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## **INSTRUCTION MANUAL**

Models: H200  
Single Channel K, J, T, E, R Thermometer



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# **1. Product Introduction**

## **1-1 Features**

- Measures temperature from five different types of thermocouples
- 0.1 Resolution
- Fast response time
- High level of accuracy
- Large LCD display
- Two year warranty

## **1-2 Applications**

- Science Experiments
- HVAC
- Plant Maintenance
- Manufacturing
- Agriculture
- Quality Control

## 2. Safety Information

Read the following safety information carefully before attempting to operate or service the meter. Only qualified personnel should perform repairs or servicing not covered in this manual.

### 2-1 Cautions!

- **DO NOT** submerge the products mentioned in this manual in water or any other types of liquids.
- This product is not designed for use in medical applications. The product can only be used to measure body temperature simply for reference.

### 2-2 Safety Symbols



Dangerous, refer to this manual before using the meter.



Conforms to requirements of European Union and European Free Trade Association (EFTA).



Battery level is low.



Don't dispose this product as unsorted municipal waste.

This instrument conforms to the following standards:

**EN61326:** Electrical equipment for measurement, control and laboratory use.

**IEC61000-4-2:** Electrostatic discharge immunity test.

**IEC61000-4-3:** Radiated, radio-frequency, electromagnetic field immunity test.

**IEC61000-4-8:** Power frequency magnetic field immunity test.

### 3. Specifications

|                          |   |
|--------------------------|---|
| Unit of Measurement      | °C or °F                                  |
| Temperature Compensation | Automatic for cold junction on K & J type |
| Thermocouple Types       | K, J, T, E & R                            |

| Thermocouple Type | Resolution | Range             | Accuracy*                          |
|-------------------|------------|-------------------|------------------------------------|
| Type K            | 0.1°C      | -50.0 to 1300.0°C | $\pm(0.2\% + 0.5^{\circ}\text{C})$ |
|                   |            | -50.1 to -100.0°C | $\pm(0.2\% + 1^{\circ}\text{C})$   |
|                   | 0.1°F      | -58.0 to 2372.0°F | $\pm(0.2\% + 1^{\circ}\text{F})$   |
|                   |            | -58.1 to -148.0°F | $\pm(0.2\% + 1.8^{\circ}\text{F})$ |
| Type J            | 0.1°C      | -50.0 to 1150.0°C | $\pm(0.2\% + 0.5^{\circ}\text{C})$ |
|                   |            | -50.1 to -100.0°C | $\pm(0.2\% + 1^{\circ}\text{C})$   |
|                   | 0.1°F      | -58.0 to 2102.0°F | $\pm(0.2\% + 1^{\circ}\text{F})$   |
|                   |            | -58.1 to -148.0°F | $\pm(0.2\% + 1.8^{\circ}\text{F})$ |
| Type T            | 0.1°C      | -50.0 to 400.0°C  | $\pm(0.2\% + 0.5^{\circ}\text{C})$ |
|                   |            | -50.1 to -100.0°C | $\pm(0.2\% + 1^{\circ}\text{C})$   |
|                   | 0.1°F      | -58.0 to 752.0°F  | $\pm(0.2\% + 1^{\circ}\text{F})$   |
|                   |            | -58.1 to -148.0°F | $\pm(0.2\% + 1.8^{\circ}\text{F})$ |
| Type E            | 0.1°C      | -50.0 to 900.0°C  | $\pm(0.2\% + 0.8^{\circ}\text{C})$ |
|                   |            | -50.1 to -100.0°C | $\pm(0.2\% + 1^{\circ}\text{C})$   |
|                   | 0.1°F      | -58.0 to 1652.0°F | $\pm(0.2\% + 1.5^{\circ}\text{F})$ |
|                   |            | -58.1 to -148.0°F | $\pm(0.2\% + 1.8^{\circ}\text{F})$ |
| Type R            | 1°C        | 0 to 600°C        | $\pm(1\% + 5^{\circ}\text{C})$     |
|                   |            | 601 to 1700°C     | $\pm(1.5\% + 5^{\circ}\text{C})$   |
|                   | 1°F        | 32 to 1112°F      | $\pm(1\% + 10^{\circ}\text{F})$    |
|                   |            | 1113 to 3092°F    | $\pm(1.5\% + 10^{\circ}\text{F})$  |

|                       |  |
|-----------------------|--|
| Data Hold             | Display freeze   |
| Memory                | Saves MAX. or MIN values with recall                   |
| Sampling Time         | Approximately 1 second                                 |
| Over Range Indicator  | " - - - - "  |
| Data Output           | RS-232 Serial data output                              |
| Operating Environment | 32° to 122°F (0° to 50°C), <80% R.H.                   |
| Power Supply          | 6 Pieces of DC 1.5V Batteries (UM4, AAA or equivalent) |
| Weight (approx.)      | 0.62lbs. (280g)  |
| Dimensions (approx.)  | 6.9 x 2.7 x 1.7" (174 x 68 x 42mm)                     |
| Included Accessories  | Instruction manual, battery, carrying case             |

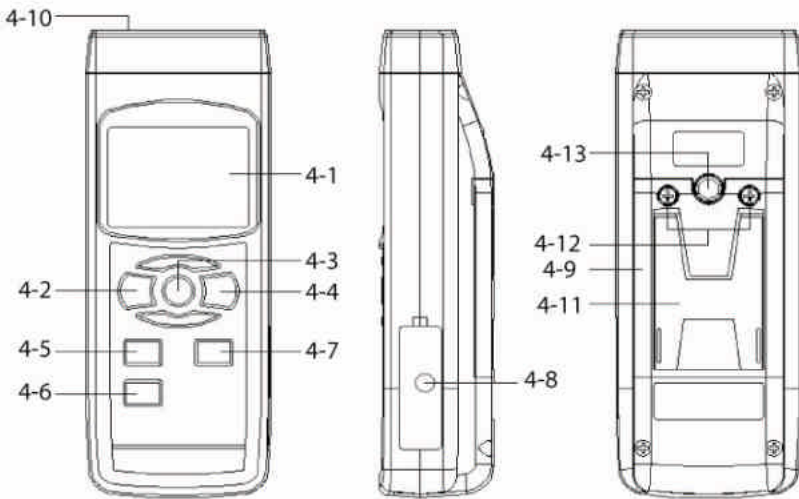
\* = Note : Accuracy applicable in environments with temperatures between 20°C to 26°C and only applies to the meter itself, not the probe.

Specifications and information are subject to change without notice

Please visit [www.anaheimscientific.com](http://www.anaheimscientific.com) for the most current product information.

## 4. Operating Instructions

### 4-1 Unit Diagram



**Fig. 1**

- 4-1 Display
- 4-2 Power Button
- 4-3 Hold Button
- 4-4 REC (MAX/MIN) Button
- 4-5 Sensor Button
- 4-6 REL (↓) Button
- 4-7 C°/F° (↑) Button

- 4-8 RS232 Socket
- 4-9 Battery Compartment
- 4-10 Thermocouple Input Socket
- 4-11 Stand
- 4-13 Tripod Screw Mount
- 4-12 Battery Cover Screw



## 4-2 Measuring Procedure

### 4-3 Thermocouple Measuring Procedure

1. Power on the meter by pressing the “Power Button” (4-2, Fig. 1). The meter will go through a short self test.
2. Select the sensor type by pressing the “Sensor Button” (4-5, Fig.1). As you press this button multiple time the meter will display the sensor type along the bottom of the LCD. You will see it change between K, J, T, E & R.
3. Once you have set it for the desired sensor type, insert the probe in to the “Thermocouple Input Socket” (4-10, Fig. 1).
4. Select the unit of measure by pressing the “°C/°F Button” (4-7, Fig.1).
5. Insert the Thermocouple in to the environment you wish to measure. The LCD will display the measured values.

### 4-4 Offset Value Adjustment

In some environments or applications there may be some need to offset the displayed temperature value. After following section 4-3 follow these steps to set a offset value.

1. Simultaneously press and hold the “Hold Button” (4-3, Fig. 1) and “REC Button” (4-4, Fig.1).
2. The LCD will display the starting value in the bottom of the LCD and the value in the middle section.
3. Using the “Up Button” (4-7, Fig. 1) to increase the offset value and/or the “Down Button” (4-6, Fig.1) to decrease the offset value.
4. Release all buttons to go to the normal measurement screen. The meter will now display measured values with the offset already calculated in to the reading.

### 4-5 Measuring Considerations

1. When inserting the measurement probes in to the “Thermocouple Input Socket” (4-10, Fig. 1), note the correct polarity usually indicated by the size of the plug blades (negative usually being the wider of the two).
2. For the most accurate reading allow the probe to stabilize when it is being introduced in to an environment that is significantly different in temperature from its starting point.

### 4-6 Data Hold Mode

1. During a measurement, press the “Hold Button” (4-3, Fig. 1) to hold the displayed value on the LCD. The “HOLD” symbol will also be displayed on the LCD.
2. Pressing the “Hold Button” (4-3, Fig. 1) will release the data hold function.

### 4-7 REC Mode

1. To record the maximum and minimum readings, press the “REC Button” (4-4, Fig. 1). The REC symbol will be displayed on the LCD. By pressing the “REC Button” (4-4, Fig. 1) you can toggle through the Max and Min values.
2. To stop using the REC function, press and hold the “REC Button” (4-4, Fig. 1) for at least 3 seconds.

#### **4-8 REL Mode**

1. It is recommended that you memorize the value on the LCD display first. Also note that the REL function does not work when the meter is in Data Hold or Data Record conditions.
2. To remove any displayed value from the LCD you can press the "REL Button" (4-6, Fig. 1). The display will then go to zero and you will see the REL marker in the top portion.
3. All subsequent values displayed will be the measured value minus the amount on the display when the REL button was pressed.
4. To cancel the REL function, simply press the "REL Button" (4-6, Fig. 1). The REL marker will then disappear from the LCD.

#### **5. Auto Power Off Disable**

This instrument has a "Auto Power Off" function that can prolong battery life. The meter will shut off automatically if none of the buttons are pressed in approx. 10 min.

To disable this function, select the memory record function during a measurement by pressing the "REC. Button" (4-4, Fig. 1 ).

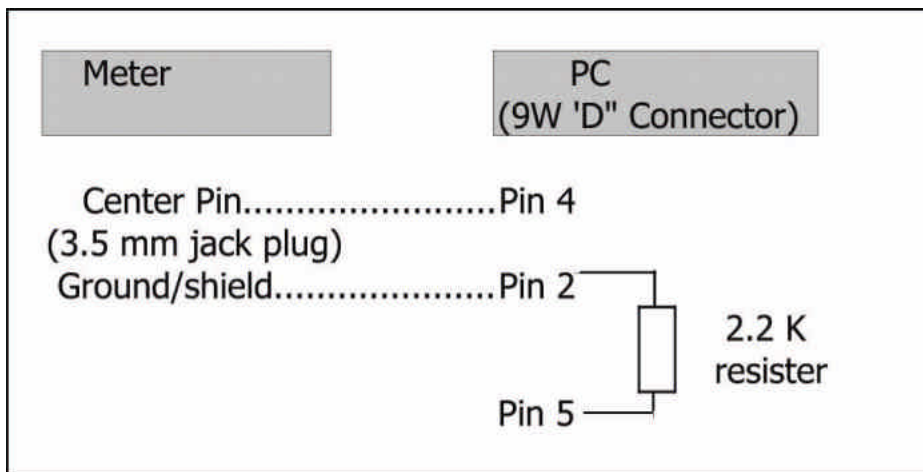
## 6. RS232 PC Serial Interface Information

This instrument has RS232 PC serial interface via a 3.5 mm terminal (4-12, Fig. 1).

The data output is a 16 digit stream which can be utilized for user's specific application.

A RS232 lead with the following connection will be required to link the instrument with the PC serial port.

Visit [www.anaheimscientific.com](http://www.anaheimscientific.com) to see any available downloadable software for your instrument.



The 16 digit data stream will be displayed in the following format:

D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1D0


Each digit indicates the following status:

|           |   |         |         |
|-----------|---|---------|---------|
| D15       | Start Word  |         |         |
| D14       | 4   |         |         |
| D13       | 1   |         |         |
| D12 & D11 | Indicator for Display<br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">°C = 01</td> <td style="width: 50%; text-align: center;">°F = 02</td> </tr> </table> | °C = 01 | °F = 02 |
| °C = 01   | °F = 02   |         |         |
| D10       | Polarity: 0 = Positive / 1 = Negative   |         |         |
| D9        | Decimal Point (DP), position from right to left<br>0 = No DP, 1 = 1 DP, 2 = 2 DP, 3 = 3 DP  |         |         |
| D8 to D1  | Display reading, D1 = LSD, D8 = MSD<br>Example: If the display reading is 1234,<br>then D8 to D1 is: 00001234   |         |         |
| D0        | End Word  |         |         |

**RS232 Setting**

|            |             |
|------------|-------------|
| Baud Rate  | 9600        |
| Parity     | No Parity   |
| Data bit # | 8 Data bits |
| Stop bit   | 1 Stop bit  |

## 7. Battery Replacement

1. When the LCD display shows the  low battery symbol, It is necessary to replace the battery. The specifications listed for this instrument do not apply when the low battery symbol is displayed.
2. Open the “Battery Compartment” (4-9, Fig. 1) by first loosening the “Battery Cover Screws” (4-12, Fig. 1).
3. Replace the batteries with “good” batteries noting the correct polarity . Replace “Battery Compartment” (4-9, Fig. 1) and “Battery Cover Screws” (4-12, Fig. 1). Ensure the cover is securely fastened.

## 8. Service Information

**Warranty Service:** Please return the product in the original packaging with proof of purchase to the address below . Clearly state in writing the performance problem and return any leads, probes, connectors and accessories that you are using w ith the device.

**Non-Warranty Service:** Return the product in the original packaging to the address below . Clearly state in w riting the performance problem and return any leads, probes, connectors and accessories that you are using w ith the device. Customers not on open account must include payment in the form of a money order or credit card. For the most current repair charges please visit [www.anaheimscientific.com](http://www.anaheimscientific.com) and click on “service/repair”.

Return all merchandise to Anaheim Scientific w ith pre-paid shipping. The flat-rate repair charge for Non-Warranty Service **does not** include return shipping. Return shipping to locations in North A merican is included for Warranty Service only. For overnight shipments and non-North American shipping fees please contact Anaheim Scientific.

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**Include with the returned instrument your complete return shipping address, contact name, phone number and description of problem .**

## 9. Limited Two-Year Warranty

Anaheim Scientific warrants to the original purchaser that its products and the component parts thereof, will be free from defects in workmanship and materials for a period of two years from date of purchase from an authorized Anaheim Scientific distributor.

Anaheim Scientific will, without charge, repair or replace, at its option, defective product or component parts. Returned product must be accompanied by proof of the purchase date in the form of a sales receipt.

To obtain warranty coverage in the U.S.A., this product must be registered by completing the warranty registration form on [www.anaheimscientific.com](http://www.anaheimscientific.com) within fifteen (15) days of purchase.

**Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. The warranty is void if the serial number is altered, defaced or removed.**

Anaheim Scientific shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitations of incidental or consequential damages. So the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may have other rights, which vary from state-to-state.

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