HUSSMANN®

Safe-NET™ III
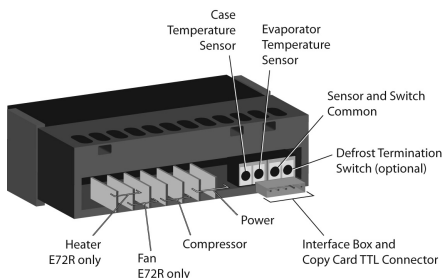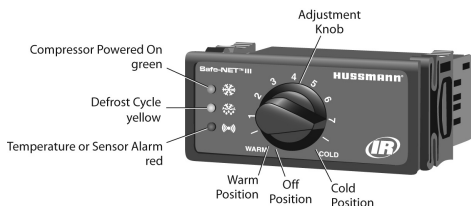**Temperature and
Defrost Controller**

USER INSTRUCTIONS

Your refrigerated case uses a Hussmann Safe-NET™ III temperature and defrost controller to precisely maintain the temperature and prevent frost buildup on the cooling coil. LEDs indicate when the compressor or refrigeration is on, when the case is in a defrost cycle, if the temperature is outside the desired range, or if there is a sensor failure. An adjustment knob allows the temperature to be set within the configured range and can power off the controller and compressor. Your controller has been custom-configured to provide the best temperature and defrost control for your chilled or frozen food.

The front of the controller has an adjustment knob and status LEDs. The back of the controller has connections for sensors and switched equipment.

Adjustment Knob

Compressor Powered On green

Defrost Cycle yellow

Temperature or Sensor Alarm red

Warm Position   Off Position   Cold Position

Case Temperature Sensor

Evaporator Temperature Sensor

Sensor and Switch Common

Defrost Termination Switch (optional)

Heater E72R only

Fan E72R only

Compressor

Power

Interface Box and Copy Card TTL Connector

The Safe-NET III controller includes the following features and connections.

- Adjustment knob:
  Adjusts the temperature setpoint.
  May include an Off Position to turn off the controller, refrigeration, and defrost heat and fan.
  See Your Case Configuration on page 7.

⚠️ **WARNING:** The optional evaporator fan remains ON when the adjustment knob is in the Off position.

- Controller LEDs:

  ❄️ Compressor Powered On LED (green):
  Lights while the compressor is running or the refrigeration valve is open.

  📶 Defrost Cycle LED (yellow):
  Lights while the refrigeration coil is defrosting.

  📶 Temperature or Sensor Alarm (red):
  Lights if the temperature is too warm or too cold.
 Flashes if a sensor fails.

See Alarms and Codes on page 7.

- Rear connections:

  – Case temperature sensor:
    Typically senses the temperature of the air in the case.
    Used by the controller to determine when to power on or power off the compressor or refrigeration.

  – Evaporator temperature sensor:
    Senses the temperature of the refrigeration coil.
    Terminates a defrost cycle when refrigeration coil ice melts.

  – Compressor or refrigeration relay:
    Switches on the compressor or refrigeration valve for cooling.

  – Defrost relay:
    The Safe-NET III controller includes a defrost relay that switches on the optional evaporator fan during normal operation and switches on the defrost heater during a defrost cycle.

Display

The display includes three red LEDs and two digits for temperature, defrost status, and error codes.

Compressor Powered On
Defrost Cycle
Temperature or Sensor Alarm
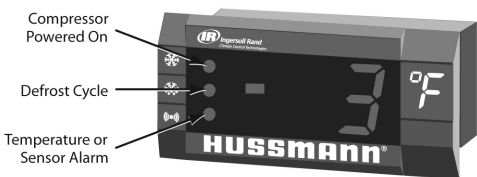
The three display LEDs are red, and their behavior matches the LEDs on the controller.

Startup

1. Plug in the case.

⚠ **WARNING:** The Off Position does not disconnect line voltage to the case, refrigeration unit, fan, or heater.

2. Wait for the self check to complete. During the self check, each LED flashes for one second, then all LEDs turn on for two seconds. If the LEDs do not flash, make sure the adjustment knob is not in the Off position. (See Your Case Configuration on page 7 for Off position functionality.)

   • After the self check, all LEDs turn off until the compressor starts. There may be a delay before the compressor starts.
   If the red Temperature or Sensor Alarm LED stays on after the self check, see Alarms and Codes on page 4.

   • The green Compressor Powered On LED turns on when the compressor starts.

Temperature Adjustment

Rotate the adjustment knob counter clockwise for a warmer setpoint or clockwise for a colder setpoint.

   • While you are adjusting the temperature, the optional display shows the setpoint (cut out value). A few seconds after you set the temperature, it reverts to showing the sensed temperature in the case.

Alarms and Codes

Flashing Temperature or Sensor Alarm LED, E1 or E2

If the Temperature or Sensor Alarm LED (red) on the controller and display is flashing, a temperature sensor has failed. The display shows E1 if the case sensor has failed or E2 if the evaporator sensor has failed. (See Alarms and Codes on page 7.)


If the case sensor fails, depending on the configuration of your controller, refrigeration will run continuously, turn off, or repeat a duty cycle of a few minutes on and a few minutes off. The graph below shows an example of duty cycle operation during a case sensor failure.
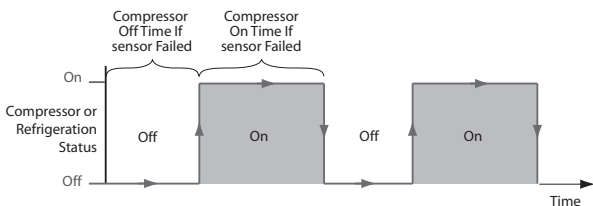
Defrost Termination Switch

Your case may use a defrost termination switch, instead of an evaporator sensor, to terminate a defrost cycle. The defrost termination switch is temperature activated and senses the completion of defrost. Your Case Configuration on page 7 shows whether your case includes a defrost termination switch.

Manual Defrost
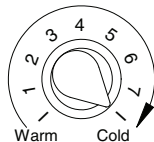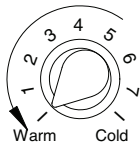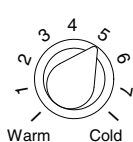
1. Note location of knob setting.

2. Rotate knob fully counterclockwise until it stops (full warm – "OFF" position).

3. After 10 seconds, but before 30 seconds, rotate knob fully clockwise until it stops (full cold position).

Note: **The above procedure initiates a manual or forced defrost.**

The control has protective settings to prevent short cycling of the compressor.

    A. The compressor may run for as long as 1 minute after step 2 is completed. Start the 10 second count down, for step 3, once the display is blank.

B. The defrost initiation may be delayed for as long as 2 minutes after step 3 is completed.

The display will show "dF" once step 3 is completed, even with the protective delay timing out. The "dF" will display for a while after defrost has terminated, to allow the temperature to stabilize.

⚠️ **CAUTION:** Return the control knob to its original setting (Step 1) once the manual defrost has been initiated.

Evaporator Fan Delay

On low temperature models, an evaporator fan delay is incorporated to delay the fan operation until the evaporator is below its setpoint temperature, following a defrost cycle.

On some low temperature models, the evaporator fan is briefly cycled to dissipate the presence of vapor during the defrost cycle.

Service Procedures (for service personnel only)

Installing a configuration file into a controller from a copy card

The copy card allows service personnel to update the configuration of a controller.

⚠️ **CAUTION:** This procedure must be followed exactly or the controller may be damaged.

 1. Disconnect power to the case (the controller must be powered off).
 *2. Connect the copy card to the controller.
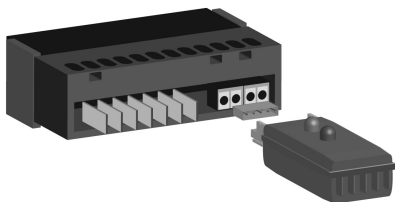
 3. **Make sure the adjustment knob is not in the Off position.**
 4. To start the installation, reconnect power to the case (the controller should be powered on).
    a. During the file transfer, both LEDs on the copy card turn on.
    b. When the data transfer has completed, the green LED remains on and the red LED turns off.
    c. If the red LED remains on and the green LED is off, the transfer failed.
    d. If the transfer fails, repeat step 1 through step 4. If it fails again, use a different copy card or controller.
 5. Disconnect power to the case (the controller is powered off).
 6. Disconnect the copy card from the controller.
 7. Reconnect power to the case (the controller is powered on).

Note: The above procedure can be easily performed through the display

interface cable, using the addition of a jumper to adapt the connection to the copy card.

* At Step 2 above:

    Disconnect the cable from the rear of the display module and attach it to the copy card using the jumper. Proceed with Step 3 through Step 7.

Wiring Examples

⚠️ **WARNING:** Before wiring the controller, make sure that the refrigeration unit, fan, heater, and controller are not connected to the electrical supply. Do not apply voltage to the digital input.

Safe-NET III Controller
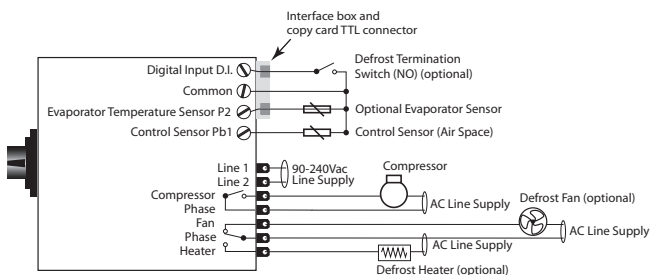
Your Case Configuration

Factory Setting	Average product temperature -10°F. Knob position #5
Adjustment knob has Off position.	Yes
Delay before compressor runs after startup.	Delay Time 30 sec.
Compressor operation if case sensor fails.	Compressor On
What the display shows during defrost?	dF
The case defrosts when the power is turned on.	Yes
The method used to end defrost.	Evaporator Sensor Temperature
Defrost terminated by termination switch	No

Alarms and Codes

Alarm or Code	Indicates	Action
Red LED remains on after startup.	Firmware corruption on controller. Controller is not operating.	Call service immediately.
Red LED turns on during operation.	Case temperature is too warm or too cool.	Make sure the door is closed. Make sure that cold air is not being blocked or deflected. Make sure that the evaporator coil is not iced up. Check the temperature using the optional display or a thermometer. If the LED does not turn off after one hour call service.
Red LED flashes.	Temperature sensor failure. E1 indicates a case temperature failure. E2 indicates an evaporator temperature sensor failure.	Check the optional display for error code E1 or E2 and call service immediately.