TC-25+ TEMPCHECK

Rapid Response Thermometer

OPERATING INSTRUCTIONS MANUAL

HAMPSHIRE CONTROLS

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1. SAFETY WARNINGS

Please read this manual in its entirety before beginning installation.

The TC-25+ TEMPCHECK Rapid Response Thermometer must be installed, and periodically tested, according to Hampshire Controls' instructions, by qualified personnel, in compliance with local, national, or regional regulations. The TC-25+ TEMPCHECK Rapid Response Thermometer will not operate correctly if it is not properly installed.

Do not modify or change system components. Using this equipment in a manner other than expressly intended may cause injury and/or void the warranty. Hampshire Controls shall not be liable for any incidental or consequential damages. The user assumes all risk and liability associated with the end use of this product.

2. Unpacking Information

The TC-25+ TEMPCHECK Rapid Response Thermometer is shipped in a single custom box. Please confirm that the box contains the following:

- ❑ **TC-25+ TEMPCHECK Rapid Response Thermometer**

- ❑ **Power Adapter:**
  - **Input:** 100-240 VAC, 50-60 Hz, <0.35 A (RMS)
  - **Output:** 12 VDC, 1 A, 12 W
  - 6' (2m) cord

- ❑ This **TC-25+ TEMPCHECK Rapid Response Thermometer Operating Instructions Manual** along with the **TC-25+ TEMPCHECK NIST-Traceable Certificate of Calibration** in a 9" x 12" 2 mil re-closable plastic bag.

3. Introduction

Hampshire Controls' TC-25+ TEMPCHECK incorporates a thermocouple in a specially designed insulated pad to provide prompt and accurate temperature response. The TC-25+ TEMPCHECK has been developed to assist laboratory and clinical personnel in the rapid determination of the temperature of bags of whole blood, red blood cells, platelets, fresh frozen plasma, cryoprecipitate and other bagged biological products. Non-invasive, accurate temperature readings are available in seconds.

In addition to rapid, accurate temperature readout, the TC-25+ TEMPCHECK provides three additional beneficial modes of operation with audio and/or LED visual temperature indications and alarms: **Manual+**, **Go/No-Go**, and **Monitor**. **Manual+** mode provides visual LED warnings if the temperature of the bagged biological product is out of range, **Go/No-Go** mode determines temperature of a single bag of biological product and provides the user with audio and visual warnings if the temperature is outside of the target temperature range, and **Monitor** mode monitors the temperature of one bag in a batch of bags (*e.g.,* 20 to 30 bags) of biological product and provides the user with audio and visual warnings if the temperature of the sample bag drifts outside of the user-specified temperature range in the time it takes to label, package, or otherwise process the full batch of bags.

The TC-25+ TEMPCHECK allows for multiple sets of user-programmable low- and high-temperature alarm setpoints for various types of bagged biological products (*e.g.,* **Whole Blood**, red blood cells (**RBC**), **Platelets**, fresh frozen plasma – storage (**FFP-S**), FFP - thawed (**FFP-T**), and cryoprecipitate (**Cryo**)). These alarm setpoints are stored in non-volatile memory and are maintained when power is lost. The TC-25+ TEMPCHECK also includes a USB Type-A connection for standard healthcare barcode scanners; a second USB Type-B connector for the output of barcode, temperature, and date-timestamp; and an SD card slot for the recording of barcode, temperature, and date-timestamp.

The TC-25+ TEMPCHECK uses a standard wall plug-in power supply with 12 VDC, 1 A output, and incorporates built-in rechargeable battery backup for limited portable operation[1] and for continued use during a power outage.

The TC-25+ TEMPCHECK Rapid Response Thermometer is simple to operate. In **Manual** and **Manual+** modes, place the bag of biological product on the thermocouple sensing pad and the temperature of the product bag will be displayed within seconds. In **Go/No-Go** and **Monitor** modes, the TC-25+ TEMPCHECK will continue to accurately monitor the temperature of the bag of biological product until the temperature monitoring processes described herein are complete.

3.1. TC-25 & TC-25+ TEMPCHECK Features

- ❑ Rapid temperature response time: 15 – 30 seconds.
- ❑ Temperature sensor range: 0.0 to 40.0 °C.
- ❑ Temperature accuracy: ±0.20 °C across the entire temperature range.[2]
- ❑ User selectable temperature scale: °C (default) or °F.
- ❑ Temperature display resolution: 0.1 °.
- ❑ Angled, high resolution, easy-to-read graphical backlit liquid crystal temperature display (LCD).
- ❑ **Manual** mode displays the temperature of the bagged biological product in ~15 seconds.
- ❑ Battery backup: greater than 7.5-hour life in active use on a fully charged LiPo battery.
- ❑ NIST-traceable Certificate of Calibration.
- ❑ CAP TRM42470 compliant.
- ❑ EU Declaration of Conformity.

3.2. Unique TC-25+ TEMPCHECK Features

- ❑ **Manual+** mode senses the temperature of the bagged biological product and provides LED visual indications of temperatures above the high alarm setpoint or below the low alarm setpoint for the user-specified bagged biological product type.
- ❑ **Go/No-Go** mode automatically senses the temperature of the bagged biological product and provides audio and visual alarms if the temperature stabilizes above the high alarm setpoint or below the low alarm setpoint for the user-specified bagged biological product type.
- ❑ **Monitor** mode monitors the temperature of one bag of a batch of bags (*e.g.* 20 to 30 bags) of biological product. The temperature of the sample bag will normally stabilize within the target

[1] Battery backup does not power the USB barcode scanner.

[2] Temperature accuracy: ±0.70 °C at power up. Accuracy improves to ±0.20 °C after 2 minutes of running time.

range (below the high alarm setpoint and above the low alarm setpoint). The TC-25+ TEMPCHECK will continue to monitor the sample bag while the remaining bags in the batch are labeled, packaged, or otherwise processed. If the temperature of the sample bag drifts out of range (above the high alarm setpoint or below the low alarm setpoint) during the batch processing period, then the TC-25+ TEMPCHECK will provide audio and visual alarms to alert the technician that the batch of bagged biological product must be returned to storage at the proper temperature immediately.

- Includes 8 sets of user-programmable low and high alarm temperature setpoints for **Manual+**, **Go/No-Go** and **Monitor** modes. The 8 sets of alarm setpoints are labelled **Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo** (for the commonly available blood products) and **Other1** and **Other2** (for other bagged biological products).
- USB Type-A input from healthcare barcode scanners.
- USB Type-B port for the serial output of date-timestamp/temperature or barcode/date-timestamp /temperature.
- SD card slot for the recording of date-timestamp/temperature or barcode/date-timestamp/ temperature.

3.3. TC-25 & TC-25+ Specifications

TC25 & TC-25+ TEMPCHECK

Temperature Response Time	15 – 30 seconds
Type K Thermocouple Range	0.0 ºC to 40.0 ºC (factory calibration guaranteed for 1 year)
Accuracy	±0.70 °C upon power up. ±0.20 ºC after 2 minutes of running time.
Resolution	0.1 °
Power Adapter	
Input (Fluctuation)	100-240 VAC (fluctuation <150 mV peak-to-peak), 50-60 Hz, <0.35 A RMS @ 115 VAC
Output	12 VDC, 1 A, 12 W
LiPo Battery Backup	>7.5 hours active use on a fully charged LiPo battery.
Size, Material, & Weight	15.2 cm (w) by 5.2 cm (h) by 23.1 cm (d), 6.0" (w) by 2.1" (h) by 9.1" (d), ABS plastic, 466 g (1.0 lb.)
Environmental Conditions	
Facilities	Intended for indoor (laboratory) use
Altitude	Up to 2,000 meters (6,600')
Ambient Temperature Range	15 ºC to 32 ºC (59 °F to 90 °F)
Maximum Relative Humidity	60% (15 ºC to 32 ºC)
Ventilation	Compliance with ANSI/ASSP Z9.5-2022 recommended.
Pollution Degree	POLLUTION DEGREE 2: only non-conductive pollution occurs.

4. Installation

NOTE: The TC-25+ TEMPCHECK Rapid Response Thermometer must be installed according to Hampshire Controls' instructions, by qualified personnel, in compliance with local, national, or regional regulations.

NOTE: DO NOT USE AN IMPROPERLY RATED POWER ADAPTER. The TC-25+ TEMPCHECK power adapter is compatible with 100-240 VAC, 50-60 Hz, <0.35 A RMS input and outputs 12 VDC, 1 A, 12 W.

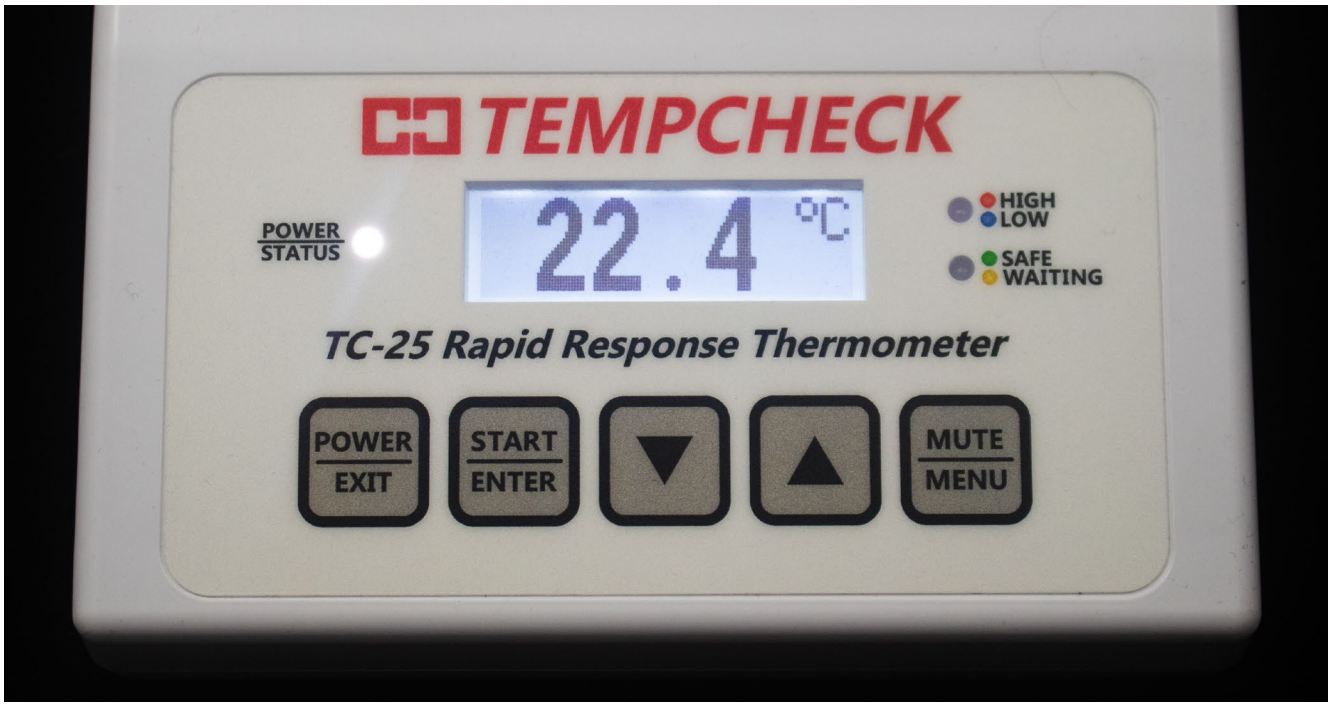


Figure 1. TC-25 & TC-25+ TEMPCHECK LCD, Indicator LEDs, and Controls.

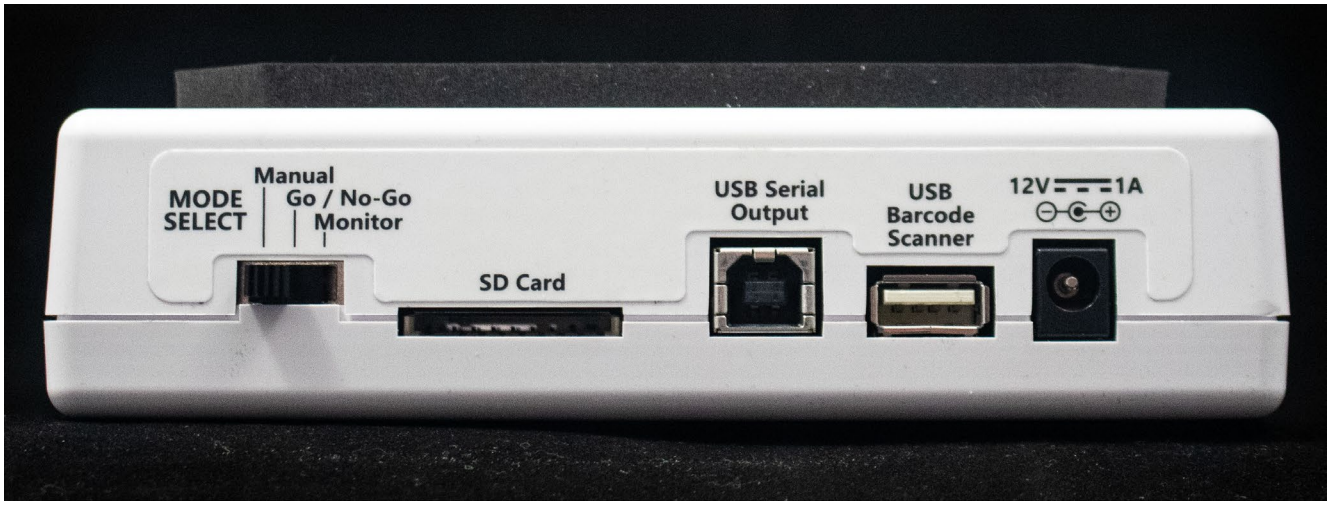
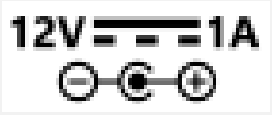


Figure 2. TC-25+ TEMPCHECK Back Panel, Mode Switch and Interconnections.

4.1. Interconnections

Table 1. TC-25+ TEMPCHECK Mode Switch and Interconnections.

TC-25+ LABEL	DESCRIPTION
MODE SELECT	3-way switch. Selects TC-25+ TEMPCHECK operating mode: **Manual** (or **Manual+**), **Go/No-Go**, or **Monitor**
SD Card	SD card slot for data logging and firmware updates (P/N 37317, 16 GByte SD Memory Card)
USB Serial Output	USB Type-B for serial data output to PC. Requires USB Type-B to USB Type-A cable (P/N 33078, 6' (2m) cable).
USB Barcode Scanner	USB Type-A for barcode scanner input only.
	Power input jack, 5.5 mm x 2.1 mm, 12VDC 1A (12 W), center positive. Power supply with 6' (2m) cord (P/N 29051).

4.2. Apply Power

Place the TC-25+ TEMPCHECK Rapid Response Thermometer at a flat, secure, stable location. Plug the included power supply into an appropriate electrical receptacle,[3] then insert the power supply connector into the TC-25+ TEMPCHECK Rapid Response power jack. Press and hold the **POWER/EXIT** button until the LEDs blink, then release the **POWER/EXIT** button. At this point, the temperature will be displayed on the LCD.

4.3. Operational Check

Upon power up, the following are the visual indications that the TC-25+ TEMPCHECK is properly powered and functioning as expected:

- **POWER/STATUS** LED: steady white.
- LCD screen: reading approximately room temperature.

If the **POWER/STATUS** LED is off, blinking, or pulsing, confirm that the power supply is properly plugged into the line power outlet and the TC-25+ TEMPCHECK power jack.

4.4. Bagged Biological Product Temperature Check

Place the product bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the insulated pad. The TC-25+ TEMPCHECK temperature display should stabilize at the temperature of the product bag in 15 to 30 seconds.

Please note the following potential temperature accuracy issues:

1. The product bag labels should be facing upward. If there are labels on the backside of the product bag, then peel enough of the label away from the center so that the product bag

[3] Outside of North America, connect the appropriate adapter (included) to the power supply before plugging it in to the receptacle.

plastic sits directly on the circular black sensor. Only the plastic product bag should contact the TC-25+ TEMPCHECK circular black sensor, and no part of the label should sit on the sensor. Product bag labels act as a thermal insulator and if they contact the sensor, then the TC-25+ TEMPCHECK will either be slow in displaying or will be completely unable to display an accurate temperature reading.

2. The TC-25+ TEMPCHECK is not intended for frozen product bags (<0 °C, <32 °F). Hard, frozen product bags can damage the TC-25+ TEMPCHECK sensor. In addition, melting frost and condensation on the product bag will often result in erroneously high temperature readings.
3. If the product is fresh frozen plasma thawed (**FFP-T**) in a water bath, then the product bag must be thoroughly dried. **FFP-T** thawed in a microwave plasma defroster can be placed directly on the TC-25+ TEMPCHECK sensor.

4.5. Temperature Calibration Confirmation

To perform a simple temperature calibration confirmation at 0.0 °C (32.0 °F), use a well agitated plastic bag filled with distilled water and ice cubes or chips made with distilled water. Place the bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the insulated pad. Continually agitate the bag by rolling it around so that the ice and distilled water remain well mixed, keeping the temperature near 0.0 °C. The TC-25+ TEMPCHECK temperature display should fall to between -0.2 °C (31.6 °F) and +0.2 °C (32.4 °F) in less than 30 seconds.

If the TC-25+ TEMPCHECK is out of calibration, then it can be returned to Hampshire Controls for recalibration and recertification. At a minimum, Hampshire Controls recommends semiannual TC-25+ TEMPCHECK temperature calibration checks. The NIST-Traceable Certificate of Calibration included with the TC-25+ TEMPCHECK expires one year after the date of shipment from the Hampshire Controls' factory, and Hampshire Controls suggests annual recertification for critical temperature verification applications.

5. Quick Start Guide

The first step for TC-25+ TEMPCHECK **Manual+**, **Go/No-Go**, and **Monitor** modes is to set the bagged biological product type. If the TC-25+ TEMPCHECK is always, or nearly always, to be used with a single type of bagged biological product, then set the **Product Select** setting to that type (**Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo**, **Other1**, or **Other2 -** see **9.2.1 Product Select ("Prod. Select")**). Conversely, if the TC-25+ TEMPCHECK is routinely used on different types of bagged biological products, then set the **Product Select** setting to ***Select***. When the **Product Select** is set to ***Select***, then the first step in the **Manual+**, **Go/No-Go**, and **Monitor** processes will be to use the **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to set the bagged biological product type for the new run (see **9.2.1.1 Product Select Set to *Select***).

Table 2. Quick Instructions for TC-25+ TEMPCHECK Operating Modes

3-Way Mode Switch/Mode	*Instructions*	*Audio/ Visual Alarms*
Manual		
Manual	1. Place the product bag on temperature sensor. 2. Wait for temperature to stabilize (15 – 30 seconds).	None
Manual+	1. If **Prod. Select** is ***Select***, then use **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to set product type. 2. Place the product bag on temperature sensor. 3. Press **START/ENTER** or scan barcode. 4. Wait for temperature to stabilize (15 – 30 seconds). 5. Press **START/ENTER** to write/record time & temperature. The TC-25+ TEMPCHECK will remain in **Manual+** mode until the **POWER/EXIT** button is pressed.	Visual (LED) Only
Go/No-Go	1. If **Prod. Select** is ***Select***, then use **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to set product type. 2. Place the product bag on temperature sensor. 3. If enabled, scan barcode OR press **START/ENTER** to launch **Go/No-Go** mode. 4. Wait for temperature to stabilize (15 – 30 seconds). Audio and visual indicators will provide temperature status (**Go** or **No-Go**). 5. Remove product bag from temperature sensor. **Go/No-Go** mode will either automatically terminate or press **POWER/EXIT** to manually terminate.	Audio & Visual (LED)
Monitor	1. If **Prod. Select** is ***Select***, then use **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to set product type. 2. Place the product bag on temperature sensor. 3. If enabled, scan barcode OR press **START/ENTER** to launch **Monitor** mode. 4. Temperature will stabilize in 15 – 30 seconds, and audio/visual indicators will provide temperature status (typically in range – **SAFE/WAITING** LED blinking green). 5. TC-25+ TEMPCHECK will continue to monitor temperature while the batch of bags is packaged, labeled, or otherwise processed. Audio and visual alarms will be generated if temperature drifts out of range. 6. When the batch of bags has been processed, press **POWER/EXIT** to terminate **Monitor** mode.	Audio & Visual (LED)

Table 3. TC-25+ TEMPCHECK Button Controls Function Guide.

PRESS BUTTON	FOR THIS ACTION
POWER/EXIT	• In PROGRAMMING mode, returns to the next higher menu level. • In PROGRAMMING mode at the root menu, returns the TC-25+ to the OPERATING mode set by the 3-way switch (**Manual**, **Go/No-Go**, or **Monitor**). • Press to terminate **Manual+**, **Go/No-Go**, and **Monitor** modes.
POWER/EXIT (LONG PRESS)	• Powers up the TC-25+ TEMPCHECK when it is powered down. Hold the **POWER/EXIT** button until the LEDs blink, then release the button. • Manual power down of the TC-25+ TEMPCHECK. Hold the **POWER/EXIT** button until 3 beeps sound, then release.
START/ENTER	• In **Manual+** mode, if either the **USB-B Serial** or **SD Card** recording are enabled, outputs the TC-25+ TEMPCHECK temperature and a date-timestamp to the **SD Card** and/or the **USB-B Serial** port. • Press to start the **Manual+**, **Go/No-Go** and **Monitor** processes. • In PROGRAMMING mode, descends into the displayed menu.
▼	• In PROGRAMMING mode, adjusts the parameter down by one increment.
▼ **(LONG PRESS)**	• In PROGRAMMING mode, either repeats the downward increment or adjusts the displayed parameter downward by larger increments. • On the TC-25+ TEMPCHECK in **Manual+**, **Go/No-Go**, and **Monitor** modes, displays the selected bagged biological product type (“**Whole Blood**”, “**RBC**”, *etc.*) and associated low temperature alarm limit until the button is released.
▲	• In PROGRAMMING mode, adjusts the parameter up by one increment.
▲ **(LONG PRESS)**	• In PROGRAMMING mode, either repeats the upward increment or adjusts the displayed parameter upward by larger increments. • On the TC-25+ TEMPCHECK in **Manual+**, **Go/No-Go**, and **Monitor** modes, displays the selected bagged biological product type (“**Whole Blood**”, “**RBC**”, *etc.*) and associated high temperature alarm limit until the button is released.
MUTE/MENU	• In **Go/No-Go** and **Monitor** modes, silences, or sets to chirp, the audio alarm. • On the TC-25+ TEMPCHECK, when the mode (**Manual+**, **Go/No-Go**, or **Monitor**) is inactive and **Prod. Select** is set to ***Select***, repeatedly pressing **MUTE/MENU** allows selection of the bagged biological product type (**Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo**, **Other1**, or **Other2**) and the associated low and high temperature alarm limits. • In PROGRAMMING mode, cycles through the options of the currently displayed menu. For example, at the “**Prod. Select**” menu, pressing **MUTE/MENU** repeatedly will cycle through the bagged biological product options (“**Whole Blood**”, “**RBC**”, “**Platelets**”, “**FFP-S**”, “**FFP-T**”, “**Cryo**”, “**Other1**”, “**Other2**”, and “***Select***”).
MUTE/MENU (LONG PRESS)	• Places the TC-25+ TEMPCHECK into PROGRAMMING mode, displaying the first root menu item (“**Time & Date**”).

6. Operating Modes

The TC-25+ TEMPCHECK features four operating modes: **Manual**, **Manual+**, **Go/No-Go**, and **Monitor**. **Manual** mode simply displays the temperature of the product bag with no temperature range checking or audio/visual alarms. **Manual+** mode senses the temperature of the bagged biological product and provides LED visual indications of the temperature relative to the user-specified range. **Go/No-Go** mode automatically senses the temperature of the product bag and provides audio and visual alarms if the temperature stabilizes outside the specified range for the bagged biological product type. **Monitor** mode continuously monitors the temperature of one sample bag in a batch of product bags (*e.g.* 20 to 30 bags) while the remaining bags in the batch are labeled, packaged, or otherwise processed. If the temperature of the sample bag drifts outside of the target range (above the high alarm or below the low alarm temperature setpoints for the product type), then the TC-25+ TEMPCHECK will provide audio and visual alarms to alert the technician. These alarms will inform the technician that the batch of product bags must be immediately returned to storage at the proper temperature. The TC-25+ TEMPCHECK includes a 3-way **MODE SELECT** switch on the back panel with settings **Manual**, **Go/No-Go**, and **Monitor** (see Figure 2). Adjust this switch to the appropriate setting for the mode of interest (**Manual** for **Manual+** mode).

6.1. Manual Mode

The procedure for rapid, accurate determination of the temperature of bagged biological products by visual observation is as follows:

1. Confirm that the 3-way switch on the back panel of the TC-25+ TEMPCHECK is set to **Manual**.
2. If the TC-25+ TEMPCHECK is powered down, activate the TC-25+ TEMPCHECK by pressing and holding the **POWER/EXIT** button until the LEDs blink, and then releasing the button.
3. Place the product bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the pad. Observe the rapid response thermometer display until the temperature stabilizes to within ±0.1 °C (±0.2 °F) for at least 3 seconds. The TC-25+ TEMPCHECK temperature display should stabilize at the temperature of the product bag within 15 to 30 seconds.

6.2. Manual+ Mode

This procedure is for the continuous display of temperature with **HIGH/LOW** and **SAFE/WAITING** LED indications relative to the selected bagged biological product type (see **9.2.1 Product Select ("Prod. Select")** - **Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cyro**, **Other1**, or **Other2**) low and high temperature alarm setpoints (see Table 7). To activate this mode, set the **Manual+ Mode** parameter to **Enabled** (see **9.4.3 Manual+ Mode**).

The **Manual+** procedure is as follows:

1. Confirm that the 3-way switch on the back panel of the TC-25+ TEMPCHECK is set to **Manual**.
2. If the TC-25+ TEMPCHECK is powered down, activate the TC-25+ TEMPCHECK by pressing and holding the **POWER/EXIT** button until the LEDs blink and then releasing the button.
3. If **9.2.1 Product Select ("Prod. Select")** is set to ***Select***, then use the **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to select the desired product type (see **9.2.1.1 Product Select Set to *Select***: **Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo**, **Other1**, or

Other2) and the associated low and high alarm temperature setpoints. Otherwise, the currently selected product type and the associated low or high alarm temperature setpoints may be displayed at any time by pressing and holding the ▼ (low alarm) or ▲ (high alarm) buttons. If you wish to run **Manual+** mode with a different bagged biological product type, then use the procedure detailed in **9.2.1 Product Select ("Prod. Select")**.

4. Place the product bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the pad.
5. If you have a **Barcode** scanner (see **7.1 Barcode Scanner**), the TC-25+ TEMPCHECK is operating on line power (not battery), and you wish to record the temperature of the product bag with the barcode either to the **SD Card** (see **7.2 SD Card Recording**) or the **USB-B Serial** port (see **7.3 USB-B Serial Output**), then scan the product bag's barcode now and the **Manual+** procedure will start. If you do not have an active **Barcode** scanner, then press the **START/ENTER** button to start the **Manual+** mode.
6. The TC-25+ TEMPCHECK temperature will start at room temperature, typically between 20 °C and 22 °C. While the temperature is in flux trending toward the temperature of the product bag, either the **HIGH/LOW** LED or the **SAFE/WAITING** LED will provide indications of temperature status. If the temperature is above the high alarm setpoint, then the **HIGH/LOW** LED will be blinking red. If the temperature is below the low alarm setpoint, then the **HIGH/LOW** LED will be blinking blue, and if the temperature is in the range between the high alarm and low alarm setpoints, then the **SAFE/WAITING** LED will be blinking green.
7. Fifteen (15) to 30 seconds after the product bag is placed on the TC-25+ TEMPCHECK, the temperature readout will stabilize (changing at rate of <0.1 °C per second). When the temperature stabilizes, the **HIGH/LOW** and **SAFE/WAITING** LEDs will display the temperature status of the product bag as detailed in Table 4 below. A solid green **SAFE/WAITING** LED indicates that the product bag temperature is in range (below the high alarm setpoint and above the low alarm setpoint). Solid red **HIGH/LOW** LED (temperature above the high alarm setpoint) or solid blue **HIGH/LOW** LED (temperature below the low alarm setpoint) indicate that the product bag temperature is out of range.
8. The current temperature may be output to the **SD Card** (see **7.2 SD Card Recording**) and/or the **USB-B Serial** port (see **7.3 USB-B Serial Output**) at any time by pressing the **START/ENTER** button.
9. **Manual+** mode does not terminate until the **POWER/EXIT** button is selected, so the user can simply replace the bagged biological product on the TC-25+ TEMPCHECK platform with another bag of the selected product type, and the **HIGH/LOW** and **SAFE/WAITING** LEDs will then show the temperature status of the new bag.
10. After determining the temperature status of all product bags of interest, press the **POWER/EXIT** button to exit **Manual+** mode.

6.3. Go/No-Go Mode

Go/No-Go mode determines the temperature of a single bag of biological product and provides the user with audio and visual alarms if the temperature is outside of the target temperature range. Table 4 details the **Go/No-Go** mode audio and visual warnings and alarms versus the temperature of the product bag. Figure 3 is a graphical representation of **Go/No-Go** mode for bagged biological products with high alarm setpoints below 13.0 °C. For these products, **Auto Go-NoGo** may be set to **Enable** (see **9.4.2 Auto Go-NoGo**). Figure 4 is a graphical representation of **Go/No-Go** mode for bagged biological products with high alarm setpoints above 13.0 °C. For these products, the user must hit the **POWER/EXIT** button to terminate the **Go/No-Go** process.

Table 4. HIGH/LOW LED, SAFE/WAITING LED (Manual+ and Go/No-Go Modes), Audio Alarm (Go/No-Go Mode) Status Versus Temperature.

	TEMPERATURE IN FLUX		TEMPERATURE STABILIZED			
TEMPERATURE (T)	**HIGH/ LOW LED**	**SAFE/ WAITING LED**	**HIGH/ LOW LED**	**SAFE/ WAITING LED**	**AUDIO ALARM**	**GO/ NO GO**
T > HIGH ALARM	BLINKING RED	OFF	SOLID RED	OFF	ON	NO GO
LOW ALARM < T < HIGH ALARM	OFF	BLINKING GREEN	OFF	SOLID GREEN	3 BEEPS	GO
T < LOW ALARM	BLINKING BLUE	OFF	SOLID BLUE	OFF	ON	NO GO

The **Go/No-Go** procedure is as follows:

1. Confirm that the 3-way switch on the back panel of the TC-25+ TEMPCHECK is set to **Go/No-Go**.
2. If the TC-25+ TEMPCHECK is powered down, activate the TC-25+ TEMPCHECK by pressing and holding the **POWER/EXIT** button until the LEDs blink and then releasing the button.
3. If **9.2.1 Product Select ("Prod. Select")** is set to ***Select***, then use the **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to select the desired product type (see **9.2.1.1 Product Select Set to *Select***: **Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo**, **Other1**, or **Other2**) and the associated low and high alarm temperature setpoints. Otherwise, the currently selected product type and the associated low or high alarm temperature setpoints may be displayed at any time by pressing and holding the ▼ (low alarm) or ▲ (high alarm) buttons. If you wish to run **Go/No-Go** mode with a different bagged biological product type, then use the procedure detailed in **9.2.1 Product Select ("Prod. Select")**.
4. Place the product bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the pad.
5. If you have a **Barcode** scanner (see **7.1 Barcode Scanner**), the TC-25+ TEMPCHECK is operating on line power (not battery), and you wish to record the final temperature of the product bag with the barcode either to the **SD Card** (see **7.2 SD Card Recording**) or the **USB-B Serial** port (see **7.3 USB-B Serial Output**), then scan the product bag's barcode now and the **Go/No-Go** procedure will start. If you do not have an active **Barcode** scanner, press the **START/ENTER** button to start the **Go/No-Go** process.
6. The TC-25+ TEMPCHECK temperature will start at room temperature, typically between 20 °C and 22 °C, with the **SAFE/WAITING** LED blinking yellow. The temperature will begin to drift toward the temperature of the product bag immediately. While the TC-25+ TEMPCHECK display temperature is changing, the **HIGH/LOW** and **SAFE/WAITING** LEDs will display the temperature status of the product bag as detailed in Table 4.
7. Fifteen (15) to 30 seconds after the product bag is placed on the TC-25+ TEMPCHECK, the temperature readout will stabilize (changing at rate of <0.1 °C per second). When the temperature stabilizes, the **HIGH/LOW** and **SAFE/WAITING** LEDs will display the temperature status of the product bag as detailed in Table 4. A solid green **SAFE/WAITING** LED and 3 quick beeps on the audio alarm indicate that the product bag temperature is in range (below the high alarm setpoint and above the low alarm setpoint):

GO. Solid red **HIGH/LOW** LED (temperature above the high alarm setpoint) or solid blue **HIGH/LOW** LED (temperature below the low alarm setpoint) with the audio alarm sounding indicate that the product bag temperature is out of range: ***NO GO.*** At this point, if they are enabled, then the stabilized temperature of the product bag will be output to the **SD Card** and/or to the **USB-B Serial** port, along with the product bag's **Barcode** if barcode scanning is active.

8. Remove the product bag from the TC-25+ TEMPCHECK. If this is a low temperature product bag and **Auto Go-NoGo** is set to **Enable**, then **Go/No-Go** mode will automatically terminate when the temperature rises above 15.5 °C. If this is a high temperature product bag and/or **Auto Go-NoGo** is set to **Disable**, then press **POWER/EXIT** to terminate **Go/No-Go** mode.

6.4. Monitor Mode

Monitor mode monitors the temperature of one bag of a batch of bags (*e.g.* 20 to 30 bags) of biological product. The temperature of the sample bag will normally stabilize within the target range (below the high alarm and above the low alarm setpoints). The TC-25+ TEMPCHECK will continue to monitor the sample bag while the remaining bags in the batch are labeled, packaged, or otherwise processed. If the temperature of the sample bag drifts outside of the target range (above the high alarm or below the low alarm setpoints) during the batch processing period, then the TC-25+ TEMPCHECK will provide audio and visual alarms to alert the technician. These alarms will inform the technician that the batch of bagged biological product must be returned to a proper storage temperature immediately. Table 5 and Figure 5 detail the **Monitor** mode audio and visual warnings and alarms versus the temperature of the sample product bag.

The procedure for **Monitor** mode when processing a batch of product bags is as follows:

1. Confirm that the 3-way switch on the back panel of the TC-25+ TEMPCHECK is set to **Monitor**.
2. If the TC-25+ TEMPCHECK is powered down, activate the TC-25+ TEMPCHECK by pressing and holding the **POWER/EXIT** button until the LEDs blink and then releasing the button.
3. If **9.2.1 Product Select ("Prod. Select")** is set to ***Select***, then use the **MUTE/MENU**, ▼, ▲, and **START/ENTER** buttons to select the desired product type (see **9.2.1.1 Product Select Set to *Select***: **Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo**, **Other1**, or **Other2**) and the associated low and high alarm temperature setpoints. Otherwise, the currently selected product type and the associated low or high alarm temperature setpoints may be displayed at any time by pressing the ▼ (low alarm) or ▲ (high alarm) buttons. If you wish to run **Monitor** mode with a different bagged biological product type, then use the procedure detailed in **9.2.1 Product Select ("Prod. Select")**.

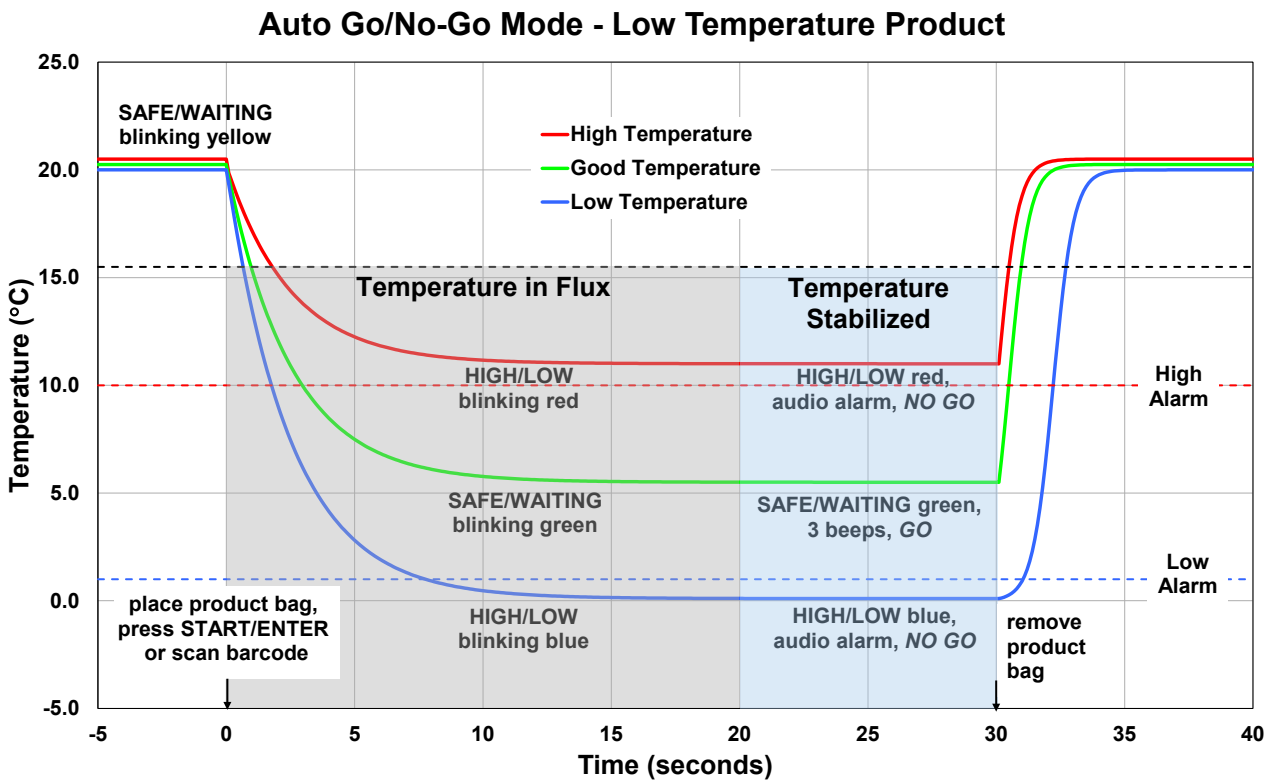


Figure 3. Auto Go/No-Go Mode Audio and Visual Indicators Versus Temperature for Low Temperature Products.

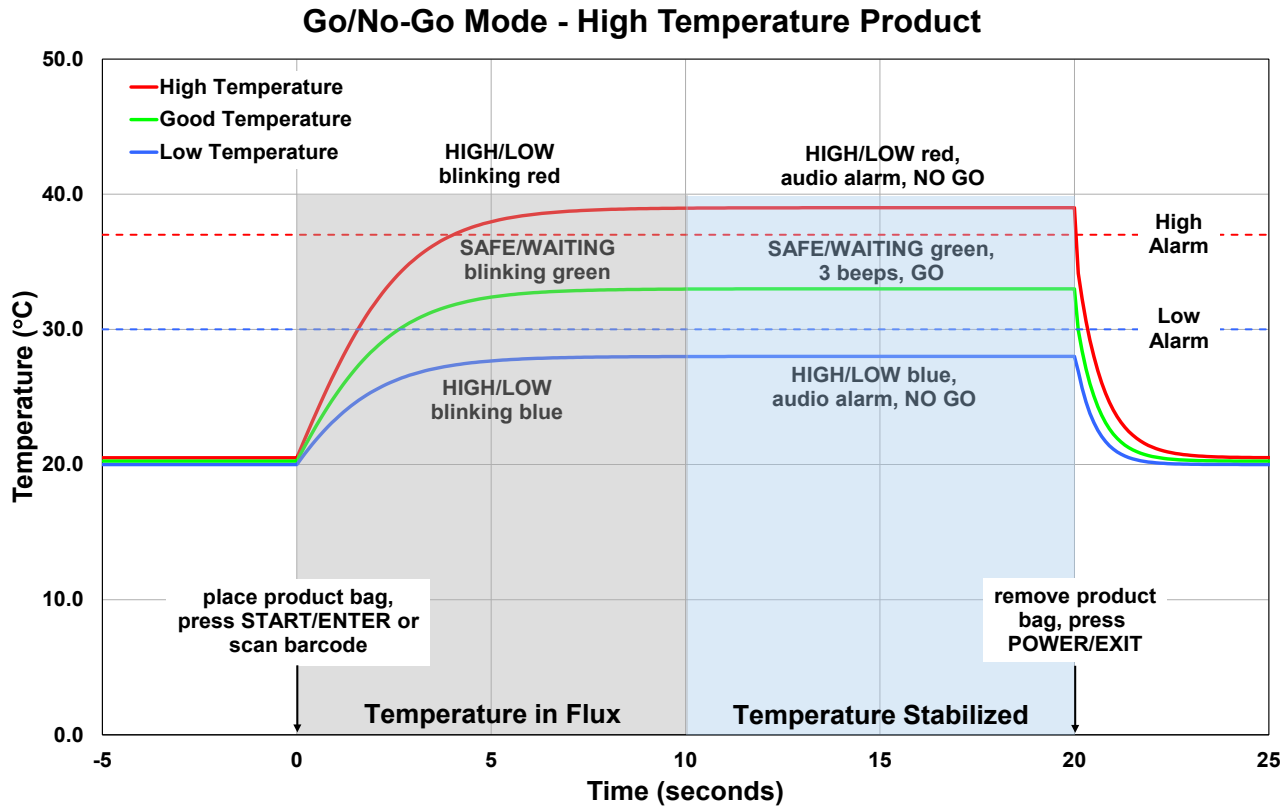


Figure 4. Go/No-Go Mode Audio and Visual Indicators Versus Temperature for High Temperature Products.

Table 5. HIGH/LOW LED, SAFE/WAITING LED, Audio Alarm Status Versus Temperature in Monitor Mode

	TEMPERATURE STABILIZED (15 – 30 SECONDS)			TEMPERATURE DRIFTING TOWARD ROOM TEMP. DURING BATCH PROCESSING			
TEMPERATURE (T)	**HIGH/ LOW LED**	**SAFE/ WAITING LED**	**Audio Alarm**	**HIGH/ LOW LED**	**SAFE/ WAITING LED**	**Audio Alarm**	**Immediate Return to Storage?**
T > HIGH ALARM	SOLID RED	OFF	ON	SOLID RED	OFF	ON	YES
LOW ALARM < T < HIGH ALARM	OFF	BLINKING GREEN	3 BEEPS	OFF	BLINKING GREEN	OFF	BATCH PROCESS PASSING
T < LOW ALARM	SOLID BLUE	OFF	ON	SOLID BLUE	OFF	ON	YES

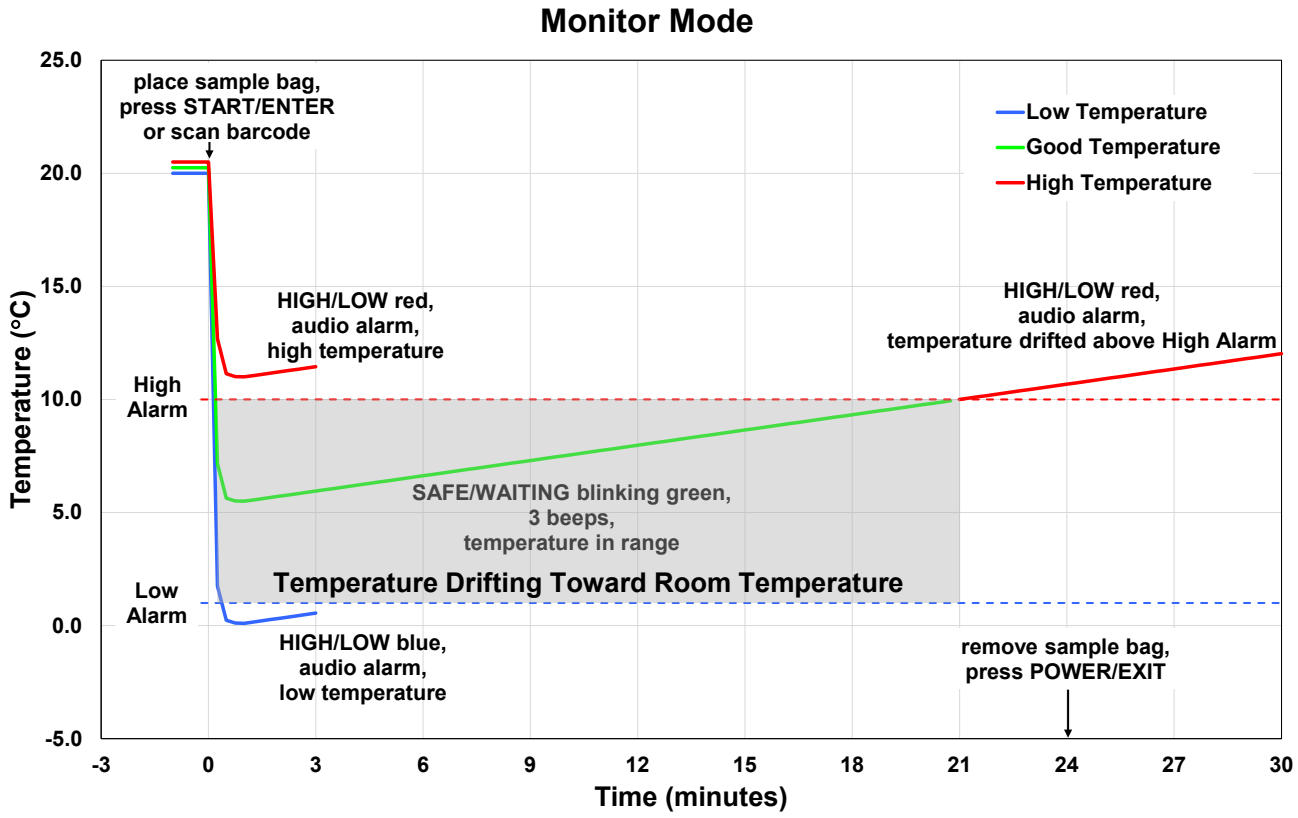


Figure 5. Monitor Mode Audio and Visual Indicators Versus Product Bag Temperature

4. Place the sample product bag (one bag in the batch of bags) on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the pad. The TC-25+ TEMPCHECK temperature will start at room temperature, typically between 20 °C and 22 °C. While the temperature is in flux trending toward the temperature of the sample product bag, the audio alarm will be chirping, and the **HIGH/LOW** LED will provide indications of temperature status. If the temperature is above the high alarm setpoint, then the **HIGH/LOW** LED will be blinking red, and if the temperature is below the low alarm setpoint, then the **HIGH/LOW** LED will be blinking blue. Wait until the **SAFE/WAITING** LED starts blinking green and the audio alarm sounds 3 quick beeps.[4] This indicates that the temperature is in range between the high alarm and low alarm setpoints for the product type.[5]
5. If you have a **Barcode** scanner (see **7.1 Barcode Scanner**), the TC-25+ TEMPCHECK is operating on line power (not battery), and you wish to record the temperature of the product bag with the barcode either to the **SD Card** (see **7.2 SD Card Recording**) or the **USB-B Serial** port (see **7.3 USB-B Serial Output**), then scan the product bag's barcode now and the **Monitor** procedure will start. If you do not have an active **Barcode** scanner, then press the **START/ENTER** button to start the **Monitor** process. The TC-25+ TEMPCHECK will continuously record a date-timestamp, the barcode (if available), and the sample product bag's temperature to the **SD Card** and/or to the **USB-B Serial** port every **Sample Rate** minutes (see **9.3.5 Sample Rate**) until the **Monitor** process is complete.
6. The TC-25+ TEMPCHECK will continue to monitor the temperature of the sample product bag while the remaining product bags in the batch are processed. As the batch processing proceeds, the temperature of the sample product bag will drift toward room temperature at a slow, but discernable rate (<0.5 °C per minute). If the temperature rises above the high alarm setpoint during the batch processing period, then the **HIGH/LOW** LED will turn solid red, and the audio alarm will sound. If the temperature drifts below the low alarm setpoint during the batch processing period, then the **HIGH/LOW** LED will turn solid blue, and the audio alarm will sound. In either of these cases, the full batch of product bags (including the sample bag) must be immediately returned to storage to restore proper temperature. If the TC-25+ TEMPCHECK temperature remains in range (below the high alarm setpoint and above the low alarm setpoint) with the **SAFE/WAITING** LED blinking green for the entire batch processing period, then the product bag batch processing has been successful *i.e.*, the temperature of the product bags remained in range for the entire batch processing period.
7. Press the **POWER/EXIT** to terminate all audio and visual indicators and the **Monitor** process, including the recording of date-timestamp, barcode (if available), and the sample product bag's temperature to the **SD Card** and to the **USB-B Serial** port.

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[4] If you do not want to wait for the temperature to move into range between the high alarm and low alarm setpoints for the product type before moving on to the next step and launching **Monitor** mode, then set an **Alarm Delay** between 5 and 30 seconds depending upon product type (see **9.3.1 Alarm Delay**). With an **Alarm Delay** of sufficient duration, you can place the product bag on the TC-25+ TEMPCHECK temperature sensor and then go immediately to the next step (#5).

[5] If the **HIGH/LOW** LED converts to solid red (temperature above the high alarm setpoint) or solid blue (temperature below the low alarm setpoint) with the audio alarm sounding, then the sample product bag temperature is out of range. In these cases, the process has failed: the temperature of the sample product bag is not in range, the full batch of bags must be returned to storage at the proper temperature, and the **POWER/EXIT** button should be pressed to terminate **Monitor** mode.

7. TC-25+ TEMPCHECK Bagged Biological Product Data Output

7.1. Barcode Scanner

The TC-25+ TEMPCHECK includes an option for USB Type-A input from standard healthcare barcode scanners (see Figure 2). If the **Barcode** feature is active (**ISBT 1 Code**, **ISBT 2 Codes**, **Other 1 Code**, or **Other 2 Codes**, see **9.4.4 Barcode**), then when the barcode scanner is used to read the bagged biological product's barcode, the bag's barcode, current TC-25+ TEMPCHECK temperature, and a date-timestamp are either recorded to an SD card (see **7.2 SD Card Recording**) output through the USB Type-B serial port **(7.3 USB-B Serial Output**) or both. For complete output data payload to the USB Type-B port and/or SD card, see Table 6.

NOTE: The **Barcode Scanner** is not powered, and is not functional, when the TC-25+ TEMPCHECK is operating on battery power.

7.2. SD Card Recording

The TC-25+ TEMPCHECK incorporates an SD card slot for the recording of the bagged biological product's barcode (if available), the TC-25+ TEMPCHECK temperature, and a date-timestamp. If the **SD Card** feature is set to **Enable** (see **9.4.5 SD Card**) and an SD card is inserted in the TC-25+ TEMPCHECK SD card slot, then the data are recorded to the SD card. For complete output data payload to the SD card, see Table 6.

If a barcode scanner is connected and active (**ISBT 1 Code**, **ISBT 2 Codes**, **Other 1 Code**, or **Other 2 Codes**, see **9.4.4 Barcode**), then **Manual+** mode will not start until the barcodes are scanned, and the SD card recordings will occur whenever the user presses **START/ENTER**. In **Go/No-Go** mode, the barcode is scanned to launch the **Go/No-Go** process, and the SD card recording for the bag occurs when the temperature stabilizes 15 to 30 seconds after bag placement on the TC-25+ TEMPCHECK sensing platform. In **Monitor** mode, the barcode is scanned to launch the **Monitor** process, and the SD card recording occurs every **Sample Rate** minutes (see **9.3.5 Sample Rate**) until the bag is removed, the **POWER/EXIT** button is pressed, and the **Monitor** process is complete.

If there is no barcode scanner connected, or the TC-25+ TEMPCHECK is operating on battery power, or the **Barcode** feature is set to **Disable** (see **9.4.4 Barcode**), then:

1. In **Manual+** mode, the SD card recording occurs whenever the user presses the **START/ENTER** button.
2. In **Go/No-Go** mode, the SD card recording output occurs when the TC-25+ TEMPCHECK temperature stabilizes (15 to 30 seconds after the product bag is placed on the temperature sensing platform).
3. In **Monitor** mode, the SD card recording occurs when the user first presses the **START/ENTER** button, and then every **Sample Rate** minutes (see **9.3.5 Sample Rate**) until the **POWER/EXIT** button is pressed at the end of the **Monitor** process.

7.3. USB-B Serial Output

The TC-25+ TEMPCHECK includes an option for USB Type-B output of the bagged biological product's barcode (if available), the TC-25+ TEMPCHECK temperature, and a date-timestamp in CSV format. If the **USB-B Serial** feature is set to **Enable** (see **9.4.6 USB-B Serial**), then the data is streamed out to the USB Type-B port. For complete output data payload to the SD card, see Table 6.

Table 6. USB-B Serial and SD Card Output Data

The ***SETTINGS*** column details the TC-25+ TEMPCHECK settings required for the ***DATA*** field to be output to the to the **SD Card** file or **USB-B Serial** port in CSV format. For example, the ***Barcode 1*** field is output when the **Barcode** setting is '**ISBT 1 Code**', '**ISBT 2 Codes**', '**Other 1 Code**', or '**Other 2 Codes**', and is not output when the **Barcode** setting is '**Disable'**. Figure 6 provides examples of the **USB-B Serial** and/or **SD Card** CSV file output based upon TC-25+ TEMPCHECK settings.

DATA	*SETTINGS*	*DESCRIPTION*
Timestamp		Date and time of the temperature reading MM-DD-YYYY HH:MM:SS, *e.g.,* "1/8/2025 11:31" (formatted to the nearest minute).
Equipment		TEMPCHECK
Equip. ID		TC-25+ TEMPCHECK equipment unique ID (UID).
Mode		**Manual+**, **Go/No-Go**, or **Monitor**
Barcode 1	**Barcode** = '**ISBT 1 Code**', '**ISBT 2 Codes**', '**Other 1 Code**', or '**Other 2 Codes**'	ISBT 128 Standard 13-character Donation Identification Number (DIN, Data Structure 001) - or - Other non-ISBT 128 barcode string.
Barcode 2	**Barcode** = '**ISBT 2 Codes**', or '**Other 2 Codes**'	ISBT 128 Standard 10-character Product Code (Data Structure 003) - or - Other non-ISBT 128 barcode string.
Product	**Manual+, Go/No-Go**, or **Monitor**	**Whole Blood**, **RBC**, **Platelets**, **FFP-S**, **FFP-T**, **Cryo**, **Other1**, or **Other2.**
Units		C or F (for °C and °F, respectively)
Temp.		TC-25+ TEMPCHECK temperature, 0.1 ° resolution
Alarm Low	**Manual+, Go/No-Go**, or **Monitor**	Low alarm temperature for the **Product**.
Alarm High	**Manual+, Go/No-Go**, or **Monitor**	High alarm temperature for the **Product**.
Pass/Fail	**Manual+, Go/No-Go**, or **Monitor**	**Pass** - temperature remained in range throughout process. **Fail** – temperature went out of range during the process.

If a barcode scanner is connected and active (**ISBT 1 Code**, **ISBT 2 Codes**, **Other 1 Code**, or **Other 2 Codes**, see **9.4.4 Barcode**), then **Manual+** mode will not start until the barcodes are scanned, and the USB-B output will occur whenever the user presses **START/ENTER**. In **Go/No-Go** mode, the barcode is scanned to launch the **Go/No-Go** process, and the USB-B output for the bag occurs when the temperature stabilizes 15 to 30 seconds after bag placement on the TC-25+ TEMPCHECK sensing platform. In **Monitor** mode, the barcode is scanned to launch the **Monitor** process, and the USB-B output occurs every **Sample Rate** minutes (see **9.3.5 Sample Rate**) until the bag is removed, the **POWER/EXIT** button is pressed, and the **Monitor** process is complete.

Example USB-B Serial and/or CSV File Output

Timestamp	Equipment	Equip. ID	Mode	Barcode 1	Barcode 2	Product	Units	Temp.	Alarm Low	Alarm High	Pass/ Fail	Settings
1/8/2025 11:31	TEMPCHECK	0C06A600	Manual+			RBC	C	3.5	1.0	10.0	Pass	**Manual+**
1/8/2025 11:35	TEMPCHECK	0C06A600	Manual+			Platelets	C	21.3	20.0	24.0	Pass	**Barcode** = Disabled
1/8/2025 11:39	TEMPCHECK	0C06A600	Manual+			Whole Blood	C	8.6	1.0	6.0	Fail	**USB-B Serial** or **SD Card** = Enable
1/8/2025 11:43	TEMPCHECK	0C06A600	Manual+	=A99992212345900	=<E0019V00	RBC	C	3.6	1.0	10.0	Pass	**Manual+**
1/8/2025 11:47	TEMPCHECK	0C06A600	Manual+	=A99992212345900	=<E0019V00	Platelets	C	23.2	20.0	24.0	Pass	**Barcode** = ISBT 2 Codes
1/8/2025 11:51	TEMPCHECK	0C06A600	Manual+	=A99992212345900	=<E0019V00	Whole Blood	C	5.4	1.0	6.0	Pass	**USB-B Serial** or **SD Card** = Enable
1/8/2025 11:43	TEMPCHECK	0C06A600	Go/No-Go			FFP-S	C	2.7	2.0	4.0	Pass	**Go/No-Go**
1/8/2025 11:47	TEMPCHECK	0C06A600	Go/No-Go			FFP-T	C	33.4	30.0	37.0	Pass	**Barcode** = Disable
1/8/2025 11:51	TEMPCHECK	0C06A600	Go/No-Go			Cryo	C	18.2	20.0	24.0	Fail	**USB-B Serial** or **SD Card** = Enable
1/8/2025 11:55	TEMPCHECK	0C06A600	Go/No-Go	=A99992212345900	=<E0019V00	Platelets	C	21.3	20.0	24.0	Pass	**Go/No-Go**
1/8/2025 11:59	TEMPCHECK	0C06A600	Go/No-Go	=A99992212345900	=<E0019V00	RBC	C	10.1	1.0	10.0	Fail	**Barcode** = ISBT 2 Codes
1/8/2025 12:03	TEMPCHECK	0C06A600	Go/No-Go	=A99992212345900	=<E0019V00	Whole Blood	C	4.7	1.0	6.0	Pass	**USB-B Serial** or **SD Card** = Enable
1/8/2025 12:07	TEMPCHECK	0C06A600	Monitor			RBC	C	3.6	1.0	10.0	Pass	**Monitor**
1/8/2025 12:08	TEMPCHECK	0C06A600	Monitor			RBC	C	3.6	1.0	10.0	Pass	**Barcode** = Disabled
1/8/2025 12:09	TEMPCHECK	0C06A600	Monitor			RBC	C	3.7	1.0	10.0	Pass	**USB-B Serial** or **SD Card** = Enable
1/8/2025 12:10	TEMPCHECK	0C06A600	Monitor			RBC	C	3.7	1.0	10.0	Pass	**Sample Rate** = 1
1/8/2025 12:11	TEMPCHECK	0C06A600	Monitor			RBC	C	3.8	1.0	10.0	Pass	
1/8/2025 12:12	TEMPCHECK	0C06A600	Monitor			RBC	C	3.8	1.0	10.0	Pass	
1/8/2025 12:13	TEMPCHECK	0C06A600	Monitor			RBC	C	3.9	1.0	10.0	Pass	
1/8/2025 12:14	TEMPCHECK	0C06A600	Monitor			RBC	C	3.9	1.0	10.0	Pass	
1/8/2025 12:15	TEMPCHECK	0C06A600	Monitor			RBC	C	4.0	1.0	10.0	Pass	
1/8/2025 12:16	TEMPCHECK	0C06A600	Monitor			RBC	C	4.0	1.0	10.0	Pass	
1/8/2025 12:20	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	4.0	1.0	6.0	Pass	**Monitor**
1/8/2025 12:23	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	4.3	1.0	6.0	Pass	**Barcode** = ISBT 2 Codes
1/8/2025 12:26	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	4.5	1.0	6.0	Pass	**USB-B Serial** or **SD Card** = Enable
1/8/2025 12:29	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	4.8	1.0	6.0	Pass	**Sample Rate** = 3
1/8/2025 12:32	TEMPCHECK	0C06A600	Monitor	=A99992265432100	=<E0063V00	Whole Blood	C	5.0	1.0	6.0	Pass	
1/8/2025 12:35	TEMPCHECK	0C06A600	Monitor	=A99992265432100	=<E0063V00	Whole Blood	C	5.3	1.0	6.0	Pass	
1/8/2025 12:38	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	5.5	1.0	6.0	Pass	
1/8/2025 12:41	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	5.8	1.0	6.0	Pass	
1/8/2025 12:44	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	6.0	1.0	6.0	Fail	
1/8/2025 12:47	TEMPCHECK	0C06A600	Monitor	=A99992212345900	=<E0019V00	Whole Blood	C	6.3	1.0	6.0	Fail	

Figure 6. USB-B Serial and/or SD Card CSV File Output Based Upon Settings

If there is no barcode scanner connected, or the TC-25+ TEMPCHECK is operating on battery power, or the **Barcode** feature is set to **Disable** (see **9.4.4 Barcode**), then:

1. In **Manual+** mode, the USB-B serial output occurs whenever the user presses the **START/ENTER** button.
2. In **Go/No-Go** mode, the USB-B serial output occurs when the TC-25+ TEMPCHECK temperature stabilizes (15 to 30 seconds after the product bag is placed on the temperature sensing platform).
3. In **Monitor** mode, the USB-B serial output occurs when the user first presses the **START/ENTER** button, and then every **Sample Rate** minutes (see **9.3.5 Sample Rate**) until the **POWER/EXIT** button is pressed at the end of the **Monitor** process.

NOTE: The USB Type-B port is powered by the connected device (PC or other device), and therefore, the USB output will occur even when the TC-25+ TEMPCHECK is operating on battery power.

7.4. Real Time Clock (RTC)

The barcode scanner, SD card recording, and USB-B serial output features require a real time clock (RTC) for the generation of a date-timestamp. Accordingly, the TC-25+ TEMPCHECK includes an RTC that can be synchronized to local time to the nearest second. Year (2025 – 2100), month (1 – 12), day (1 – 31), hour (0 – 23), minute (0 – 59), and second (0 – 59) are user programmable. Whenever the barcode scanner, USB-B serial output, or SD card recording are

activated, the RTC values are displayed on the LCD. If the displayed time is not synchronized to local time, then the RTC must be reset to local time (see **9.1 Time & Date Menu**).

8. Operating on Battery Power

If line power is either disconnected (portable operation) or down (power outage), then the TC-25+ TEMPCHECK Rapid Response Thermometer operates on battery power. When the thermometer is operating on battery power, the battery charge % is shown in the lower right corner of the LCD and the **POWER/STATUS** LED slowly pulses. When the battery charge falls to 10%, the charge % will be highlighted on the LCD and the **POWER/STATUS** LED will rapidly flash. If the battery charge falls to the critical 5% level, in addition to the rapid flashing of the **POWER/STATUS** LED, a fast-chirping audible alarm will sound.

Active run time starting with a fully charged battery is approximately 7.5 hours. The shelf-life of a powered down (not connected to line power) TC-25+ TEMPCHECK is approximately 3 months *i.e.,* the battery must be recharged after 3 months of unpowered storage.

The battery will recharge whenever the TC-25+ TEMPCHECK is plugged into line power. Total recharge time from battery-fully-drained to battery-fully-charged is approximately 9.5 hours

8.1. Manual Mode Battery Operation

After 4 minutes of inactivity (*i.e.,* no button presses), the TC-25+ TEMPCHECK will shut down to conserve battery power. The TC-25+ TEMPCHECK can be powered up again by pressing and holding the **POWER/EXIT** button until the LEDs blink and then releasing the button.

8.2. Battery Operation with Real Time Clock

The **Barcode**, **SD Card**, and **USB-B Serial** features require date-timestamps from the real time clock (RTC). If the battery drains or the TC-25+ TEMPCHECK is powered down, then the RTC will no longer be synchronized. Therefore, if the **Barcode** (see **9.4.4 Barcode**), **SD Card** (see **9.4.5 SD Card**), or **USB-B Serial** (see **9.4.6 USB-B Serial**) features are enabled and the TC-25+ TEMPCHECK is operating on battery power, then the thermometer will not shutdown to conserve battery life. With any of these features enabled, the system must always remain under power to keep the RTC synchronized.

If **Barcode**, **SD Card**, and **USB-B Serial** are all disabled, then TC-25+ TEMPCHECK will shut down to conserve battery power after 4 minutes of inactivity, *i.e.*, 4 minutes after the **Manual+**, **Go/No-Go**, or **Monitor** modes have been terminated by pressing the **POWER/EXIT** button.[6] The TC-25+ TEMPCHECK can be powered up again by pressing and holding the **POWER/EXIT** button until the LEDs blink and then releasing the button.

9. Programming Mode

Place the TC-25+ TEMPCHECK into PROGRAMMING mode to access the programmable features listed in Table 7 as follows:

[6] Or when **Auto Go-NoGo** is set to **Enable** (see **9.4.2 Auto Go-NoGo**), 4 minutes after **Go/No-Go** mode automatically terminates.

1. Press and hold the **MUTE/MENU** button until the first menu ("**Time and Date**") is displayed on the LCD.
2. Repeatedly tap the **MUTE/MENU** button until the TC-25+ TEMPCHECK menu of interest is displayed: "**Time & Date**", "**Alarm Limits**", "**Delays**", or "**Settings**".
3. Once the menu of interest is displayed, press the **START/ENTER** button to descend into the parameters for that menu, and the first parameter for that menu will be displayed on the LCD. For example, the first parameter for the "**Alarm Limits**" menu that will be "**Prod. Select**".
4. Press the **MUTE/MENU** button repeatedly to get to the parameter of interest. The LCD will cycle through the parameter options for the menu item. For example, for the "**Alarm Limits**" menu, repeatedly pressing the **MUTE/MENU** button will cycle through this parameter list: "**Prod. Select**", "**Blood Low**", "**Blood High**", …, "**Other2 High**."
5. When the LCD displays the parameter of interest, press **START/ENTER** to descend into the options for the parameter with the current value for that parameter displayed on the LCD. For example, if you press **START/ENTER** in the "**Alarm Limits**" menu at the "**Prod. Select**" parameter, then the LCD will display the currently selected bagged biological product (*e.g.,* "**RBC**").
6. Change the displayed parameter setting to the preferred value by pressing the ▲ or ▼ buttons. For example, for the "**Prod. Select**" parameter, repeatedly tapping the ▲ or ▼ buttons will cycle through the bagged biological product options "**Whole Blood**", "**RBC**", "**Platelets**", "**FFP-S**", "**FFP-T**", "**Cryo**", "**Other1**", "**Other2**", and "***Select***".
7. When the preferred value is displayed on the LCD, save it by selecting the **POWER/EXIT** button. This will return the LCD display to the parameter listing. In the example detailed above, the LCD screen will indicate "**Prod. Select**".
8. Pressing the **POWER/EXIT** button again will return the LCD display to the root menu. In the example detailed above, the LCD screen will then indicate "**Alarm Limits**".
9. Once in the root menu, pressing the **POWER/EXIT** button one more time will return the system to the mode determined by the 3-way switch on the back panel of the TC-25+ TEMPCHECK (**Manual**, **Go/No-Go**, or **Monitor**).

Table 7. TC-25+ TEMPCHECK Programmable Values

MENU/ PARAMETER	DESCRIPTION, SETTING OPTIONS, RANGE	FACTORY SETTINGS
Time & Date	**Real time clock programmable to the nearest second**	**None**
Year	2025 - 2100	Year
Month	1 – 12	Month
Day	1 – 31	Day
Hour	0 – 23	Hour
Minute	0 – 59	Minute
Second	0 – 59	Second
Alarm Limits		
Prod. Select	**Whole Blood, RBC, Platelets, FFP-S, FFP-T, Cryo, Other1, Other2, *Select***	**Whole Blood**

Blood Low	Whole Blood, low temperature alarm limit	0.0 – 40.0 °C	1.0 °C
Blood High	Whole Blood, high temperature alarm limit	0.0 – 40.0 °C	6.0 °C
RBC Low	RBC, low temperature alarm limit	0.0 – 40.0 °C	1.0 °C
RBC High	RBC, high temperature alarm limit	0.0 – 40.0 °C	10.0 °C
Platelet Low	Platelets, low temperature alarm limit	0.0 – 40.0 °C	20.0 °C
Platelet Hi	Platelets, high temperature alarm limit	0.0 – 40.0 °C	24.0 °C
FFP-S Low	FFP-S, low temperature alarm limit	0.0 – 40.0 °C	2.0 °C
FFP-S High	FFP-S, high temperature alarm limit	0.0 – 40.0 °C	4.0 °C
FFP-T Low	FFP-T, low temperature alarm limit	0.0 – 40.0 °C	30.0 °C
FFP-T High	FFP-T, high temperature alarm limit	0.0 – 40.0 °C	37.0 °C
Cryo Low	Cryo, low temperature alarm limit	0.0 – 40.0 °C	20.0 °C
Cryo High	Cryo, high temperature alarm limit	0.0 – 40.0 °C	24.0 °C
Other1 Low	Other1, low temperature alarm limit	0.0 – 40.0 °C	1.0 °C
Other1 High	Other1, high temperature alarm limit	0.0 – 40.0 °C	6.0 °C
Other2 Low	Other2, low temperature alarm limit	0.0 – 40.0 °C	1.0 °C
Other2 High	Other2, high temperature alarm limit	0.0 – 40.0 °C	6.0 °C
Delays			
Alarm Delay	Delay (seconds) before audio alarm is engaged	1 – 120 s	5 s
Mute Period	Time (seconds) the audio alarm is silenced when the MUTE button is pressed	5 – 30 min	5 min
Mute Sound	Chirp or Silence		Chirp
Chirp Period	Frequency (seconds) of the chirp when the audio alarm is muted or while the temperature is in flux in **Go/No-Go** and **Monitor** modes.	0 – 120 s	15 s
Sample Rate	Time (minutes) between **USB-B Serial** and/or **SD Card** CSV file temperature loggings while in **Monitor** mode.	1 – 15 min.	1 min
Settings			
Tmpr Scale [A]	°C or °F		°C
Auto Go-NoGo	Disable or Enable		Disable
Manual+ Mode	Disable or Enable		Disable

Barcode	Disable, ISBT 1 Code, ISBT 2 Codes, Other 1 Code, Other 2 Codes.		Disable
SD Card	Disable or Enable		Disable
USB-B Serial	Disable or Enable		Disable
Bklgt Bright	LCD backlighting, brightness	10 – 100%	100%
Bklgt Dim	LCD backlighting, dimming	10 – 100%	50%
Bklgt Func	LCD backlighting, function: Off, On, Timed Dim, or Timed Off		On
Bklgt Timer	LCD backlighting, dimmer timing (after any button press)	3 – 60 s	30 s
Set Acc. Code	00000000 – Allows any user to program the TC-25+ TEMPCHECK XXXXXXX – Value must be entered before programming the TC-25+ TEMPCHECK		00000000

[A] The TC-25+ TEMPCHECK factory set **Tmpr Scale** is Celsius (°C), and the product low and high temperature alarm setpoints are established in the factory as shown in Table 7 in °C. If the **Tmpr Scale** is modified to °F in the field, then these factory product low and high temperature alarm setpoints are converted to °F. For example, if the **Tmpr Scale** is converted to °F, then the **RBC Low** and **RBC High** temperature setpoints are converted to 33.8 °F and 50.0 °F, respectively.

9.1. Time & Date Menu

Options: Year (2025 – 2100), Month (1 – 12), Day (1 – 31), Hour (0 – 23), Min (0 – 59), Sec (0 – 59)

Factory Setting: No factory setting. The RTC must be set by the user to local time whenever the SD Card or USB-B Serial port are enabled (see 9.4.5 SD Card and 9.4.6 USB-B Serial).

The TC-25+ TEMPCHECK incorporates a real-time clock (RTC) programmable to the nearest second allowing for timestamps on temperature data output through the **SD Card** and/or **USB-B Serial** port:

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Select the **START/ENTER** button. The LCD will first indicate "**Year**".
3. Tap the **MUTE/MENU** button until the next period to be modified is displayed, starting with the **Year** and going sequentially through **Month, Day, Hour, Minute,** and **Second.**
4. Tap the ▲ or ▼ buttons until the LCD shows the correct value for the current time.
5. Press the **POWER/EXIT** button to save the value for the current period. The LCD will then display the period just modified ("**Year**", "**Month**", "**Day**", "**Hour**", "**Minute**" or "**Second**").
6. Repeat steps 3 through 5 for each period: **Month, Day, Hour, Minute,** and **Second**.
7. Press the **POWER/EXIT** again to return to the root menu. At this point, the LCD will indicate "**Time & Date**".
8. Press the **POWER/EXIT** button one more time to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.2. Alarm Limits Menu

9.2.1. Product Select ("Prod. Select")

Options: Whole Blood, RBC, Platelets, FFP-S, FFP-T, Cryo, Other1, Other2, or *Select*

Factory Setting: Whole Blood

The low and high temperature alarm limits for **Manual+**, **Go/No-Go**, and **Monitor** modes are set by the bagged biological product type (**Whole Blood, RBC, Platelets, FFP-S, FFP-T, Cryo, Other1, Other2,** or ***Select***). The **Prod. Select** value determines which set of low and high temperature alarm limits are employed for **Manual+**, **Go/No-Go**, and **Monitor** modes as follows:

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** again. The LCD should then indicate "**Alarm Limits**".
3. Select the **START/ENTER** button. The LCD will show "**Prod. Select**" along with the current setting (*e.g.,* "**FFP-S**").
4. Tap the ▲ or ▼ buttons until the LCD shows the preferred bagged biological product type (*e.g.,* "**RBC**").
5. Press the **POWER/EXIT** button to save the new **Prod. Select** value. The LCD will again display "**Prod. Select**" along with the revised setting (*e.g.,* "**RBC**").
6. Press the **POWER/EXIT** again to return to the root menu. At this point, the LCD will indicate "**Alarm Limits**".
7. Press the **POWER/EXIT** button one more time to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.2.1.1. Product Select Set to *Select*

Options: Whole Blood, RBC, Platelets, FFP-S, FFP-T, Cryo, Other1, or Other2

The low and high temperature alarm limits for **Manual+**, **Go/No-Go**, and **Monitor** modes are set by the bagged biological product type (**Whole Blood, RBC, Platelets, FFP-S, FFP-T, Cryo, Other1,** or **Other2**). If **Prod. Select** is set to ***Select***, then the user must select the bagged biological product type just before launching **Manual+**, **Go/No-Go**, or **Monitor** modes as follows. The ***Select*** product type can only be set when the **Manual+**, **Go/No-Go**, or **Monitor** modes are inactive and the **SAFE/WAITING** LED is amber (either steady or pulsing):

1. Press the **MUTE/MENU** button and the LCD will display the product type last run (*e.g.,* "**Platelets**").
2. Tap the ▲ or ▼ buttons until the LCD shows the preferred bagged biological product type (*e.g.,* "**Cryo**").
3. Press the **START/ENTER** button to save the desired product type for the next run.

9.2.2. Product Low and High Temperature Alarm Setpoints

Range: 0.0 – 40.0 °C

Factory Setting: Product type dependent (see Table 7)

The low and high temperature alarm limits for **Manual+**, **Go/No-Go** and **Monitor** modes are uniquely set for each bagged biological product type (**Whole Blood, RBC, Platelets, FFP-S, FFP-T, Cryo, Other1,** or **Other2**). The alarm limit parameter names are listed in Table 7:

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** again. The LCD should then indicate "**Alarm Limits**".
3. Select the **START/ENTER** button. The LCD will first show "**Prod. Select**".
4. Tap the **MUTE/MENU** button until the product bag temperature alarm setpoint of interest is displayed on the LCD (*e.g.,* "**Cryo High = 24.0 °C**").
5. Tap the ▲ or ▼ buttons until the LCD shows the preferred value for the product bag temperature alarm setpoint (*e.g.,* "**Cryo High** = **24.5 °C**"). A single quick press of the ▲ or ▼ button changes the temperature by 0.1 °. A long press (>1 second) changes the temperature by 1 °.
6. Press the **POWER/EXIT** button to save the value of the product bag temperature alarm setpoint. At this point, the LCD will show "**Alarm Limits**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.3. Delays Menu

9.3.1. Alarm Delay

Range: 1 – 120 seconds

Factory Setting: 5 seconds

While the **HIGH/LOW** LED red and blue indicators will be engaged immediately upon alarm condition (temperature above the high alarm or below the low alarm setpoints), in **Go/No-Go** and **Monitor** modes, an audio **Alarm Delay** can be established whereby the TC-25+ TEMPCHECK will defer engaging the audio alarm by **Alarm Delay** seconds. The factory setting for this **Alarm Delay** parameter is 5 seconds *i.e.,* the audio alarm will be engaged 5 seconds after encountering an alarm condition:

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** twice more, and the LCD will indicate "**Delays**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Alarm Delay**" along with its current setting in seconds.
4. Tap the ▲ or ▼ buttons until the LCD shows the preferred value for the **Alarm Delay** in seconds. A single quick press of the ▲ or ▼ button changes the **Alarm Delay** by 1 second. A long press (>1 second) changes the **Alarm Delay** by 10 seconds.
5. Press the **POWER/EXIT** button to save the revised **Alarm Delay**. At this point, the LCD will show "**Delays**".
6. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.3.2. Mute Period

Range: 5 – 30 minutes

Factory Setting: 5 minutes

While the **HIGH/LOW** LED red and blue indicators will remain lit under alarm conditions, in **Go/No-Go** and **Monitor** modes, if the user presses the **MUTE/MENU** button when the TC-25+ TEMPCHECK is in alarm condition (temperature above the high alarm or below the low alarm setpoints), then the audio alarm will convert from a long periodic beep (~90 dB) to a less frequent short **Chirp** or to **Silence** (see **9.3.3 Mute Sound**) for **Mute Period** minutes. The factory setting for the **Mute Period** is 5 minutes.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** twice more, and the LCD will indicate "**Delays**".
3. Select the **START/ENTER** button, and the LCD will first indicate "**Alarm Delay**".
4. Press the **MUTE/MENU** button, and the LCD will show "**Mute Period**" along with its current setting in minutes.
5. Tap the ▲ or ▼ buttons until the LCD shows the preferred value for the **Mute Period** in minutes. A single quick press of the ▲ or ▼ button changes the **Mute Period** by 1 minute. A long press (>1 second) changes the **Mute Period** by 10 minutes.
6. Press the **POWER/EXIT** button to save the revised **Mute Period**. At this point, the LCD will show "**Delays**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.3.3. Mute Sound

Options: Chirp or Silence

Factory Setting: Chirp

While the **HIGH/LOW** LED red and blue indicators will remain lit under alarm conditions, in **Go/No-Go** and **Monitor** modes, if the user presses the **MUTE/MENU** button when the TC-25+ TEMPCHECK is in alarm condition (temperature above the high alarm or below the low alarm setpoints), then the audio alarm will convert from a long periodic beep (~90 dB) to a less frequent short **Chirp** or to **Silence** for **Mute Period** seconds (see **9.3.2 Mute Period**). The factory setting for the **Mute Sound** is **Chirp**.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** twice more, and the LCD will indicate "**Delays**".
3. Select the **START/ENTER** button, and the LCD will first indicate "**Alarm Delay**".
4. Press the **MUTE/MENU** button twice, and the LCD will show "**Mute Sound**" along with its current setting ("**Chirp**" or "**Silence**").
5. Tap the ▲ or ▼ buttons until the LCD shows the preferred setting for the **Mute Sound**.
6. Press the **POWER/EXIT** button to save the revised **Mute Sound**. At this point, the LCD will show "**Delays**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.3.4. Chirp Period

Range: 1 – 120 seconds

Factory Setting: 15 seconds

While the **HIGH/LOW** LED red and blue indicators will remain lit under alarm conditions, in **Go/No-Go** and **Monitor** modes, if the user presses the **MUTE/MENU** button when the TC-25+ TEMPCHECK is in alarm condition (temperature above the high alarm or below the low alarm setpoints), then the audio alarm will convert from a long periodic beep (~90 dB) to a less frequent short **Chirp** or to **Silence** (see **9.3.3 Mute Sound**) for **Mute Period** seconds (see **9.3.2 Mute Period**). If the **Mute Sound** is **Chirp**, then the time between chirps is **Chirp Period** seconds. The factory setting for **Chirp Period** is 15 seconds (*i.e.,* 15 seconds between chirps).

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** twice more, and the LCD will indicate "**Delays**".
3. Select the **START/ENTER** button, and the LCD will first indicate "**Alarm Delay**".
4. Press the **MUTE/MENU** button three times, and the LCD will show "**Chirp Period**" along with its current setting in seconds.
5. Tap the ▲ or ▼ buttons until the LCD shows the preferred value for the **Chirp Period** in seconds. A single quick press of the ▲ or ▼ button changes the **Chirp Period** by 1 second. A long press (>1 second) changes the **Chirp Period** by 10 seconds.
6. Press the **POWER/EXIT** button to save the revised **Chirp Period**. At this point, the LCD will show "**Delays**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.3.5. Sample Rate

Range: 1 – 15 minutes

Factory Setting: 1 minute

If the TC-25+ TEMPCHECK is in **Monitor** mode and either **SD Card** recording (see **7.2 SD Card Recording**) or **USB-B Serial** output (see **7.3 USB-B Serial Output**) are active, then the bagged biological product's barcode (if available), the TC-25+ TEMPCHECK temperature, and a date-timestamp are recorded to the **SD Card** and/or output through the **USB-B Serial** port at the start of **Monitor** mode (when the user selects the **START/ENTER** button or scans the barcode), and every **Sample Rate** minutes thereafter, until **Monitor** mode terminates (when the user selects the **POWER/EXIT** button to terminate the **Monitor** process). The factory setting for the **Sample Rate** is 1 minute.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** twice more, and the LCD will indicate "**Delays**".
3. Select the **START/ENTER** button, and the LCD will first indicate "**Alarm Delay**".
4. Press the **MUTE/MENU** button four times, and the LCD will show "**Sample Rate**" along with its current setting in minutes.
5. Tap the ▲ or ▼ buttons until the LCD shows the preferred value for the **Sample Rate** in minutes.
6. Press the **POWER/EXIT** button to save the revised **Sample Rate**. At this point, the LCD will show "**Delays**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4. Settings Menu

9.4.1. Temperature Scale ("Tmpr Scale")

Options: °C, °F

Factory Setting: °C

The TC-25+ TEMPCHECK can display temperature in Celsius (°C) or Fahrenheit (°F). The factory setting for the **Tmpr Scale** is °C:

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** three times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**" along with its current setting ("°C" or "°F").
4. Press either ▲ or ▼ to change to the preferred **Tmpr Scale**.
5. Press the **POWER/EXIT** button to save the revised **Tmpr Scale**. At this point, the LCD will show "**Settings**".
6. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.2. Auto Go-NoGo

Options: Disable or Enable

Factory Setting: Disable

Go/No-Go mode terminates in one of two ways: If **Auto Go-NoGo** is set to **Enable**, then **Go/No-Go** mode terminates when the bagged biological product is removed from the TC-25+ TEMPCHECK temperature sensing platform and the temperature rises above 15.5 °C. Otherwise, **Go/No-Go** mode terminates when the user presses the **POWER/EXIT** button. **Auto Go-NoGo** works only for bagged biological products with high temperature alarm setpoints below 13.0 °C. If the high temperature alarm setpoint is above 13.0 °C, then **Go/No-Go** mode must be terminated by pressing the **POWER/EXIT** button. The factory default for **Auto Go-NoGo** is **Disable**.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** three times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button and the LCD will show "**Auto Go-NoGo**" along with its current setting ("**Enable**" or "**Disable**").
5. Press either ▲ or ▼ to change to the preferred **Auto Go-NoGo** setting.
6. Press the **POWER/EXIT** button to save the revised **Auto Go-NoGo** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.3. Manual+ Mode

Options: Disable or Enable

Factory Setting: Disable

Manual+ mode provides for the continuous display of temperature status with **HIGH/LOW** and **SAFE/WAITING** LED indications relative to the selected bagged biological product type (see **9.2.1 Product Select ("Prod. Select")**) low and high temperature alarm setpoints (see **9.2.2 Product Low and High Temperature Alarm Setpoints**). Set **Manual+ Mode** to **Enable** to activate this mode of operation. If **Manual+ Mode** is set to **Disable**, then there will be no LED temperature indications when the 3-way switch on the back panel of the TC-25+ TEMPCHECK is set to **Manual**. The factory default for **Manual+ Mode** is **Disable**.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** three times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button twice and the LCD will show "**Manual+ Mode**" along with its current setting ("**Enable**" or "**Disable**").
5. Press either ▲ or ▼ to change to the preferred **Manual+ Mode** setting.
6. Press the **POWER/EXIT** button to save the revised **Manual+ Mode** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.4. Barcode

Options: Disable, ISBT 1 Code, ISBT 2 Codes, Other 1 Code, Other 2 Codes

Factory Setting: Disable

The TC-25+ TEMPCHECK includes a USB Type-A input port for standard healthcare barcode scanners (see Figure 2). The TC-25+ TEMPCHECK has been programmed to accept the Donation Identification Number (DIN) (Data Structure 001) only (**ISBT 1 Code**) or the DIN and the Product Code (Data Structure 003) (**ISBT 2 Codes**) of ISBT 128 Standard barcodes. The TC-25+ TEMPCHECK also accepts either one barcode (**Other 1 Code**) or two barcodes (**Other 2 Codes**) of non-ISBT 128 Standard barcodes. In the latter two cases, the barcodes are simply recorded as read by the barcode scanner. If this **Barcode** feature is active (**ISBT 1 Code, ISBT 2 Codes, Other 1 Code,** or **Other 2 Codes**), then when the barcode scanner is used to read the bagged biological product's barcode, the barcode(s), current TC-25+ TEMPCHECK temperature, and a date-timestamp are either recorded on an SD card (see **7.2 SD Card Recording**), output through the USB Type-B port (see **7.3 USB-B Serial Output**), or both. For complete output data payload to the USB Type-B port and/or SD card, see Table 6. The factory setting for the barcode scanner is **Disable** *i.e.,* if a barcode scanner is to be employed, it must be activated by setting **Barcode** to **ISBT 1 Code, ISBT 2 Codes, Other 1 Code,** or **Other 2 Codes**.

NOTE: The **Barcode Scanner** is not powered, and is not functional, when the TC-25+ TEMPCHECK is operating on battery power.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** three times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 3 times, and the LCD will show "**Barcode**" along with its current setting ("**Disable**", "**ISBT 1 Code**", "**ISBT 2 Codes**", "**Other 1 Code**", or "**Other 2 Codes**").

5. Press either ▲ or ▼ to change to the preferred **Barcode** setting.
6. Press the **POWER/EXIT** button to save the revised **Barcode** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.5. SD Card

Options: Disable or Enable

Factory Setting: Disable

The TC-25+ TEMPCHECK incorporates an **SD Card** slot for the recording of the bagged biological product's ISBT 128 or other barcode (if available, see **9.4.4 Barcode**), the TC-25+ TEMPCHECK temperature, and a date-timestamp. If this **SD Card** feature is set to **Enable** and an SD card is inserted in the SD card slot, then the ISBT 128 or other barcode (if available), temperature, and date-timestamp are recorded to the **SD Card** as detailed in **7.2 SD Card Recording** and Table 6. The factory setting for **SD Card** is **Disable** *i.e.,* the SD card recordings will only occur if the user sets this **SD Card** parameter to **Enable**.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** three times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 4 times, and the LCD will show "**SD Card**" along with its current setting ("**Disable**" or "**Enable**").
5. Press either ▲ or ▼ to change to the preferred **SD Card** setting.
6. Press the **POWER/EXIT** button to save the revised **SD Card** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.6. USB-B Serial

Options: Disable or Enable

Factory Setting: Disable

The TC-25+ TEMPCHECK incorporates an **USB-B Serial** port for the CSV formatted output of the bagged biological product's ISBT 128 or other barcode (if available, see **9.4.4 Barcode**), the TC-25+ TEMPCHECK temperature, and a date-timestamp. If this **USB-B Serial** feature is set to **Enable**, then the ISBT 128 or other barcode (if available), temperature, and date-timestamp are output in CSV format through the **USB-B Serial** port as detailed in **7.3 USB-B Serial Output** and Table 6. The factory setting for **USB-B Serial** is **Disable** *i.e.,* the CSV formatted output will only occur if the user sets this **USB-B Serial** parameter to **Enable**.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** three times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 5 times, and the LCD will show "**USB-B Serial**" along with its current setting ("**Disable**" or "**Enable**").

5. Press either ▲ or ▼ to change to the preferred **USB-B Serial** setting.
6. Press the **POWER/EXIT** button to save the revised **USB-B Serial** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.7. LCD Backlight Brightness ("Bklgt Bright")

Range: 10 – 100%

Factory Setting: 100%

The TC-25+ TEMPCHECK temperature is displayed on a backlit LCD screen. While the TC-25+ TEMPCHECK is operating on line power, the degree of backlighting ("**Bklgt Bright**") can be adjusted between 10% and 100% of full backlighting power. The **Bklgt Bright** factory setting is 100%.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** 3 times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 6 times, and the LCD will show "**Bklgt Bright**" along with its current setting (*e.g.,* "**50%**").
5. Press ▲ or ▼ to change to the preferred **Bklgt Bright** setting. A single quick press of the ▲ or ▼ button changes the **Bklgt Bright** by 1%. A long press (>1 second) changes the **Bklgt Bright** by 10%.
6. Press the **POWER/EXIT** button to save the revised **Bklgt Bright** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.8. LCD Backlight Dimming ("Bklgt Dim")

Range: 10 – 100%

Factory Setting: 50%

The TC-25+ TEMPCHECK temperature is displayed on a backlit LCD screen. While the TC-25+ TEMPCHECK is operating on battery power, the backlighting can be dimmed. The degree of backlight dimming ("**Bklgt Dim**") can be adjusted between 10% and 100%. The **Bklgt Dim** factory setting is 50%.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** 3 times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 7 times, and the LCD will show "**Bklgt Dim**" along with its current setting (*e.g.,* "**50%**").
5. Press ▲ or ▼ to change to the preferred **Bklgt Dim** setting. A single quick press of the ▲ or ▼ button changes the **Bklgt Dim** by 1%. A long press (>1 second) changes the **Bklgt Dim** by 10%.

6. Press the **POWER/EXIT** button to save the revised **Bklgt Dim** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.9. LCD Backlight Function ("Bklgt Func")

Options: Off, On, Timed Dim, or Timed Off

Factory Setting: On

The TC-25+ TEMPCHECK temperature is displayed on a backlit LCD screen. While the TC-25+ TEMPCHECK is operating on battery power, the backlighting can be set based upon the "**Bklgt Func**" setting. The backlighting can be turned off ("**Off**"), turned on ("**On**"), dimmed after fixed time ("**Timed Dim**", see **9.4.10 LCD Backlight Timer ("Bklgt Timer")**), or it can be turned off after a fixed time ("**Timed Off**", see **9.4.10 LCD Backlight Timer ("Bklgt Timer")**). The factory setting for **Bklgt Func Dim** is **On**.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** 3 times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 8 times, and the LCD will show "**Bklgt Func**" along with its current setting (*e.g.,* "**Timed Off**").
5. Press ▲ or ▼ to change to the preferred **Bklgt Func** setting.
6. Press the **POWER/EXIT** button to save the revised **Bklgt Func** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.10. LCD Backlight Timer ("Bklgt Timer")

Range: 3 – 60 seconds

Factory Setting: 30 seconds

The TC-25+ TEMPCHECK temperature is displayed on a backlit LCD screen. While the TC-25+ TEMPCHECK is operating on battery power, the backlighting can be set based upon the "**Bklgt Func**" setting. The backlighting can be turned off ("**Off**"), turned on ("**On**"), dimmed after fixed time ("**Timed Dim**"), or it can be turned off after a fixed time ("**Timed Off**"). If the **Bklgt Func** is either **Timed Dim** (backlighting dimmed after a fixed time) or **Timed Off** (backlighting turned off after a fixed time), then the **Bklgt Timer** value is the fixed time. The factory setting for the **Bklgt Timer** is 30 seconds.

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the **MUTE/MENU** 3 times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button, and the LCD will indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 9 times, and the LCD will show "**Bklgt Timer**" along with its current setting in seconds.
5. Press ▲ or ▼ to change to the preferred **Bklgt Timer** setting. A single quick press of the ▲ or ▼ button changes the **Bklgt Timer** by 1 second. A long press (>1 second) changes the **Bklgt Timer** by 10 seconds.

6. Press the **POWER/EXIT** button to save the revised **Bklgt Timer** setting. At this point, the LCD will show "**Settings**".
7. Press the **POWER/EXIT** button again to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

9.4.11. Set Access Code ("Set Acc. Code")

Options: 0000000 – Access code disabled. Any user may program the TC-25+ TEMPCHECK.
XXXXXXXX – Administrator can set any 8-digit access code, which must be entered before the TC-25+ TEMPCHECK can be programmed.

Factory Setting: 00000000 – Access code disabled.

An administrator may lock the TC-25+ TEMPCHECK programming by entering this "**access code**". If this "**access code**" is any value other than 00000000, then the user must properly enter the code before programming the TC-25+ TEMPCHECK. The factory setting for the "**access code**" is 00000000, *i.e.*, the "**access code**" is disabled.:

1. Press and hold the **MUTE/MENU** button until "**Time & Date**" is displayed in the LCD.
2. Tap the MUTE/MENU button 3 times, and the LCD will indicate "**Settings**".
3. Select the **START/ENTER** button. The LCD will first indicate "**Tmpr Scale**".
4. Press the **MUTE/MENU** button 10 times until the "**access code**" is displayed. The most significant digit of the "**access code**" is edited first.
5. Tap the ▲ or ▼ buttons until the LCD shows the desired character for the "**access code**" digit.
6. Press the **MUTE/MENU** button, to select the next most significant digit in the "**access code**".
7. Repeat steps 5 and 6 until the 8 digits of the "**access code**" match the desired code.
8. Press the **POWER/EXIT** to save the "**access code**". At this point, the LCD will indicate "**Settings**".
9. Press the **POWER/EXIT** button one more time to return the system to the operational mode determined by the 3-way switch on the back panel (**Manual**, **Go/No-Go**, or **Monitor**).

10. Updating TC-25+ TEMPCHECK Firmware

To update the TC-25+ TEMPCHECK firmware, follow this procedure:

1. Press and hold the **POWER/EXIT** until the TC-25+ TEMPCHECK powers down.
2. If in use, unplug the barcode scanner from the USB Type-A connector (**USB Barcode Scanner**) and any device connected to the USB Type-B connector (**USB Serial Output**). If there is an **SD Card** inserted, then remove it from the slot. Leave the power cord connected to line power.
3. Insert the SD card with the new firmware into the **SD Card** slot on the back panel of the TC-25+ TEMPCHECK.
4. Press and hold the ▲ button. Continue holding the ▲ button while pressing the **POWER/EXIT** button until the LCD and LEDs turn on, then release both the ▲ and

POWER/EXIT buttons. The firmware update will then be completed automatically and the TC-25+ TEMPCHECK will power down.

5. Remove the new firmware SD card from the **SD Card** slot.
6. Press the POWER/EXIT button to power up the TC-25+ TEMPCHECK. Once the TC-25+ TEMPCHECK is on, it will be running with the new firmware.

11. Performance Checks & Maintenance

To perform a simple temperature calibration check at 0.0 °C (32.0 °F), use a well agitated plastic bag filled with distilled water and ice cubes or chips made with distilled water. Place the bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the insulated pad. Continually agitate the bag by rolling it around so that the ice and distilled water remain well mixed, keeping the temperature near 0.0 °C. The TC-25+ TEMPCHECK temperature display should fall to between -0.2 °C (31.6 °F) and +0.2 °C (32.4 °F) in less than 30 seconds.

The NIST-Traceable Certificate of Calibration included with the TC-25+ TEMPCHECK expires one year after the date of shipment, and Hampshire Controls recommends annual temperature calibration recertifications. Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for annual recertification. Hampshire Controls will return the recalibrated TC-25+ TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

Cleaning Instructions: Moisten a microfiber cloth with a mixture of 70% isopropyl alcohol and 30% water. Gently wipe the surfaces of the TC-25+ TEMPCHECK. Clean the LCD screen, carefully wiping in one direction.

13. Replacement Parts

Table 8. TC-25+ TEMPCHECK Rapid Response Thermometer Replacement Parts

All replacement parts, except for the USB Type-B male to USB Type-A male cable (P/N 33078) and the 16 GByte SD card (P/N 37317), are exclusively sold by, and must be ordered from, Hampshire Controls. Part replacement, and any repairs, must be performed only by a qualified service technician.

HAMPSHIRE CONTROLS PART # (P/N)	DESCRIPTION
F83023-01	TC-25 TEMPCHECK Rapid Response Thermometer
F83023-02	TC-25+ TEMPCHECK Rapid Response Thermometer
CF83023-01, CF82023-02	TC-25 or TC-25+ TEMPCHECK Rapid Response Thermometer Calibration and Recertification
29051	Universal Power Adaptor, 2m (6') Cord Input: 100-240 VAC, 50-60 Hz, <0.35 A RMS Output: 12 VDC, 1 A, 12 W
33078	6' USB Type-B Male to USB Type-A Male Cable
37317	16 GByte SD Memory Card
70906	Hardware Key, TC-25 to TC-25+ TEMPCHECK Upgrade

14. Troubleshooting Guide

TC-25+ TEMPCHECK Type K Thermocouple Damaged

- If the Type K thermocouple probe wire has poked through the circular black membrane located in the middle of the insulated pad, then the TC-25+ TEMPCHECK might not provide accurate temperature readings. Please return the TC-25+ TEMPCHECK for repair before the temperature sensor is damaged further. Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for repair. Hampshire Controls will return the repaired TC-25+ TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

TC-25+ TEMPCHECK Display Does Not Agree with 0.0 °C (32 °F) Reference

- To perform a simple temperature calibration check at 0.0 °C (32.0 °F), use a well agitated plastic bag filled with distilled water and ice cubes or chips made with distilled water. Place the bag on the TC-25+ TEMPCHECK insulated pad with the bag approximately centered on the circular black sensor located in the middle of the insulated pad. Continually agitate the bag by rolling it around so that the ice and distilled water remain well mixed, keeping the temperature near 0.0 °C. The TC-25+ TEMPCHECK temperature display should fall to between -0.2 °C (31.6 °F) and +0.2 °C (32.4 °F) in less than 30 seconds. If not, then contact Hampshire Controls for a return material authorization (RMA) number and a quotation for temperature calibration and recertification. Hampshire Controls will return the recalibrated TC-25+ TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

TC-25+ TEMPCHECK Temperature Reading at a Fixed Value >40.0 °C (104.0 °F)

- If the display shows a fixed temperature reading >40.0 °C (104.0 °F), then the Type K thermocouple temperature probe circuit is broken (open circuit). Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for repair. Hampshire Controls will return the repaired TC-25 TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

TC-25+ TEMPCHECK Temperature Not Responsive to Bagged Biological Product

- If the temperature displayed is not responsive to the placement of bagged biological product on the sensor pad and is around room temperature (between 16 °C (60 °F) and 27 °C (80 °F)), then the Type K thermocouple temperature probe may be short circuited. Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for repair. Hampshire Controls will return the repaired TC-25 TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

TC-25 TEMPCHECK Temperature Out of Range or Drastically Different than Expected

- If the display shows fixed or variable temperature readings of <0.0 °C (<32.0 °F) or >40.0 °C (104.0 °F) or readings drastically different than expected, then the Type K thermocouple temperature probe, associated wiring, or connections have failed or there is an issue with the temperature calibration. Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for repair. Hampshire Controls will return the repaired TC-25 TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

TC-25+ TEMPCHECK Temperature Display Is Blank and POWER/STATUS LED is Off

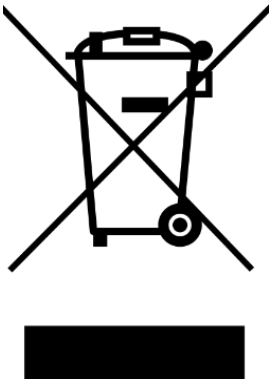
The TC-25+ TEMPCHECK might be on battery and has powered down to conserve battery life. Press and hold the **POWER/EXIT** button until the LEDs blink and then release the button to activate the TC-25+ TEMPCHECK. If the TC-25+ TEMPCHECK does not activate, then:

- Verify that the power adapter is connected to line power and to the power connector on the TC-25+ TEMPCHECK.
- Disconnect, wait 10 seconds, and then reconnect the power adapter to the power connector on the TC-25+ TEMPCHECK.
- If the power adapter is properly connected, the TC-25+ TEMPCHECK temperature display is still blank, and the **POWER/STATUS** LED is still off, then the TC-25+ TEMPCHECK power circuit must be damaged so that even the internal battery backup does not cause the TC-25+ TEMPCHECK to function. Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for repair. Hampshire Controls will return the repaired TC-25+ TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.

Constant Alarm Condition (HIGH/LOW LED Solid Red or Blue, Audio Alarm Sounding)

- Set the 3-way switch on the back panel of the TC-25+ TEMPCHECK to **Manual** mode. This should terminate all audio alarm conditions. If not, then the TC-25+ TEMPCHECK is damaged. Contact Hampshire Controls for a return material authorization (RMA) number and a quotation for repair. Hampshire Controls will return the repaired TC-25+ TEMPCHECK with a new 1-year NIST-Traceable Certificate of Calibration.
- If switching to **Manual** mode does terminate all audio alarm conditions as expected, then verify that the low and high alarm temperature setpoints are programmed correctly for the bagged biological product of interest before returning the 3-way switch to **Go/No-Go** mode or **Monitor** mode. See **9.2.2 Product Low and High Temperature Alarm Setpoints** for programming instructions.

15. Disposal



This symbol affixed to the underside of the TC-25+ TEMPCHECK means that used electrical and electronic products should not be mixed with general waste. For proper treatment, recovery, and recycling, please take the TC-25+ TEMPCHECK to designated collection points where it will be accepted free of charge.

Disposing of the TC-25+ TEMPCHECK correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details on your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with local, national, or regional legislation.

For business users in the European Union:

If you wish to discard the TC-25+ TEMPCHECK, please contact your dealer or supplier for further information.

Information on disposal in other countries outside the European Union:

The symbol above is only valid in the European Union. If you wish to discard the TC-25+ TEMPCHECK, please contact your local authorities or dealer and ask for the correct method of disposal.

16. Limited Warranty

Hampshire Controls Corporation warrants the TC-25+ TEMPCHECK Rapid Response Thermometer against defects in material and workmanship, when used as recommended, for a period of one year from original purchase. TC-25+ TEMPCHECK Rapid Response Thermometers believed to have such defects must be returned to the factory by prepaid transportation.

Hampshire Controls' obligation under this warranty is limited to the repair or replacement, at its option, of those items which upon examination prove to be defective. Such repair or replacement will be made without charge.

This warranty will be void if repairs or alterations are made or attempted without factory authorization; or if the item has been subject to misuse, negligence or accident.

This warranty will be void if the user attempts to charge any device, including iPhones, iPads, or any other mobile device, using the TC-25+ TEMPCHECK Rapid Response Thermometer's USB Type-A port.

Hampshire Controls Corporation assumes no liability for consequential damages of any kind. The purchaser, by acceptance of the product, assumes all liability of the consequence of its use or misuse.

Hampshire Controls Corporation makes no other warranty, whether expressed or implied, in connection with the sale or use of this product.

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Refer to www.hampshirecontrols.com for latest specifications.

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