

MiraThermo Temperature Monitor  
& Thermometer  
for event recording  
with data logging optional

**User Manual**

V1.0

Release date: 12/18/2025

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**Important Information**

*This document provides essential instructions for the safe and effective use of this product. Please read it carefully and familiarize yourself with the operation before use.*

**1. Safety introduction**

*This section describes the general rules that must be followed to ensure the safe use of this product.*

**Avoid Personal Injury / Equipment Damage**

- Do not use this instrument to measure live parts or in their proximity (especially high-voltage components).
- Do not use the probe with corrosive solvents unless it is a designated anti-corrosion probe.

**Valid Safety / Warranty Statement**

- Operate the instrument only within the technical parameters specified in this document.
- Always use the instrument correctly and only for its intended purpose.
- Do not expose the handle or cable (if applicable) to environments above 80 °C unless explicitly specified for high-temperature use. The temperature rating of the probe refers only to the measuring range of sensors.

**Correct Disposal Statement**

- Dispose of used batteries at designated battery recycling points.
- At the end of the product's service life, dispose of it in accordance with local regulations.

**2. Product introduction**

This series of thermometers is professional-grade, high-precision, and highly reliable with the main unit powered by three AAA batteries or a dedicated AC adapter and supports multiple installation and usage modes, including handheld operation, flat-surface placement, stand mounting, and magnetic wall mounting.

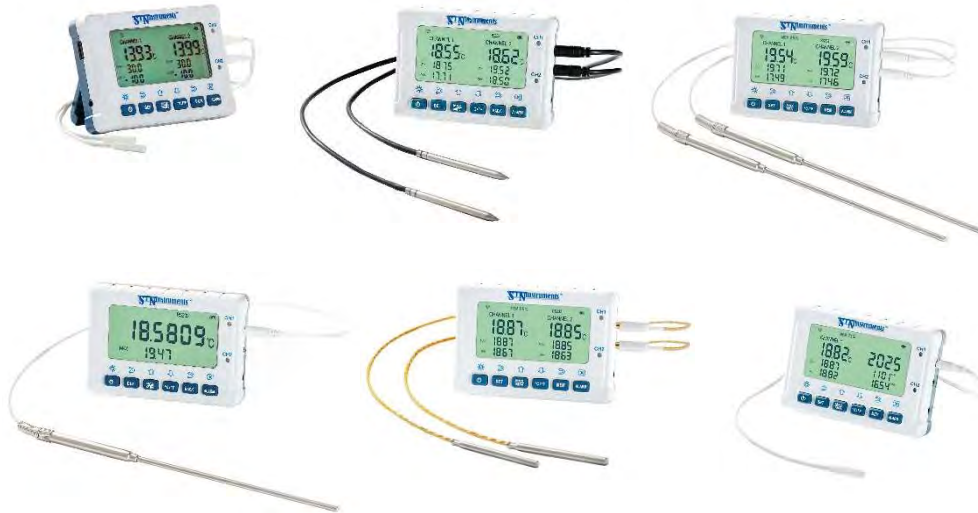
It can be categorized based on the following criteria:

- **Sensor type:** NTC (thermistor), Pt1000 (platinum RTD), or Pt100 (platinum RTD)
- **Measurement range:** -50 °C to 70 °C, -90 °C to 110 °C, -90 °C to 200 °C, -200 °C to 100 °C, -50 °C to 150 °C, or -80 °C to 200 °C
- **Accuracy:** ±0.2 °C, ±0.1 °C, or ±0.05 °C
- **Data logging:** with or without data-logging capability
- **Channel configuration:** single-channel or dual-channel
- **Probe assembly:** PTFE bullet probe, or stainless-steel probe with long or short stem
  - Plastic-encapsulated probe: 5 mm diameter, 25 mm length (NTC, Pt1000)
  - Stainless steel probe: 5 mm diameter, 75 mm length (NTC, Pt1000)
  - Stainless steel probe: 4 mm diameter, 150 mm length (NTC, Pt1000)
  - Stainless steel probe: 5 mm diameter, 70 mm length (Pt100)

**Note: Do not connect or disconnect the probe while the meter is powered on. Please ensure the probe is securely connected before turning on the meter.**

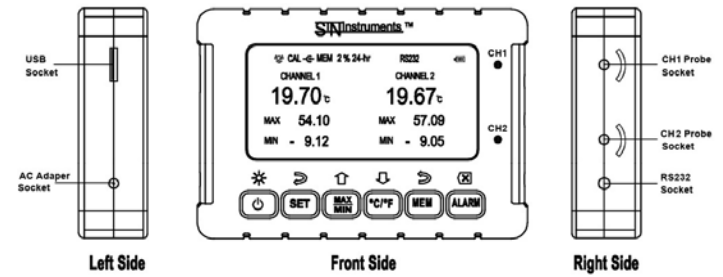
### 3. Product pictures

Examples of meters with different probes

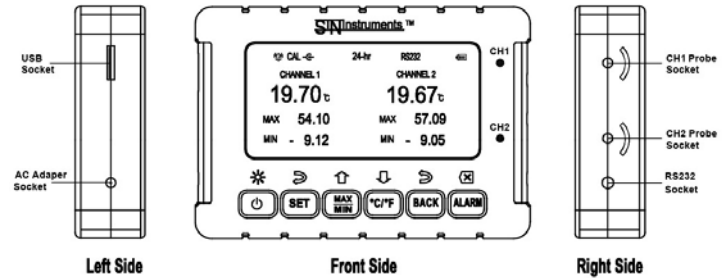


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### 4. Overall outline drawings

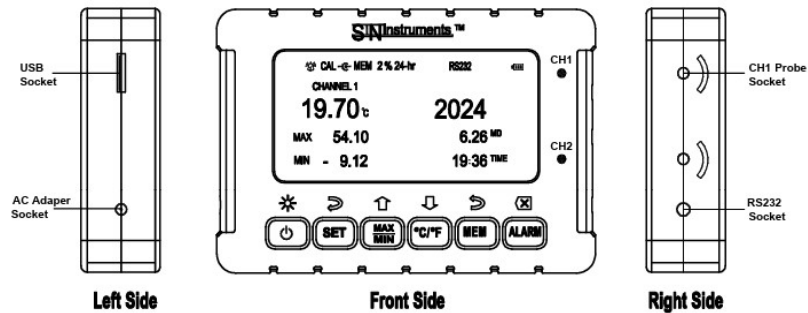


Picture 1 Temperature monitor with data logging function



Picture 2 Temperature monitor without data logging function

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Picture 3 Single-channel accuracy thermometer with data logging function



Picture 4 Premium accuracy thermometer without data logging function

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### 5. Packing list

- Meter
- 1 or 2 probes
- Batteries
- Magnetic tape
- Flash drive (for meters with data logging function)
- Power supply adapter (only for data downloading of meters with data logging function)

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## 6. Operation instruction

Note: If there is no operation for more than **30 seconds** between two actions, the instrument will automatically return to the **main interface**.

### 6.1 Button function

- ⏻ On/Off: Press the button to power on the device; a beep will sound upon activation. Once turned on, the main interface will appear, displaying real-time readings along with the MAX and MIN values. Press and hold the button to power off the device; A second beep will confirm shutdown.
- ★ Backlight on/off. Press the button briefly to toggle the back light on or off.  
Note: After the backlight has been on for **30 seconds**, if there is no operation, the backlight will automatically turn off.
- ⏸ SET: Configure/display and enter to access configuration settings, view display options, and confirm selections.
- ⬆ MAX/MIN: Display the MAX/MIN values and functions as the up arrow to increase numerical values or scroll through other options within the same menu level.
- ⬇ °C/°F: Change the unit of measurement and functions as the down arrow to decrease numerical values or scroll through other options within the same menu level.  
**Note: For meters without data logging, the BACK button is provided on the meter.**  
**For meters with data logging, the MEM button is provided on the meter.**
- ⏪ BACK: In any settings menu, press this button to return to the previous menu.
- ⏪ MEM: 1) In any settings menu, press this button to return to the previous menu.  
2) Used together with SET button to start or stop data logging.

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☒ALARM: Change alarm settings, silence active alarms, delete OIO (Out-In-Out) records, delete MAX/MIN history records and delete previous calibration.

### 6.2 Turn on/off

Press ⏻ to turn on/off the unit and there will be a beep.

### 6.3 Configure system settings and view device information

Press and hold the “SET” button to enter the settings menu, where the user can modify the following:

Date / Time

Sr (Sampling rate)

Int (Data logging interval)

AL (Alarm on/off)

OIO (Define the time interval during which multiple alarms are recorded as a single alarm event)

bAud

Sn (Display S/N)

VEr (Display hardware and software versions)

rSt ALL (Reset all settings to factory defaults)

Use the arrow buttons to navigate and select the settings to be configured. At any point during the process, press the BACK/MEM button to exit the settings menu.

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### Date/Time Settings

The first setting is Date/Time. Press the SET button—the Year will begin to flash. Use the arrow buttons to increase or decrease the value. Press SET again to move to the Month, then use the arrows to adjust. Continue this process for Day, Hour, and Minute. Once all values are set, press the BACK/MEM button to complete the Date/Time configuration.

### Sr (Sample rate) setting

This setting adjusts the display’s refreshing interval. Available options are 2, 5, 10, 30, and 60 seconds.

Note: Higher refreshing rates reduce battery life, choose thoughtfully.

### Int (Interval of data logging when applicable)

This setting configures the data logging interval, with selectable ranges from 00:01 to 1:00 (hour: minute).

### AL (Alarm)

This setting toggles the alarm’s sound ON or OFF.

### OIO (Out in Out)

Defines the time window during which multiple alarm occurrences are recorded as a single event in the history log. This period can be set from 5 minutes to 60 minutes.

### bAud rate

Use the arrow buttons to select the desired baud rate or choose “OFF” to disable RS232 communication.

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### Sn (S/N)

Two lines of numbers are displayed. Combine the first eight digits from the top line with the eight digits from the bottom line to obtain the complete serial number (S/N).

### Ver (Version)

Displays the hardware and software versions of the device.

### rSt ALL (Reset all)

Press the SET button to reset all settings to the factory defaults. A confirmation message, “Sure,” will appear. Press SET again to proceed with the reset or press BACK/MEM to cancel.

Caution: This operation will restore the meter to its factory default settings, except for the calibration curve.

### 6.4 Set alarm values

While on the main interface, press the ALARM button to switch the interface to display the high alarm (“HIALM”) and low alarm (“LOALM”) settings.

Each of the two channels can be set with different alarm values. Press and hold the “SET” button to enter the configuration mode. The first digit of CHANNEL 1’s high alarm (“HIALM”) will begin to flash. Use the arrow buttons to adjust the value, and press “SET” to save the current digit and move to the next.

Repeat this process to complete the alarm settings for both CHANNEL 1 and CHANNEL 2.

Press the BACK/MEM button to exit the ALARM configuration menu.

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## 6.5 View MAX/MIN and delete the records

### View MAX/MIN records

The temperature maximum and minimum values are recorded in cycles based on 24-hour, 7-day, or 31-day periods. For the 24-hour period, data is recorded at 1-hour intervals. For the 7-day and 31-day periods, data is recorded at 1-day intervals. A rolling recording method is used.

At the main interface, press the “MAX/MIN” button to access the records. The display will show “HISt 24hr”. For 24-hour records, press “SET” to view the data along with the corresponding date and time. Use the down arrow to scroll through all entries. Press “BACK/MEM” to return to the “HISt” menu, then use the arrow buttons to switch between 24-hour, 7-day, or 31-day records.

The MAX and MIN values shown on the main interface indicate the highest and lowest readings recorded for each channel individually since the meter was powered on.

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## 6.6 View Alarm records and delete the records

Hi/Lo alarms with time/date stamps: Each Hi/Lo alarm event is recorded along with the time it occurred and when the temperature returned to the acceptable range. To prevent frequent false alarms caused by brief temperature fluctuations, an alarm debounce interval is set, ensuring system stability. When a Hi/Lo alarm triggered on a channel, the corresponding channel indicator light flashes rapidly and the buzzer emits an audible warning.

From the main interface, press the “ALARM” button, then press “SET” to view OIO (Out-in-Out) records. These records include the alarm values as well as the date and time on each excursion. Use the arrow buttons to scroll through the records. The meter can record up to 20 event groups.


To delete the OIO history while viewing the records, press the “ALARM” button again. The screen will display “SurE” for confirmation. Press “SET” to confirm deletion.



### 6.7 Silencing the alarm

While the alarm is active, press the ALARM button to silence the audible alert; the visual alarm indicator will continue flashing as long as the measured value remains outside the preset alarm limits.

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## Delete one specific record

To delete 24hr record, press “MAX/MIN” button and unit will display “HISt” 24hr, press SET to enter this record, on the top of meter, “24hr” displayed, press “”, the screen will display “SurE” for confirmation. Press “SET” again to confirm deletion, and the display will show “dEL”.

To delete 7-day record, press “MAX/MIN” button and unit will display “HISt” 24hr, press  to display “7 d”, press set to enter 7-day record, on the top of meter, “7-day” displayed, press “”, the screen will display “SurE” for confirmation. Press “SET” again to confirm deletion, and the display will show “dEL”.

To repeat the same operation to delete 31-day record.

## Delete all MAX/MIN records

To delete all records, navigate to “rSt” using the arrow buttons and press “SET”. The screen will display “SurE” for confirmation. Press “SET” again to confirm deletion, and the display will show “dEL”. To cancel the deletion, press  to cancel the deletion.

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## 6.8 Data logging and data export

(applicable only to meters with data logging)

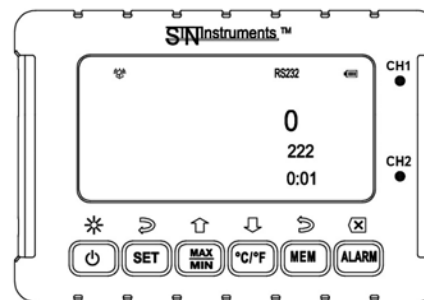
### Start data logging

From the main interface, press MEM button, it will display the default settings as below.

0: Indicates the percentage of recorded data used.

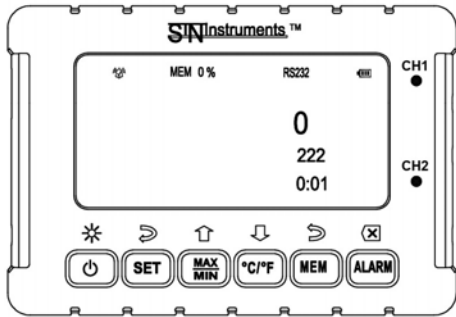
222: Indicates the calculated number of recordable days based on the data-logging interval shown on the third line.

0:01: indicates the data-logging interval in **hours: minutes** format.



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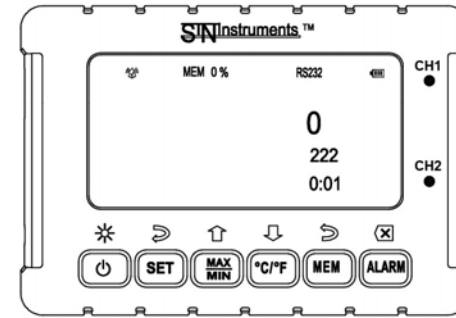
Press the SET button. The display will show MEM 0% (or another percentage) on the top line, indicating the percentage of memory capacity used. This message indicates that data logging has been activated. Press MEM ↩ to return to the main interface.



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## Stop data logging

From the main interface, press MEM button, it will display the default settings as below.



Then press the SET button to stop data logging. The “MEM x%” indication on the top line will disappear. Press MEM ↩ button back to the main interface.

After data logging is stopped and then restarted, the previously recorded data will remain stored in memory, and any new data will be appended under the same file name.

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## Data export

Insert a USB flash drive formatted as **FAT32**. If it is not already in FAT32 format, please use a PC to quickly format it to FAT32. Connect the AC adapter and power on the unit. The screen will first display the **SN**, followed by **OUT...**. The number shown in the lower right corner indicates the amount of data that has already been exported. During the export process, do not disconnect the power and do not remove the USB flash drive. Once the export is complete, the unit will automatically return to the main measurement screen.

Afterward, remove the USB flash drive and insert it into a computer to view the data. The data files are located in the STN\_LOG folder. Each file name corresponds to the time at which the export started, and a new file name is generated for each export. The data stored in the logger is not deleted after export.

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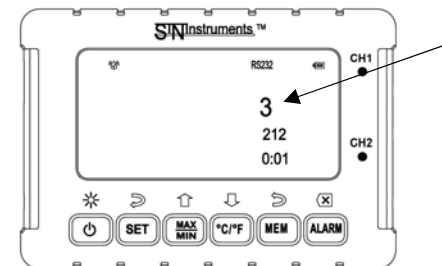
## Deleting Stored Data from Memory (Data Logging)

To delete data stored in memory from data logging, first stop data logging. When logging is stopped, MEM x% will no longer be displayed on the top line.

From the main interface, press the MEM button to enter the default settings screen.

The number shown on the first line (as indicated by the arrow in the figure below) represents the percentage of memory occupied by the saved data.

Press the ALARM button, and “SURE” will appear for confirmation. Press SET to confirm the deletion. The display will show “dEL...”. Please wait until the deletion process is complete. This value will be updated after the meter is restarted. To cancel the deletion, press MEM to cancel the deletion.



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## 6.9 Calibration

Note: 1) If the meter is a dual-channel model, both channels must be calibrated simultaneously during calibration, it is not permitted to calibrate only one channel.

2) Calibration does not need to be performed at all four points simultaneously, nor is there a required order for selecting calibration points.

This unit supports calibration at four or five temperature points depending on the measurement range:

-50°C to 70°C: -40.0°C, 0.0°C, 25.0°C, and 70.0°C

-90°C to 110°C: -80.0°C, 0.0°C, 50.0°C, and 100.0°C



-90°C to 200°C: -80.0°C, 0.0°C, 100.0°C, and 200.0°C

-200°C to 100°C: -195.60°C, -80.0°C, 0.0°C, 50.0°C, and 100.0°C

-50°C to 150°C: -50.0°C, 0.0°C, 50.0°C, and 150.0°C

-80°C to 200°C: -80.0°C, 0.0°C, 100.0°C, and 200.0°C

### Calibrate

To start the calibration, first turn off the meter. Press and hold "SET" button, then press  until S/N number appears, first release , then release the "SET" button to enter the calibration mode.

Put the probe to the temperature bath with temperature value required as above. Use up arrow or down arrow to select the calibration point. Wait for the readings stable and meet the requirement. Then press SET button to confirm the selected value and enter the calibration process. the meter will display "CAL...", wait, until:

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(1) "FINE" displayed on the screen and beep voice. This means the calibration is done successfully.

(2) If the calibration fails, one of the following error codes will be displayed.

#### Calibration fault code:

Er10: probe no plug in CH1

Er20: probe no plug in CH2

Er11: The Ch1 measured temperature differs from the calibration point temperature by more than  $\pm 5$  °C.

Er21: The Ch2 measured temperature differs from the calibration point temperature by more than  $\pm 5$  °C.

Er12: The Ch1 temperature fluctuation exceeds  $\pm 0.05$  °C.

Er22: The Ch2 temperature fluctuation exceeds  $\pm 0.05$  °C.

Note: If both channels have faults, only the CH1 fault will be displayed.

During calibration mode, the reading must be: 1) within  $\pm 5.0$ °C of the selected calibration point, 2) within  $\pm 0.05$ °C of fluctuation.

If either condition is not met when pressing "SET" to calibrate, the display will show "CAL" followed by a calibration fault code, indicating the calibration failed.

Press "BACK/MEM"  to return to the calibration interface.

To continue calibration, make the necessary corrections based on the calibration fault code until the calibration requirements are satisfied.

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### Deleting the Calibration Curve

Enter Calibration Mode, then press the ALARM button. The display will show "SurE". Press the SET button to confirm, and the display will show "dEL". The stored calibration curve will be deleted, and the meter will then return to the calibration interface.

## 7. Battery

This unit operates on three AAA batteries. For optimal performance, it is recommended to replace all three batteries at the same time.

## 8. Error Messages

No probe: Indicates that no probe is detected or that no data connection has been established.

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## 9. Specifications

Probe Type	NTC (thermistor), Pt100 (Platinum RTD), Pt1000 (Platinum RTD)
Channel No.	1, 2 available
Unit	Temperature (°C/°F)
Measurement Ranges	-50 °C to 70 °C, -90 °C to 110 °C, -90 °C to 200 °C, -200 °C to 100 °C, -50 °C to 150 °C, -80 °C to 200 °C
Measuring Accuracy	$\pm 0.2$ °C, $\pm 0.1$ °C, $\pm 0.05$ °C
Resolutions	0.01°C of accuracy $\pm 0.2$ °C and $\pm 0.1$ °C 0.0001°C/ 0.001°C/0.01°C changeable
Probe Assembly	Plastic-encapsulated probe: 5 mm OD * 25 mm (NTC, Pt1000) Stainless steel probe: 5 mm OD * 75 mm (NTC, Pt1000) Stainless steel probe: 4 mm OD * 150 mm (NTC, Pt1000) Stainless steel probe: 5 mm OD * 70 mm (Pt100)
Probe Wire Length	3 meters
OIO (Out In Out): Defines the time window during which multiple alarm occurrences are recorded as a single event	Configurable from 5 mins to 60 mins.

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Memory	Non-volatile, no data loss when power off
LCD refresh interval	2s, 5s, 10s, 30s and 60s configurable
Date/time	Configurable
Alarm values	Configurable
Alarm Function	ON/OFF Selectable
Factory Default	Resettable
Communication/Baud Rate	RS232/2400, 9600, OFF
Operation Condition	-30°C to 50°C, no condensation
Power Supply	Adapter/ 3 "AAA" batteries
Shell Material	ABS
Dimensions/Weight	3.25"X4.6"X1"/176g
Calibration	4 points across the range
Calibration Report	Included with each unit
Below applicable to meter with data logging function:	
Export File Formats	CSV
Data Storage Capacity	320,000 groups
Sampling Interval	from 00:01 to 1:00 (hour : minute) configurable
Data Export	Flash drive through USB port

## Contact us

For technical assistance, product information, or service inquiries, please contact:

STN Instruments LLC  
9396 SW Tigard St., Portland, OR 97223, USA

☎ Phone: 971 245 5485

✉ Email: [info@stnstruments.com](mailto:info@stnstruments.com)

🌐 Website: [www.stnstruments.com](http://www.stnstruments.com)

