CAREL CONTROLLER

Programming Instructions

The Carel controller has a two-level menu system for programming the operation of the case. Level 1 program settings are the most frequently accessed parameters. These items are used to make simple changes to the operation of the case. Level 2 program settings control more complicated aspects of the case operation and, therefore, require the use of a password to gain access.

HOW TO CHANGE LEVEL 1 CONTROL SETTINGS

1. Press and hold the Program **[Prg]** button down for 5 seconds. **"St"** will be shown on the display.
2. 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.
3. Use the **[Up]** and **[Down]** arrows to change the value. Then press the **[Set]** button again to return to the menu.
4. The only exception to Step #3 is the real time clock, program code **"tc"**. In this case, you must press the **[Set]** button in order to access the submenu of available settings for the **"tc"**parameter. Then press the **[Up]** and **[Down]** arrows to move up and down the submenu. Once changes are made in this submenu, press the **[Prg]** button to get back to the main menu.
5. 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.

HOW TO CHANGE LEVEL 2 CONTROL SETTINGS

6. Press and hold the **[Prg]** and **[Set]** buttons down for 5 seconds. The display will show a flashing **"0"**.
7. Use the **[Up]** arrow until the display reads **"22"** (this is the password), then press the **[Set]** button. The display will read **"/P"**.
8. 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.)
9. Use the **[Up]** and **[Down]** arrows to change the value. Then press the **[Set]** button again to return to the menu.
10. 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.
11. 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.

CAREL CONTROLLER

Low Temp Codes

3-5 DOOR LOW TEMP LEVEL 1		
Code	**Name**	**Factory Set**
St	Set point	-10
rd	Differential	6
dI	Defrost interval	12
dt1	Defrost end temp	70
dP1	Defrost duration	40
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	-

1 & 2 DOOR LOW TEMP LEVEL 1		
Code	**Name**	**Factory Set**
St	Set point	-10
rd	Differential	6
dI	Defrost interval	12
dt1	Defrost end temp	45
dP1	Defrost duration	30
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	-

IM BOTTOM-MOUNTED COIL LEVEL 1		
Code	**Name**	**Factory Set**
St	Set point	7
rd	Differential	4
dI	Defrost interval	12
dt1	Defrost end temp	70
dP1	Defrost duration	40
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	-

LOW TEMP LEVEL 2		
Code	**Name**	**Factory Set**
/A2	Probe 2 configuration	2
c1	Min time between starts	5
c2	Min comp OFF	1
c3	Min comp ON	1
d0	Defrost type	4
dd	Drip time	1
dn	Defrost duration %	100
AL	Low temp alarm	-20
AH	High temp alarm	10
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

1 & 2 DOOR LOW TEMP LEVEL 2		
Code	**Name**	**Factory Set**
/A2	Probe 2 configuration	2
c1	Min time between starts	5
c2	Min comp OFF	1
c3	Min comp ON	1
d0	Defrost type	0
dd	Drip time	1
dn	Defrost duration %	100
AL	Low temp alarm	-20
AH	High temp alarm	10
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

IM BOTTOM-MOUNTED COIL LEVEL 2		
Code	**Name**	**Factory Set**
/A2	Probe 2 configuration	2
c1	Min time between starts	5
c2	Min comp OFF	1
c3	Min comp ON	1
d0	Defrost type	4
dd	Drip time	1
dn	Defrost duration %	100
AL	Low temp alarm	-20
AH	High temp alarm	25
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

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Medium Temp Codes

MEDIUM TEMP LEVEL 1		
Code	**Name**	**Factory Set**
St	Set point	34
rd	Differential	4
dt1	Defrost end temp	50
dP1	Defrost duration	30
d/1	Defrost probe temp	n/a
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 LEVEL 2		
Code	**Name**	**Factory Set**
/A2	Probe 2 configuration	0
c1	Min time between starts	5
c2	Min comp OFF	1
c3	Min comp ON	1
d0	Defrost type	2
dI	Defrost interval	12
dd	Drip time	1
dn	Defrost duration %	100
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

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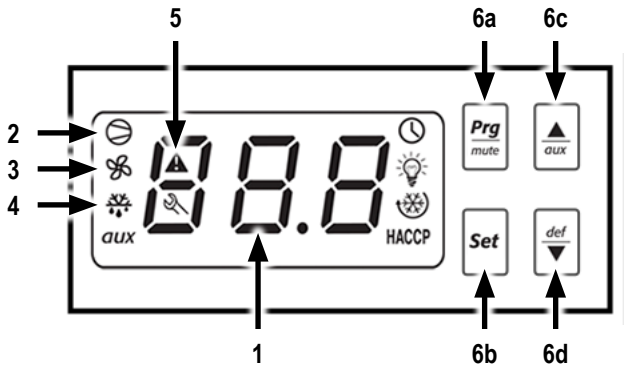
CAREL CONTROLLER

Basic Operations



1. **Temperature Display:** The temperature of the case is displayed here. When the case is in defrost mode, this display will read DEF.
2. When lit, this icon indicates the compressor is running.
3. When lit, this icon indicates the fans are running.
4. When lit, this icon indicates the defrost heater is activated.
5. This icon flashes in an alarm situation.
6. **Buttons:**
   a. **Prg/mute:** This button is used to silence the audible alarm. The alarm will re-energize after 60 minutes if the condition that caused it has not been corrected. This button is also used to make basic changes to the program and should be used only by a qualified service technician.
   b. **Set:** This button is used to program the control and should be used only by a qualified service technician.
   c. **Up Arrow/aux:** This button is used to program the control and should be used only by a qualified service technician.
   d. **Down Arrow/def:** This button is used to program the control and should be used only by a qualified service technician.

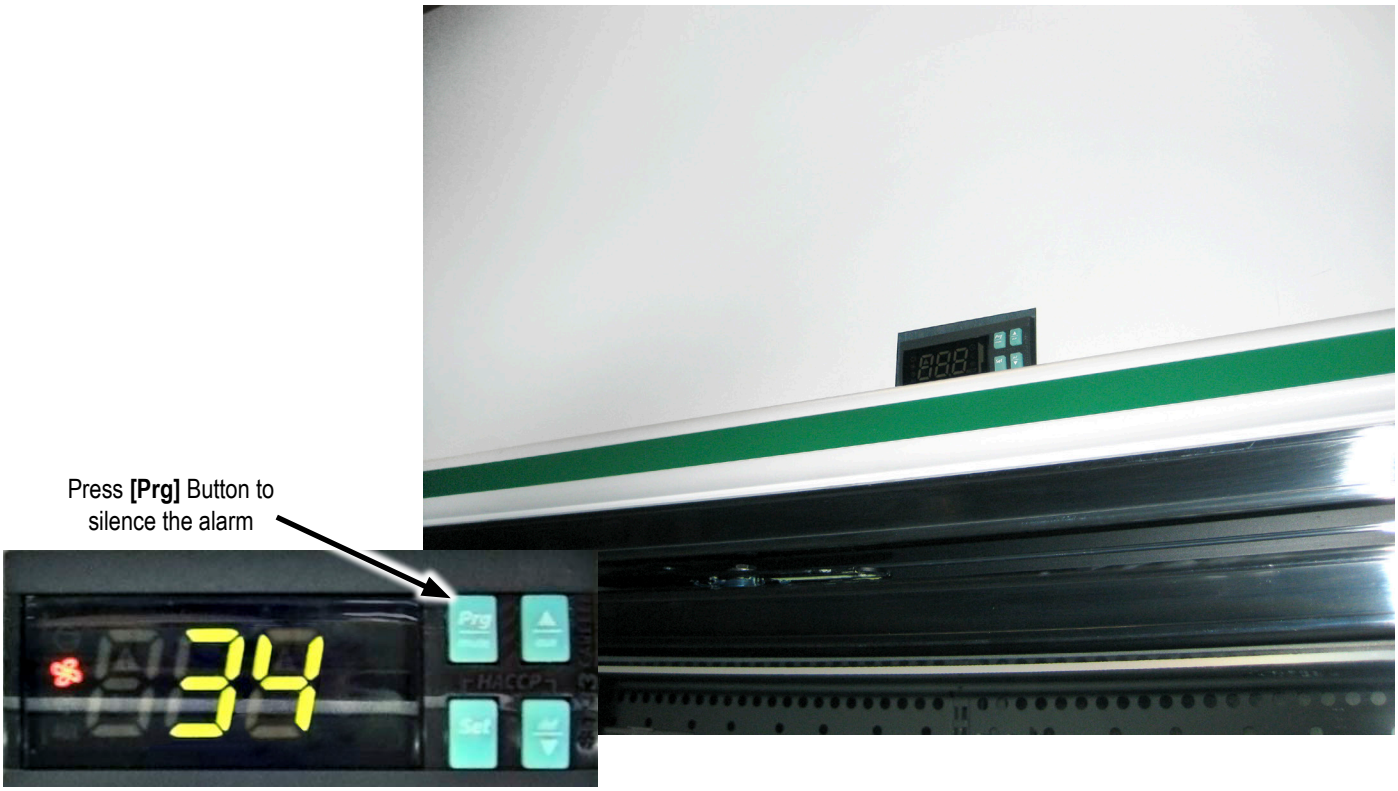
Basic Case Operations

1. The case's condensing unit (mounted on top of the case) 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 30ºF, except when in defrost.
3. The case goes into defrost two times per day. The defrost lasts between 30 and 50 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 40ºF for a medium temp case and 60ºF 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 41ºF 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.

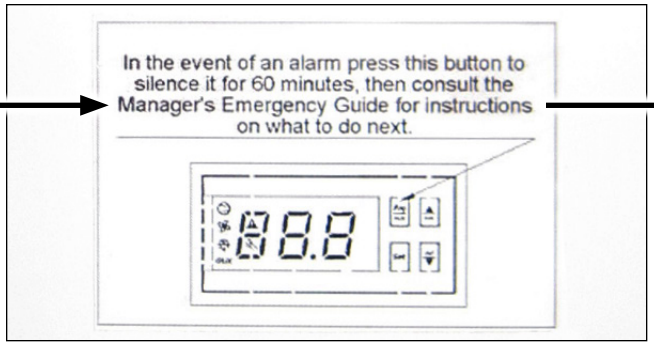
CAREL CONTROLLER

Silencing the Temperature 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.

Alarm Instruction Label
An instruction label for the electronic control can be found affixed to the ceiling of each case inside the right-hand door.



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

CAREL CONTROLLER

Conditions that Trigger the Alarm

Your LOW TEMP case has two defrosts programmed per day, one at 8:00 AM and one at 8:00 PM. A typical defrost lasts one hour. Your MEDIUM TEMP case has two defrosts programmed per day, one at 8:00 AM and one at 8:00 PM. 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 delay after defrost. The controller has a 10ºF high alarm set point. The alarm will sound when the sensed temperature is at or above 10ºF for a period of 60 minutes. If the temperature drops below 10ºF 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.
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 or 8:00 PM). 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.
    - 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.)

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
   - **LO** = low temperature inside the display case

   DEF = case is in defrost (this is not an error code)
3. 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.
4. If the source of the problem was not identified in step #3, a service request should be directed to your service provider immediately.

This image shows the controller at normal operation.

This image shows the controller during an alarm condition. This is the high temperature alarm code (HI). Other codes may also be displayed. *(See above for other codes)*