Viking Built-In Refrigeration Programming Features
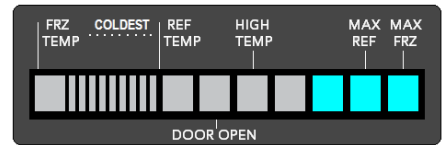
Sabbath Mode

Sabbath mode is used to disable interior lights and alarms for observance of the Sabbath. Before the Sabbath mode is engaged, the bale arm of the ice maker needs to be raised until it clicks into the detent. This turns off the power to the ice maker.

To enter **Sabbath mode**, press the *ACTIVATE CONTROLS* pad to activate the control panel. Then, press and hold *ACTIVATE CONTROLS* and *DISPLAY OFF* pads simultaneously for three seconds. It will beep three times and light the three right blue squares so you will know that you have activated Sabbath mode.

To exit **Sabbath mode**, follow the same procedures used to activate.

ACTIVATE CONTROLS **ACTIVATE CONTROLS** **DISPLAY OFF**

Hold for three seconds

FRZ TEMP | COLDEST | REF TEMP | HIGH TEMP | MAX REF | MAX FRZ

DOOR OPEN

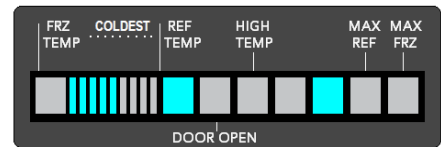Sabbath mode activated

Showroom Mode

Showroom mode allows electronic controls and interior lights to function independently of 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. One beep will be heard indicating that sequence was entered properly. Continue holding until three beeps are heard and then the Blue LED two steps to the right of the **HIGH TEMP** indicator will illuminate. Showroom mode is entered.

To exit **Showroom mode**: Press and hold the *ACTIVATE CONTROLS* pad. While holding, press and Hold the *HIGHER* and *ALARM OFF* pad simultaneously. One beep will be heard indicating that sequence was entered properly. Continue holding until three beeps are heard. The display will revert to normal operation

ACTIVATE CONTROLS **HIGHER** **ALARM OFF**

Hold   Then push both for three seconds

FRZ TEMP | COLDEST | REF TEMP | HIGH TEMP | MAX REF | MAX FRZ

DOOR OPEN

Showroom mode activated

Forced Compressor Start

This allows the immediate operation of the compressor.
Press *ACTIVATE CONTROLS* to activate control panel.
To activate the **Forced Compressor Start**: Press and hold either *MAX FRZ* or *ALARM OFF* and *DISPLAY OFF* for 3 seconds. **NOTE:** On the AR models the *MAX FRZ* button is unmarked and to the left of the MAX REF Pad.

ACTIVATE CONTROLS

MAX FRZ **DISPLAY OFF**
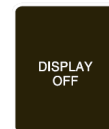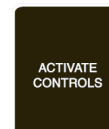
Hold for three seconds

Forced Defrost Start

This allows the immediate operation of the defrost system

Press *ACTIVATE CONTROLS* to activate control panel.

To activate the **Forced Defrost Start**: Press and hold *MAX REF*

and *DISPLAY OFF* for 3 seconds. **NOTE:** On the AF models

the *MAX REF* button is unmarked and to the left of the MAX FRZ Pad

ACTIVATE CONTROLS
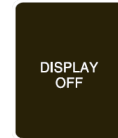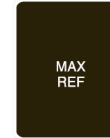
MAX REF

DISPLAY OFF

Hold for three seconds

Quick Guide for Service Mode Navigation

- Service Mode A

Button	Description	Notes
DISPLAY OFF	To adjust Conventional Defrost Duration	(*Hold for 3 seconds to engage*)
HIDDEN BUTTON	To Adjust VCC Speed	
MAX REF	Refrigerator Cut-in / Cut-out Differential	(*Higher / Lower Pads to Adjust*)
MAX FRZ	Freezer Cut-in / Cut-out Differential	(*Higher / Lower Pads to Adjust*)

- Service Mode B

Button	Description	Notes
DISPLAY OFF [1]	Toggle Automatic Keyboard enable on or off	
DISPLAY OFF [2]	Set MODE Selection (**Service Mode C**)	(*Hold for 3 seconds to engage*)
HIDDEN BUTTON	Toggle between Adaptive or Conventional Defrost	
FRZ TEMP	Adjust Freezer Thermistor Offsets	(*Higher / Lower Pads to Adjust*)
REF TEMP	Adjust Fresh Food Thermistor Offsets	(*Higher / Lower Pads to Adjust*)
MAX REF	Adjusted Max Ref duration time	(*Higher / Lower Pads to Adjust*)
MAX FRZ	Adjusted Max Frz duration time	(*Higher / Lower Pads to Adjust*)
ALARM OFF	Adjust delay time when door open alarm sounds	(*Higher / Lower Pads to Adjust*)

MAX FRZ held simultaneously for 3 seconds will activate forced **Compressor Start** in Service Mode B

ALARM OFF held for 3 seconds will activate **Forced Defrost** in Service Mode B


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While keyboard is enabled and the fresh food door is open, press the *Hidden Button* key once, and within five (5) seconds press *MAX REF*, *MAX FRZ*, *MAX REF* and *MAX FRZ*. When you have entered the service mode successfully you will here 3 tones and will be in service mode A.

SERVICE MODE A

In this mode you can do the following:

- Read the thermistor(s) temperature by the use of a Binary Code system (A)

- Adjust the Conventional defrost times when the unit is set to Conventional defrost (B)

- Set Compressor Frequency VCC (C) *(Important when replacing a LV Board)*

- Set Thermistor Cut-In / Cut-out differential – Freezer and Fresh Food (D and E)

Bottom Mount / Side by Side
Display shown
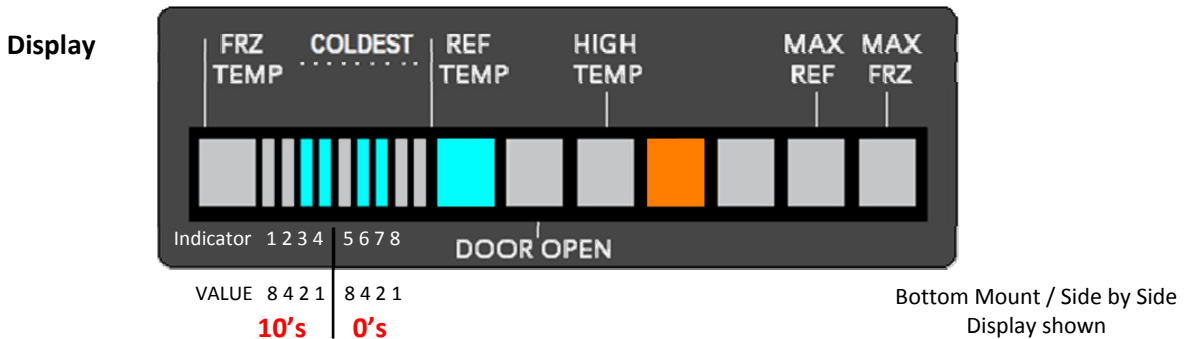
The Orange LED to the *right* of the HIGH TEMP LED will be lit. The freezer or refrigerator LED will be lit (Depending on the model) and some of the temperature indicators will be lit as well. On a Bottom mount and a Side by Side, when you depress the *FRZ TEMP* pad, the far left temp indicator will illuminate, along with a combination of temperature indicator bars. The same is true if you depress the *REF TEMP* Pad. The REF TEMP indicator will illuminate along with a combination of temperature indicator bars. The example above is of a reading of the REF TEMP thermistor.

The temperature bars are actually displaying the temperature of the cabinet thermistor(s) by use of a **B**inary **C**ode **D**ecimal system or (BCD). The following is how this is achieved and what each bar represents.

A. Temperature readout of thermistor(s).

There are nine temperature bars in the display. In the figure above they are labeled Indicator 1 thru 9. Below are the "Values" of each of the first 8 bars (8 4 2 1) *then* (8 4 2 1). The first 4 bars are for the **10's** temperature and the next 4 bars are for the **0's** temperature. Each value is equivalent to a temperature in degrees F°

Starting at the most left indicator bar, the **10's** values are as follows:

- Indicator 1 = 8 or 80°

- Indicator 2 = 4 or 40°

- Indicator 3 = 2 or 20°

- indicator 4 = 1 or 10°.

These four bars represent the tens digit. In the example above, Indicator 3 (20° F) and Indicator 4 (10° F) are lit. Add the two values together (20° F and 10° F = 30°). Therefore our refrigerator thermistor is reading 30° Fahrenheit.

Ex: If indicator 2 (40°) + 3 (20°) were lit, add them values together and it would equal 60° Fahrenheit.

Temperature readout of thermistor(s) - *Continued*

The next set of indicator bars (5 thru 8) represent the 0's values. As with the first four bars, the second set of four bars have the same value

Starting at the most left indicator bar, the **0's** values are as follows:

- Indicator 5 = 8 or 8°

- Indicator 6 = 4 or 4°

- Indicator 7 = 2 or 2°

- indicator 8 = 1 or 1°

These four bars represent the zero's digit. In the example on page 3, none of the first four indicators are lit, therefore the temperature is less than 10° F, however there are led's illuminated in the next set of four.

- Indicators 6 (4° F) and indictor 7 (2° F) are lit. Add the two values together (4° F and 2° F = 6°). Therefore our refrigerator thermistor is reading 36° Fahrenheit total. By adding the total of the first four bars (30° F) and the total of the 2nd set of four bars (6°F) we come to the TOTAL TEMP.

    EX: If indicator 5 (8°) + 8 (1°) were lit, then it would equal 9° Fahrenheit.

Ninth Indicator Bar

Indicator 9 is a sign indicator +/-. When lit, the value of the total number is negative. When not lit, the number is positive.

Changing from displaying refrigerator (freezer) thermistor value to the freezer (refrigerator) thermistor value is done by pressing the *FRZ TEMP* pad (BM, S X S and AF models) and *REF TEMP* pad (BM, S X S and AR models)

B. Adjustable Conventional Defrost

This would allow service/manufacturing/engineering to adjust defrost for predetermined times. The times would be 4, 5, 6, 8, 12, 16, 18, 20, and 24 hours. **NOTE:** To change defrost algorithm from adaptive to conventional or vice versa, the program needs to be set in SERVICE MODE B. When set to *Conventional Defrost*, the unit will defrost based on the settings set below. Factory Default is 8 hours.

Access: Press and hold *Display Off* pad for 3 seconds. 1 audio confirmation beep will be heard. Both the FRZ temp and REF temp LED will extinguish and (1) bar will be lit.

Display
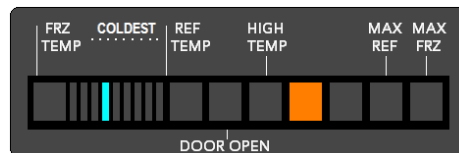
The Conventional Defrost time will be displayed in one of the temperature indicators (one of nine temperature indicators) are to be lit. The example above shows the 4th bar (from left) lit.

1. **Defrost Times**

    The indicator light and corresponding Defrost Times are listed below.

2. **Changing Levels**

    The defrost times are changed by using the Higher Temp and Lower Temp key pads. Pressing the Higher Temp key once will lower the defrost time by one level; pressing the Lower Temp key once will increase the defrost time by one level in the other direction.

- Continued on Page 5 -

Adjustable Conventional Defrost - *Continued*

3. **First Defrost**

   Once Conventional defrost is initiated the <u>first</u> defrost will always be 4 hours of CRT regardless of the level it has been changed to. Below is chart showing the different settings.

Indicator	1	2	3	**4***	5	6	7	8	9
Defrost Time	4 Hours	5 Hours	6 Hours	**8 Hours**	12 Hours	16 Hours	18 Hours	20 Hours	24 Hours

   ***** Default Setting (*As shown on page 4*)

   Exit:

   To exit Adjustable Conventional Defrost, press the *Display On/Activate Controls* key.

C. VCC Compressor Frequency

This allows adjustment of the compressor frequency used when the compressor is running at low speed. *(A new LV board comes at a default setting of 7)*

Access: Press the *Hidden Button* pad. An audio confirmation beep will be heard.
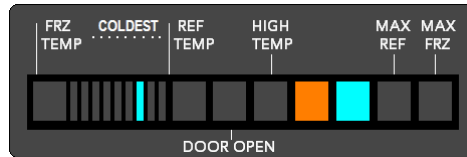
Display

   The Blue LED to the *right* of the Orange LED will be lit. The Compressor Frequency will be displayed by having one of the nine segment indicators being lit.

1. **Compressor Frequency Levels**

   The indicator light and corresponding Compressor Frequencies are listed below.

Indicator	1	2	3	**4***	5	6	**7***	8	9
VCC setting	55 Hz	57 Hz	62 Hz	**65 Hz**	67 Hz	70 Hz	**75 Hz**	80 Hz	85 Hz

   * 4 Setting (*65Hz*) is for the BM Units and 36" AR units
   * 7 Setting (*75Hz*) is for all Side by Side units, 30" AR units and 30"and 36" AF units.

2. **Changing Levels**

   The low speed frequency value is changed by using the Higher Temp and Lower Temp key pads. Pressing the Higher Temp key once will lower the frequency by one level; pressing the Lower Temp key once will increase the frequency.
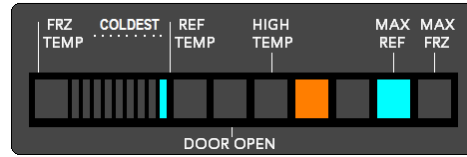
   Exit:

   To exit Adjustable Conventional Defrost, press the *Display On/Activate Controls* key.

D. Refrigerator Cut In/Out Temperature Differential *(Fresh Food Compartment)*

The parameter defines the temperature separation between the refrigerator cut-in and cut-out temperatures. (BM, S X S an AR)

Access: Press the *MAX REF* pad. An audio confirmation beep will be heard.

Display

The Max REF indicator will be illuminated. The differential temperature will be displayed by having one of the nine segment indicators being lit.

1. Refrigerator Cut In/Out Temperature Differential Temperatures

The indicator light and corresponding differential temperatures are listed below.

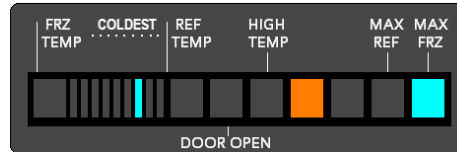| Indicator	1	2	3	4	5	6	7	8	**9***
Cut In / Cut Out	3°	4°	5°	6°	7°	8°	9°	10°	**12°**

* Default Setting

2. Changing Levels

The differential temperature is changed by using the Higher Temp and Lower Temp keys. Pressing the Higher Temp key once will change the differential temperature by one level; pressing the Lower Temp key once will change the differential temperature by one level in the opposite direction.

E. Freezer Cut In/Out Temperature Differential *(Freezer Compartment)*

The parameter defines the temperature separation between the freezer cut-in and cut-out temperatures. (BM, S X S an AF)

Access: Press the *MAX FRZ* pad. An audio confirmation beep will be heard.

Display

The MAX FRZ indicator will be illuminated. The differential temperature will be displayed by having one of the nine segment indicators being lit.

1. Freezer Cut In/Out Temperature Differential Temperatures

The indicator light and corresponding differential temperatures are listed below.

Indicator	1	2	3	4	5	6	7	8	**9***
Cut In / Cut Out	3°	4°	5°	6°	7°	9°	11°	13°	**15°**

* Default Setting

2. Changing Levels

The differential temperature is changed by using the Higher Temp and Lower Temp key pads. Pressing the Higher Temp key once will change the temperature by one level; pressing the Lower Temp key once will change the temperature by one level in the opposite direction.
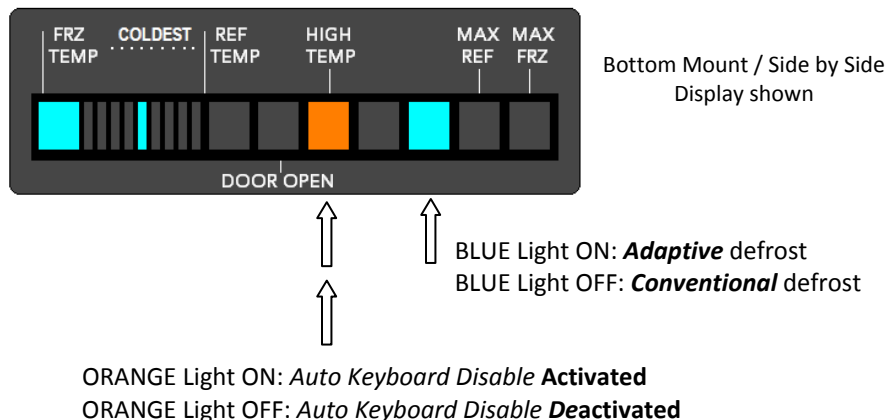
SERVICE MODE B

In this mode you can do the following:

- Automatic Keyboard Functions (A)

- Door Open delay (B)

- Set Offsets (C and D)   *(Important when replacing a LV Board)*

- Adjust MAX REF Duration (E)   *BM, Side by Side and AR models*

- Adjust MAX FRZ Duration (F)   *BM, Side by Side and AF models*

- Mode Adjustment (G)   *(Important when replacing a LV Board)*

- Set unit for *Adaptive* or *Conventional* Defrost (H)

SERVICE MODE B entry

When controller is in SERVICE MODE A of the program mode, press the *Activate Controls* / *Display ON* Pad once. To go back to SERVICE MODE A, press pad again. Upon initially entering Service Mode B, the Freezer Indicator light and freezer temperature offset will be displayed, regardless of the type of unit. *(The example below shows a Freezer offset of 5)*.

Display

Bottom Mount / Side by Side
Display shown

BLUE Light ON: ***Adaptive*** defrost
BLUE Light OFF: ***Conventional*** defrost

ORANGE Light ON: *Auto Keyboard Disable* **Activated**
ORANGE Light OFF: *Auto Keyboard Disable* **Deactivated**

The Orange LED to the *right* of the HIGH TEMP LED will go out and the HIGH TEMP Orange LED should be ON ***** indicating that the controller is in Mode B. The Blue LED to the left of MAX REF shown above will be ON (*Adaptive Defrost*) or OFF (*Conventional Defrost*).

> *** NOTE: *The High Temp indicator can be either on or off depending on the Keyboard setting.***

- If the HIGH TEMP Light is out, the automatic keyboard disable is set to OFF. If the light in ON, then the Automatic keyboard Disable is set to ON. *(Refer to Automatic Keyboard Disable feature on page XX).*

- If the BLUE LED shown above is lit, then the controller is set to adaptive defrost (Default). If it is out, then the Conventional Defrost System is activated. The unit would then defrost depending on the setting set in SERVICE MODE A.
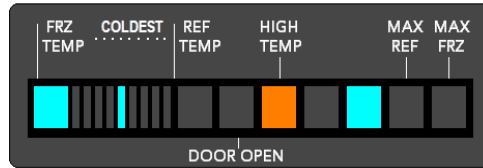
A. Automatic Keyboard Functions

The automatic keyboard disable feature can be toggled between on or off while in Mode B.

Access

Pressing the *Display Off* pad toggles the feature on and off.

Display

When the High Temp indicator is lit (while in Mode B), the feature is set to ON. When the High Temp indicator is not lit (while in Mode B), the feature is set to OFF.

- When set to **OFF**, all keys are active continuously. This is not recommended! Accidental changes to the program could be made in error if all pads are left active.

- When set to **ON**, the feature is activated (This program disables all keys except Alarm Off key after 10 minutes). In order to make any program changes, the ACTIVATE CONTROLS / DISPLAY ON pad would need to first be depressed before any changes can be made.
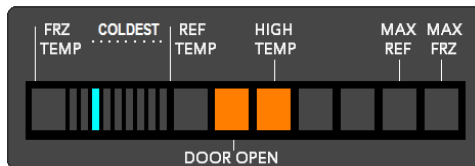
B. Door Open Audio Delay

The door open audio delay (time it takes before audio alarm goes off while door is open) can be altered from this mode. The default setting is 3 minutes.

Access

Press *Alarm Off* key while in Mode B

Display

When entered, the door open indicator and current door open audio delay level indicator will be lit. The above shows the default setting of the 3rd bar (3minutes).

1. **Changing Door Open Audio Delay**

   The door open audio delay is changed by using the *Higher Temp* and *Lower Temp* Pads. Pressing the Higher Temp pad once will lower the duration time by 1 min.; pressing the Lower Temp pad once will increase the duration time by 1 min.

| Indicator	1	2	**3***	4	5	6	7	8	9
Delay Time	1 minute	2 minutes	**3 minutes**	4 minutes	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes

* Default Setting

Exit:

To exit door open delay time, press the *Activate Controls / Display On* key.

C. Temperature Offset adjust *(Freezer compartment)*

The freezer cut-in and cut-out values can be calibrated from this mode. All models, including the AR must have the proper Freezer Offset adjustment or improper temperature will occur. When entering SERVICE MODE B, the display will default to the display shown below.
*(A new LV board comes at a Freezer default setting of **5**)*

Access: Press *FRZ TEMP* pad while in Mode B
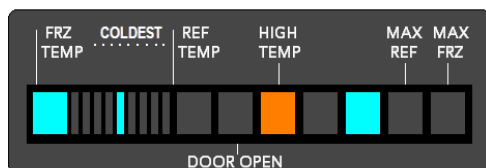
Display

The display above shows the default freezer offset setting when SERVICE MODE B was entered. You will notice that the FRZ TEMP (Left most Blue LED) is illuminated as well as the 5th temp bar.

1. Offset Levels

The indicator light and corresponding offset is listed below. The cut-out offset temperature added to the temperature corresponding to the cut-out level stored in EEPROM table produce the actual cut-in and cut-out temperature for the controller. The cut-in temperature will be the cut-in/cut-out differential added to the cut-out temperature.

Offset Settings – Freezer

Indicator	Offset	Freezer Offset - Description
1	+8	
2	+6	
3	+4	*(For 42"and 48"Dispenser S X S models)*
4	+2	*(For 42"and 48"Non - Dispenser S X S models)*
5	0	*(For 36"AF **and** BM)* **Factory Default**
6	- 2	*(For 30"AF models)*
7	- 4	
8	- 6	
9	- 8	(For 30" and 36" AR models) **MUST be set for proper operation!**

2. Changing Levels

Using the *Higher Temp* and *Lower Temp* pad changes the offset level. Pressing the Higher Temp pad once will lower the indicator by one level and raise the offset by 2 degrees; pressing the Lower Temp pad once will raise the indicator by one level and lower the offset by 2 degrees

On **BM** and **S x S** models, it is the Freezer Thermistor that determines whether the compressor, condenser fan and freezer evaporator fan will operate, depending on the temperature. The Fresh Food thermistor in these models determine whether the cooling fan in the fresh food compartment will operate but does not effect the other components.

In an **AF** unit, the same operation occurs as does the BM and SxS units.

The **AR** model does not have a freezer compartment so the LV board is designed to operate with a fixed resistance reading to cycle the compressor on or of. The LV board **MUST** be adjusted to the maximum freezer setting (9th bar) on the AR units for proper operation.

> **NOTE:** *Failure to adjust the freezer offset to the proper setting will cause improper temperatures to occur especially in the **AR** units.*

Exit:

To exit, press the *Activate Controls / Display On* key.

D. Temperature Offset adjust *(Fresh Food compartment)*

The Fresh Food cut-in and cut-out values can be calibrated from this mode. All models must have the proper Fresh Food Offset adjustment or improper temperature will occur. When entering MODE B, the display defaults to the Freezer Display shown on Page 9 Offset. To display the Fresh Food Offset setting, Press the REF TEMP Pad and you should see the display shown below. *(A new LV board comes at a Fresh Food default setting of **8**)*

Access: Press the *REF TEMP* pad while in Mode B
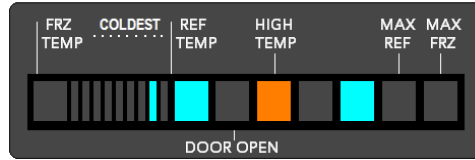
Display

The display above shows the default fresh food offset setting when SERVICE MODE B was entered and REF TEMP pad was depressed. You will notice that the REF TEMP (Blue LED) is illuminated as well as the 5th temp bar.

3. **Offset Levels**

The indicator light and corresponding offset is listed below. The cut-out offset temperature added to the temperature corresponding to the cut-out level stored in EEPROM table produce the actual cut-in and cut-out temperature for the controller. The cut-in temperature will be the cut-in/cut-out differential added to the cut-out temperature.

Offset Settings – Fresh Food

Indicator	Offset	Fresh Food - Description
1	+8	
2	+6	
3	+4	
4	+2	*(For 48"Dispenser S X S models)*
5	0	*(For 30" and 36" AR models)*
6	- 2	*(For 42"Dispenser and 48"Non-Dispenser S X S models)*
7	- 4	*(For 42"Non-Dispenser S X S models)*
8	- 6	*(For BM models)* **Factory Default**
9	- 8	

4. **Changing Levels**

Using the *Higher Temp* and *Lower Temp* pad changes the offset level. Pressing the Higher Temp pad once will lower the indicator by one level and raise the offset by 2 degrees; pressing the Lower Temp pad once will raise the indicator by one level and lower the offset by 2 degrees

On **BM**, **S x S** and **AR** models, it is the Fresh Food thermistor in these models determine whether the cooling fan in the fresh food compartment will operate but does not effect the other components. On the AF units, this setting has no effect.
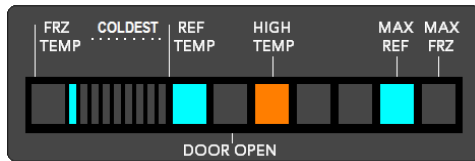
Exit:

To exit, press the *Activate Controls / Display On* key.

E. MAX REF duration *(BM, SxS and AR models)*

MAX REF run time Duration can be altered from this mode.

Access: Press *MAX REF* Pad while in SERVICE MODE B

Display

MAX REF indicator and current Max Ref Duration level indicator will be lit. The default setting is the 1st bar (4 hours).

1. **Duration Options** The indicator light and corresponding Max Ref duration "HOURS" is listed below.

Indicator	1*	2	3	4	5	6	7	8	9
Run Time	4 Hours	6 Hours	8 Hours	10 Hours	12 Hours	14 Hours	16 Hours	18 Hours	20 Hours

2. **Changing MAX REF Duration**

The MAX REF duration is changed by using the *Higher Temp* and *Lower Temp* pads. Pressing the Higher Temp pad once will lower the duration time by 2 hours; pressing the Lower Temp pad once will raise the duration time by 2 hours.
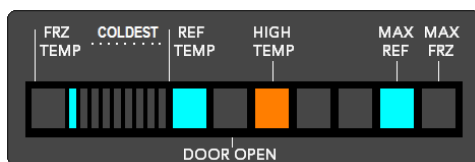
Exit:

To exit, press the *Activate Controls / Display On* key.

F. MAX FRZ duration *(BM, SxS and AF models)*

MAX FRZ run time Duration can be altered from this mode.

Access: Press *MAX FRZ* pad while in SERVICE MODE B

Display

MAX FRZ indicator and current Max Frz Duration level indicator will be lit. The default setting is the 2nd bar (6 hours).

3. **Duration Options** The indicator light and corresponding Max Ref duration "HOURS" is listed below.

Indicator	1	2*	3	4	5	6	7	8	9
Run Time	4 Hours	6 Hours	8 Hours	10 Hours	12 Hours	14 Hours	16 Hours	18 Hours	20 Hours

4. **Changing MAX FRZ Duration**

The MAX REF duration is changed by using the *Higher Temp* and *Lower Temp* pads. Pressing the Higher Temp pad once will lower the duration time by 2 hours; pressing the Lower Temp pad once will increase the duration time by 2 hours.

Exit:

To exit, press the *Activate Controls / Display On* key.

G. MODE setting

When a Low Voltage Board is replaced, the default setting is designed to run a two zone system (A Side X Side or Bottom Mount Refrigerator). In order to set the proper mode on AR and AF units, or to check to see if a MODE setting is correct for the unit you are working on perform the following instruction.

Access: Press *Display Off* key while in Mode B. The Orange LED (HIGH TEMP) will go out.

BM and S x S Display   AF Display   AR Display
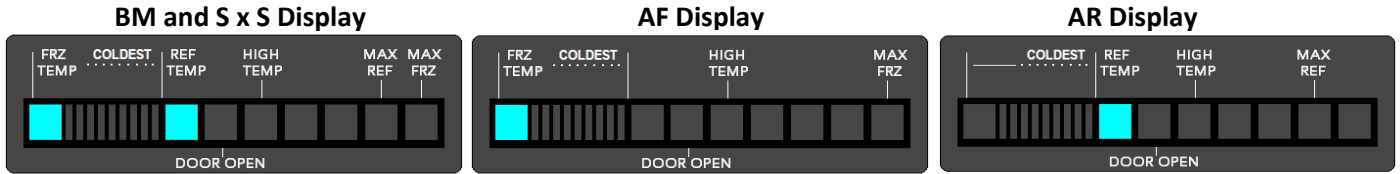
Continue Holding the Pad in for 3 seconds until three (3) confirmation tones are heard. The **BM** and S x S units should have both the *FRZ TEMP* and *REF TEMP* LED's lit, indicating a Dual Zone unit.

If you are working on an AR, then only the *REF TEMP* Led should be lit. If both LED's are illuminated this means that the LV board was not programmed for the proper unit. Press the *REF TEMP* pad and the unmarked Blue LED to the far left will extinguish. To confirm, press and Hold Activate Controls until three (3) confirmation tones are heard. The unit has now been properly programmed.

If you are working on an AF, then only the *FRZ TEMP* Led should be lit. If both LED's are illuminated this means that the LV board was not programmed for the proper unit. Press the *FRZ TEMP* pad and the unmarked Blue LED to the left of the Door Open indicator will extinguish. To confirm, press and Hold Activate Controls until three (3) confirmation tones are heard. The unit has now been properly programmed.

Pressing **BOTH** the *REF TEMP* and *FRZ TEMP* pads simultaneously on a **BM** or **S x S** model will set the MODE to a Dual Zone system (Default) Both LED's will light.

Exit:

To exit, press the Activate Controls / Display On key.

H. Set unit for *Adaptive* or *Conventional* defrost

All units are set to Adaptive defrost from the factory. When conditions warrant, the LV board can be programmed to operate on a Conventional Defrost system the defrost algorithm can be changed from *Adaptive* to *Conventional* or vice versa.

Access

While in SERVICE MODE B, Pressing the *Hidden Button* pad will toggle the feature on and off.

Display   Adaptive Defrost – LED ON   Conventional Defrost – LED OFF
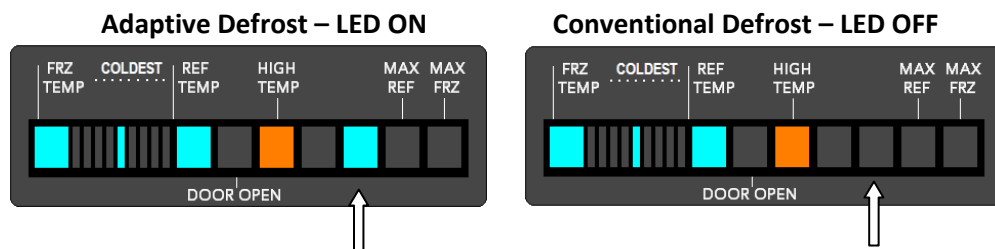
- When the Blue LED to the left of MAX REF is lit (while in Mode B) the unit is set to *Adaptive* defrost (Default). When this indicator is not lit (while in Mode B) the unit is set to *Conventional* defrost. When Set to Conventional, the duration time is Set in SERVICE MODE A (Page 4-5)

Exit: To exit, press the Activate Controls / Display On key.