CERTIFIED ISO9001

Portable temperature device /Handheld Temperature Indicator

User Manual

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I. Introduction

Temperature indicator is a high-precision instrument that is specially developed for rapid temperature measuring of molten metal in smelting, casting and other industries and also used for measuring the temperature of slag.

With a high-performance high-speed 16-bit embedded microprocessor unit as the core, the instrument applies a high-precision measurement sensor and a variety of intelligent processing technologies to ensure the steady operation for a long term and high anti-jamming capability.

Accurate and rapid temperature measurement can be conducted in a variety of melting occasions by connecting it with matched thermocouples.

This instrument adopts thermocouple as temperature measuring sensor.

Thermoelectric power produced by thermocouple when measuring temperature is firstly amplified by preamplifier amplification, then converted into digital numbers through the A/D converter, then send the numbers to the microcontroller for the data processing; for the S/B/R/ D type disposable thermocouple, the instrument automaticlly gives compensation to the environment temperature. After measuring the
temperature successfully, the temperature is displayed and maintained.

Simultaneously, the buzzer rings, indicating to take out the temperature measuring lance. When the thermocouple is inserted next measurement, the display will show the environment temperature.

II. Function instruction

Temperature indicator adopts the integrated design with the immersion lance.

According to the characteristic of the harsh working environment and high temperature, the temperature indicator employs high light LED and full metal jacket which is durable.

Specific functions are as follows:

- Buzzer ring after measurement
- It will detect the Battery voltage and will display battery level
- Four high-brightness LED display with 15mm word height
- Automatic sleep function, that is, if no signal can be input in one or two minutes, the instrument enters into sleep mode which reduces the power consumption to a large extent. When measuring, you just need to lift the instrument up to rouse it into working mode.

III. Technical parameters

Thermocouple	S	B	R	D
Fast thermocouple	800～ 1769℃	800～ 1820℃	800～ 1769℃	800～ 1999℃
Multi-time thermocouple	200～ 1769℃	600～ 1820℃	200～ 1769℃	200～ 1999℃
Display	Four high-brightness LED display with 15mm word height			
Working condition	Temperature range 0～ 55℃ ;Relative humidity<85%			
Storage condition	Temperature rang -40～ 85℃ ;Relative humidity<95%			
Power	With rechargeable battery inside and rated voltage 5V			

IV. Panel Instruction

There are three buttons K1, K2, K3 on the internal mainboard for for temperature adjustment (Generally no adjustment). See Clause VI for specific operations.

Within 3 seconds when starting, it shows on the percentage of remaining battery power and the type of thermocouple the current used.

Please recharge in time when the power display is lower than 70.

Instruction for type of the current use of thermocouple :

Type S display 1
Type B display 2
Type R display 3
Type D display 4

V. Precautions for Use

1. When the display shows "----", it means the input signal line is in bad contact or the thermocouple is not connected.
2. When the indicator light flashes, it shows low battery voltage. The battery need charging. Before charging, power off the instrument. When charging, use the matched charger and the indicator light turns red. When the battery is fully charged, the indicator light turns green. It is not advisable to charge for too long time; the charging time is around 4 hours.
3. When the input signal is inversely connected, the display will show the environment temperature.
4. Finish measuring the instrument should shut down timely, avoid the battery waste.

When the measurement is finished, please power off in time to save battery power.
5. The instrument should match the corresponding thermocouple, otherwise the measured data are without reference meaning.
6. The insertion time of the lance in the liquid metal should be no more than 7s when measuring, to avoid burning out the thermocouple paper tube and the contact block. If the contact block is burnt out, please change a new one; when changing the contact block, please ensure right connection. If the compensation cable is broken, please change a new one with same type and same length.

VI、Specific operation instructions for setting keys

There are two dial switches on the internal circuit board for setting the Type of thermocouple . The details are as follows.:

1=OFF, 2=OFF: Type :S
1=ON, 2=OFF: Type:B
1=OFF,2=ON:Type:R
1=ON,2=ON : Type:D

There are three buttons K1, K2 and K3 on the internal board for setting operation parameters. The botton K1 is used to select the parameters to be set (the number of the specific items is shown in the table below), the botton K2 is used to select the bit to be set, and the button K3 key is used to input the specific parameters.

Function Item 1: Measuring mode settings, 0 for continuous: 1 for fast.
The factory setting is 1. Items 3 and 4 are available only for fast measurement mode.
Function Item 2: Reserved, no specific use
Function Item3: Temperature platform fluctuation value. Fantong can be set at 1-16 C, and the factory can be set at 3.
Function Item4: Temperature platform duration. Settable range 1-16 for 1/6-16/6 seconds
Function Item 5: Modification value for Cold end temperature . Guide 50 as the benchmark, more than 50 will be as the increase, less than 50 will be as the decrease, the factory setting is 50, For example: the actual temperature of the current cold end is 16℃, but the thermometer shows 19℃, you should adjust the setting items is 47, it will show 16℃; If the thermometer shows 10, you should adjust it to 56, and the thermometer shows 16℃.
Function item 6: Modification value for S type . On the basis of 50,more than 50 will be as the increase, less than 50 will be as the decrease;

Function item 7: Modification value for B type. On the basis of 50,more than 50 will be as the increase, less than 50 will be as the decrease;
Function item 8:Modification value for R type . On the basis of 50,more than 50 will be as the increase, less than 50 will be as the decrease;
Function Item 9: Modification value for D type. On the basis of 50,more than 50 will be as the increase, less than 50 will be as the decrease
The factory setting is 50
Function Item 10: Reservation
Function Item 11: Save Enables. When this item is zero, all modifications to functionality cannot be saved. This item can be saved only when it is 1. This item is 0 at boot-up. This function item is set to avoid human error in modifying operation parameters.

If thermocouple has been inserted in the ready or measured state, the button does not work. When no thermocouple is inserted, the button can be used for setting operation. Firstly, press button KI to enter the setting state. In the setting state, the left-most digital tube displays the setting number, and the right two digital tubes display the setting value. In the setting value, the current edit bit is in the flickering state. Press K3 to enter the size of the setting value, and press button K2 to change the edit bit. After setting one item, press K1 to enter the next setting number.

The panel displays four characters, and the two leftmost characters are the settings number. The second character on the left is not displayed, and the third and fourth characters on the left are set values.

In the setting state, if there is no key operation for 10 seconds, the system will return to the normal operation state.

VII、Troubleshooting Instructions

When it is in abnormal operation, the temperature indicator will indicate the current fault type in the form of number. The specific fault number is as follows:
1: The temperature of cold end exceeds 55℃.
2: Thermocouple electrical potential is out of range
If the measurement fails, it will display 8888

VIII. Warranty

One year warranty

IX.Measures for common problems

1. If there is a great difference for measuring temperature, please check whether the consistency of graduation between temperature indicator and thermocouple;

2. The measured temperature value cannot be sustained, and the end lamp does not light, please check whether the function item is 1 which means the measurement state for fast temperature measurement ;

Check whether the temperature fluctuation value of function 3 is too small and the factory setting is 5;

Check whether the function 4 is too big, and nd the factory setting is 4

3. After the thermocouple is inserted into the temperature measuring lance, the preparatory light is off.

Firstly please confirm that the temperature of the temperature lance is well connected. You can also disconnect lance cable from the temperature indicator, make short-circuit for two inputs of the temperature indicator with a short wire to see if the green light is on. To confirm whether it is the problem arises from temperature indicator or the problem with the lance or the compensation wire.

X. One set includes

1) Temperature Indicator Head 1 pc
2) Three-part Lance Tube 1.5m/1 pc
3) Charger 1 pc
4) Lance Inside wire 1.5meter
5) Receptacle 2 pcs

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