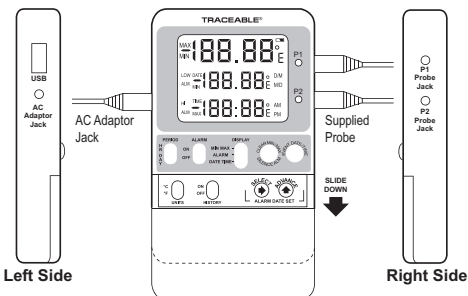


## SPECIFICATIONS

Range:	-200 to 105.00°C
Accuracy:	±0.25°C
Resolution:	0.01°C (0.1°F)
Temperature	
Sampling Rate:	10 seconds
Memory Capacity:	1,048,576 points
USB Download Rate:	180 readings per second
Battery:	2 AAA (1.5V)



## SETTING THE TIME/DATE

- Slide the DISPLAY switch to the DATE/TIME position, the thermometer will display the time-of-day and date. Adjustable parameters are Year->Month->Day->Hour->Minute->12/24 hour time.
- Press the SELECT button to enter the setting mode.
- Subsequently press the SELECT button to select which parameter to adjust. The selected parameter will flash once selected.
- Press the ADVANCE button to increment the selected parameter.
- Hold the ADVANCE button to continuously "roll" the selected parameter.
- Press the EVENT DISPLAY button to toggle between Month/Day (M/D) and Day/Month (D/M) display modes.

If no button is pressed for 15 seconds while in the setting mode, the thermometer will exit the setting mode. Changing the position of the DISPLAY switch while in the setting mode will save the current settings.

## VIEWING THE TIME-OF-DAY/DATE

To view the time-of-day/date, slide the DISPLAY switch to the DATE/TIME position.

## SELECTING THE UNIT OF MEASURE

To select the desired unit of temperature measure (°C or °F), slide the UNITS switch to the corresponding position.

## SELECTING THE TEMPERATURE PROBE CHANNEL

Slide the PROBE switch to either position '1' or position '2' to select the corresponding probe channel P1 or P2.

All temperature readings displayed will correspond with the selected probe channel.

**Note:** Both probe channels are sampled and monitored continuously regardless of the selected probe channel.

## MINIMUM AND MAXIMUM MEMORY

The minimum temperature stored in memory is the minimum temperature measured since the last clear of min/max memory. The maximum temperature stored in memory is the maximum temperature measured since the last clear of min/max memory.

## MINIMUM AND MAXIMUM TEMPERATURE VALUES ARE NOT PROGRAMMABLE.

Minimum and maximum temperature values are stored individually for each probe channel P1 and P2. Both channels are monitored continuously regardless of the selected probe channel.

## VIEWING MIN/MAX MEMORY

- Slide the PROBE switch to select temperature probe channel to be displayed.
- Slide the DISPLAY switch to the MIN/MAX position.
- The thermometer will display the current, minimum, and maximum temperatures for the selected probe channel.
- Press the EVENT DISPLAY button to display the minimum temperature with the corresponding date and time of occurrence.
- Press the EVENT DISPLAY button a second time to display the maximum temperature with the corresponding date and time of occurrence.
- Press the EVENT DISPLAY button to return to the current temperature display.

No button press for 15 seconds while viewing the minimum or maximum event data will trigger the thermometer to return to the current temperature display.

## CLEARING THE MIN/MAX MEMORY

- Slide the PROBE switch to select the temperature probe channel to be cleared.
- Slide the DISPLAY switch to the MIN/MAX position.
- Press the CLEAR SILENCE ALM button to clear the current minimum and maximum temperature readings.

## Alarms

Alarm high and low limits can be set individually for each probe channel (P1 and P2).

## SETTING ALARM LIMITS

- Slide the switch to the ALARM position. Then slide the PROBE switch to select the probe channel for which alarms will be set.

Each digit of the alarm value is set individually:

Low Alarm Sign (Positive/Negative) -> Low Alarm Hundreds/Tens -> Low Alarm Ones -> Low Alarm Tenths -> High Alarm Sign (Positive/Negative) -> High Alarm Hundreds/Tens -> High Alarm Ones -> High Alarm Tenths.

- Press the SELECT button to enter the setting mode. The LOW ALM symbol will flash.
- Press the SELECT button to select the digit to adjust. Each subsequent press of the SELECT button will move to the next digit. Digit will flash while selected.
- Press ADVANCE button to increment the selected digit.

**Note:** The negative sign will flash if the sign is negative; no symbol will flash if the sign is positive. Press the ADVANCE button to toggle the sign while it is selected.

If no button is pressed for 15 seconds while in the setting mode, the thermometer will exit the setting mode.

Changing the position of the DISPLAY switch while in the setting mode will save the current settings.

## VIEWING THE ALARM LIMITS

- Slide the PROBE switch to select the probe channel alarm limits to be displayed.
- Slide the DISPLAY switch to the ALARM position.

## ENABLING/DISABLING ALARMS

- Slide the ALARM switch to the ON or OFF position to enable or disable the alarms.
- Alarms are enabled for both probe channels P1 and P2 while the switch is set to ON. Alarms are disabled for both probe channels P1 and P2 while the switch is set to OFF.
- The alarms cannot be configured to enable individual channels P1 or P2 only.

## ALARM EVENT HANDLING

An alarm event will trigger if the alarm is enabled and a temperature reading is recorded below the low alarm set point or above the high alarm set point.

When an alarm event triggers, the thermometer buzzer will sound, and the LED for the alarming temperature channel will flash (P1 or P2). If the alarming probe channel is selected, the LCD symbol will flash signaling which set point was breached (HI ALM or LO ALM).

An active alarm may be cleared by either pressing the CLEAR SILENCE ALM button or disabling the alarm functionality by sliding the ALARM switch to the OFF position.

Once an alarm is cleared, it will not re-trigger until after the temperature returns to within the alarm limits.

**Note:** If an alarm event is triggered and returns to within the alarm limits before being cleared, the alarm event will remain active until it is cleared.

## VIEWING ALARM EVENT MEMORY

- Slide the PROBE switch to select the probe channel alarm data to be displayed.
- Slide the DISPLAY switch to the ALARM position. The current temperature, low alarm limit, and high alarm limit will display.
- Press the EVENT DISPLAY button. The thermometer will display the alarm limit, date, and time of the most recent alarm out of range condition. The symbol ALM OUT will display to signal the date and time displayed indicate when the temperature when out of tolerance.
- Press the EVENT DISPLAY button a second time. The thermometer will display the alarm limit, date, and time of the most recent alarm event returning to within the alarm limits. The symbol ALM IN will display to signal the date and time displayed indicate when the temperature returned to within tolerance.

- Press the EVENT DISPLAY button to return to the current temperature display.

No button press for 15 seconds while viewing the alarm events will trigger the thermometer to return to the current temperature display.

**Note:** If no alarm event has occurred for the selected probe channel, the thermometer will display "LLL.LL" on each line.

## DATA LOGGING OPERATION

Thermometer will continuously log temperature readings for both probe channels into permanent memory at one-minute intervals. The total memory capacity is 1,048,576 data points. Each data point contains the temperature reading for P1, the temperature reading for P2, and the date and time of occurrence.

**Note:** All data stored in Celsius (°C) and date format is MM/DD/YYYY.

The thermometer will also store the most recent 10 alarm events. Each alarm event data point contains the probe channel which alarmed, the alarm set point that was triggered, the date and time the channel reading went out of range, and the date and time the channel reading returned to within range.

## VIEWING THE MEMORY CAPACITY

Slide the MEM VIEW switch to the ON position.

The first line will display the current percentage of memory full. The second line will display the number of days remaining before memory is full. The third line will display the logging interval (one minute).

**Note:** The MEM symbol will become active on the display when the memory is 95% full.

## SETTING THE LOGGING INTERVAL

- Slide the MEM VIEW switch to the ON position. The first line will display the current percentage of memory full. The second line will display the number of days remaining before memory is full at the current logging interval. The third line will display the current logging interval.
- To increment the logging interval, press the ADVANCE button. The minimum logging interval is one minute (0:01). The maximum logging rate is 24 hours (24:00). Once 24 hours is selected, the next subsequent press of the ADVANCE button will return to one minute.

## VIEWING UNIQUE DEVICE ID NUMBER

- Slide the MEM VIEW switch to the ON position.
- Press EVENT DISPLAY button. The second and third lines will display the first eight digits of the ID number.
- Press the EVENT DISPLAY button a second time. The second and third lines will display the last eight digits of the ID number.
- Press the EVENT DISPLAY button to return to the default display.

## DOWNLOADING STORED DATA

**Note:** The USB download will not occur if battery LCD symbol is active. Plug the supplied AC adapter into the thermometer to provide sufficient power for USB operation.

1. The data can be downloaded directly to a USB Mass Storage Flash Drive. To begin download, insert USB flash drive into USB port located on left side of thermometer.
2. The download will begin upon insert. LED P1 will turn on to indicate the download has begun. Wait up to 60 seconds for LED to turn on after insertion of the drive. Flash drives with larger amounts of data stored on the drive prior to downloading will take longer to begin the download.
3. Once download process is complete, LED P1 will turn off. Do not remove USB drive until process is complete.
4. The data transfer rate is approximately 180 data points per second.

**Note:** DO NOT leave the USB Mass Storage Flash Drive inserted into the unit. Insert, DOWNLOAD, and then remove. The device cannot continuously write to a USB.

## REVIEWING STORED DATA

The downloaded data is stored in a comma-delimited CSV file on the flash drive. The filename naming convention is "D1D2D3D4D5D6D7R1.CSV" where D1 through D7 are the last seven digits of the thermometer's unique ID number and R1 is the revision of the file starting with the letter "A".

If more than one file is written from the same thermometer to the USB flash drive, the revision letter will be incremented in order to preserve the previously downloaded files.

The data file can be opened in any software package supporting comma-delimited files including spreadsheet software (Excel) and text editors.

The file will contain the thermometer unique ID number, the most recent ten temperature events, and all stored temperature readings with date and time stamps.

**Note:** All data stored in Celsius (°C) and date format is MM/DD/YYYY.

## DISPLAY MESSAGES

If no buttons are pressed and LL.LL appears on the display, this indicates that the temperature being measured is outside of the temperature range of the unit, or that the probe is disconnected or damaged.

## BENCH STAND

The unit is supplied with a bench stand located on the back. To use the bench stand, locate the small opening at the bottom back of the unit. Place your fingernail into the opening and flip the stand out. To close the stand, simply snap it shut.

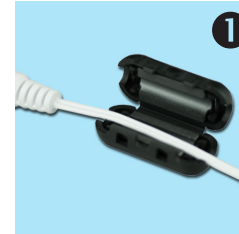
## BATTERY REPLACEMENT

To replace the battery, remove the battery cover, located on the back of the unit by sliding it down. Remove the exhausted batteries and replace with two (2) new AAA alkaline batteries. Insert the new batteries with the proper polarity as indicated by the illustration in the battery compartment. Replace the battery cover.

Replacing the batteries WILL clear the minimum/maximum memories and high/low alarm settings. However, replacing the batteries WILL NOT clear the time-of-day/date settings or stored temperature data.

## STATIC SUPPRESSOR INSTALLATION

Static generated, radio frequency can affect any cable through the air or by physical contact. To protect against radio frequency, install a suppressor onto your thermometers cable to absorb radio frequency as follows:



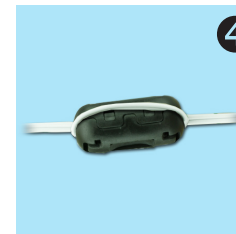
Lay the cable along the center of the suppressor with the connector to your left.



Loop the right end of the cable under the suppressor and back up again laying the cable along the center of the suppressor.



Carefully, snap the two halves together with the looped cable routed through the center.



This completes the installation of the suppressor.

# TRACEABLE<sup>®</sup> MEMORY-LOC<sup>™</sup> DATALOGGING LN2 THERMOMETER INSTRUCTIONS