**  
Press [En] to input channel tag, most ten English characters.
- 2. Channel unit**  
Press [En] to input channel unit, most seven English characters.

#### Note

Channel unit and measure signal are Independence.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [Input] screen.  
Select [No] to cancel setting content, and exit [Input] screen.  
Select [Cancel] to continue setting parameters in [Input] screen.

## 6.4 Input Filter Setting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
 Use arrow keys and [En] to input the password, enter the [Input] screen.

| Input  |            | 2008-03-10 13:21:32 |  |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
|--|------------|---------------------|--|-----------|--------|------|---|----|------|-------|------|------|-------|-------|------|-------|---|---|---|---|--|
| Channel:   | 1          | Tag:                | Chnl01   |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Type:  | 4-20mA     | Unit:               | %  |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Range:   | 4.00 20.00 | Filter:             | 0.0s <span style="color:red">• Filer time</span> |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Vacuum:  | No         | Cut:                | 0.0% Sqrt: No                                    |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Burnout Set:   | Error      | Frequency:          | 1  |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Accumulate:  | No         | Acc.Magnification:  | 1  |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| <table border="1"> <thead> <tr> <th></th> <th>LL</th> <th>L</th> <th>H</th> <th>HH</th> <th>Zone</th> </tr> </thead> <tbody> <tr> <td>Value</td> <td>4.00</td> <td>4.00</td> <td>20.00</td> <td>20.00</td> <td>0.00</td> </tr> <tr> <td>Relay</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> </tr> </tbody> </table> |            |                     |  |           | LL     | L    | H | HH | Zone | Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 | Relay | 0 | 0 | 0 | 0 |  |
|  | LL         | L                   | H  | HH        | Zone   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Value  | 4.00       | 4.00                | 20.00  | 20.00     | 0.00   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Relay  | 0          | 0                   | 0  | 0         |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| K=:  | 1.00       | B=:                 | 1.00   | Clear Acc | Copy01 | Exit |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |

Setting filter time constant

Press [Up] and [Down] to set the time, the range from 0.0S to 9.9S.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

### Explanations

Filter setting method:

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

## 6.5 Burnout Setting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

| Input  |            | 2008-03-10 13:21:32 |        |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
|--|------------|---------------------|--------|-----------|--------|------|---|----|------|-------|------|------|-------|-------|------|-------|---|---|---|---|--|
| Channel:   | 1          | Tag:                | Chnl01 |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Type:  | 4-20mA     | Unit:               | %      |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Range:   | 4.00 20.00 | Filter:             | 0.0s   |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Vacuum:  | No         | Cut:                | 0.0%   |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
|  |            | Sqrt:               | No     |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Burnout Set:   | Error      | Frequency:          | 1      |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Accumulate:  | No         | Acc.Magnification:  | 1      |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| <table border="1"> <thead> <tr> <th></th> <th>LL</th> <th>L</th> <th>H</th> <th>HH</th> <th>Zone</th> </tr> </thead> <tbody> <tr> <td>Value</td> <td>4.00</td> <td>4.00</td> <td>20.00</td> <td>20.00</td> <td>0.00</td> </tr> <tr> <td>Relay</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> </tr> </tbody> </table> |            |                     |        |           | LL     | L    | H | HH | Zone | Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 | Relay | 0 | 0 | 0 | 0 |  |
|  | LL         | L                   | H      | HH        | Zone   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Value  | 4.00       | 4.00                | 20.00  | 20.00     | 0.00   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Relay  | 0          | 0                   | 0      | 0         |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| K=:  | 1.00       | B=:                 | 1.00   | Clear Acc | Copy01 | Exit |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |

Burnout setting

### Set with arrow keys.

| Setting          | Result                                     |
|------------------|--|
| Least            | Low limit                                  |
| Max              | High limit                                 |
| Hold front value | Fix the finally right value before burnout |
| Error flag       | #####                                      |

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [Input] screen.  
Select [No] to cancel setting content, and exit [Input] screen.  
Select [Cancel] to continue setting parameters in [Input] screen.

## 6.6 Reference Junction Compensation

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [System] screen.

| System            |                     | 2008-03-10 13:21:32 |        |
|-------------------|---------------------|---------------------|--------|
| Alias:            | Overview            |                     |        |
| Date:             | 2008-03-10 13:21:32 | Password:           | 000000 |
| Interval:         | 2sec                | Address:            | 8      |
| Baudrate:         | 9600                | Parity:             | None   |
| RJC:              | 0.2                 |                     | 20.2   |
| Alarm delay:      | 4sec                |                     |        |
| Language:         | English             |                     |        |
| Clear Report Data |                     | Clear Alarm Summary |        |
| Factory Setting   |                     | Exit                |        |

Setting the RJC value

### CJ compensational value

When there are some differences between the scene temperature and the cold temperature instrument measured, user can use the adjust function.  
Compensation value= CJ measurement value + CJ adjusted value

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [System] screen.  
Select [No] to cancel setting content, and exit [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

## 6.7 Accumulation Setting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

| Input  |            | 2008-03-10 13:21:32 |               |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
|--|------------|---------------------|---------------|-----------|--------|------|---|----|------|-------|------|------|-------|-------|------|-------|---|---|---|---|--|
| Channel:   | 1          | Tag:                | Chnl01        |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Type:  | 4-20mA     | Unit:               | %             |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Range:   | 4.00 20.00 | Filter:             | 0.0s          |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Vacuum:  | No         | Cut:                | 0.0% Sqrt: No |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Burnout Set:   | Error      | Frequency:          | 1             |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Accumulate:  | No         | Acc.Magnification:  | 1             |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| <table border="1"> <thead> <tr> <th></th> <th>LL</th> <th>L</th> <th>H</th> <th>HH</th> <th>Zone</th> </tr> </thead> <tbody> <tr> <td>Value</td> <td>4.00</td> <td>4.00</td> <td>20.00</td> <td>20.00</td> <td>0.00</td> </tr> <tr> <td>Relay</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> </tr> </tbody> </table> |            |                     |               |           | LL     | L    | H | HH | Zone | Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 | Relay | 0 | 0 | 0 | 0 |  |
|  | LL         | L                   | H             | HH        | Zone   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Value  | 4.00       | 4.00                | 20.00         | 20.00     | 0.00   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Relay  | 0          | 0                   | 0             | 0         |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| K=:  | 1.00       | B=:                 | 1.00          | Clear Acc | Copy01 | Exit |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |

Cumulative function and cumulative magnification

### Set the accumulate function and cumulate magnification

Move the cursor to [Accumulate], use [Up] and [Down] to set the accumulate function.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

### Explanation

Accumulation function is that carries out time integral for current channel measurement value and arithmetic value.

The range of accumulation value is 0 ~ 9,999,999,999.9, one radix point.

It will clear voluntarily when accumulate value exceeding 9,999,999,999.9.

When enabled the accumulation function, the accumulation value can be displayed in the overview screen automatically.

## 6.8 Copying Channel Parameters

Use this function when channel A and channel B need to set the same parameter.

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.

Use arrow keys and [En] to input the password, enter the [Input] screen.

| Input  |            | 2008-03-10 13:21:32 |               |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
|--|------------|---------------------|---------------|-----------|--------|------|---|----|------|-------|------|------|-------|-------|------|-------|---|---|---|---|--|
| Channel:   | 1          | Tag:                | ChnI01        |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Type:  | 4-20mA     | Unit:               | %             |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Range:   | 4.00 20.00 | Filter:             | 0.0s          |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Vacuum:  | No         | Cut:                | 0.0% Sqrt: No |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Burnout Set:   | Error      | Frequency:          | 1             |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Accumulate:  | No         | Acc.Magnification:  | 1             |           |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| <table border="1"> <thead> <tr> <th></th> <th>LL</th> <th>L</th> <th>H</th> <th>HH</th> <th>Zone</th> </tr> </thead> <tbody> <tr> <td>Value</td> <td>4.00</td> <td>4.00</td> <td>20.00</td> <td>20.00</td> <td>0.00</td> </tr> <tr> <td>Relay</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td></td> </tr> </tbody> </table> |            |                     |               |           | LL     | L    | H | HH | Zone | Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 | Relay | 0 | 0 | 0 | 0 |  |
|  | LL         | L                   | H             | HH        | Zone   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Value  | 4.00       | 4.00                | 20.00         | 20.00     | 0.00   |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| Relay  | 0          | 0                   | 0             | 0         |        |      |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |
| K=:  | 1.00       | B=:                 | 1.00          | Clear Acc | Copy01 | Exit |   |    |      |       |      |      |       |       |      |       |   |   |   |   |  |

Copy the channel parameter

### Copy the channel parameter

Move the cursor to [Copy01].

When used the [Up] and [Down] to copy source channel, it may display on the soft key.

Press [En] to confirm copying parameters.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

### Explanation

The operations can copied the following parameter

Type / Unit / Range / Square / Vacuum / Filter / Cut / low low Alarm / low Alarm / high Alarm / high high Alarm / Zone / 4 touch points / Adjust value.

## 6.9 Square Root Computation and Small Signal Cutting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

The screenshot shows the 'Input' configuration screen with the following parameters:

- Channel: 1
- Type: 4-20mA
- Range: 4.00 20.00
- Vacuum: No
- Burnout Set: Error
- Accumulate: No
- Tag: Chn01
- Unit: %
- Filter: 0.0s
- Cut: 0.0%
- Sqrt: No
- Frequency: 1
- Acc.Magnification: 1

Below the main parameters is a table with columns LL, L, H, HH, and Zone. The values are:

|       | LL   | L    | H     | HH    | Zone |
|-------|------|------|-------|-------|------|
| Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 |
| Relay | 0    | 0    | 0     | 0     |      |

At the bottom, there are buttons for K=: 1.00, B=: 1.00, Clear Acc, Copy01, and Exit.

#### 1. Set the small signal cutting

Move the cursor to [Cut], modify the small signal cutting percent with [Up] and [Down] keys.

If the signal is smaller than the signal cutting percent, it will be forced into lower limit of measurement range.

#### 2. Set the square root computation

Move the cursor to [Sqrt], enabled the square root computation with [Up] and [Down] keys.

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

### Explanation

Need to use to square root function in measurement differential pressure flow meter in pore plate, a few flow meter not bringing the square root function along per se, can use this function.

That the small signal cutting is to point to when rate of flow is lower than some threshold value, regard it being irrespective of flow turn to be able to ignore, flow shows for zero.

## Chapter 7 Setting Alarms

### 7.1 Alarm Setting

Each channel can set four alarm values, high high alarm, high alarm, low alarm and low low alarm.

#### CAUTION

Set the measurement range before setting the alarm.

All of the alarm settings of a channel are canceled in the following cases:

- When the signal type is changed(Volt, Resistance)
- When the input range is changed
- When the setting compensation or square root operation

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.

Use arrow keys and [En] to input the password, enter the [Input] screen.

The screenshot shows the 'Input' configuration screen with the following settings:

- Channel: 1
- Tag: ChnI01
- Type: 4-20mA
- Unit: %
- Range: 4.00 | 20.00
- Filter: 0.0s
- Vacuum: No
- Cut: 0.0% | Sqrt: No
- Burnout Set: Error
- Frequency: 1
- Accumulate: No
- Acc. Magnification: 1

Alarm Thresholds:

|       | LL   | L    | H     | HH    | Zone |
|-------|------|------|-------|-------|------|
| Value | 4.00 | 4.00 | 20.00 | 20.00 | 0.00 |
| Relay | 0    | 0    | 0     | 0     | 0    |

Buttons: K=: 1.00 | B=: 1.00 | Clear Acc | Copy01 | Exit

#### 1. Select the alarm channel

The setting method is the same as the signal type and signal range

#### 2. Set the alarm threshold value

The threshold value must in the channel range.

#### 3. Set the alarm threshold value zone

Prevent the relay frequently action when the signal surged by the alarm threshold value.

#### 4. Set relay number

Output the relay with setting serial number when an alarm occurs.

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Input] screen.

Select [No] to cancel setting content, and exit [Input] screen.

Select [Cancel] to continue setting parameters in [Input] screen.

## Explanation

### Alarm condition and Undo Alarm condition

| Threshold type      | Alarm condition                     | Undo Alarm condition                      |
|---------------------|-------------------------------------|---|
| high-high threshold | Channel value > high-high threshold | Channel value < high-high threshold-zone. |
| high threshold      | Channel value > high threshold      | Channel value < high threshold-zone.      |
| low threshold       | Channel value < low threshold       | Channel value > low threshold+zone.       |
| low-low threshold   | Channel value < low-low threshold   | Channel value > low-low threshold+zone.   |

### Relay number setting

Alarm doesn't output to relay when the relay number setting is zero.

When sharing an alarm output relay among multiple alarms, each alarm will act the relay activated.

### Normally closed relay (Option)

The Initialization is normally opened relay, if you need normally closed relay, please contact us.

## 7.2 Setting the Relay Delay Period

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [System] screen.

The screenshot shows the 'System' configuration screen with a dark blue header containing 'System' and the date/time '2008-03-10 13:21:32'. The main area contains several configuration options, each with a dropdown arrow: 'Alias: Overview', 'Date: 2008-03-10 13:21:32', 'Password: 000000', 'Interval: 2sec', 'Address: 8', 'Baudrate: 9600', 'Parity: None', 'RJC: 0.2 20.2', 'Alarm delay: 4sec', and 'Language: English'. Below these are three buttons: 'Clear Report Data', 'Clear Alarm Summary', and 'Factory Setting'. A dark blue 'Exit' button is located at the bottom right. A red box highlights the 'Alarm delay: 4sec' option, and a red line points from this box to the text 'Setting the Relay Delay Period' below the screenshot.

Setting the Relay Delay Period

About the input method of editing parameter, see section 『Common key operations』

### The Relay Delay Period

For preventing the relay mistake action, in appearance system group state, relay time lapse can set 0-10 seconds to delay trigger under the system configuration.

Think that the queen who gives an alarm coming into being continues setting up second of inner signal being in the state giving an alarm without exception or continues setting up second of inner signal without exception in eliminating newspaper state, relay only meeting action.

The relay will action when the continue setting second signal under alarm state or undo alarm state.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [System] screen.

Select [No] to cancel setting content, and exit [System] screen.

Select [Cancel] to continue setting parameters in [System] screen.

## Chapter 8 Setting Analog Outputs

### 8.1 Analog Outputs Setting

The instrument provides 4-20mA analog output.

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.

Use arrow keys and [En] to input the password, enter the [Output] screen.

1. **Set the output source channel**  
Set the source of this channel output value.
2. **Output the adjust value**  
Output value = Current value × K + B。

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Output] screen.

Select [No] to cancel setting content, and exit [Output] screen.

Select [Cancel] to continue setting parameters in [Output] screen.

#### Explanation

The analog output only supports 4-20mA

According to the channel measurement range, converts the source channel value to percentage, then transforms to 4-20mA analog output.

When there is no output source channel , the analog output will fix to4mA。

## Chapter 9 Data Saving and Saving to External Storage Medium

### 9.1 Setting the Saving Interval of Internal Memory

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [System] screen.

The screenshot shows the 'System' configuration screen with the following settings:

- System: 2008-03-10 13:21:32
- Alias: Overview
- Date: 2008-03-10 13:21:32
- Password: 000000
- Interval: 2sec (highlighted with a red box)
- Address: 8
- Baudrate: 9600
- Parity: None
- RJC: 0.2 / 20.2
- Alarm delay: 4sec
- Language: English
- Buttons: Clear Report Data, Clear Alarm Summary, Factory Setting, Exit

— Set the saving interval

#### Set the saving interval

User can choose 1s/2s/5s/10s/15s/30s/1min/2min/4min.

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [System] screen.

Select [No] to cancel setting content, and exit [System] screen.

Select [Cancel] to continue setting parameters in [System] screen.

#### Explanation

The sample period is 1 second, so the smallest records interval is 1 second.  
Increasing the interval can prolong the time length of storage data.

---

#### Note

The interior saving historical data will be invalidation if you modify the saving interval, therefore, please backup the historical data before you modify it, prevents the loss.

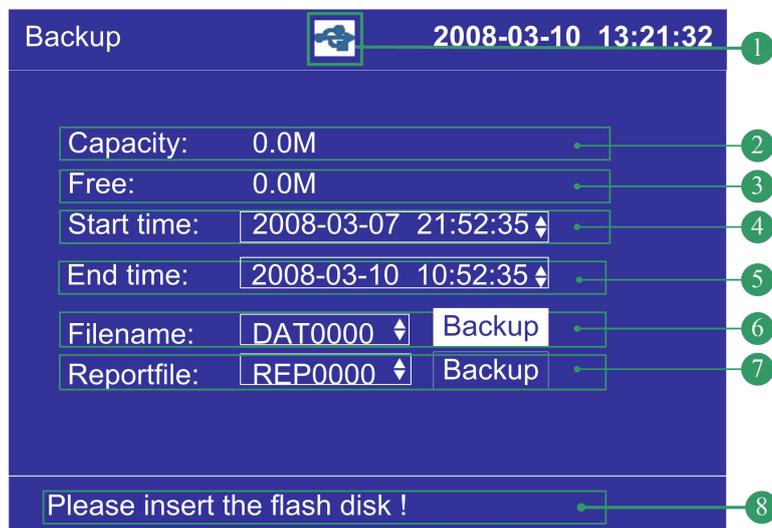
---

**The relation of the saving interval and time length**

| Interval  | Time length      |
|-----------|------------------|
| 1 second  | 72 hour/channel  |
| 2 second  | 6 day/ channel   |
| 5 second  | 15 day/ channel  |
| 10 second | 30 day/ channel  |
| 15 second | 45 day/ channel  |
| 30 second | 90 day/ channel  |
| 1 minute  | 180 day/ channel |
| 2 minute  | 360 day/ channel |
| 4 minute  | 720 day/ channel |

## 9.2 Saving to External Storage Medium

### Procedure



1. U Disk insertion symbol
2. U Disk aggregate capacity
3. U Disk surplus capacity
4. The internal data starting time
5. The internal data ending time
6. Set the data filename, and backup this file.
7. Set the Report file, and backup this file.
8. The status bar.

### Explanation

The meanings of the status bar information

| Item                              | Contents   |
|-----------------------------------|--|
| Please insert the flash disk!     | Instrument has detected the U disk on the USB interface.                             |
| Find the hardware...              | Measure the U Disk information and space available.                                  |
| Initialization succeeds!          | Be good preparation for data backup.   |
| Backup the file ( Blue schedule ) | Backup now, please wait for.   |
| Backup is finished!               | Backup is finished; you can pullout the U Disk.                                      |
| File of the same name exists!     | The same name document has existed, changes the name of this file and back up again. |
| Backup fails!                     | Format the disk, and backup again.   |

## Chapter 10 Setting Temperature pressure Parameters

### 10.1 Set Temperature And Pressure Compensation Model And The Flow Channel Parameters

This section describes how to set the parameters of temperature and pressure compensation model, flow channel, measuring devices and measuring dielectric, etc.

#### Operation

Press the [page] and [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [compensation].

| Compensation        |               | 2013-04-13 12:58:28 |      |
|---------------------|---------------|---------------------|------|
| Compensation:       | Compensation1 |                     |      |
| Flow Channel:       | Chn101        |                     |      |
| Measure Device:     | Orifice       |                     |      |
| Measure Media:      | Steam         |                     |      |
| Accumulate Rate:    | 1             |                     |      |
| Little Flow Fill:   | 0%            | 0%                  |      |
| Over Scale Set:     | 100%          |                     |      |
| Power-off Fill:     | 0%            |                     |      |
| Local Atm Pressure: | 0.1013MPa     |                     |      |
|                     |               | Configure           | Exit |

- 1. Compensation**  
Select the compensation channel, a total number of four channels. Select with [Up and Down] key.
- 2. Flow channel**  
set the compensation flow channel. Select with [Up and Down] key.
- 3. Measuring device**  
set the compensation medium measurement device, which has a plate, vortex (frequency), vortex (mA). Select with [Up and Down] key .
- 4. Measuring medium**  
set the measurement medium, which has steam, water and general gases. Select with [Up and Down] key.
- 5. Cumulative rate**  
set accumulation rate values, according to [the instantaneous value × magnification]. Press [En] key to modify the settings, [up and down] key to adjust.
- 6. Small flow fill**  
the first setting value is the percentage of small flow limit; the second setting value

is the percentage of compensation. The Percentage is all flow range percentage. To adjust settings with [Up and Down] keys.

When the instantaneous flow rate is less than the first set value, the flow accumulation value according to make up the second set.

**7. Over-range setting**

when instantaneous flow exceeds maximum range, and then it will lead to top destruction, according to [flow range × set value] accumulation. To adjust settings with [Up and Down] keys

**8. Power-down fill**

Cumulative value and the statements during a power outage is according to [flow range × set value] calculated compensation. To adjust settings with [Up and Down] keys.

**9. Parameter setting**

Press [En] key to enter the temperature and pressure compensation parameter setting screen.

**Confirming operation**

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [compensation] screen.

Select [No] to cancel setting content, and exit [compensation] screen.

Select [Cancel] to continue setting parameters in [compensation] screen.

**Explain**

During flow accumulation, it should the first cut the small signal, and then calculated the flow after compensation according to temperature and pressure compensation formula. Then have calculation on small flow compensation, over range compensation, accumulation, and finally get the last flow to accumulate.

## 10.2 Orifice + Steam Parameter Setting

This section describes measuring device (orifice) and measuring medium (steam) parameters setting.

### Operation

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure             |       | 2013-04-13 12:58:28 |     |
|-----------------------|-------|---------------------|-----|
| Removal:              | 0.0%  |                     |     |
| Square:               | No    |                     |     |
| Pressure-Diff Scale:  | 4.00  | 20.00               |     |
| Pressure-Diff Unit:   | KPa   |                     |     |
| Flow unit:            | t/h   |                     |     |
| Actual Temperature:   | Input | Chnl02              | °C  |
| Actual Pressure:      | Input | Chnl03              | Mpa |
| Designed Temperature: | 0 °C  |                     |     |
| Designed Pressure:    | 0 MPa |                     |     |
| Finish                |       |                     |     |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be the limit input. To adjust settings with [Up and Down] keys

#### 2. Square root

To have square root calculation on the percentage of the differential pressure signal. To adjust settings with [Up and Down] keys

#### 3. Differential pressure range

To acquire differential signal to display range. Press [En] key to modify the settings. To adjust settings with [Up and Down] keys

#### 4. Differential pressure units

Differential pressure signal units is involved in operations. It is fixed at KPa.

#### 5. Flow units

Flow units is involved in operations, the default is t / h (or t / h, kg / h). Press [up and down] key to select.

#### 6. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and

down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings, press [up and down] key to adjust.

**7. Pressure condition**

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the pressure value, press [up and down] key to select.

[Set]: Set the constant value for pressure. Press [En] button to change settings, press [up and down] key to adjust.

**8. Set temperature**

Set temperature value. Press [En] button to change settings, press [up and down] key to adjust.

**9. Design pressure**

Set pressure value. Press [En] button to change settings, press [up and down] key to adjust.

**10. Cursor to the [Finish] button, press the [En] button to return.**

## 10.3 Orifice + Water Parameter Setting

This section describes measuring device (orifice) and measuring medium (water) parameters setting.

### Operating

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure             |        | 2013-04-13 12:58:28 |    |
|-----------------------|--------|---------------------|----|
| Removal:              | 0.0%   |                     |    |
| Square:               | No     |                     |    |
| Pressure-Diff Scale:  | 4.00   | 20.00               |    |
| Pressure-Diff Unit:   | KPa    |                     |    |
| Flow unit:            | t/h    |                     |    |
| Actual Temperature:   | Input  | Chnl02              | °C |
| Actual Pressure:      | 0.6MPa |                     |    |
| Designed Temperature: | 0 C    |                     |    |
| Finish                |        |                     |    |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be the limit input. To adjust settings with [Up and Down] keys

#### 2. Square root

To have square root calculation on the percentage of the differential pressure signal. To adjust settings with [Up and Down] keys

#### 3. Differential pressure range

To acquire differential signal to display range. Press [En] key to modify the settings. To adjust settings with [Up and Down] keys

#### 4. Differential pressure units

Differential pressure signal units is involved in operations. It is fixed at KPa.

#### 5. Flow units

Flow units is involved in operations, the default is t / h (or t / h, kg / h). Press [up and down] key to select.

#### 6. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and

down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings, press [up and down] key to adjust.

**7. Pressure condition**

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the pressure value, press [up and down] key to select.

[Set]: Set the constant value for pressure. Press [En] button to change settings, press [up and down] key to adjust.

**8. Set temperature**

Set temperature value. Press [En] button to change settings, press [up and down] key to adjust.

**9. Cursor to the [Finish] button, press the [En] button to return.**

## 10.4 Orifice + General Gas Parameter Setting

This section describes measuring device (orifice) and measuring medium (general gas) parameters setting.

### Operating

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure             |             | 2013-04-13 12:58:28 |         |
|-----------------------|-------------|---------------------|---------|
| Removal:              | 0.0% ▾      | Square:             | No ▾    |
| Pressure-Diff Scale:  | 4.00 ▾      |                     | 20.00 ▾ |
| Pressure-Diff Unit:   | KPa ▾       |                     |         |
| Flow unit:            | t/h ▾       |                     |         |
| Actual Temperature:   | Input ▾     | Chnl02 ▾            | °C      |
| Actual Pressure:      | Input ▾     | Chnl03 ▾            | MPa     |
| Designed Temperature: | 0 C ▾       |                     |         |
| Designed Pressure:    | 0 MPa ▾     |                     |         |
| Compress Rate:        | Table ▾     | Air ▾               |         |
| Local atm:            | 0.1013Mpa ▾ |                     |         |
| Finish                |             |                     |         |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be the limit input. To adjust settings with [Up and Down] keys

#### 2. Square root

To have square root calculation on the percentage of the differential pressure signal. To adjust settings with [Up and Down] keys

#### 3. Differential pressure range

To acquire differential signal to display range. Press [En] key to modify the settings. To adjust settings with [Up and Down] keys

#### 4. Differential pressure units

Differential pressure signal units is involved in operations. It is fixed at KPa.

#### 5. Flow units

Flow units is involved in operations. It is fixed at m<sup>3</sup>/h.

#### 6. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings,

press [up and down] key to adjust.

**7. Pressure condition**

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the pressure value, press [up and down] key to select.

[Set]: Set the constant value for pressure. Press [En] button to change settings, press [up and down] key to adjust.

**8. Set temperature**

Set temperature value. Press [En] button to change settings, press [up and down] key to adjust.

**9. Designed pressure**

Set design pressure value. Press [En] button to change settings, press [up and down] key to adjust.

**10. Compressibility coefficient**

General gas's compressibility coefficient. There are [set], [check] two options.

[Settings]: free to set the compression factor. Press [En] button to change settings, press [up and down] key to adjust.

[Check]: There are three kinds of gas models: air, nitrogen, oxygen, press [up and down] key to select.

**11. The local atmospheric pressure**

Atmospheric pressure where the user locates. Press [En] button to change settings, press [up and down] key to adjust.

**12. Cursor to the [Finish] button, press the [En] button to return.**

## 10.5 Vortex (Frequency) + Steam Parameter Setting

This section describes measuring device (vortex) and measuring medium (steam) parameters setting.

### Operating

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure           |  | 2013-04-13 12:58:28                 |                                       |
|---------------------|--|-------------------------------------|---------------------------------------|
| Removal:            | <input type="text" value="0%"/>                              |                                     |                                       |
| K:                  | <input type="text" value="1"/>                               |                                     |                                       |
| Unit of K:          | <input type="text" value="Times/m&lt;sup&gt;3&lt;/sup&gt;"/> |                                     |                                       |
| Flow Unit:          | <input type="text" value="t/h"/>                             |                                     |                                       |
| Actual temperature: | <input type="text" value="Input"/>                           | <input type="text" value="Chnl02"/> | <input type="text" value="°C"/>       |
| Actual pressure:    | <input type="text" value="Input"/>                           | <input type="text" value="Chnl03"/> | <input type="text" value="MPa"/>      |
|                     |  |                                     | <input type="button" value="Finish"/> |

#### 1. Resection of the small signal

the setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be the limit input. To adjust settings with [Up and Down] keys

#### 2. K Vortex average K factor setting.

Press [En] key to modify the settings. . To adjust settings with [Up and Down] keys.

#### 3. K factor unit

K factor unit is involved in operation.

The default is time / m3 (optional times / m3, plays / L). To adjust settings with [Up and Down] keys

#### 4. Flow units

Traffic units involved in operations, the default is t / h (optional t / h, kg / h), press [up and down] key to select.

#### 5. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings, press [up and down] key to adjust.

**6. Pressure condition**

Choose [0.6MPa] or [1.6Mpa]. Press [up and down] key to select.

**7. Cursor to the [Finish] button, press the [En] button to return.**

## 10.6 Vortex (Frequency) + Water Parameter Setting

This section describes the measuring device (vortex (frequency) and measured medium (water) parameter settings.

### Operation

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure                             |  | 2013-04-13 12:58:28                 |                                 |
|---------------------------------------|--|-------------------------------------|---------------------------------|
| Removal:                              | <input type="text" value="0%"/>                              |                                     |                                 |
| K:                                    | <input type="text" value="1"/>                               |                                     |                                 |
| Unit of K:                            | <input type="text" value="Times/m&lt;sup&gt;3&lt;/sup&gt;"/> |                                     |                                 |
| Flow Unit:                            | <input type="text" value="t/h"/>                             |                                     |                                 |
| Actual temperature:                   | <input type="text" value="Input"/>                           | <input type="text" value="Chnl02"/> | <input type="text" value="°C"/> |
| Actual pressure:                      | <input type="text" value="0.6MPa"/>                          |                                     |                                 |
| <input type="button" value="Finish"/> |  |                                     |                                 |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be the limit input. To adjust settings with [Up and Down] keys

#### 2. K Vortex average K factor setting.

Press [En] key to modify the settings. . To adjust settings with [Up and Down] keys

#### 3. K factor unit

K factor unit is involved in operation.

The default is time / m3 (optional times / m3, plays / L). To adjust settings with [Up and Down] keys

#### 4. Flow units

Traffic units involved in operations, the default is t / h (optional t / h, kg / h), press [up and down] key to select.

#### 5. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

## 10.7 Vortex (Frequency) + General Gas Parameter Setting

This section describes the measuring device (vortex (frequency) and measured medium (general gas) parameter settings.

### Operation

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure           |  | 2013-04-13 12:58:28                 |                                       |
|---------------------|--|-------------------------------------|---------------------------------------|
| Removal:            | <input type="text" value="0%"/>                              |                                     |                                       |
| K:                  | <input type="text" value="1"/>                               |                                     |                                       |
| Unit of K:          | <input type="text" value="Times/m&lt;sup&gt;3&lt;/sup&gt;"/> |                                     |                                       |
| Flow Unit:          | <input type="text" value="t/h"/>                             |                                     |                                       |
| Actual temperature: | <input type="text" value="Input"/>                           | <input type="text" value="Chnl02"/> | <input type="text" value="°C"/>       |
| Actual pressure:    | <input type="text" value="Input"/>                           | <input type="text" value="Chnl03"/> | <input type="text" value="MPa"/>      |
| Compress Rate:      | <input type="text" value="Table"/>                           | <input type="text" value="Air"/>    |                                       |
| Local atm pressure: | <input type="text" value="0.1013MPa"/>                       |                                     |                                       |
|                     |  |                                     | <input type="button" value="Finish"/> |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be 0. To adjust settings with [Up and Down] keys.

#### 2. K Vortex average K factor setting.

Press [En] key to modify the settings. . To adjust settings with [Up and Down] keys.

#### 3. K factor unit

K factor unit is involved in operation.

The default is time / m<sup>3</sup> (optional times / m<sup>3</sup>, plays / L). To adjust settings with [Up and Down] keys.

#### 4. Flow units

Flow units is involved in operations. It is fixed at m<sup>3</sup>/h.

#### 5. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings, press [up and down] key to adjust.

**6. Pressure condition**

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the pressure value, press [up and down] key to select.

[Set]: Set the constant value for pressure. Press [En] button to change settings, press [up and down] key to adjust.

**7. Compressibility coefficient**

General gas's compressibility coefficient. There are [set], [check] two options.

[Settings]: free to set the compression factor. Press [En] button to change settings, press [up and down] key to adjust.

[Check]: There are three kinds of gas models: air, nitrogen, oxygen, and press [up and down] key to select.

**8. The local atmospheric pressure**

Atmospheric pressure where the user locates. Press [En] button to change settings, press [up and down] key to adjust.

**9. Cursor to the [Finish] button, press the [En] button to return.**

## 10.8 Vortex (mA) + Steam Parameter Setting

This section describes the measuring device (vortex (ma) and measured medium (steam) parameter settings.

### Operation

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure           |  | 2013-04-13 12:58:28                 |                                       |
|---------------------|--|-------------------------------------|---------------------------------------|
| Removal:            | <input type="text" value="0%"/>                          |                                     |                                       |
| Volume Scale:       | <input type="text" value="4.00"/>                        | <input type="text" value="20.00"/>  |                                       |
| Volume Unit:        | <input type="text" value="m&lt;sup&gt;3&lt;/sup&gt;/h"/> |                                     |                                       |
| Flow Unit:          | <input type="text" value="t/h"/>                         |                                     |                                       |
| Actual temperature: | <input type="text" value="Input"/>                       | <input type="text" value="Chnl02"/> | <input type="text" value="°C"/>       |
| Actual pressure:    | <input type="text" value="Input"/>                       | <input type="text" value="Chnl03"/> | <input type="text" value="MPa"/>      |
|                     |  |                                     | <input type="button" value="Finish"/> |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be input limit. To adjust settings with [Up and Down] keys

#### 2. Volume Range

Collect display range of volume signal, and press [En key to modify the settings, and press [up and down] key to adjust.

#### 3. Volume unit

Volume unit is involved in operations, fixed at m<sup>3</sup> / h.

#### 4. Flow units

Flow units is involved in operations, the default is t / h (optional t / h, kg / h), press [up and down] key to select.

#### 5. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings,

press [up and down] key to adjust.

**6. Pressure condition**

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the pressure value, press [up and down] key to select.

[Set]: Set the constant value for pressure. Press [En] button to change settings, press [up and down] key to adjust.

**7. Cursor to the [Finish] button, press the [En] button to return.**

## 10.9 Vortex (mA) + Water Parameter Setting

This section describes the measuring device (vortex (ma) and measured medium (water) parameter settings.

### Operation

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure                             |  | 2013-04-13 12:58:28                 |                                 |
|---------------------------------------|--|-------------------------------------|---------------------------------|
| Removal:                              | <input type="text" value="0%"/>                          |                                     |                                 |
| Volume Scale:                         | <input type="text" value="4.00"/>                        | <input type="text" value="20.00"/>  |                                 |
| Volume Unit:                          | <input type="text" value="m&lt;sup&gt;3&lt;/sup&gt;/h"/> |                                     |                                 |
| Flow Unit:                            | <input type="text" value="t/h"/>                         |                                     |                                 |
| Actual temperature:                   | <input type="text" value="Input"/>                       | <input type="text" value="Chnl02"/> | <input type="text" value="°C"/> |
| Actual pressure:                      | <input type="text" value="0.6MPa"/>                      |                                     |                                 |
| <input type="button" value="Finish"/> |  |                                     |                                 |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be input limit. To adjust settings with [Up and Down] keys.

#### 2. Volume Range

Collect display range of volume signal, and press [En key to modify the settings, and press [up and down] key to adjust.

#### 3. Volume unit

Volume unit is involved in operations, fixed at m<sup>3</sup> / h.

#### 4. Flow units

Flow units is involved in operations, the default is t / h (optional t / h, kg / h), press [up and down] key to select.

#### 5. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings,

press [up and down] key to adjust.

**6. Pressure condition**

Input type: [enter], [set] (two options).

Choose [0.6MPa] or [1.6Mpa], and press [up and down] key to adjust.

**7. Cursor to the [Finish] button, press the [En] button to return.**

## 10.10 Vortex (mA) + General Gas Parameter Setting

This section describes the measuring device (vortex (ma) and measured medium (general gas) parameter settings.

### Operation

Press the [page] + [En], enter the configuration menu.

Use the [arrow keys] and [En] button, enter the password, and then select to enter the [flow compensation].

Move the cursor to the [Parameter setting] button, press the [En] key to enter the parameter setting screen.

| Configure           |  | 2013-04-13 12:58:28                 |                                       |
|---------------------|--|-------------------------------------|---------------------------------------|
| Removal:            | <input type="text" value="0%"/>                          |                                     |                                       |
| Volume Scale:       | <input type="text" value="4.00"/>                        | <input type="text" value="20.00"/>  |                                       |
| Volume Unit:        | <input type="text" value="m&lt;sup&gt;3&lt;/sup&gt;/h"/> |                                     |                                       |
| Flow Unit:          | <input type="text" value="t/h"/>                         |                                     |                                       |
| Actual temperature: | <input type="text" value="Input"/>                       | <input type="text" value="Chnl02"/> | <input type="text" value="°C"/>       |
| Actual pressure:    | <input type="text" value="Input"/>                       | <input type="text" value="Chnl03"/> | <input type="text" value="MPa"/>      |
| Compress Rate:      | <input type="text" value="Table"/>                       | <input type="text" value="Air"/>    |                                       |
| Local atm pressure: | <input type="text" value="0.1013MPa"/>                   |                                     |                                       |
|                     |  |                                     | <input type="button" value="Finish"/> |

#### 1. Resection of the small signal

The setting range is 0.0-9.9%, expressed by a percentage. If Input differential signal is less than set value range, it will be 0. To adjust settings with [Up and Down] keys.

#### 2. Volume Range

Collect display range of volume signal, and press [En key to modify the settings, and press [up and down] key to adjust.

#### 3. Volume unit

Volume unit is involved in operations, fixed at m<sup>3</sup> / h.

#### 4. Flow units

Flow units are involved in operations. It is fixed at m<sup>3</sup>/h.

#### 5. Temperature conditions

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the temperature value, press [up and down] key to select.

[Set]: Set the constant value for temperature. Press [En] button to change settings, press [up and down] key to adjust.

#### 6. Pressure condition

Input type: [enter], [set] (two options).

[Input]: Select the signal channel input for the pressure value, press [up and down] key to select.

[Set]: Set the constant value for pressure. Press [En] button to change settings, press [up and down] key to adjust.

**7. Compressibility coefficient**

General gas's compressibility coefficient. There are [set], [check] two options.

[Settings]: free to set the compression factor. Press [En] button to change settings, press [up and down] key to adjust.

[Check]: There are three kinds of gas models: air, nitrogen, oxygen, and press [up and down] key to select.

**8. The local atmospheric pressure**

Atmospheric pressure where the user locates. Press [En] button to change settings, press [up and down] key to adjust.

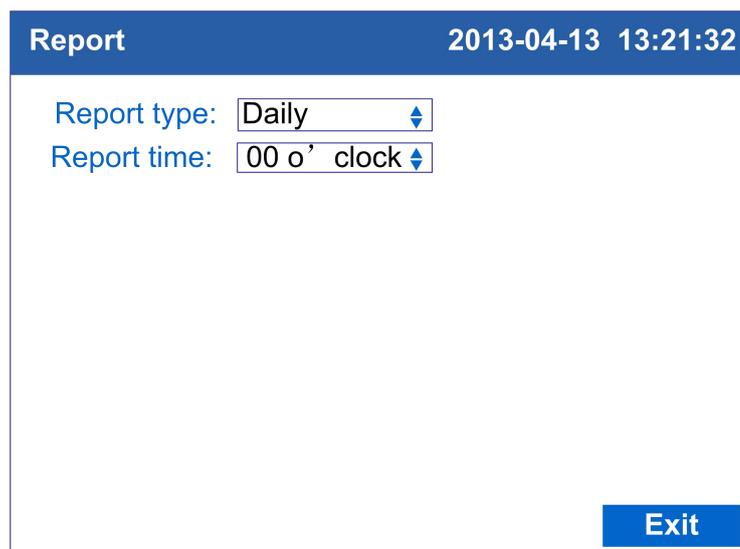
**9. Cursor to the [Finish] button, press the [En] button to return.**

## Chapter 11 Setting Report

### 11.1 Setting specifications of report

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Report] screen.



Report 2013-04-13 13:21:32

Report type: Daily

Report time: 00 o'clock

Exit

#### 1. Report type

Select report type for display and saving, there are four options: Hourly, 8Hourly, 12Hourly and Daily (you can get into the Report-Monthly screen while at the screen of Report-Daily)

#### 2. Report time

Setting report time. Using [Up] or [Down] key to Configure the report time from 00 o'clock to 07 o'clock.

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [Report] screen.

Select [No] to cancel setting content, and exit [Report] screen.

Select [Cancel] to continue setting parameters in [Report] screen.

---

#### Warning

Do not change the report type at will; the change will cause the internal data to be chaotic.

---

## Chapter 12 Communication Function

### 12.1 Communication Using RS232C (Option)

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [system] screen.

System 2008-03-10 13:21:32

Alias: Overview

Date: 2008-03-10 13:21:32 Password: 000000

Interval: 2sec Address: 8

Baudrate: 9600 Parity: None

RJC: 0.2 20.2

Alarm delay: 4sec

Language: English

Clear Report Data Clear Alarm Summary

Factory Setting Exit

Communication baudrate Communication address Parity mode

| Item                      | Content                               |
|---------------------------|---------------------------------------|
| Communication address     | 0 – 255                               |
| Communication baud rate   | 1200/2400/4800/9600/19200/38400/57600 |
| Communication parity mode | None/Odd/Even                         |

#### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [System] screen.  
Select [No] to cancel setting content, and exit [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

## Explanation

1. Connects communication wiring.
2. Setting the instrument's communication address, baud rate, parity.
3. The setting of the PC's communication address, baud rate, and parity are the same of the instruments.
4. Use it.

The port of RS232C is DB9.

Where,

2 → RXD, 3 → TXD, 5 → GND

---

### Note

The instrument's RS485 port uses 7 and 8 two pin in DB9 port, if user has ordered two RS232C and RS485 function at the same time, not use 9 core connecting lines to link up with instrument and PC machine, two of RS485 pin communication that can disturb RS232C, makes communication fail.

Use 3 core communication lines and PC machine to link up

---

## 12.2 Communication Using RS485 (Option)

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [system] screen.

System 2008-03-10 13:21:32

Alias: Overview

Date: 2008-03-10 13:21:32 Password: 000000

Interval: 2sec Address: 8

Baudrate: 9600 Parity: None

RJC: 0.2 20.2

Alarm delay: 4sec

Language: English

Clear Report Data Clear Alarm Summary

Factory Setting Exit

Communication baudrate Communication address Parity mode

| Item                      | Content                               |
|---------------------------|---------------------------------------|
| Communication address     | 0 – 255                               |
| Communication baud rate   | 1200/2400/4800/9600/19200/38400/57600 |
| Communication parity mode | None/Odd/Even                         |

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [System] screen.  
Select [No] to cancel setting content, and exit [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

## Explanation

1. Connects communication wiring.
2. Sets the instrument's communication address, baud rate, parity mode.
3. The setting of the PC's communication address, baud rate, and parity mode are the same of the instruments.
4. Use it.

---

### Note

- Allow multiple instruments to connect to RS485 network. Use the type of the bus-based connections.
  - When the link of the RS485 is further or the interference in the connecting with the bus is larger. Add 120 $\Omega$  resistance at both ends in the network. Connection is between the 485+ and 485-.
-

## 12.3 Connect with Micro Printer (Option)

The instrument can connect with the micro printer.

### Procedure

System 2008-03-10 13:21:32

Alias: Overview

Date: 2008-03-10 13:21:32 Password: 000000

Interval: 2sec Address: 8

Baudrate: 9600 Parity: None

RJC: 0.2 20.2

Alarm delay: 4sec

Language: English

Clear Report Data Clear Alarm Summary

Factory Setting Exit

Communication baudrate Communication address Parity mode

1. The printer's time range
2. Set the printer's start time
3. Set the printer's end time
4. Select the print channel
5. Set the interval
6. Print the data
7. Print the trend
8. Seek the connection printer
9. The printer state.

### Explanation

Use the RS232C port to connect the instrument and the printer

| Port | Printer port |
|------|--------------|
| RXD  | RTS          |
| TXD  | RXD          |
| GND  | GND          |

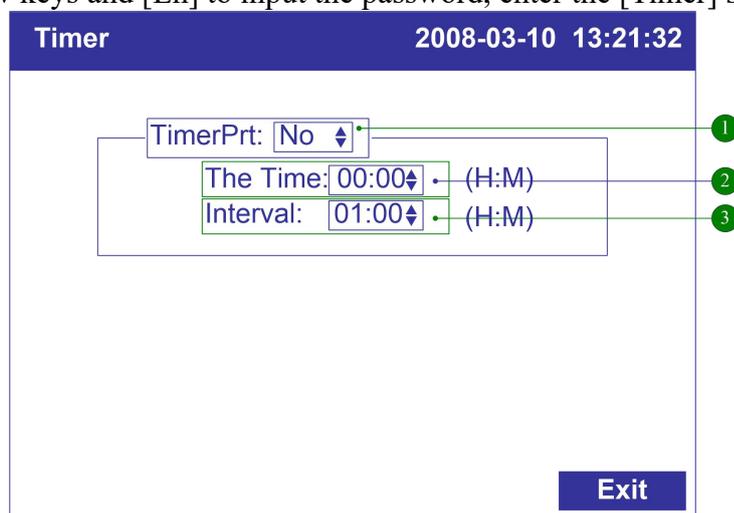
Set the printer's communication parameter (the instrument doesn't need)

|           |      |
|-----------|------|
| Baud rate | 9600 |
| Start bit | 1    |
| Data bit  | 8    |
| Parity    | None |

## 12.4 Auto Print Function Setting

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Timer] screen.



1. Set the timer print function  
Move the cursor to [Timer Prt], choose it with [Up] and [Down]  
[Yes]: The timer print function is opened.  
[No]: The timer print function is closed.
2. The starting time
3. Interval: Between two printing time intervals.

### Confirming operation

After the parameter setting, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exit [Timer] screen.  
Select [No] to cancel setting content, and exit [Timer] screen.  
Select [Cancel] to continue setting parameters in [Timer] screen.

---

#### Note

- When use the timer print function, the printer must connect with the instrumental the time.
  - About the printer setting, see section 10.3.
-

## Chapter 13 Initializing Data

### 13.1 Restore Factory Setting

#### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [system] screen.

The screenshot shows the 'System' configuration menu with the following settings:

- System: 2008-03-10 13:21:32
- Alias: Overview
- Date: 2008-03-10 13:21:32
- Password: 000000
- Interval: 2sec
- Address: 8
- Baudrate: 9600
- Parity: None
- RJC: 0.2 / 20.2
- Alarm delay: 4sec
- Language: English

Buttons at the bottom: Clear Report Data, Clear Alarm Summary, Factory Setting (highlighted with a red box), and Exit.

Set the initialization

Restore factory setting

Move the cursor to [Factory Setting], press [En].

#### Confirming operation

Select [Yes] and press [En] to restore factory setting.

Select [No] and press [En] to cancel factory setting.

After Restore Factory setting, select [Exit] there is a Frame.

Select [Yes] to save setting content, and exit [System] screen.

Select [No] to cancel setting content, and exit [System] screen.

Select [Cancel] to continue setting parameters in [System] screen.

---

#### Note

After factory setting, the historical data stored in instrument will be cleared.  
Before the factory setting, please backup the historical data.

---

## Explanation

### The influencing parameter tabulation

| Type                                     | Name                      | Value   |
|--|---------------------------|---|
| System parameter                         | Alias                     | Overview  |
|  | Password                  | 000000  |
| Display parameter                        | Direction                 | Horizontal  |
|  | Group1                    | Enable<br>Group1 – Chnl1 –purple<br>Group2 –Chnl2 – green<br>Group3 –Chnl3 – blue<br>Group4 –Chnl4 – yellow |
|  | Group2 – 4                | Prohibited  |
| Data save parameter                      | Interval                  | 02 S  |
| Communication parameter                  | Address                   | 8   |
|  | Baud rate                 | 9600  |
|  | Parity                    | None  |
|  | Timing printer            | Prohibited  |
| Analog input parameter<br>(all channels) | Tag                       | Channel[No.]  |
|  | Type                      | 4-20mA  |
|  | Unit                      | %   |
|  | lower limit               | 4.00  |
|  | Upper limit               | 20.00   |
|  | Accumulation              | No  |
|  | Accumulation rate         | 1   |
|  | Vacuum                    | No  |
|  | Filter                    | 0.0 sec.  |
|  | Burnout                   | Minimum   |
|  | Cold junction adjustment  | 0.0   |
|  | Square                    | No  |
|  | Cut                       | 0.0%  |
|  | Adjust value K            | 1.00  |
| Adjust value B                           | 0.00                      |   |
| Alarm parameter<br>(all channels)        | Alarm low low threshold   | 4.00  |
|  | Alarm low threshold       | 4.00  |
|  | Alarm high threshold      | 20.00   |
|  | Alarm high high threshold | 20.00   |
|  | Alarm contact(all alarm)  | 0   |
|  | Zone                      | 0.00  |
| Analog output parameter<br>(all loops)   | Analog output             | No  |
|  | Adjust value K            | 1.00  |
|  | Adjust value B            | 0.00  |

## 13.2 Purge Alarm Summary

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [system] screen.

The screenshot shows the 'System' configuration screen with the following parameters and options:

- System: 2008-03-10 13:21:32
- Alias: Overview
- Date: 2008-03-10 13:21:32
- Password: 000000
- Interval: 2sec
- Address: 8
- Baudrate: 9600
- Parity: None
- RJC: 0.2
- Alarm delay: 4sec
- Language: English
- Options: Clear Report Data, Clear Alarm Summary (highlighted), Factory Setting, Exit

A red arrow points from the 'Clear Alarm Summary' button to the text 'Purge Alarm Summary' located below the screen.

### Purge Alarm Summary

Move the cursor to [Purge Alarm], press [En].

### Confirming operation

Select [Yes] and press [En] to purge alarm summary.  
Select [NO] and press [En] to cancel purge alarm summary.

After Purge Alarm Summary, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exits [System] screen.  
Select [No] to cancel setting content, and exits [System] screen.  
Select [Cancel] to continue setting parameters in [System] screen.

### Explanation

Clearing alarm list will eliminate alarm records in memory, and can not be recovered.  
Clearing alarm list will not affect other parameters and functions of this instrument.

## 13.3 Purge Accumulation Data

### Procedure

Press [Page] and [En] at the same time, enter the configuration menu.  
Use arrow keys and [En] to input the password, enter the [Input] screen.

| Input   |  | 2008-03-10 13:21:32               |   |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
|---|--|-----------------------------------|---|--|-------------------------------------|-----------------------------------|---|----|------|-------|-----------------------------------|-----------------------------------|------------------------------------|------------------------------------|-----------------------------------|-------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--|
| Channel:  | <input type="text" value="1"/>                                       | Tag:                              | <input type="text" value="Chnl01"/>                                     |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Type:   | <input type="text" value="4-20mA"/>                                  | Unit:                             | <input type="text" value="%"/>  |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Range:  | <input type="text" value="4.00"/> <input type="text" value="20.00"/> | Filter:                           | <input type="text" value="0.0s"/>                                       |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Vacuum:   | <input type="text" value="No"/>                                      | Cut:                              | <input type="text" value="0.0%"/> <input type="text" value="Sqrt: No"/> |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Burnout Set:  | <input type="text" value="Error"/>                                   | Frequency:                        | <input type="text" value="1"/>  |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Accumulate:   | <input type="text" value="No"/>                                      | Acc.Magnification:                | <input type="text" value="1"/>  |  |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| <table border="1"> <thead> <tr> <th></th> <th>LL</th> <th>L</th> <th>H</th> <th>HH</th> <th>Zone</th> </tr> </thead> <tbody> <tr> <td>Value</td> <td><input type="text" value="4.00"/></td> <td><input type="text" value="4.00"/></td> <td><input type="text" value="20.00"/></td> <td><input type="text" value="20.00"/></td> <td><input type="text" value="0.00"/></td> </tr> <tr> <td>Relay</td> <td><input type="text" value="0"/></td> <td><input type="text" value="0"/></td> <td><input type="text" value="0"/></td> <td><input type="text" value="0"/></td> <td></td> </tr> </tbody> </table> |  |                                   |   |  | LL                                  | L                                 | H | HH | Zone | Value | <input type="text" value="4.00"/> | <input type="text" value="4.00"/> | <input type="text" value="20.00"/> | <input type="text" value="20.00"/> | <input type="text" value="0.00"/> | Relay | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> |  |
|   | LL   | L                                 | H   | HH                                     | Zone                                |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Value   | <input type="text" value="4.00"/>                                    | <input type="text" value="4.00"/> | <input type="text" value="20.00"/>                                      | <input type="text" value="20.00"/>     | <input type="text" value="0.00"/>   |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| Relay   | <input type="text" value="0"/>                                       | <input type="text" value="0"/>    | <input type="text" value="0"/>  | <input type="text" value="0"/>         |                                     |                                   |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |
| K=:   | <input type="text" value="1.00"/>                                    | B=:                               | <input type="text" value="1.00"/>                                       | <input type="text" value="Clear Acc"/> | <input type="text" value="Copy01"/> | <input type="text" value="Exit"/> |   |    |      |       |                                   |                                   |                                    |                                    |                                   |       |                                |                                |                                |                                |  |

Clear Accumulate Soft Key

### Clear Accumulate

Move the cursor to [Clear Acc], press [En] key.

### Confirming operation

Select [Yes] and press [En] to purge accumulation data.  
Select [NO] and press [En] to cancel purge accumulation data.

After Purge Alarm Summary, select [Exit] there is a Frame.  
Select [Yes] to save setting content, and exits [Input] screen.  
Select [No] to cancel setting content, and exits [Input] screen.  
Select [Cancel] to continue setting parameters in [Input] screen.

### Explanation

Clearing accumulation will eliminate accumulation records in memory, and can not be recovered.

Clearing accumulation will not affect other parameters and functions of this instrument.

## Chapter 14 Specifications

### 14.1 Signal and Alarm Specifications

#### Measures input

| Item                     | Specification  |
|--------------------------|--|
| Number of input channels | Measuring 12 channels at the same time(maximum)  |
| Scan Interval            | 1 second   |
| Signal types             | DC current(I) 、 Volt(V) 、 thermocouple(TC) 、 resistance temperature detector(RTD)、 frequency(FR) |

#### Measure range

| Input type | Range   | Measuring range    |
|------------|---------|--------------------|
| Current    | 4-20mA  | 4.00mA ~ 20.00mA   |
|            | 0-10mA  | 0.00mA ~ 10.00mA   |
| Volt       | 1-5V    | 1.000V ~ 5.000V    |
|            | 0-5V    | 0.000V ~ 5.000V    |
|            | 0-10V   | 0.000V ~ 10.000V   |
|            | 20mV    | 0.00mV ~ 20.00mV   |
|            | 100mV   | 0.00mV ~ 100.00mV  |
| Resistance | 350Ω    | 0.0Ω ~ 350.0Ω      |
| Frequency  | FR      | 0Hz ~ 10000Hz      |
| RTD        | PT100   | -200.0°C ~ 650.0°C |
|            | Cu50    | -50.0°C ~ 140.0°C  |
|            | Cu53    | -50.0°C ~ 150.0°C  |
|            | BA1     | -100°C ~ 600°C     |
|            | BA2     | -100°C ~ 600°C     |
| TC         | S       | -100°C ~ 1600°C    |
|            | R       | -50°C ~ 1600°C     |
|            | B       | 500°C ~ 1800°C     |
|            | K       | -50°C ~ 1300°C     |
|            | N       | -200°C ~ 1300°C    |
|            | E       | -100°C ~ 1000°C    |
|            | J       | -100°C ~ 1000°C    |
|            | T       | -100°C ~ 380°C     |
|            | WRE5-26 | 0°C ~ 2310°C       |
|            | WRE3-25 | 0°C ~ 2315°C       |
|            | F1      | 600°C ~ 2000°C     |
|            | F2      | 600°C ~ 2000°C     |

Measuring current: I = 0.5mA(Resistance、 RTD)

|                      |   |
|----------------------|---|
| Thermocouple burnout | Select the displays of MAX,MIN, Error sign and Keep the anterior values<br>Standard: $\leq 2k\Omega$ , burnout: $\geq 100k\Omega$<br>Measuring current: about 2.5uA |
|----------------------|---|

| <b>Item</b>                                      | <b>Specification</b>  |
|--|---|
| The thermocouple reference junction compensation | Use the interior reference junction compensation , compensation precision $\pm 0.5^{\circ}\text{C}$ |
| Digital filtering                                | 0~9.9 seconds inertia filter  |
| Vacuum operation                                 |   |
| Common arithmetic                                | Use the LOG trend operation in the whole range  |
| Subsection arithmetic                            | Use the linearity operation at each subsection  |

## Alarm

| <b>Parameter</b>  | <b>Specification</b>   |
|-------------------|--|
| Number of alarms  | Up to four alarms for each channel   |
| Alarm types       | Ultra Upper limit alarm<br>Upper limit alarm<br>Lower limit alarm<br>Ultra Lower limit alarm                     |
| Alarm delay time  | Selectable from 1s to 3600s for each channel   |
| Alarm output      | Output to the interior relay<br>Number of the interior relay: 12<br>The interior relay operation: OR operation   |
| Display           | When has alarming, in corresponding screen display alarm condition, in Status Display Section display alarm icon |
| Alarm information | Display the alarm log that occurred in the alarm summary   |

## 14.2 Display Specifications

### Display

| Item     | Specification                            |
|----------|--|
| Display* | 5.6" TFT LCD (234-by-320 dot resolution) |

\* LCD display may have some pixels light or dark, because of the difference function of LCD, and the LCD brightness possibly is also dissimilar, but these are not malfunction.

### Display information

| Item                                  | specification  |
|---------------------------------------|--|
| Display group                         | Assigns the channel for the group of trend and history.  |
| Group                                 | 4  |
| Assign to each group's channel number | ≤ 4  |
| Display color                         | RGB  |
| Trend display                         |  |
| Update rate                           | One note interval  |
| Waveform line width                   | 1 pixels   |
| Display method                        | Display the right angel with time shaft(T) and measurement value(Y)<br>Distribution: Horizontal、Vertical<br>Trend period: saving interval × 30 div |
| Scale                                 | Display each channel scale(0%~100%)  |
| Figure display                        | The measured value is displayed by number  |
| Update rate                           | 1 second   |
| Bar display                           | The measured value is displayed in bar chart   |
| Update rate                           | 1 second   |
| Scale                                 | 0% ~ 100%  |
| History display                       | Display the saving data of EMS memory  |
| Time shaft                            | Zoom in 1times/2 times /4 times /8 times /16 times /32 times   |
| Display alarm summary                 | Most display 15 pieces alarm   |

### Other display information

| Item                       | Specification   |
|----------------------------|---|
| Channel tag                | 10 characters (Numbers)   |
| Channel units              | 7 characters (Numbers)  |
| Status display             | Display the instrument's status in top part of display screen.  |
| Display content            | Name, board card status, alarm status, USB status, circulation status, history status, year, month, day, hour, minute and second. |
| Auto-switch                | Switch the display group in the appointed time interval<br>Interval: 10 second  |
| Language                   | English   |
| System information display | Display the in-out、relay output modes、instrument additional function、Firmware-Version and release date                            |

## 14.3 Data Storage Specifications

### Configure

| Item                    | Specification                  |
|-------------------------|--------------------------------|
| Onboard memory          | Interior data storage          |
| Medium                  | FLASH                          |
| Content                 | 6MB                            |
| Operation               | FIFO(first-in first-out)       |
| Exterior storage medium | Backup interior memorized data |
| Medium                  | U disk                         |
| Content                 | Maximum 4GB                    |
| File format             | FAT32                          |
| File name               | DAT + “number”                 |

### Data type

| Item             | Specification           |
|------------------|-------------------------|
| Data size        |                         |
| Sampling         | 2 bytes/Data            |
| Accumulation     | 4 bytes/Data            |
| Data format      | Binary system data      |
| Sampling periods | Up to register interval |
| Note mode        | Register all the time   |

## 14.4 Other standard functions

### The correlative function of the time

| <b>Item</b>         | <b>Specification</b>   |
|---------------------|--|
| Clock               | Run between 2000~2099  |
| Clock precision     | $\pm 10$ ppm(0 to 50°C), excluding a delay (of 1 second, maximum) caused each time the power is turned on. |
| Batteries Longevity | About 10years(room temperature)  |

### The input character types

| <b>Item</b> | <b>Specification</b>   |
|-------------|--|
| Character   | English(lowercase)、 English(capital)、 Numeral and symbol (limited) |

## 14.5 Select fittings

### Alarm output relay

| Item                 | Specification   |
|----------------------|---|
| Motion               | When alarm acts, output relay signal on the back panel's terminals. |
| Output ports         | Maximum 12  |
| Relay connect rating | 250VAC(50/60Hz)/3A, 250VDC/0.1A(load resistance)                    |
| Output format        | Normally open   |
| Relay operation      | OR operation  |

### RS232C/RS485

| Item        | Specification                             |
|-------------|---|
| Confer      | MODBUS-RTU                                |
| Baud rate   | 1200/2400/4800/9600/19200/38400/57600 bps |
| Date length | 8Bytes                                    |
| Parity mode | None/odd/even                             |

### 24VDC wiring

| Item                   | Specification   |
|------------------------|---|
| Loop                   | 4   |
| Output voltage         | 22VDC ~ 25VDC (rating output current)                                     |
| Maximum output current | 65mADC ( Over current protection operation current: approximately 90mADC) |
| Allow impedance        | $\leq 750\Omega$  |

### USB function

| Parameter            | Specification                 |
|----------------------|-------------------------------|
| USB port             | Compatible USB2.0 composition |
| Ports                | 1                             |
| Power supply         | 5V $\pm$ 10%, 100mA           |
| Attachable equipment | U Disk                        |

### Analog signals output

| Parameter         | Specification    |
|-------------------|------------------|
| Output type       | 4-20mA           |
| Output channels   | Most 4           |
| Allowed impedance | $\leq 750\Omega$ |

## 14.6 General Specifications

### Construction

| Parameter                 | Specification   |
|---------------------------|---|
| Mounting                  | Flush panel mounting(on a vertical plane)                                   |
| Mounting Pitch            | Mounting may be inclined backward up to 30 degrees from a horizontal plane. |
| Allowable Panel Thickness | 1 to 10mm   |
| Material                  | Front Panel & Rear Panel: ABS<br>Case: Aluminum alloy                       |
| Dimensions                | 144(W)×144(H)×220(D) mm   |
| Weight                    | Approx 4.0Kg( without Optional Accessories)                                 |

### Standard operating conditions

| Parameter              | Specification                      |
|------------------------|------------------------------------|
| Power supply voltage   | 220VAC                             |
| Power supply frequency | 50Hz                               |
| Ambient temperature    | 0°C ~ 50°C                         |
| Ambient humidity       | 0% ~ 85%                           |
| Warm-up time           | At least 30 minutes after power on |
| Installs position      | Indoor                             |

### Power

| Parameter                            | Specification                  |
|--------------------------------------|--------------------------------|
| Rated power supply                   | 220VAC                         |
| Allowable power supply voltage range | 85VAC ~ 265VAC                 |
| Rated power supply frequency         | 50Hz ~ 60Hz                    |
| Rated power consumption              | ≤59W(include option functions) |

### Insulation

| Parameter           | Specification                            |
|---------------------|--|
| Dielectric strength | Between measuring input terminals: ≥400V |
| Earth resistance    | Earth resistance ≤ 10Ω                   |

### Transport and Storage conditions

| Parameter           | Specification |
|---------------------|---------------|
| Ambient temperature | -10°C ~ 60°C  |
| Ambient humidity    | 0% ~ 95%      |

## Standard Performance

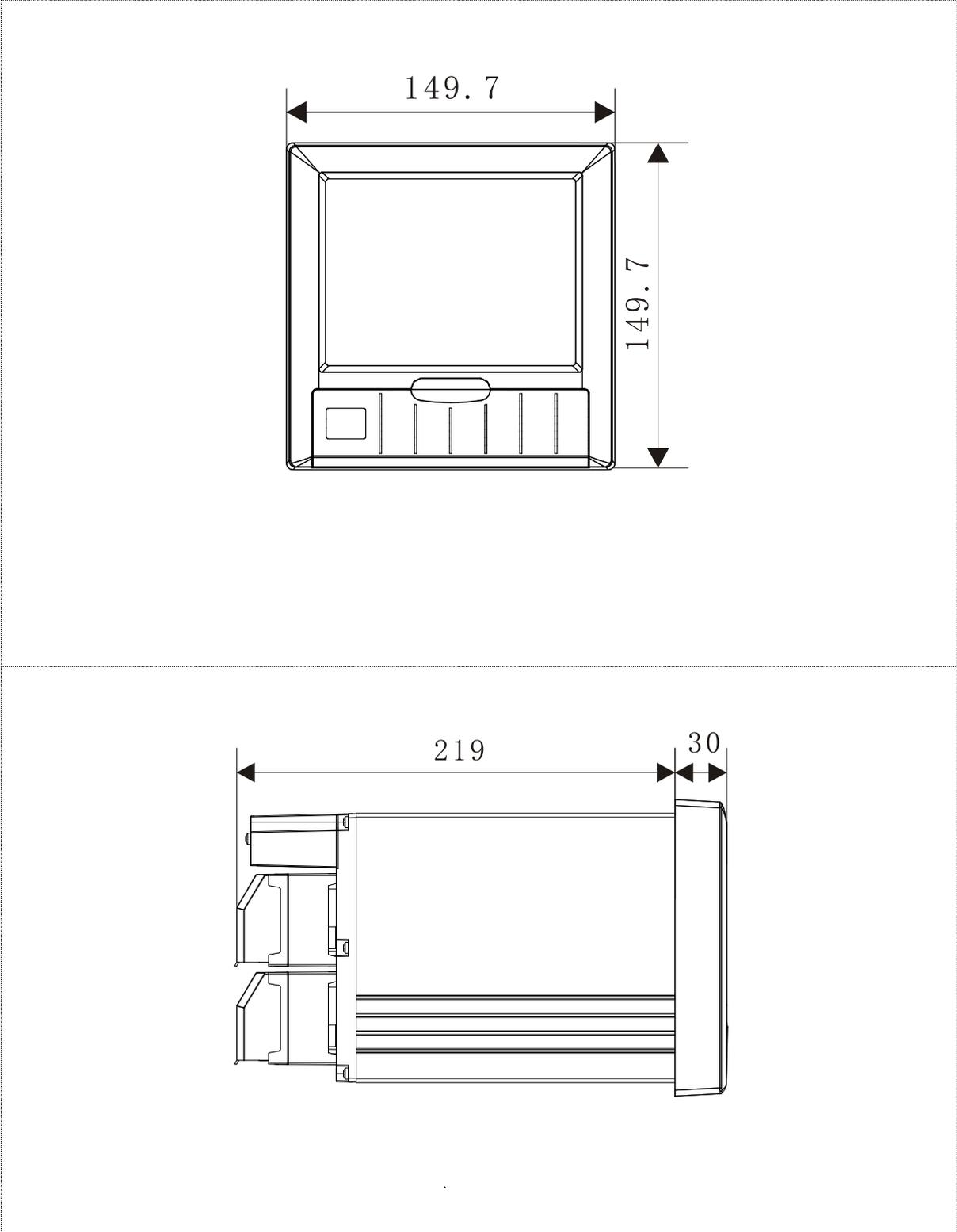
| Parameter                             | Specification  |
|---------------------------------------|--|
| Measuring Accuracy                    | Standard operating conditions<br>temperature: $23 \pm 2^\circ\text{C}$<br>humidity: $55\% \pm 10\% \text{RH}$<br>power supply voltage: 220VAC<br>power supply frequency: $50\text{Hz} \pm 1\%$<br>warm-up temperature: at least 30 minutes after power on<br>Other ambient conditions such as vibration should not adversely affect the operation.<br>Measuring accuracy: Entire measuring range error $\leq 0.2\% \text{F.S.}$<br>Trend accuracy: $0.5\% \text{F.S.}$ |
| Maximum allowable input voltage       | -2VDC $\sim$ +10VDC  |
| Input resistance                      | Voltage signal: $\geq 1\text{M}\Omega$<br>Current signal: $250\Omega$  |
| Resistance measure excitation current | 0.5mA  |
| Burnout measure current               | About 2.5uA  |
| Maximum common mode noise voltage     | $\geq 300\text{VAC}_{\text{rms}}(50\text{Hz})$   |
| Normal mode rejection                 | 5VDC: 1VAC(50Hz)<br>100mV: 100mVAC(50Hz)<br>20mV: 50mVAC(50Hz)   |

## Other standards

| Parameter              | Specification  |
|------------------------|----------------|
| Data storage age limit | About 10 years |

# 14.7 Dimensional Drawings

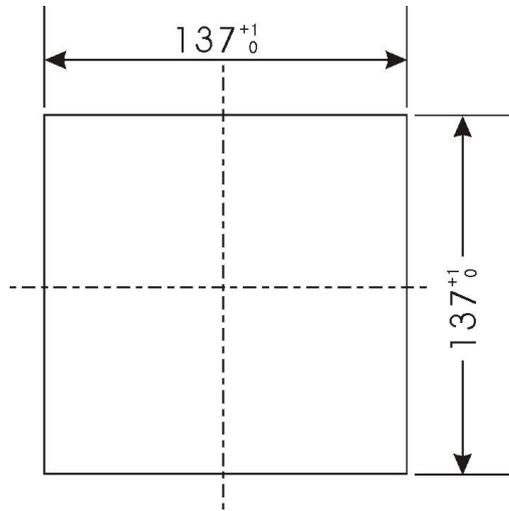
Unit: mm



## Panel Cutout

Unit: mm

### Single-Unit Mounting



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