



367 / 367D

Thermometer Instruction Manual



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A. INTRODUCTION

1. Congratulations!!

Thank you for purchasing TPI products. The 360 series thermometers are easy to use and built to last. They are backed by a 3 year limited warranty. Please remember to complete and return your product warranty registration card.

2. Product Description

The ergonomically designed 360 series hand-held thermometers are waterproof and offer high accuracy and reliability.

3. EC Declaration of Conformity

This is to certify that TPI 360 series thermometers conform to the protection requirements of the council directive 89/336/EEC, in the approximation of laws of the member states relating to Electromagnetic compatibility and 73/23/EEC. The Low Voltage Directive by application of the following standards:

EN 50081-1	1992 Emissions Standard
EN 50082-1	1992 Immunity Standard
EN 61010-1	1993 Safety Standard
EN 61010-2-031	1995 Safety Standard
EN 61010-2-032	1995 Safety Standard

To ensure conformity with these standard, this instrument must be operated in accordance with the instructions and specifications given in this manual.

CAUTION: Even though this instrument complies with the immunity standards, it's accuracy can be affected by strong radio emissions not covered in the above standards. Sources such as hand-held radio transceivers, radio and TV transmitters, vehicle radios and cellular phones generate electromagnetic radiation that could be induced into the test leads of this instrument. Care should be taken to avoid such situations or alternatively, check to make sure that the instrument is not being influence by these emissions.

CAUTION: Please follow manufacturers test procedures whenever possible. Do not attempt to measure unknown voltages or components until a complete understanding of the circuit is obtained.

B. SAFETY CONSIDERATIONS



WARNING: Use caution when performing measurements on temperatures above 100°F.

GENERAL GUIDELINES

ALWAYS

- Test your thermometer before using it to make sure it is operating properly.
- Inspect temperature probes before using to make sure there are no breaks or shorts.
- Double check all connections before testing.

NEVER

- Insert the probe into an electrically charged medium.
- Touch the probe tip or shaft after it has been inserted in a hot substance.

C. TECHNICAL DATA

1. Features and Benefits

Large LCD Easy to read measurement results

High Accuracy Reliable test results.

Water Proof Rugged and built to last.

Auto Off Automatically powers off after 5 minutes of inactivity.

Data Logging Record and time stamp results.
(367D Only)

2. Product Applications

Perform the following tests and/or measurements with the 360 series thermometers:

Validate the temperature of incoming food product prior to accepting deliveries.

Measure food storage temperature.

Verify cooking and storage temperature.

Confirm hot and cold holding cabinet temperatures.

Measure food reheating temperatures.

Monitor frozen food thawing temperature.

3. Specifications

Input Type	Range
Thermistor	-58°F to 302°F (-50°C to 150°C)
K-Type Thermocouple	-328°F to 1,112°F (-200°C to 600°C)
T-Type Thermocouple	-328°F to 752°F (-200°C to 400°C)

K-Type Probe Yellow Cord

T-Type Probe Blue Cord

Thermistor Probe White Cord

Accuracy $\pm(0.1\% \text{ of reading} + 0.4^{\circ}\text{F} (0.2^{\circ}\text{C}))$

Resolution $> -100^{\circ}\text{C} = 0.1^{\circ}\text{C}, \leq 100^{\circ}\text{C} = 1^{\circ}\text{C}$

IP Rating IP 67

Units of Measure °C / °F Selectable

Operating Temperature -4°F to 122°F (-20°C to 50°C)
 $-100^{\circ}\text{C} = 0.1^{\circ}\text{C}, \leq 100^{\circ}\text{C} = 1^{\circ}\text{C}$

Battery Type AA (LR6) x 2

Battery Life Up to 14,000 hours

Countdown Timer Select from 1 second to 24 hours

Real Time Clock Yes

Auto Power Off Off after 5 minutes, can be disabled

Over Temperature Alarm Yes

Field Calibration Mode Yes

Fast Update Mode Yes

Data Logging Mode 367D Only

D. Measurement Techniques

1. Controls & Functions



On / Off Key turns the 367 on for use or off (stand by mode). The clock is displayed when the instrument is off and the timer and alarm clock are accessible.



Left Arrow Key is used to select parameters when the 367 is in “menu” mode. This key is also used to activate data hold.



Menu Key is used to activate menu mode and is also used to cycle through various displays.



Right Arrow Key is used to change data, start/stop the timer and activate alarm mode.

2. Clock, Timer, & Alarm

When the 367 is off, the real time clock is displayed and the countdown timer and alarm clock functions are available. Press the MENU key to cycle through each of the displays.

Real time clock display



The clock displays in a 24 hour format (hh:mm) and can be set from the menu mode.

Press the MENU key to cycle to the next display.

Clock, Timer, & Alarm (continued)

Countdown timer display



One of the three preset countdown timers is displayed.

Pressing the LEFT ARROW key cycles through the timers. The timers can be set from the menu mode.

Pressing the RIGHT ARROW key activates the timer and the arrows on the left side of the timer will begin to scroll. Pressing the RIGHT ARROW key again stops and resets the timer.

When the countdown timer reaches 0, an alarm consisting of 3 short beeps repeating continuously will activate. Press any key to turn off the alarm and reset the timer.

Press the MENU key to cycle to the next display.

Clock, Timer, & Alarm (continued)

Alarm clock display



The alarm clock set time is displayed.

To set the alarm press the LEFT ARROW key and the minutes digits will blink. Press the RIGHT ARROW key to set the desired value. Holding the key down will increase the value rapidly.

Press the LEFT ARROW key to cycle to the hour digits. Press the RIGHT ARROW key to set the desired value. Holding the key down will increase the value rapidly.

Press the LEFT ARROW key to exit (no digits blinking) and the alarm is set.

Clock, Timer, & Alarm (continued)

To activate the alarm press the RIGHT ARROW key and an alarm bell will display next to the time.



To deactivate alarm mode, press the RIGHT ARROW key again.

When the alarm clock set time is reached the alarm will begin to sound. Press any key to turn off the alarm.

3. Performing Measurements

1. Turn the 367 on by pressing the On/Off key. The display will read “OPEN” if no probe is attached.

MENU mode can be activated to change clock, display, and data logging (367D only) settings after the 367 has been turned on.

Please see page 22. If no changes are necessary please proceed to the next step.

2. Attach a temperature probe to the input connector and use the screw collar to secure the probe to the thermometer.
3. Touch or insert the probe into the item under test. The temperature measured at the probe will display on the 367. Press the MENU key to set the sub display to clock mode. The temperature will be displayed in the main display. Please see below.



4. From the temperature / clock display the following functions can be performed.

Data Hold - Pressing the LEFT ARROW key freezes the display and “HOLD” will be displayed. Pressing the LEFT ARROW key again returns the 367 to normal operation.

Performing Measurements (continued)

Increased Update Rate - Pressing the RIGHT ARROW key increases the update rate allowing quickly changing temperatures to be measured. "F" will blink in the display while this mode is active. Please see below.



To return the update rate to normal press the RIGHT ARROW key. Note: The update rate will automatically return to normal after 5 minutes.

5. Pressing the menu key will cycle through the clock, alarm clock, timer, and data logging (367D only) functions.

367D Only - If you do not have a 367D please skip to page 20

6. Press the MENU key repeatedly until the sub display switches to logger display mode. Please see below



Performing Measurements (367D Only)

7. "L" will flash when the 367D is logging. Pressing the RIGHT ARROW key will activate and deactivate logging. The number to the right will increase each time a new measurement has been logged.

NOTE: When logging is started all previously logged data will be overwritten.

8. Pressing the LEFT ARROW key displays the current logging interval setting (See below). The logging interval can be changed in menu mode. (See appendix A)



9. Pressing the LEFT ARROW key again will cycle the 367D to the logging reserved display (see below).



Performing Measurements (367D Only)

10. Reserved logging is used to tell the 367D to log at the preset start and stop times. Pressing the RIGHT ARROW key enables (LrES yes) or disables (LrES no) reserved logging. The start and stop times can be checked as shown below.
11. Pressing the LEFT ARROW key displays the current logging start time (See below). The logging start time can be changed in menu mode. (See appendix A)



12. Pressing the LEFT ARROW key again displays the current logging stop time (See below). The logging stop time can be changed in menu mode. (See appendix A)



Performing Measurements (367D Only)

13. Press the MENU repeatedly to switch the 367D to store / recall mode (See below)



14. Press the RIGHT ARROW key to select the location to store the currently displayed measurement. Allow 1 second for data storage.
15. Pressing the RIGHT ARROW key cycles to the next storage location. There are 16 (0~15) total storage locations. Any existing data is overwritten when the storage location is selected.

Performing Measurements (367D Only)

16. Pressing the LEFT ARROW key switches the 367D to recall mode (See below).



17. Pressing the LEFT ARROW key selects the location to recall and display. Allow 1 second for data retrieval.

Performing Measurements (continued)

18. Press the MENU key to cycle the 367 to temperature / timer display mode. The temperature and one of three preset countdown timers is displayed. See below.



19. Pressing the LEFT ARROW key cycles through the timers. The timers can be set from the menu mode. Pressing the RIGHT ARROW key activates the timer and the arrows on the left side of the timer will begin to scroll. Pressing the RIGHT ARROW key again stops and resets the timer.

When the countdown timer reaches 0, an alarm consisting of 3 short beeps repeating continuously will activate. Press any key to turn off the alarm and reset the timer.

Performing Measurements (continued)

20. Pressing the MENU key cycles the sub display to the temperature / alarm clock display. See below.



To set the alarm press the LEFT ARROW key and the minutes digits will blink. Press the RIGHT ARROW key to set the desired value. Holding the key down will increase the value rapidly. Press the LEFT ARROW key to cycle to the hour digits. Press the RIGHT ARROW key to set the desired value. Holding the key down will increase the value rapidly. Press the LEFT ARROW key to exit (no digits blinking) and the alarm is set. To activate the alarm press the RIGHT ARROW key and an alarm bell will display next to the time. To deactivate alarm mode, press the RIGHT ARROW key again. When the alarm clock set time is reached the alarm will begin to sound. Press any key to turn off the alarm.

21. Pressing the MENU key cycles the 367 the temperature / clock display.

4. Menu Mode

Setting countdown timers

- 1.. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed. Pressing the MENU key repeatedly will cycle through the various menu parameters.
2. Press the menu key and countdown timer 1 will be displayed.



- a. Use the LEFT ARROW key to select hour, minute, or seconds and use the RIGHT ARROW key to set the required time. Holding down the RIGHT ARROW key will change the value rapidly.
3. When changes are complete, press and hold the MENU key to exit menu mode and return to normal operation or press the MENU key to cycle to the next timer.
 4. “tr1” will change to “tr2” and timer two can be set by performing the steps a & b above.
 5. “tr2” will change to “tr3” and timer three can be set by performing steps a & b above. Press and hold the MENU key to exit menu mode and return to normal operation or press the MENU key to cycle to the next function.

Menu Mode (continued)

Setting the clock

1. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until clock mode is displayed.



- a. Use the LEFT ARROW key to select hour, minute, or seconds and use the RIGHT ARROW key to set the required time. Holding down the RIGHT ARROW key will change the value rapidly.
3. When changes are complete, press and hold the MENU key to exit menu mode and return to normal operation or press the MENU key to cycle to the function.

Menu Mode (continued)

Field calibration

1. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until field calibration mode is displayed (see display below). TO USE FIELD CALIBRATION AN ICE BATH IS REQUIRED.



3. Insert the temperature probe into the ice bath. The measured temperature is displayed. Allow the thermometer to completely stabilize (approximately 5 minutes) and then press the LEFT ARROW key.
4. Calibration is complete.

Menu Mode (continued)

Auto power off

The auto power off function conserves battery life by turning the 367 off after 5 minutes of inactivity. To disable or enable this function perform the following steps.

If menu mode is active skip to step 2.

1. Press the menu key repeatedly until auto power off mode is displayed (see display below).



2. Press the RIGHT ARROW key to activate (yes) or deactivate (no) auto power off mode.

Menu Mode (continued)

Over/Under temperature alarm

The over/under alarm can be used to alert you when the measured temperature is above or below a set point. This mode is used with the gap setting. (See next page)

1. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until over temperature alarm mode is displayed (see display below).



3. Press the RIGHT ARROW key to activate (Lt-yes) or deactivate (Lt-no) the over temperature alarm.
4. To increase the alarm point press the LEFT ARROW key until Lt-up is displayed. Press the RIGHT ARROW key to increase the displayed value. Holding the RIGHT ARROW key down increases the display rapidly.
5. To decrease the alarm point press the LEFT ARROW key until Lt-dn is displayed. Press the RIGHT ARROW key to decrease the displayed value. Holding the RIGHT ARROW key down decreases the display rapidly. After the desired alarm point is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

Menu Mode (continued)

Over/Under temperature alarm gap

The over/under temperature alarm gap lets the 367D know how much over or under the set point the temperature must be for the alarm to sound. For example, if the set point is 160°F and the gap is 4°F, the alarm will sound if the temperature goes above 164°F or under 156°F.

1. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until over temperature alarm mode gap is displayed (see display below).



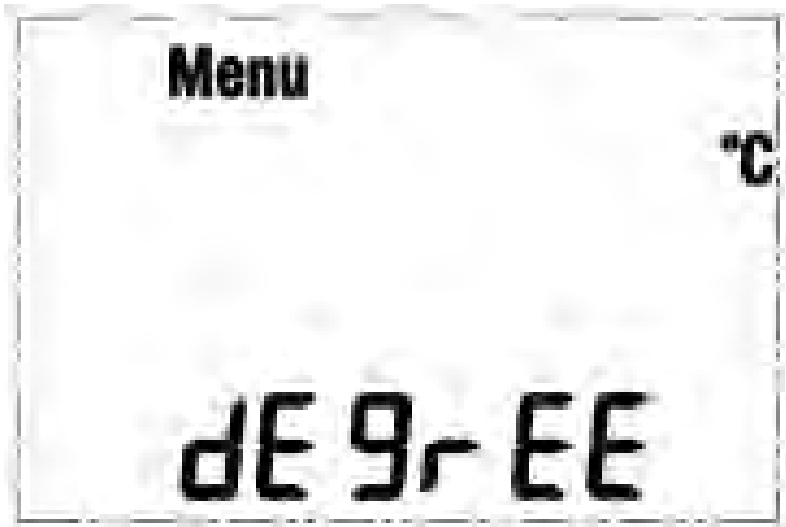
3. Gap mode sets how far away from the alarm set point the temperature must be before the alarm sounds.
4. To increase the gap point press the LEFT ARROW key until GAP-uP is displayed. Press the RIGHT ARROW key to increase the displayed value. Holding the RIGHT ARROW key down increases the display rapidly.
5. To decrease the alarm point press the LEFT ARROW key until GAP-dn is displayed. Press the RIGHT ARROW key to decrease the displayed value. Holding the RIGHT ARROW key down decreases the display rapidly.
6. After the desired gap is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

Menu Mode (continued)

Unit of measure

If menu mode is active skip to step 2.

1. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until unit of measurement mode is displayed (see display below).



3. Press the RIGHT ARROW key to switch between Celsius and Fahrenheit unit of measurement.
4. After the desired unit of measure is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

Menu Mode (continued)

Probe type select

The 367 will automatically detect the type of probe connected. To manually select the type of probe follow the steps below.

If menu mode is active skip to step 2.

1. To activate menu mode, press and hold down the MENU key until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until probe type selection mode is displayed (see display below).



3. To manually select the type of probe being used press the LEFT ARROW key to switch the main display to SEL. Press the RIGHT ARROW key to select between “K” and “T” type thermocouple input.
4. To return the 367 to auto select press the LEFT ARROW key until Auto is displayed.
5. After the desired probe type is selected press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

E. Logging Parameters (367D Only)

1. To change the logging interval, press and hold the MENU key down to activate menu mode until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until logger interval mode is displayed. See below.



3. To set the interval press the RIGHT ARROW key to set the desired value in seconds. Holding the key down will increase the value rapidly. Press the LEFT ARROW key and the minutes digits will blink. Press the RIGHT ARROW key to set the desired value. Press the LEFT ARROW key to cycle to the hour digits. Press the RIGHT ARROW key to set the desired value.
4. After the desired interval is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

Logging Parameters 367D Only (continued)

1. To change the logging start time, press and hold the MENU key down to activate menu mode until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until logger start time mode is displayed. See below.



3. To set the start time press the RIGHT ARROW key to set the desired value in seconds. Holding the key down will increase the value rapidly. Press the LEFT ARROW key and the minutes digits will blink. Press the RIGHT ARROW key to set the desired value. Press the LEFT ARROW key to cycle to the hour digits. Press the RIGHT ARROW key to set the desired value.
4. After the desired start time is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

Logging Parameters 367D Only (continued)

1. To change the logging stop time, press and hold the MENU key down to activate menu mode until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until logger start time mode is displayed. See below.



3. To set the stop time press the RIGHT ARROW key to set the desired value in seconds. Holding the key down will increase the value rapidly. Press the LEFT ARROW key and the minutes digits will blink. Press the RIGHT ARROW key to set the desired value. Press the LEFT ARROW key to cycle to the hour digits. Press the RIGHT ARROW key to set the desired value.
4. After the desired stop time is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

Logging Parameters 367D Only (continued)

1. To enable (reserve) the logging function to begin at the specified start time, press and hold the MENU key down to activate menu mode until the 367 beeps and “EDIT” is displayed.
2. Press the menu key repeatedly until logger reserve mode is displayed. See below.



3. Pressing the RIGHT ARROW key enables (LrES yes) or disables (LrES no) reserved logging.
4. After the desired reserved mode is set press the MENU key to go to the next selection or press and hold the MENU key to exit menu mode.

F. Retrieving Logged Data (367D Only)

1. Install the 367D PC interface software on the computer.
2. Attach the 367D interface dock to the 367D and connect the USB cable from the dock to the PC.
3. The 367D interface software will automatically detect the 367D and begin communication.
4. Through the software all data logged can be retrieved.

G. Optional Accessories

<u>Part #</u>	<u>Description</u>
A365	Belt clip holder
A367	USB docking station / belt clip, cable, software (367D only)
GT13L	Bead type probe (food and non-food applications)
GT19L	Bead type probe with oven clamp
CT11L	Surface temperature measurements
FT11L	Penetration / Immersion measurements

H. Troubleshooting and Maintenance

Troubleshooting

Problem

Probable Causes

Does not power up

- Dead or defective battery
- Broken wire from battery snap to PCB

Temperature reads high

- Very weak battery that will not turn on the low battery indicator on the LCD

Only reads OPEN

- Temperature probe not connected
- Temperature probe defective

Maintenance

- 1. Battery Replacement:** The 367 will display a battery symbol when the internal 1.5 Volt batteries needs replacement.
 - a. Disconnect the temperature probe.
 - b. Loosen the 4 battery cover screws located on the back cover.
 - c. Remove the battery cover.
 - d. Remove old batteries and replace with new batteries. Observe the correct polarity.
 - e. Reassemble the instrument in reverse order from above.
- 2. Cleaning your 367:**

Use a mild detergent and slightly damp cloth to clean the surfaces of the 367.

367 / 367D SPECIFICATIONS (PARTIAL LIST)

Input Type	Range
Thermistor	-58°F to 302°F (-50°C to 150°C)
K-Type Thermocouple	-328°F to 1,112°F (-200°C to 600°C)
T-Type Thermocouple	-328°F to 752°F (-200°C to 400°C)

Accuracy +/- (0.1% of reading + 0.4°F (0.2°C))

Resolution > -100°C = 0.1°C, ≤ 100°C = 1°C

IP Rating IP 67

Units of Measure °C / °F Selectable

Operating Temperature -4°F to 122°F (-20°C to 50°C)

Battery Type AA (LR6) x 2 -100°C = 0.1°C, ≤ 100°C = 1°C

Battery Life Up to 14,000 hours

Countdown Timer Select from 1 second to 24 hours

Real Time Clock Yes

Auto Power Off Off after 5 minutes, can be disabled

Over Temperature Alarm Yes

Field Calibration Mode Yes

Fast Update Mode Yes

Data Logging Mode 367D Only

