SABBATH MODE

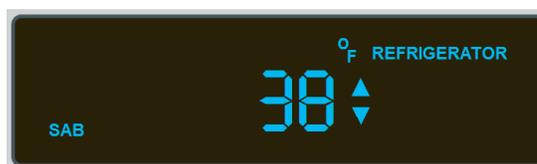Sabbath mode is used to disable interior lights and alarms for observance of the Sabbath.

To enter **Sabbath Mode**: Press and HOLD the ACTIVATE CONTROLS pad. While holding the ACTIVATE CONTROLS pad, press and hold the DISPLAY OFF pad simultaneously for 3 seconds. Continue holding until three tones are heard and then the S A B indicator will be displayed on the alpha-numeric display. The unit is now in Sabbath mode.

Press and HOLD   *Press and Hold for 3 seconds*
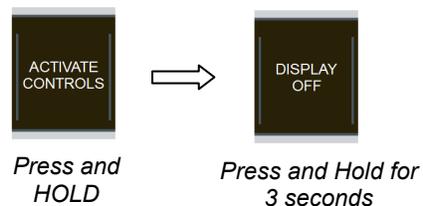
The Sabbath Mode is used for the purpose of controlling the refrigeration unit without the interior lights, changes to the LED display and the keypad tones.

The following actions will occur while in Sabbath mode:

Sabbath mode activated

- In Sabbath mode, only the ACTIVATE CONTROLS and DISPLAY OFF keypads will be active *(In order to disable Sabbath mode ONLY! Display cannot be shut off while in Sabbath mode).*
- The LED readout will be identical to the state is was prior to entering Sabbath mode with the exception of S A B in the display.
- The Freezer / Refrigerator outputs (e.g. Compressor, fans, etc.) will not have an immediate response by the opening or closing of the door(s). If the controller calls for action, there will be a 15-25 second delay.
- The error handling inside the controller will be functional, but all alarms will be suppressed until the Sabbath Mode has been exited.

The following components are deactivated in Sabbath mode:

- ALL Keypads (*except Activate controls and Display Off*)
- All tones will be disabled.
- Display is static
- Interior lights
- Door open alarm and power alarm indicators are disabled; however the alarm is maintained in memory and will be displayed when Sabbath mode is exited.

The defrost function in Sabbath Mode is based solely on elapsed clock time. Four (4) hours after Sabbath Mode is entered, the first defrost is activated. Subsequent defrosts are every eight (8) hours after the last defrost cycle.

If a Long Power Loss is encountered, the control will write to EEPROM that Sabbath Mode was active and the control will return to Sabbath Mode when power is restored. The POWER indicator will not be activated on the LED display. The Sabbath Mode defrost timer will be reset to zero after a long power loss. A VCC Self Test will also be performed upon power up.

To exit **SABBATH MODE**, see activation procedures above.

SHOWROOM MODE

Showroom mode allows electronic controls and interior lights to function independently of the refrigeration system

To enter **Showroom Mode**: Press and hold the ACTIVATE CONTROLS pad. While holding, press and Hold the HIGHER and ALARM OFF pad simultaneously. Continue holding until three beeps are heard and then the SHOW indicator will be displayed on the alpha-numeric display. The unit is now in Showroom mode.

Press and Hold

Press and Hold simultaneously for 3 seconds
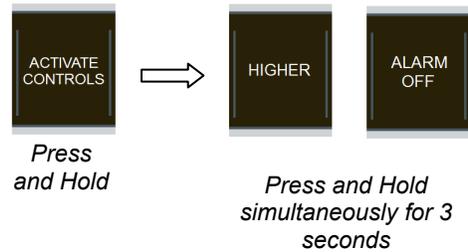
The Showroom Mode is used for the purpose of displaying models and allowing a user to interact with the product on the sales floor without having the temperature control and defrost operations active.

The following components are deactivated in Showroom mode:

- Compressor and condenser fan motor
- Evaporator and service fan motors
- Defrost heater
- High temperature alarm
- Open / shorted thermistor alarm

Showroom mode activated

The following components are activated in Showroom mode:

- Keypad, display and audible enunciator
- Interior lights off after 10 minutes feature
- Door open alarm and power alarm

The LED display will initially show a temperature of 38°F for the refrigerator and a temperature of 0°F for the freezer. The user will have the ability to change the set temperature using the HIGHER and LOWER for demonstration purposes. Once the new temperature is set, the up or down arrow will flash for 10 seconds (depending on the direction of temperature adjustment) and the display will then revert back to the initial temperatures specified above.

If a Long Power Loss is encountered, the control will write to EEPROM that Showroom mode was active and the control will return to Showroom Mode when power is restored.

Upon exiting Showroom Mode the High Temperature, Door Open, Power, Open Thermistor and Shorted Thermistor Alarms duration will be reset to zero.

To exit **SHOWROOM MODE**, see activation procedures above.

FORCED DEFROST

With unit in NORMAL operation mode, the defrost can be manually initiated

To enter **Forced Defrost**: Press and release the ACTIVATE CONTROLS
pad. Now press and Hold the HIGHER pad. While holdng the Higher Pad,
press and hold the DISPLAY OFF pad for 3 seconds. When entered correctly, d E F
will be illuminated in the display.

| ACTIVATE CONTROLS		HIGHER		DISPLAY OFF
Press and release.		*Press and hold…*		*Press and Hold for 3 seconds*
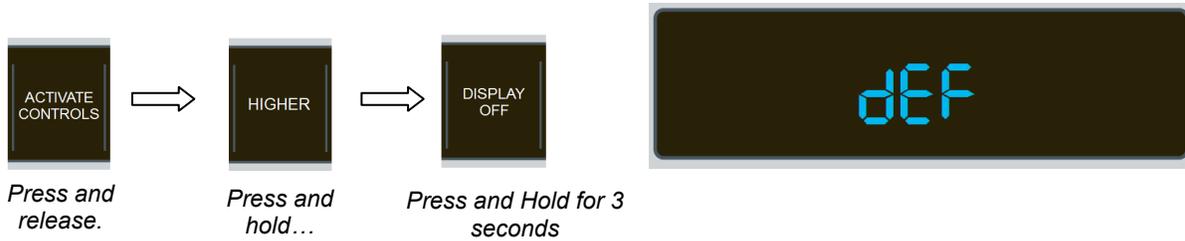
Unit immediately suspends all cooling operations, compressor turns off and evaporator fan, condenser
fan, and refrigerator crossover fan all shut off. Defrost heaters are enabled dependant upon satisfaction of
defrost terminator.

FORCED COMPRESSOR START

With unit in NORMAL operation mode, unit immediately energizes the compressor, condenser fan, refrigerator cross over
fan and evaporator fans. In Forced Compressor Start the compressor dwell time is ignored. The compressor and fans are
activated until the cut out temperature is reached and then the unit returns to normal operation.

To enter **Forced Compressor Start**: Press and release the ACTIVATE CONTROLS
pad. Now press and Hold the LOWER pad. While holdng the LOWER Pad,
press and hold the DISPLAY OFF pad for 3 seconds.

ACTIVATE CONTROLS		LOWER		DISPLAY OFF
Press and release.		*Press and hold…*		*Press and Hold for 3 seconds*
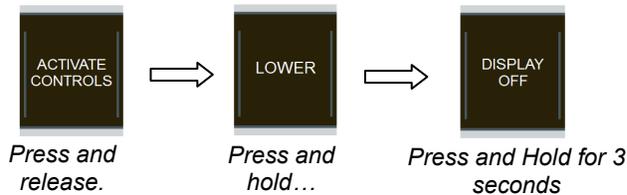
FAHRENHEIT / CELSIUS ADJUST

To change from °F to °C, press and hold ACTIVATE CONTROLS then press and hold ALARM OFF for 3
seconds. To change back, follow the same steps.

ACTIVATE CONTROLS		ALARM OFF
Press and Hold.		*Press and Hold for 3 seconds*

°F REFRIGERATOR

79

°C REFRIGERATOR

26
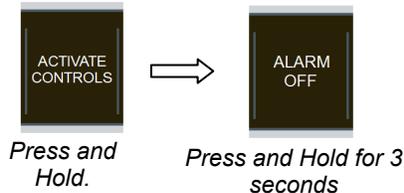
ENTERING SERVICE MODE

Enable keypad by pressing and releasing ACTIVATE CONTROLS, press the FAST COOL pad once, and within five (5) seconds press HIGHER, LOWER, HIGHER and LOWER. The controller will switch to Program Mode A. The LED display will show PrA and an audio confirmation will sound three times.

Service Mode A

```
PrA
```

(NOTE: Each press of the ACTIVATE CONTROLS pad will toggle between Service Mode A and B)

FRZ TEMP　　　　To read the temperature of the thermistor in Freezer with the offset, no filtering applied.

REF TEMP　　　　To read the temperature of the thermistor in Fresh Food with the offset, no filtering applied.

FAST COOL　　　　To toggle between Adaptive Add or Conventional Defrost Cnd (Factory default: Add)

```
FAST
COOL
```

With each push of the FAST COOL pad, the user will toggle between *adaptive* or *conventional* defrost. If set to conventional, the intervals (in hours) must be set as well. Once set, press and hold the ACTIVATE CONTROLS pad until 3 beeps are heard and your changes will be saved.

```
Add
```
```
Cnd
```

ALARM OFF　　　　To access and adjust Conventional Defrost in (1) Hour intervals when defrost system is set to set to Conventional Defrost C n D *(as shown above)*

```
ALARM
OFF
```

Press and hold the ALARM OFF pad for 3 seconds until CD is in the display. Now, press either the HIGHER or LOWER pad to display the current time interval. The default is 8 hours. Use the HIGHER or LOWER pad to adjust the values. The Minimum interval is 4 hours and the maximum is 24 hours. Once set, press and hold the ACTIVATE CONTROLS pad until 3 beeps are heard and your changes will be saved.

```
Cd
```
⇨ ```HIGHER``` *OR* ```LOWER``` ⇨ ```8```

Above shows the default Conventional defrost of every 8 hours!

Depress the HIGHER pad to increase the time intervals between defrost and use the LOWER pad to decrease the time intervals. Once set, press and hold the ACTIVATE CONTROLS pad until 3 beeps are heard and your changes will be saved.

Service Mode A *(Continued)*

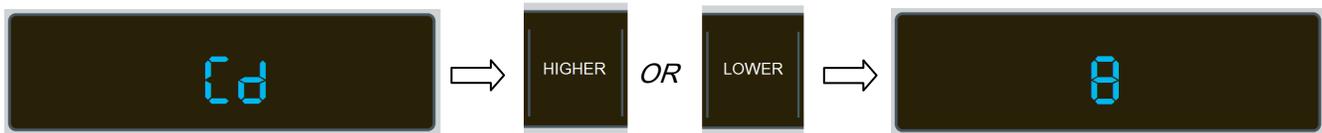**DISPLAY OFF ¹**

DISPLAY
OFF

To view and adjust VCC (Compressor speed) **CLF**.

Values are set automatically when model code is selected (see page 10)

Press the **DISPLAY OFF** button once and **CLF** is in the display.

CLF

Now, press either the **HIGHER** or **LOWER** button to display the default compressor speed.
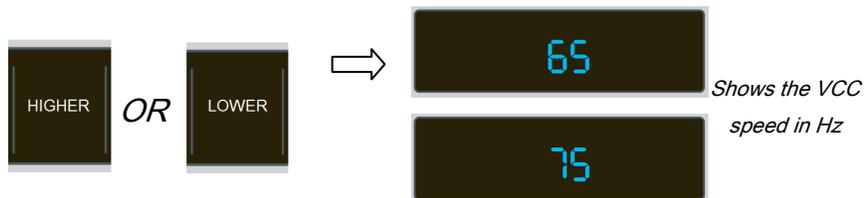
HIGHER **OR** LOWER ⟹ 65

75

Shows the VCC speed in Hz

To exit, press the **ACTIVATE CONTROLS** pad and **PrA** will be displayed. Press and HOLD the **ACTIVATE CONTROLS** pad for three seconds to exit the Service Mode.
Any changes made to the other parameters will be saved.

DISPLAY OFF ²

DISPLAY
OFF

To display software versions and build number on the controller.

Press and hold the **DISPLAY OFF** button for 3 seconds until you see software version A and the current version. Using the **HIGHER** or **LOWER** pad, toggle between A, B and C to view the current software and Build versions.

A1   b 5   C 0

A + Major version   **B** + Minor version   **C** + Build

To exit, press the **ACTIVATE CONTROLS** pad and **PrA** will be displayed. Press and HOLD the **ACTIVATE CONTROLS** pad for three seconds to exit the Service Mode.
Any changes made to the other parameters will be saved.

Service Mode A *(Continued)*

HIGHER + ALARM OFF

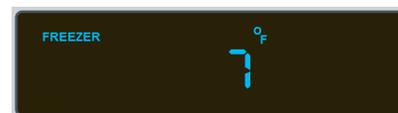To view and adjust the Freezer and Fresh Food Cut-in hysteresis.

Values are set automatically when model code is selected (see page 10)

Press and hold **HIGHER** and **ALARM OFF** pads for 3 seconds until CIH is displayed.

[IH

Press the **FRZ TEMP** pad (select models), the display will show the Freezer Cut-in set point. Values can be adjusted from **1°F** to **10°F**. Adjust by using the **HIGHER** or **LOWER pad.**

FREEZER °F
7

Press the **REF TEMP** pad (select models), the display will show the Fresh Food Cut-in set point. Values can be adjusted from **1°F** to **10°F**. Adjust by using the **HIGHER** or **LOWER pad.**

Refer to the chart on page 10 for Cut-In settings per model.

°F REFRIGERATOR
6

To exit, press the **ACTIVATE CONTROLS** pad and PrA will be displayed. Press and HOLD the **ACTIVATE CONTROLS** pad for three seconds to exit the Service Mode.

Any changes made to the other parameters will be saved.

LOWER + ALARM OFF

To view and adjust the Freezer and Fresh Food Cut-out hysteresis.

Values are set automatically when model code is selected (see page 10)

Press and hold **LOWER** and **ALARM OFF** pads for 3 seconds until COH is displayed.

COH

Press the **FRZ TEMP** pad (select models), the display will show the Freezer Cut-out set point. Values can be adjusted from -**1°F** to **-10°F**. Adjust by using the **HIGHER** or **LOWER pad.**

FREEZER °F
-8
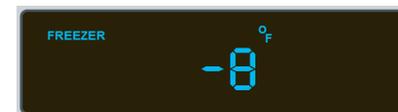
Press the **REF TEMP** pad (select models), the display will show the Fresh Food Cut-out set point. Values can be adjusted from -**1°F** to **-10°F**. Adjust by using the **HIGHER** or **LOWER pad.**

Refer to the chart on page 10 for Cut-Out settings per model.

°F REFRIGERATOR
-b

To exit, press the **ACTIVATE CONTROLS** pad and PrA will be displayed. Press and HOLD the **ACTIVATE CONTROLS** pad for three seconds to exit the Service Mode.

Any changes made to the other parameters will be saved.

Service Mode B

`Prb`

(NOTE: Each press of the ACTIVATE CONTROLS pad will toggle between Service Mode A and B)

FRZ TEMP FRZ TEMP	To view and adjust the Freezer offset (*on some models*). <u>Values are set automatically when model code is selected (see page 10)</u> Freezer Icon illuminates and the offset value. This is the value that the thermistor must sense in order for the center of the box to reflect the customer selected temperature.	FREEZER °F **0**
REF TEMP REF TEMP	To view and adjust the Fresh Food offset (*on some models*). <u>Values are set automatically when model code is selected (see page 10)</u> Refrigerator Icon illuminates and the offset value. This is the value that the thermistor must sense in order for the center of the box to reflect the customer selected temperature.	°F REFRIGERATOR **-9**
FAST COOL FAST COOL	Press **FAST COOL** key once. The FAST COOL indicator will illuminate and the current value will be displayed. Press **HIGHER** or **LOWER** key to adjust (1 to 20 Hours) **2** is factory default.	FAST COOL **2**
MAX REF MAX REF	Press **MAX REF** key once. The MAX REF indicator will illuminate and the current value will be displayed. Press HIGHER or LOWER key to adjust (1 to 20 Hours) **4** is factory default.	MAX REF **4**
MAX FRZ MAX FRZ	Press **MAX FRZ** key once. The MAX FRZ indicator will illuminate and the current value will be displayed. Press HIGHER or LOWER key to adjust (1 to 20 Hours) **6** is factory default.	MAX FRZ **b**
ALARM OFF ALARM OFF	Press ALARM OFF key once. The DOOR OPEN indicator will illuminate and the current value will be displayed. This is the delay time before the alarm will sound when the door is left open. Press HIGHER or LOWER key to adjust (1 to 20 minutes) **3** is factory default.	**3** DOOR OPEN

To exit, press the **ACTIVATE CONTROLS** pad and **Prb** will be displayed. Press and HOLD the **ACTIVATE CONTROLS** pad for three seconds to exit the Service Mode.
Any changes made to the other parameters will be saved.

IMPORTANT: In order to access <u>Service Mode C</u>, you MUST be in Service Mode B. While in Service Mode B, press and hold ALARM OFF pad for 3 seconds. The controller will switch to Program Mode C. The display will show P r C.

Service Mode C

FRZ TEMP or **REF TEMP** Depress either pad to display the current model type. Below is an example of model VCBB5361

Selecting **HIGHER** will select the next model configuration in the list. Pressing **LOWER** will select the previous model configuration in the list. The REFRIGERATOR and FREEZER indicators will illuminate based on whether or not the currently selected model supports the associated function. If the configuration is changed, the default settings will be loaded for the selected model configuration. When a model has been selected, press and hold **ACTIVATE CONTROLS** for 3 seconds until 3 beeps are heard. The Low Voltage board has now be reprogrammed.

MODEL CODE	CONFIGURATION	MODEL NUMBERS
136	Bottom Mount	VCBB5361 – FDBB5361
242	Side by Side Dispenser 42"	VCSB5421D – FDSB5421D
248	Side by Side Dispenser 48"	VCSB5481D – FDSB5481D
342	Side by Side 42"	VCSB5421 – FDSB5421
348	Side by Side 48"	VCSB5481 – FDSB5481
430	All Refrigerator 30"	VCRB5301 – FDRB5301
436	All Refrigerator 36"	VCRB5361 – FDRB5361
530	All Freezer 30"	VCFB5301 – FDFB5301
536	All Freezer 36"	VCFB5361 – FDFB536

SETTING THE MODEL CODE IS REQUIRED WHEN REPLACING THE LOW VOLTAGE BOARD

NOTE: Setting the proper model code will automatically set the following inputs to the control board:

VCC low speed freq	Freezer offset	Refrigerator offset
Refrigerator cut-in	Refrigerator cut-out	Freezer cut-in
Freezer cut-out	Refrigerator Default Temp	Freezer Default Temp

Defrost Termination Delay	**Defrost Start Delay**	**Defrost Lockout Adder**	**Plant Mode**
This adjustment is not a field adjustment and should not be performed by technicians. This is a factory only adjustment. If you see dtd in the display, immediately exit Mode C by holding ACTIVATE CONTROLS for three seconds until you get three audible beeps. Return to your previous actions.	This adjustment is not a field adjustment and should not be performed by technicians. This is a factory only adjustment. If you see dSd in the display, immediately exit Mode C by holding **ACTIVATE CONTROLS** for three seconds until you get three audible beeps. Return to your previous actions.	This adjustment is not a field adjustment and should not be performed by technicians. This is a factory only adjustment. If you see dLA in the display, immediately exit Mode C by holding ACTIVATE CONTROLS for three seconds until you get three audible beeps. Return to your previous actions	This adjustment is not a field adjustment and should not be performed by technicians. This is a factory only adjustment. If you see Pt in the display, immediately switch the main power switch to OFF. Turn main power switch back ON and start over

Service Mode C *(Continued)*

To access the Freezer (*on some models*) upper temperature limit, Press and HOLD the **MAX FRZ** button. While holding the **MAX FRZ** button, press the **HIGHER** pad and HOLD for 3 seconds until **FUL** is shown in the display. Depress the **FRZ TEMP** pad to display the default setting.

MAX FRZ	⇒	HIGHER		FUL	⇒	FRZ TEMP
Press and HOLD		*Press and Hold for 3 seconds*				*Press*

To access the Freezer (*on some models*) lower temperature limit, Press and HOLD the **MAX FRZ** button. While holding the **MAX FRZ** button, press the **LOWER** pad and HOLD for 3 seconds until **FLL** is shown in the display. Depress the **FRZ TEMP** pad to display the default setting.

MAX FRZ	⇒	LOWER		FLL	⇒	FRZ TEMP
Press and HOLD		*Press and Hold for 3 seconds*				*Press*

To access the Fresh Food (*on some models*) upper temperature limit, Press and HOLD the **MAX REF** button. While holding the **MAX REF** button, press the **UPPER** pad and HOLD for 3 seconds until **rUL** is shown in the display. Depress the **REF TEMP** pad to display the default setting.

MAX REF	⇒	HIGHER		rUL	⇒	REF TEMP
Press and HOLD		*Press and Hold for 3 seconds*				*Press*

To access the Fresh Food (*on some models*) lower temperature limit, Press and HOLD the **MAX REF** button. While holding the **MAX REF** button, press the **LOWER** pad and HOLD for 3 seconds until **rLL** is shown in the display. Depress the **REF TEMP** pad to display the default setting.

MAX REF	⇒	LOWER		rLL	⇒	REF TEMP
Press and HOLD		*Press and Hold for 3 seconds*				*Press*

Default Parameters for All Models

Model	SERVICE MODE A				
	CLF *VCC*	CIH Fresh Food Cut-In	CIH Freezer Cut-In	COH Fresh Food Cut-out	COH Freezer Cut-out
VCBB5361 - FDBB5361	65hZ	6° F	7° F	− 6° F	− 8° F
VCRB5301 - FDRB5301	75hZ	6° F	N/A	− 6° F	N/A
VCRB5361 - FDRB5361	65hZ	6° F	N/A	− 6° F	N/A
VCFB5301 - FDFB5301	75hZ	N/A	7° F	N/A	− 8° F
VCFB5361 - FDFB5361	75hZ	N/A	6° F	N/A	− 6° F
VCSB5421 - FDSB5421	75hZ	6° F	7° F	− 6° F	− 7° F
VCSB5421D - FDSB5421D	75hZ	6° F	7° F	− 6° F	− 7° F
VCSB5481 - FDSB5481	75hZ	6° F	7° F	− 6° F	− 7° F
VCSB5481D - FDSB5481D	75hZ	6° F	7° F	− 6° F	− 7° F

Model	SERVICE MODE B					
	Fresh Food Temperature Offset	Freezer Temperature Offset	FAST COOL	MAX REF	MAX FRZ	DOOR ALARM
VCBB5361 - FDBB5361	− 9° F	0° F	2 hrs	4 hrs	6 hrs	3 mins
VCRB5301 30" AR	− 6° F	N/A	2 hrs	4 hrs	N/A	3 mins
VCRB5361 36" AR	− 5° F	N/A	2 hrs	4 hrs	N/A	3 mins
VCFB5301 30" AF	N/A	− 2° F	2 hrs	N/A	6 hrs	3 mins
VCFB5361 36" AF	N/A	1° F	2 hrs	N/A	6 hrs	3 mins
VCSB5421 - FDSB5421	− 6° F	− 2° F	2 hrs	4 hrs	6 hrs	3 mins
VCSB5421D - FDSB5421D	− 8° F	4° F	2 hrs	4 hrs	6 hrs	3 mins
VCSB5481 - FDSB5481	− 4° F	− 5° F	2 hrs	4 hrs	6 hrs	3 mins
VCSB5481D - FDSB5481D	− 8° F	1° F	2 hrs	4 hrs	6 hrs	3 mins

Model	SERVICE MODE C				
	CODE	FUL Freezer Upper Limit	FLL Freezer Lower Limit	rUL Fresh Food Upper Limit	rLL Fresh Food Lower Limit
VCBB5361 - FDBB5361	136	7° F	− 5° F	47° F	33° F
VCRB5301 - FDRB5301	430	N/A	N/A	47° F	33° F
VCRB5361 - FDRB5361	436	N/A	N/A	47° F	33° F
VCFB5301 - FDFB5301	530	7° F	− 5° F	N/A	N/A
VCFB5361 - FDFB5361	536	7° F	− 5° F	N/A	N/A
VCSB5421 - FDSB5421	342	7° F	− 5° F	47° F	33° F
VCSB5421D - FDSB5421D	242	7° F	− 5° F	47° F	33° F
VCSB5481 - FDSB5481	348	7° F	− 5° F	47° F	33° F
VCSB5481D - FDSB5481D	248	7° F	− 5° F	47° F	33° F

ALARMS

POWER LOSS

After power is initially applied to the unit or if a power loss is experienced, 3 dashes in the center of the display, along with the word POWER will continue to flash until reset. The three dashes are only shown for 30 seconds to allow the temperature display buffer to stabilize. After 30 seconds it will show the actual temperature of the cabinet. It can be more sensitive to temperature fluctuations (door openings, etc.) for up to 30 minutes as the internal temperature buffering algorithm is filled up with data. Depending on the model, either the FREEZER indicator or the REFRIGERATOR indicator will be lit as well. Press and Release ACTIVATE CONTROLS or ALARM OFF to reset.

```
┌──────────────────────────────┐        ┌──────────────────────────────┐
│ FREEZER                       │        │              REFRIGERATOR     │
│                               │        │                               │
│        ━ ━ ━                  │        │         ━ ━ ━                 │
│              POWER            │        │                   POWER       │
└──────────────────────────────┘        └──────────────────────────────┘
```

DOOR OPEN ALARM

If the controller senses that the door has been open longer than the set delay time (Factory default = 3 min's), the controller will emits three tones and repeat the pattern until rectified. The DOOR OPEN indicator will also flash on and off.

To reset, Depress the ALARM OFF pad or close the door.

NOTE: The DOOR ALARM time can be adjusted in Program Mode B.

```
┌──────────────────────────────┐
│ FREEZER              °F       │
│                  ┃┃           │
│              ┗┛      DOOR OPEN│
└──────────────────────────────┘
```

HIGH TEMPERATURE ALARM

When the controller detects critical temperatures in the Fresh Food section (above 50° F) or in the Freezer section   (above 15°F) for a duration of 3 hours, an alarm will sound. The HIGH TEMP indicator will illuminate and either the "FREEZE" or the "REFRIGERATOR" LED will flash on and off, along with an audible alarm. The alarm will continue until the temperature falls below the indicated temperatures shown above. The visual alarm will continue even after temperature is satisfied until the ALARM OFF pad is pressed. The audible alarm is always disabled by pressing   ALARM OFF, but the HIGH TEMP display can only be turned off by pressing ALARM OFF after the temperature for the compartment drops below the high temperature threshold for that compartment.

```
┌──────────────────────────────┐
│ FREEZER              °F       │
│                 ┃┣            │
│                  ┗┛           │
│                      HIGH TEMP│
└──────────────────────────────┘
```

THERMISTOR ALARM

When the controller detects an open thermistor, five tones will occur, the LED will display o P n in the temperature area and the applicable "REFRIGERATOR" or "FREEZER" indicator will illuminate, indicating the faulty thermistor location.

When the controller detects a shorted thermistor, five tones will occur, the LED will display S H r in the temperature area and the applicable "REFRIGERATOR" or "FREEZER" indicator will illuminate, indicating the faulty thermistor location. The controller will still maintain temperature control and defrost operations in both sections of the unit until repair is accomplished, regardless of whether the thermistor is open or shorted. In the section where faulty thermistor is located, unit will be operated as if the cut-out temperature is never reached, while the other section will be unaffected and operate normally.

REFRIGERATOR

OPn

FREEZER

SHr