

# CAREL IR33+ CONTROLLER

## Programming Instructions



The Carel IR33+ controller has a two-level menu system for programming the operation of the case; Level 1 and Level 2 program settings. Unlike IR33, the IR33+ control system is easier to use with a password.

### HOW TO CHANGE LEVEL 1 AND 2 CONTROL SETTINGS

1. Press and hold the **[PRG]** button down until the display shows a flashing “0”.
2. Use the **[UP]** arrow until the display reads “22” (this is the password), then press the **[SET]** button. The display will read “/A2”.
3. Use the **[UP]** and **[DOWN]** arrows to move up or down the menu until you reach the parameter you intend to view or change. When the proper code is displayed, press the **[SET]** button to view the current setting for that parameter. (You will notice the Level 1 program codes are also found in this menu.)
4. Use the **[UP]** and **[DOWN]** arrows to change the value. Then press the **[SET]** button again to return to the menu.
5. The exceptions to Step #4 are the program codes “tc”, “td1”, and “td2”. In these cases, you must press the **[SET]** button in order to access the submenu of available settings for these parameters. Once changes are made in this submenu, press the **[PRG]** button to get back to the main menu.
6. When finished making all necessary changes, you **MUST** press and hold the **[PRG]** button for 10 seconds to save them. Alternatively, if you decide you do NOT want to save changes you’ve just made, simply stop pressing buttons for 30 seconds and the control will return to normal operation, discarding any changes made.

**Note: Zero Zone should be contacted before working on changing settings. To be completed by a trained person only.**

For technical support, please contact the  
Zero Zone Service Department at:

**800-247-4496**



# CAREL IR33+ CONTROLLER

## Low Temp Codes

3-5 DOOR LOW TEMP LEVEL 1			1 & 2 DOOR LOW TEMP LEVEL 1			IM BOTTOM-MOUNTED COIL LEVEL 1		
Code	Name	Factory Set	Code	Name	Factory Set	Code	Name	Factory Set
St	Set Point	-10	St	Set Point	-10	St	Set Point	7
rd	Differential	6	rd	Differential	6	rd	Differential	4
AH	High Temp Alarm	10	AH	High Temp Alarm	10	AH	High Temp Alarm	25
c1	Min Comp Time Starts	5	c1	Min Comp Time Starts	5	c1	Min Comp Time Starts	5
d/1	Defrost Probe Temp	(actual)	d/1	Defrost Probe Temp	(actual)	d/1	Defrost Probe Temp	(actual)
dn	Defrost Duration %	100	dn	Defrost Duration %	100	dn	Defrost Duration %	100
tc.y	RTC year	-	tc.y	RTC year	-	tc.y	RTC year	-
tc.m	RTC month	-	tc.m	RTC month	-	tc.m	RTC month	-
tc.d	RTC day of month	-	tc.d	RTC day of month	-	tc.d	RTC day of month	-
tc.u	RTC day of week	-	tc.u	RTC day of week	-	tc.u	RTC day of week	-
tc.h	RTC hour	-	tc.h	RTC hour	-	tc.h	RTC hour	-
tc.m	RTC minute	-	tc.m	RTC minute	-	tc.m	RTC minute	-

LOW TEMP LEVEL 2			1 & 2 DOOR LOW TEMP LEVEL 2			IM BOTTOM-MOUNTED COIL LEVEL 2		
Code	Name	Factory Set	Code	Name	Factory Set	Code	Name	Factory Set
/A2	Probe 2 Configuration	2	/A2	Probe 2 Configuration	2	/A2	Probe 2 Configuration	2
c2	Min Comp OFF	1	Ad	Low & High Alarm Delay	60	Ad	Low & High Alarm Delay	60
c3	Min Comp ON	1	c2	Min Comp OFF	1	c2	Min Comp OFF	1
d0	Defrost Type	4	c3	Min Comp ON	1	c3	Min Comp ON	1
dd	Drip Time	1	d0	Defrost Type	0	d0	Defrost type	4
dl	Defrost Interval	24	dd	Drip Time	1	dd	Drip Time	1
dP1	Defrost Duration	40	dl	Defrost Interval	24	dl	Defrost Interval	12
dt1	Defrost end temp	70	dP1	Defrost Duration	30	dP1	Defrost Duration	40
AL	Low Temp Alarm	-20	dt1	Defrost end temp	45	dt1	Defrost End Temp	70
F0	Fan Management	2	AL	Low Temp Alarm	-20	AL	Low Temp Alarm	-20
F1	Fan Start Temp	30	F0	Fan Management	2	F0	Fan Management	2
H0	Serial Address	1	F1	Fan Start Temp	30	F1	Fan Start Temp	30
H1	Function of Relay 4	10	H0	Serial Address	1	H0	Serial Address	1
td1.d	Defrost time day 1	11	H1	Function of Relay 4	10	H1	Function of Relay 4	10
td1.h	Defrost time hour 1	8	td1.d	Defrost time day 1	11	td1.d	Defrost time day 1	11
td1.m	Defrost time minute 1	0	td1.h	Defrost time hour 1	8	td1.h	Defrost time hour 1	8
td2.d	Defrost time day 2	0	td1.m	Defrost time minute 1	0	td1.m	Defrost time minute 1	0
td2.h	Defrost time hour 2	0	td2.d	Defrost time day 2	0	td2.d	Defrost time day 2	11
td2.m	Defrost time minute 2	0	td2.h	Defrost time hour 2	0	td2.h	Defrost time hour 2	20
			td2.m	Defrost time minute 2	0	td2.m	Defrost time minute 2	0

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# CAREL IR33+ CONTROLLER

## Low Temp Codes

2-5 DOOR LOW TEMP LEVEL 1			IM BOTTOM-MOUNTED COIL 1-2 DOOR LEVEL 1		
Code	Name	Factory Set	Code	Name	Factory Set
St	Set Point	-10	St	Set Point	7
rd	Differential	6	rd	Differential	4
AH	High Temp Alarm	10	AH	High Temp Alarm	25
c1	Min Comp Time Starts	5	c1	Min Time Between Starts	0
d/1	Defrost Probe Temp	(actual)	d/1	Defrost Probe Temp	(actual)
d/2	Defrost Probe Temp Evap #2	(actual)	dn	Defrost Duration %	100
dn	Defrost Duration %	100	tc.y	RTC year	-
tc.y	RTC year	-	tc.m	RTC month	-
tc.m	RTC month	-	tc.d	RTC day of month	-
tc.d	RTC day of month	-	tc.u	RTC day of week	-
tc.u	RTC day of week	-	tc.h	RTC hour	-
tc.h	RTC hour	-	tc.m	RTC minute	-
tc.m	RTC minute	-			

2-5 DOOR LOW TEMP LEVEL 2			IM BOTTOM-MOUNTED COIL 1-2 DOOR LEVEL 2		
Code	Name	Factory Set	Code	Name	Factory Set
/A2	Probe 2 Configuration	2	/A2	Probe 2 Configuration	2
/A3	Probe 3 Configuration	2	/A4	Probe 4 Configuration	0
Ad	Low & High Alarm Delay	60	c2	Min Comp OFF	1
c2	Min Comp OFF	1	c3	Min Comp ON	1
c3	Min Comp ON	1	d0	Defrost Type	0
d0	Defrost Type	4	dd	Drip Time	6
dd	Drip Time	1	dl	Defrost Interval	0
dl	Defrost Interval	12	dP1	Defrost Duration	35
dP1	Defrost Duration	40	dt1	Defrost End Temp	45
dP2	Defrost Duration Evap #2	40	AL	Low Temp Alarm	-20
dt1	Defrost End Temp	70	F0	Fan Management	2
dt2	Defrost End Temp Evap #2	70	F1	Fan Start Temp	30
AL	Low Temp Alarm	-20	H0	Serial Address	1
F0	Fan Management	2	H1	Function of Relay 4	10
F1	Fan Start Temp	30	td1.d	Defrost time day 1	11
H0	Serial Address	1	td1.h	Defrost time hour 1	8
H1	Function of Relay 4	4	td1.m	Defrost time minute 1	0
td1.d	Defrost time day 1	11	td2.d	Defrost time day 2	11
td1.h	Defrost time hour 1	8	td2.h	Defrost time hour 2	20
td1.m	Defrost time minute 1	0	td2.m	Defrost time minute 2	0
td2.d	Defrost time day 2	11			
td2.h	Defrost time hour 2	20			
td2.m	Defrost time minute 2	0			

# CAREL IR33+ CONTROLLER

## Medium Temp Codes

MEDIUM TEMP MASTER/STANDALONE LEVEL 1		
Code	Name	Factory Set
St	Set Point	34
rd	Differential	4
tc.y	RTC year	-
tc.m	RTC month	-
tc.d	RTC day of month	-
tc.u	RTC day of week	-
tc.h	RTC hour	-
tc.m	RTC minute	-

MEDIUM TEMP HYBRID LEVEL 1		
Code	Name	Factory Set
St	Set Point	34
rd	Differential	4
tc.y	RTC year	-
tc.m	RTC month	-
tc.d	RTC day of month	-
tc.u	RTC day of week	-
tc.h	RTC hour	-
tc.m	RTC minute	-

MEDIUM TEMP HYBRID WITH ELEC DEFROST LEVEL 1		
Code	Name	Factory Set
St	Set Point	34
rd	Differential	4
AH	High Temp Alarm	50
c1	Min Time between Starts	5
dn	Defrost Duration %	100
d/1	Defrost Probe Temp	(actual)
tc.y	RTC year	-
tc.m	RTC month	-
tc.d	RTC day of month	-
tc.u	RTC day of week	-
tc.h	RTC hour	-
tc.m	RTC minute	-

MEDIUM TEMP MASTER/STANDALONE LEVEL 2		
Code	Name	Factory Set
/A2	Probe 2 Configuration	0
Ad	Low & High Alarm Delay	60
c1	Min Time between Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	2
dd	Drip Time	1
dl	Defrost Interval	12
dn	Defrost Duration %	100
dP1	Defrost Duration	30
AL	Low Temp Alarm	30
AH	High Temp Alarm	50
F0	Fan Management	0
F1	Fan Start Temp	5
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost time day 1	11
td1.h	Defrost time hour 1	8
td1.m	Defrost time minute 1	0
td2.d	Defrost time day 2	11
td2.h	Defrost time hour 2	20
td2.m	Defrost time minute 2	0

MEDIUM TEMP HYBRID LEVEL 2		
Code	Name	Factory Set
/A2	Probe 2 Configuration	0
Ad	Low & High Alarm Delay	60
c1	Min Time between Starts	5
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	2
dd	Drip Time	1
dl	Defrost Interval	8
dn	Defrost Duration %	100
dP1	Defrost Duration	45
AL	Low Temp Alarm	30
AH	High Temp Alarm	50
F0	Fan Management	0
F1	Fan Start Temp	5
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost time day 1	11
td1.h	Defrost time hour 1	4
td1.m	Defrost time minute 1	0
td2.d	Defrost time day 2	11
td2.h	Defrost time hour 2	14
td2.m	Defrost time minute 2	0
td3.d	Defrost time day 2	11
td3.h	Defrost time hour 2	20
td3.m	Defrost time minute 2	0

MEDIUM TEMP HYBRID WITH ELEC DEFROST LEVEL 2		
Code	Name	Factory Set
/A2	Probe 2 Configuration	0
Ad	Low & High Alarm Delay	60
c2	Min Comp OFF	1
c3	Min Comp ON	1
d0	Defrost Type	0
dd	Drip Time	1
dl	Defrost Interval	12
dP1	Defrost Duration	30
dt1	Defrost End Temp	50
AL	Low Temp Alarm	28
F0	Fan Management	2
F1	Fan Start Temp	30
H0	Serial Address	1
H1	Function of Relay 4	10
td1.d	Defrost time day 1	11
td1.h	Defrost time hour 1	8
td1.m	Defrost time minute 1	0
td2.d	Defrost time day 2	11
td2.h	Defrost time hour 2	20
td2.m	Defrost time minute 2	0

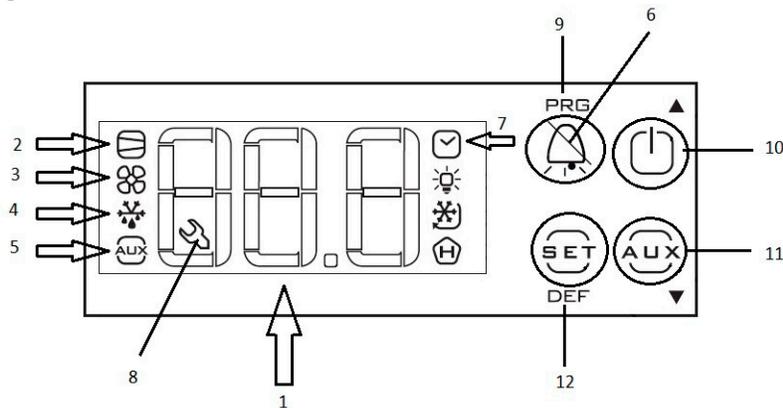
65-1444 Rev B

65-1468 Rev A

65-1505 Rev C

# CAREL IR33+ CONTROLLER

## Basic Operations



## Carel IR33+ Display Legend

### KEYPAD LOCATIONS

1. **Temperature Display:** The temperature of the case is displayed here. When the case is in defrost mode, this display will read "DEF".
2. **Compressor:** When lit, this icon indicates the compressor is running. It flashes when activation is delayed or inhibited by protection times.
3. **Fan:** When lit, this icon indicates the fans are running. It flashes when activation is delayed by protection times or other procedures in progress.
4. **Defrost:** When lit, this icon indicates the defrost heater is activated. It flashes when activation is delayed by protection times or other procedures in progress.
5. **AUX output:** When lit, this icon indicates AUX output 1 or 2 is active. It flashes when anti-sweat heater function is active.
6. **Alarm:** When flashing, there is an alarm during normal operation (e.g. high/low temperature alarm) and/or a malfunction.
7. **Clock:** When lit, this icon indicates Real Time Clock ("RTC") has been set and is available. When flashing, there is a clock alarm and Error Time Clock ("Etc") will be displayed. This means that the "RTC" has failed.
8. **Service:** When flashing, a malfunction has occurred (e.g. Electrically Erasable Programmable Read-Only Memory (EEPROM) errors or faulty probes).

### BUTTONS:

9. **PRG/MUTE:** Accesses the type "F" parameters (frequent) or the menu for setting the password to access the type "C" parameters (configuration) if pressed for more than three seconds. If there is an active alarm, it mutes the audible alarm. If this button is pressed and held for more than five seconds at start-up, it will activate the procedure for setting the default factory parameters. **Contact Zero Zone before performing this procedure; it can erase your IR33+ program settings.** Note: PRG+ON-OFF/UP resets any alarm with manual reset if pressed together for more than three seconds.
10. **ON-OFF/UP:** Switches the controller ON if pressed for more than one second. If pressed for more than three seconds, it switches the controller OFF. When setting the parameters, it increases the value displayed or scrolls to the next parameter.
11. **AUX/DOWN:** Activates/deactivates the auxiliary output if pressed for more than one second. When setting the parameters, it decreases the value displayed or scrolls to the previous parameter.
12. **SET/DEF:** Displays and/or lets the user set the set point if pressed for more than one second. Also used to enter settings of parameters. **CAUTION: If pressed for more than five seconds, it starts a manual defrost.**

# CAREL IR33+ CONTROLLER

## Basic Case Operations

1. The case's condensing unit (mounted on top of the case if a Hybrid™) cycles off and on during normal operation. When the inside of the case is warm, the compressor turns on. When the inside of the case is cold, the compressor turns off.
2. On medium temp cases, the fans run all of the time. On low temp cases, the fans run when the evaporator temperature is below 30°F, except when in defrost.
3. The freezer case goes into defrost one or two times per day and lasts between 30 and 40 minutes. The Ice Merchandiser goes into defrost one time per day and lasts for 40 minutes. At the end of the defrost, the low temp doors may fog on the inside. This is normal. During the defrost, the air in the ducts can warm up to 40°F for a medium temp case and 60°F for a low temp case. Product temperatures within the case will not rise above acceptable levels, however. Product in medium temp cases will remain at or below 41°F and product inside low temp cases will remain frozen.\*
4. The lights remain on at all times unless the light switch located in the right-hand door frame is switched off.
5. The water removal system has a maximum capacity of two gallons. When cleaning the interior of the case, do not use more than this amount of liquid.

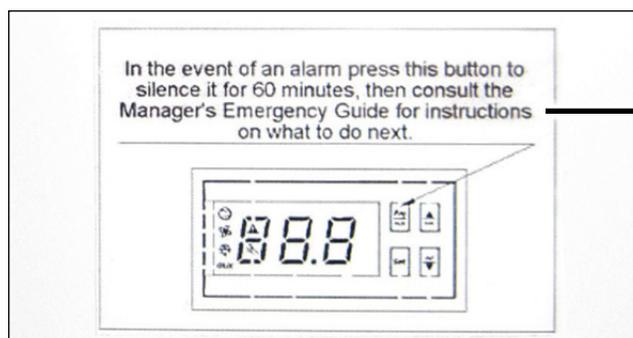
**\*Please consult the Zero Zone Service Department on case defrost characteristics for non-standard defrost settings.**

## Silencing the IR33+ Temperature Alarm

Press PRG/MUTE Button to  
silence the alarm



The button used to silence the alarm ([PRG] button) is located on the controller on the front of the case above the right-hand door. If the alarm sounds, push the [PRG] button which will reset the alarm and silence it for one hour.



See "Manager's  
Emergency Guide"  
at the end of this  
manual.

# CAREL IR33+ CONTROLLER

## Conditions that Trigger the Alarm

Your low temp case has one or two defrosts programmed per day; one at 8:00 AM and one at 8:00 PM, or a single defrost at either 4:00 AM or 8:00 AM. A typical defrost lasts one hour. Your medium temp case has two or three defrosts programmed per day; one at 8:00 AM and one at 8:00 PM for two defrosts, and 4:00 AM, 2:00 PM, and 8:00 PM for three defrosts. If the alarm sounds during this time, please allow an additional one-hour recovery time before calling for service.

If the alarm sounds outside of the above times, please review the following checklist. If you've checked all of these items and the case still does not work properly, submit a service request.

Cases with electronic controls (a digital display cut into the shroud above the doors) have a one-hour alarm delay after defrost. The controller has a 10°F high alarm set point for low temp and 50°F for a medium temp. The controller has a -20°F low alarm setpoint for low temp and 28°F or 30°F for medium temp. The alarm will sound when the sensed temperature is at or above 10°F for a period of 60 minutes. If the temperature drops below 10°F during this 60 minutes, the alarm timer will reset. If the case is in defrost, the electronic display will read "DEF".

## Common Things to Check

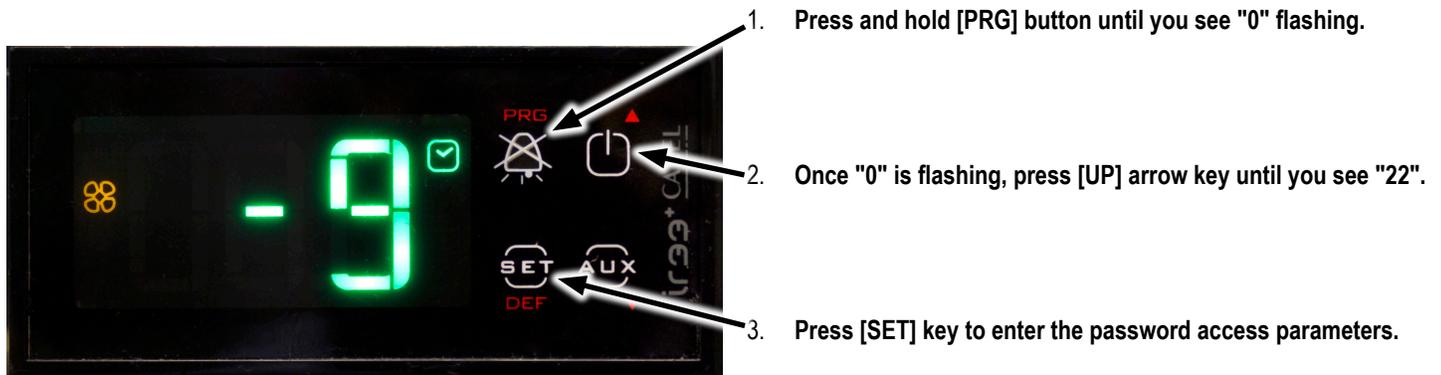
### DEFROST AND ALARMS

1. Check the circuit breakers for the cases. Tripped circuit breakers will cut off the power to the cases and to the alarms. **Do not turn off case refrigeration overnight when closing the store.**
2. Reach-in door low temp cases have a one-hour defrost. Check the following before you enter a service request.
  - Determine when the defrost cycle started (typically at 8:00 AM and 8:00 PM for two defrosts and either 4:00 AM or 8:00 AM for one defrost). Please wait one hour and double check case status before calling for service.
  - The fans turn off during defrost and for a few minutes after defrost.
  - Has the case just been stocked? (Warm product will take 24 hours to cool down.)
  - Is the case heavily shopped? (Frequent door opening will warm the case.)
  - Do not block return air grills at the bottom of the low temp case.
3. Reach-in door medium temp cases also have a defrost time. Check the following before you enter a service request.
  - Medium temp fans run while in defrost and lights remain on.
  - Typically medium temp cases defrost at 8:00 AM and 8:00 PM for two defrosts and 4:00 AM, 2:00 PM, and 8:00 PM for three defrosts.
  - Has the case just been stocked? (Warm product will take 24 hours to cool down.)
  - Is the case heavily shopped? (Frequent door opening will warm the case.)

# CAREL IR33+ CONTROLLER

## IR33+ Verify and/or Change Parameters

### SET PASSWORD IN ORDER TO CHANGE PARAMETERS



### BELOW ARE EXAMPLES OF PARAMETERS TO CHECK ON THE CAREL IR33+

- Any parameter can be changed in a similar manner so long as it is listed on your program set points list attached to your case or in the Low and Medium Temp Codes section of this manual.
1. **A1 - Verify A1 Parameter is set to "1". If not, [SET] A1 to "1".**
    - a. Press [UP] arrow key to move to A1 parameter.
    - b. Press [SET].
    - c. Press [UP] arrow key to set parameter to "1" if not already "1".
    - d. Press [SET].
  2. **AL - Verify Low Temp Alarm. Set AL according to your case programming.**
    - a. Press [UP] arrow key to move to AL parameter.
    - b. Press [SET].
    - c. Press [DOWN] arrow key to set parameter to your case setting according to program installed. See decal on case and the Low and Medium Temp Codes section of this manual.
    - d. Press [SET].
  3. **AH - Verify High Temp Alarm according to your case setting.**
    - a. Press [UP] arrow key to move to AH parameter.
    - b. Press [SET].
    - c. Press [DOWN] arrow key to set parameter to your case setting according to program installed. See decal on case and the Low and Medium Temp Codes section of this manual.
    - d. Press [SET].

# CAREL IR33+ CONTROLLER

## IR33+ Parameters Verify and/or Change

4. **H1 - Verify parameter H1 set to "10".**
  - a. Press **[UP]** arrow key to move to H1 parameter.
  - b. Press **[SET]**.
  - c. Press **[UP]** arrow key to set parameter to "10" if not already "10".
  - d. Press **[SET]**.
5. **St - Verify Set Point according to your case set point.**
  - a. Press **[UP]** arrow key to move to St parameter.
  - b. Press **[SET]**.
  - c. Press **[UP]** arrow key to set parameter to your case setting according to program installed. See decal on case and the Low and Medium Temp Codes section of this manual.
  - d. Press **[SET]**.
6. **Verify parameters according to list attached to your case or per the Low and Medium Temp Codes section of this manual.**
7. **CONFIRM PARAMETER SETTINGS - IMPORTANT! YOU MUST PERFORM THIS STEP LAST!**
  - a. After you have set all parameters you must do the following to confirm:
    - Press and hold **[PRG]** key until the Carel returns to temperature reading. Your settings are saved once this is done.

**IMPORTANT NOTE:** At any time if you stop operating the Carel and do not perform step 7, the Carel will return to normal operations and will **NOT** save your settings. Make sure you keep the Carel programming state active if you have changed settings. If you do not, you will lose all your settings and must start over.

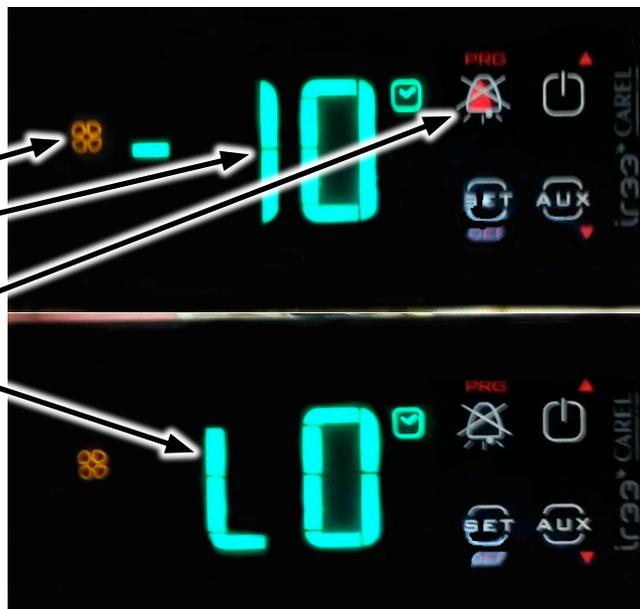
### LOW ALARM ON THE CAREL IR33+

The Carel screen will alternate between:

- Temperature reading, and
- "LO"

The following will be displayed on the Carel:

- Fans may be on (Fan icon)
- The Temperature displayed
- Alarm LED will be on when TEMP is displayed
- "LO" will be displayed alternating with "TEMP"



# CAREL IR33+ CONTROLLER

## IR33+ Parameters Verify and/or Change

### SETTING PARAMETERS ON THE CAREL IR33+

To set a parameter after you have entered the password, perform the following steps. See picture below for key locations.

1. Press **[UP]** arrow key until parameter you want to see is displayed.
2. Press **[SET]** to enter parameter setting
3. Press **[UP]** or **[DOWN]** arrow to set parameter to desired setting.
4. Press **[SET]** again to exit parameter setting.

Repeat these steps until you have changed all parameters.

***Do not forget to confirm parameters after setting them.  
See step 7 from the previous page on how to confirm settings.***



# MANAGER'S EMERGENCY GUIDE

## Hybrid™ Display Cases

Zero Zone medium and low temp Hybrid™ display cases have a built-in alarm system to alert you of problems with the operation of the case. In the event of a problem, an alarm will sound (a constant beeping noise) and the display will flash an error code. If this occurs:

1. Press and hold the **[PRG]** button on the display for 5 seconds to silence the alarm. The **[PRG]** button is in the upper left of the control. Doing so will silence the alarm for 60 minutes.
2. Identify the alarm code displayed on the screen. The FOUR most common alarm codes are listed below:
  - **“E0”** = case temperature probe error
  - **“E1”** = defrost temperature probe error
  - **“HI”** = high temperature inside the display case. Display will alternate between HI and Temperature when HI temp alarm is active.
  - **“LO”** = low temperature inside the display case. Display will alternate between LO and Temperature when LO temp alarm is active.
3. **“DEF”** = case is in defrost (this is not an error code).
4. If the error code is an **“E0”** or an **“E1”**, then proceed to step #4; a qualified refrigeration technician is required to correct the situation. In the event of a high temperature alarm (**“HI”**), there is a chance that there is a simple fix for the problem:
  - a. Verify that a door is not accidentally held open. Sometimes products will fall off the shelves and prevent a door from fully closing.
  - b. Confirm that the case was not recently stocked with product. Holding one of the doors open for an extended period of time (as is the case when stocking) will raise the internal temperature and possibly set off the alarm.
  - c. Determine whether a defrost cycle has recently occurred. Following the defrost period, the case temperature may be warmer than usual.
  - d. Make sure proper airflow is not compromised by debris covering the balloon guard located at the front of each condensing unit on the top of each case behind the shroud. You will need to use a step ladder to check this. If possible, remove the item or debris blocking the balloon guard. If you are unable to easily remove the item or debris, call your service provider.Identifying and correcting any of these problems will return the case temperature to normal conditions.
5. If the source of the problem was not identified in step #3, a service request should be directed to your service provider immediately.



For other technical support, please refer to  
Zero Zone Installation & Operation Manuals  
available on the Service page at:

[WWW.ZERO-ZONE.COM](http://WWW.ZERO-ZONE.COM)

or contact the Zero Zone Service Department at:

800-247-4496

All specifications subject to change without notice.

