

Safe-NET™ Display & Alarm Modules

Description:

Safe-NET™ Display Module:

The Safe-NET™ Display Module (As shown in figure 1 and figure 2 on page 3) is a temperature-monitoring device. The display module reads and displays temperature sensed by the product simulator temperature sensor mounted in the refrigerated space. The display module notifies the user of alarms based on preset alarm conditions.

Alarm Module:

The alarm module (As shown in figure 3 on page 3) is an additional feature to Safe-NET™. The alarm module supplies power to the display module via an 8-wire cable. The alarm module provides battery back up power to the display module during loss of A.C power. The display module communicates with the alarm module via a 2-wire cable. Additionally, the alarm module is equipped with a beeper to provide audible notification of alarms.

Operation:

Normal:

1. During normal operating conditions, the product simulator temperature is displayed.
2. The GREEN LED on the alarm module is lighted (As shown in figure 3 on page 3).

Product temperature alarms:

1. Display generates an alarm if the product simulator temperature rises above the high alarm set point or below the low alarm set point for preset time duration.
2. When the display module generates the high temperature alarm, the RED LED on the display module is lighted. Every 12 seconds, “PrHi” is displayed for 3 seconds and the remaining time, product simulator temperature is displayed.
3. When the display module generates the low temperature alarm, the RED LED on the display module is lighted. Every 12 seconds, “PrLo” is displayed for 3 seconds and the remaining time, product simulator temperature is displayed.
4. For both alarms, the beeper on the alarm board beeps every 6 seconds.

Power Failure:

1. The battery on the alarm board supplies power to the display.
2. The display is blanked. Product temperature is displayed for a period of 6 seconds every 3 minutes.
3. Product temperature alarms can be generated during power loss.
4. Audible alarm is only active for temperature alarms.

Low Battery:

1. During normal operating conditions, alarm module monitors battery condition.
2. Display shows “bAtt” when there is a Low battery.
3. Low battery audible alarm is only active with A.C power applied.
4. The beeper on alarm board beeps every 2 minutes.

Connection Failure:

1. The loss of communication between the display module and the alarm module activates an alarm.
2. When the display module generates the loss of communication alarm, the RED LED on the display module is lighted. Every 12 seconds, “A-Er” is displayed for 3 seconds and the remaining time, product simulator temperature is displayed.
3. The beeper on alarm board beeps every 30 seconds.

Precedence of Alarms:

Severity of the alarm determines the beeper action.

Following is the priority of the alarms.

Alarm	Display Action	Beeper OFF Time	Severity
Product HIGH/LOW Alarm	PrHi/PrLo	6 Seconds	1
Connection Failure	A-Er	30 Seconds	2
Low Battery	BAtt	2 Minutes	3

Alarm with higher severity takes precedence over the low severity alarm.

For example, if there is a product alarm and low battery:

1. The beeper on the alarm board beeps every 6 seconds to indicate the product temperature alarms.
2. Indication of the low battery alarm is ignored by the beeper, but is active in the display.
3. Every 12 seconds, the display shows “PrHi” for 3 seconds followed by “bAtt” for 3 seconds and the remaining time, product simulator temperature is displayed.

Alarm set points:

Following are the alarm set points with respective case models.

Case Model	Set point	Product high alarm set point	Product low alarm set point	Product alarm delay
ARL	-8.0 °F	2.0 °F	-22.0 °F	90 Min
ARV	36.0 °F	43.0 °F	32.0 °F	60 Min

Note:

1. High temperature alarm will typically activate during startup of the case. This is normal since the refrigerated space will require an extended period of time to reach operating temperature. Product should not be loaded until operating temperature is reached. Failure to do so may result in product loss.
2. Battery backup operation is possible for a period not to exceed 6 hours. Condition of the battery determines this period. Operation of Safe-NET™ is compromised after this time. Product integrity cannot be ensured until power is restored and the battery is replaced.

Safe-NET™ display module with top cover

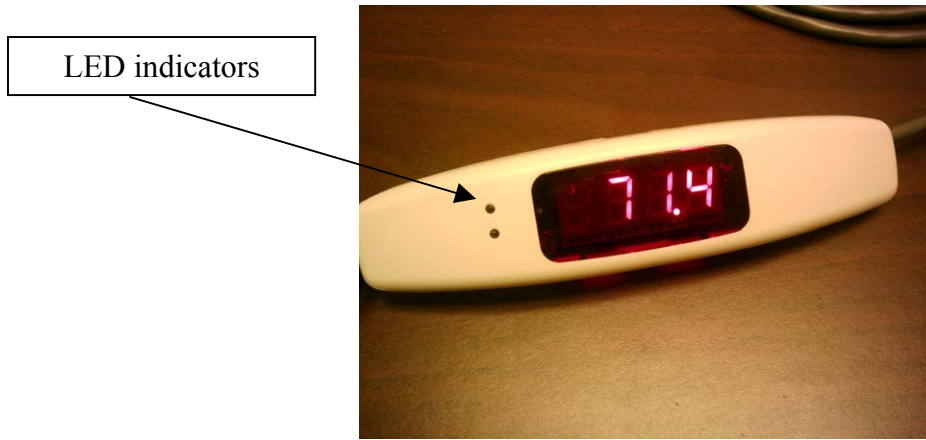


Figure - 1

Safe-NET™ display module with cover off

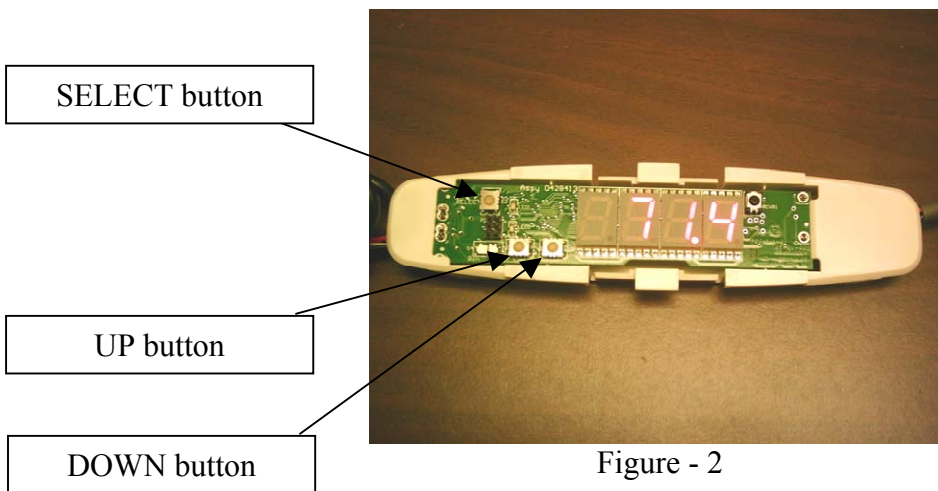


Figure - 2

Alarm module

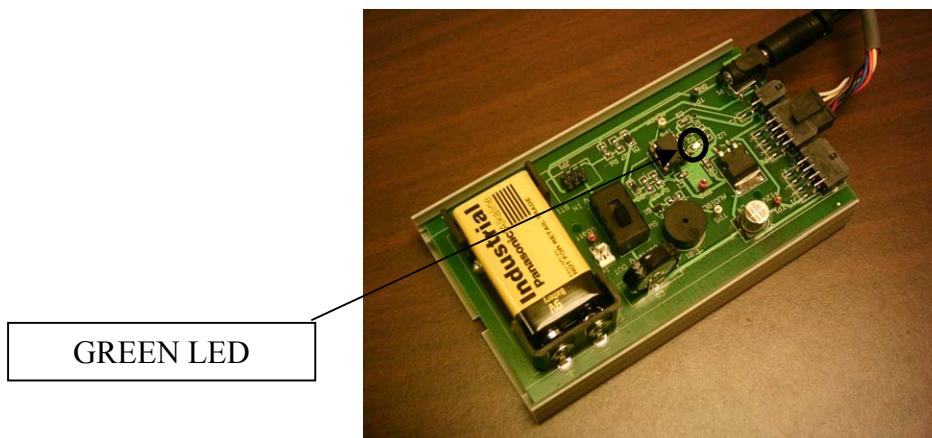


Figure - 3

Modify alarm set points in ARL/ARV cases

The Safe-NET™ display module stores the alarm set points and the alarm delay times for monitoring of ARL/ARV cases. The following instructions guide the user through the alarm set points and alarm delay modification process.

- Using a small flat head instrument (small flat head screw driver), remove the top cover of the display module.
- There are three buttons on the left hand side of the display board, named “**SELECT**”, “**UP**” and “**DOWN**”(As shown in figure 2 on page 3).
- Although labels are not clear, buttons can be determined by their location on the display board.
- Among the three visible buttons on the display, following are the locations of each button and its use.
- **SELECT** button is located near the top edge of the display board. Used for selecting the menus and editing the menus.
- **UP** is the left button of the two buttons located on the bottom line up of the display board.
- **DOWN** is the right button.

Notes:

- **SELECT** button is used to scroll through the following menus

➤ SETUP	–	StuP.
➤ CLOCK	–	CLOC.
➤ DEFROST	–	dEFr.
➤ TEMPERAURES	–	tEM.
➤ VALVE	–	uALu.
➤ DISPLAY DEFAULT	–	diSP.
- To edit any menu item, press either the **UP** or **DOWN** button to enter selected menu.
- Once the **UP** or **DOWN** button is pressed, use the **SELECT** button to modify and save the parameter.
- User must enter a valid password to edit parameter settings.
- Once the edited value is entered using the **SELECT** button, the display cycles between menu item and edited menu value.
- Once the menu is displayed, if any button is not pressed for 12 seconds the display returns to showing temperature. User must scroll through the menus using **SELECT** button to return to SETUP menu.
- Holding a button down has the same effect as pressing once.

Warning:

- **It is not recommended that any parameter values other than those described here be changed. Modification of any other parameters could result in unpredictable Safe-NET™ operation.**
- **The user should consider proper monitoring of the case when modifying product alarm set points and product alarm time delays.**

PASSWORD

- Start from default display (product simulator temperature) press **SELECT** button.
- When the select button is pressed for the first time “**StuP**” is displayed for one second and then display cycles between “**dSet**” and “current set point”.
- Press **UP** button once.
- Display cycles between “**PASS**” and ‘**0**’(default password value).
- Pressing **SELECT** button will take the user to editing mode, with the display flashing password value.
- Use **UP** button to increment the value and **DOWN** to decrement the value.
- Press the **SELECT** button when the correct password value is flashing.
- The display cycles between **PASS** and password value to confirm the new value of the menu item.
 - The default password is **595**. At this time, it cannot be changed.
 - The password is active for **5** minutes from the last modification.

MODIFYING SET POINTS

- With password set and with display cycling between “**PASS**” and new password value.
 - Use **UP** button until display shows the desired parameter to be modified.
- With password set and with display reading product temperature.
 - Use **SELECT** button to scroll through the menus.
 - Once display reaches “**StuP**”/SETUP menu use **UP** button until display shows the desired parameter to be modified.
- To change the product low alarm set point press the **UP** button until display cycles between “**PrLo**” and “current product low alarm set point”.
- To change the product high alarm set point press the **UP** button until display cycles between “**PrHi**” and “current product high alarm set point”.
- To change the product alarm delay press the **UP** button until display cycles between “**P-dL**” and “current product alarm delay”.
- Once the desired menu item is displayed, press **SELECT** button.
- Display starts flashing the corresponding menu VALUE.
- With the display flashing the corresponding menu VALUE, press **UP** or **DOWN** button to change the parameter.
- The value of the parameter can be modified only within the following specified range:

Case Model	Range of product high alarm set point	Range of product low alarm set point	Range of alarm delay
ARL	-8.0 °F to 8.0 °F	-24 °F to -8.0 °F	0 to 240 Min
ARV	36.0 °F to 52.0 °F	20.0 °F to 36.0 °F	0 to 240 Min

- Once the desired value is flashing, press **SELECT** button to store new value.
- Display cycles between the new modified value and the menu item.
- Within 12 seconds after button activation, display starts showing the product temperature.
- Replace top cover of the display module after modifications are complete. (When replacing top cover, ensure alarm LED indicators are on the left side as shown in figure 1 of page 3)