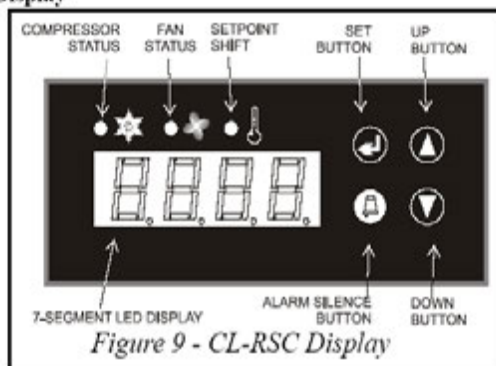


Overview

The Control Link Refrigeration System Controller (CL-RSC) is an electronic device that can control all functions of a single-compressor refrigeration system, including refrigeration, defrost, and alarming. Scheduled defrost and case light control is also possible with the addition of an expansion real-time clock module.

CL-RSC Operation

The Display



The primary means of interaction with the CL-RSC system during programming and operation will be the display on the front of the Control Link module (or the remote display, if one is being used).

Seven-Segment Display

The four-digit seven-segment display is the primary means a technician or operator will use for viewing temperatures and alarm codes, and programming setpoints.

Status LEDs

The three LEDs above the seven-segment display show the status of the compressor relay, the fan relay, and whether or not a setpoint shift is active (lit if setpoint shift is active).

Buttons

The four buttons to the right of the seven-segment display are used to program the CL-RSC, select temperatures and alarms for viewing, and perform other functions such as alarm silencing and manual defrost.

Modes of Operation

Start-Up

Compressor operation will be suspended after power-up based on the value of the $[SUD]$ parameter (default 10 minutes). After this delay, the CL-RSC resumes normal refrigeration control. To prevent nuisance alarms when the case is first started up, no high temperature case alarms will be generated until 120 minutes after the start of the first cooling cycle.

Normal Operation (Refrigeration)

When in refrigeration mode, the CL-RSC energizes the compressor relay when the case temperature is above the setpoint, and de-energizes it when

the case temperature setpoint is satisfied. The fan relay is activated and de-activated the same way as the compressor relay, unless the CL-RSC has been programmed to keep the fans always ON.

Alarms During Refrigeration

If the case temperature sensor value falls below the low temperature setpoint or rises above the high temperature setpoint, the alarm relay (if defined) will energize, and the display will show the alarm code. The energized alarm relay and display code will continue until the temperature returns to normal (1°F below high temp alarm setpoint or 1°F above low temp setpoint) or until the Alarm Silence button is pressed (alarm is suspended for 5 minutes, then will reoccur if problem is still active).

Defrost Operation

Defrost cycles are initiated at the times programmed in the CL-RSC. During defrost, the compressor relay is de-energized, and the defrost relay is energized. The defrost relay will be de-energized when the defrost termination temperature is reached or until the programmed defrost duration has elapsed (whichever occurs first). While the defrost relay is energized, the display will show *dEF* instead of the case temperature.

If a defrost drip duration has been programmed, immediately after defrost termination the compressor relay will remain OFF for an amount of time to allow moisture to drain off the coil. During this time, the display will read *driP*. When the drip time is over, refrigeration will resume.

Fans may be either off or on during defrost, based on user programming.

Manual Defrost

A manual defrost may be initiated at any time by holding the SET button for 10 seconds until the *dEF* message is shown on the display. Defrost will begin immediately and terminate normally. If one of the auxiliary inputs is configured as a manual defrost switch, a contact closure on the switch will also initiate a manual defrost.

Compressor Fail-Safe Mode

If the case temperature sensor fails, the CL-RSC will operate in a fail-safe mode that cycles the compressor ON and OFF at a user-defined regular interval. The ON/OFF rate is determined by setting parameters $[SFP]$ and $[SFD]$ in the CL-RSC. $[SFP]$ sets the interval period, and $[SFD]$ sets the amount of time during that period the compressor will be ON.

For example, if during fail-safe you want the compressor to alternate being ON for three minutes and OFF for seven minutes, set $[SFD]$ to 3 and $[SFP]$ to 10. This will cause the compressor to be ON for three minutes of the 10 minute interval, and OFF for the remaining seven minutes.

General Parameters

- General parameters are used by technicians and operators to set the control set-points and defrost schedules.

Before Changing General Parameters

- Before changing parameters, clear any active alarms by pressing the Alarm Silence button.

Changing General Parameters

- **Do not lightly press buttons! You MUST use considerable force while pressing controller buttons or your commands will not register!**
- Press (SET) and hold for five seconds.
- If general mode programming has been password protected, you will see PASS on the display.
- Press (SET) and use the arrow keys to increment the password number until the correct password is shown and then press (SET).
- Note: If general parameters are not password protected, PASS will not appear on the display.

The display will show the first programmable parameter: CSP (Case temperature Set Point). The arrow keys may be used to scroll through the list of general parameters. To change the value of any parameter follow these steps:

1. Select the parameter using the arrow keys (until the code is shown).
2. Press (SET).
3. Current value of this parameter will display. Use arrow keys to change values.
4. Press (SET) to accept value.
5. Repeat steps 1-4 until all set points have been properly configured.
6. When finished, press (SET) again for five seconds to save changes and exit. The display will blank for one second and then revert to normal display if the save was successful.
7. To cancel all changes, press and hold (SILENCE) for five seconds, or leave controller idle for 60 seconds. You will lose all setpoint changes made since you entered General Programming Mode.

See **Warning at right.**

<i>General Parameters</i>				
<i>Code</i>	<i>Description</i>	<i>Min</i>	<i>Max</i>	<i>Default</i>
<i>CSP</i>	Temp control set point (deg F, can be displayed in deg C)	-40	100	25
<i>dEft</i>	Defrost termination temperature (deg F, can be displayed in deg C)	-40	100	35
<i>dEFd</i>	Defrost cycle duration (minutes)	1	120	10
<i>dUPU</i>	Defrost upon power-up? (if yes, initiates defrost cycle after power restore)	no	YES	no
<i>ddAP</i>	Defrost delay after powerup (minutes)	0	120	5
<i>dr iP</i>	Compressor OFF delay after defrost (minutes)	0	60	10
<i>dCPd</i>	Defrost cycles per day (if set to 0, no dFx schedule times will be shown)	0	12	10
<i>tAH</i>	High temperature alarm setpoint. (deg F, can be displayed in deg C)	-40	100	100
<i>tAL</i>	Low temperature alarm setpoint (deg F, can be displayed in deg C)	-40	100	-40
<i>Adtd</i>	Alarm delay after defrost (temp alarms are suspended for this many minutes after end of defrost)	0	60	10
<i>AdEL</i>	Alarm delay for high/low temp alarm. Temp must remain out of alarm setpoint range for this number of minutes before an alarm can occur.	0	60	10
<i>SFT</i>	Software Version	-	-	-

Note! See Technical Information Sheet In This Manual For This Case's Settings

Note! See Technical Information Sheet In This Manual For This Case's Settings

WARNING!
You MUST press and hold (SET) after changing setpoints for changes to be permanent. Leaving the controller idle for 60 seconds will log you out and cancel all your setpoint changes.

Advanced Parameters

- General parameters are used to change higher-level parameters not directly related to system operations.
- Selecting and changing advanced parameters works the same way as general parameters, except that they are accessed in a different way and require entering a different password.

Before Changing Advanced Parameters

- Before changing parameters, clear any active alarms by pressing the Alarm Silence button.

Changing Advanced Parameters

- **Do not lightly press buttons! You MUST use considerable force while pressing controller buttons or your commands will not register!**
- Press and hold the UP and DOWN buttons simultaneously for five seconds to enter the *Advance Programming Mode*. The display will show **APAS**.
- Press (SET) and use the arrow keys to select the correct password (default is 0000), and press (SET) to enter it.

Advanced Parameters				
Code	Description	Min	Max	Default
dI FF	Control temp setpoint differential (dead-band around setpoint) in degrees	1	10	1
CSUd	Compressor ON delay after power-up (minutes)	0	15	10
COt	Minimum compressor OFF time (minutes)	0	15	5
COnt	Minimum compressor ON time (minutes)	0	15	1

Alarms

There are ten different alarms that may occur in a CL-RSC. When an alarm is detected, CL-RSC takes the following actions:

- Displays a four-character error code on the LED display (unless parameter “Add” is set to “YES”
- Closes the Aux relay (if parameter “ArA” is set to “ALAr”)
- Uses fail-safe modes and settings to compensate for the alarm condition and attempt to keep the system running until repair can be done.

Alarm Codes	
Code	Description
ES 10	Sensor #1 (case temp) is open. CL-RSC uses CSFP and CSFO to pulse the compressor ON and OFF as a fail-safe.
ES 15	Sensor #1 (case temp) is short. CL-RSC uses CSFP and CSFO to pulse the compressor ON and OFF as a fail-safe.
ES20	Temp sensor #2 (defr. term) is open. Defrosts will last the full time duration (dEFd) and will not terminate by temperature.
ES25	Temp sensor #2 (defr. term) is short. Defrosts will last the full time duration (dEFd) and will not terminate by temperature.
ES30	Temp sensor #3 is open. No fail-safe actions.
ES35	Temp sensor #3 is short. No fail-safe actions.
HtP	High temperature alarm setpoint was reached after the Adtd(def. delay) or AdEL (normal delay) elapsed. No fail-safe actions.
LtP	Low temperature alarm setpoint was reached after the Adtd(defrost delay) or AdEL (normal delay) elapsed. No fail-safe actions.
dEt	During defrost, the case temperature did not reach the defrost termination temperature setpoint (dEFt) before the defrost cycle time finished. No fail-safe actions.
rLY	Compressor fault detected.

Clearing Alarms

To clear an alarm and cause the CL-RSC to resume normal operation, press the Alarm Silence button. The alarm message will disappear, the Aux relay will open (if parameter “ArA” is set to “ALAr”), and the CL-RSC will attempt to resume normal operation. If the condition or conditions that caused the alarm are still present, the alarm will reoccur after the appropriate alarm delays have elapsed.

Installation Photos

- See next page for installation photos of Emerson Control Link CPC® P/N 818-2050 Refrigeration Controller.
- Note: Exact location may vary depending upon model and features.

EMERSON CONTROL LINK CPC® P/N 818-2050 REFRIG. CONTROLLER: INSTALLATION PHOTOS



Ballast

Main Power Switch

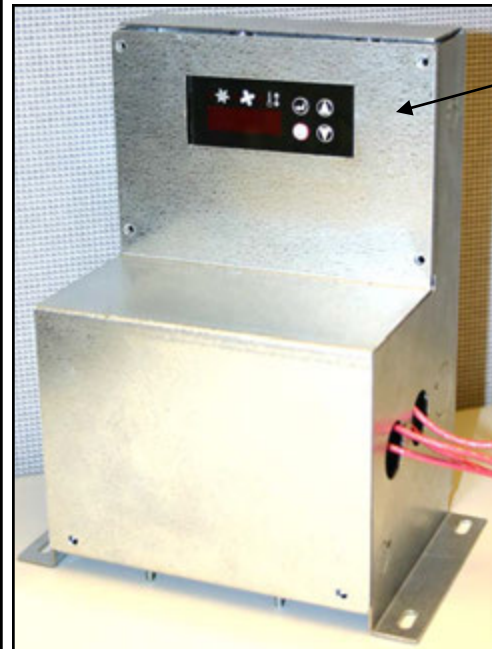
Note: This Sheet Applicable To "CO" Cases Only

Control Link Refrigeration System Controller



Enlarged View of Control Link Refrigeration System Controller

EMERSON CONTROL LINK CPC® P/N 818-2050 REFRIG. CONTROLLER: INSTALLATION PHOTOS



Control Link Refrigeration System Controller With Housing Cover Attached

View of Control Link Refrigeration System Controller With Housing Cover Removed



Control Link
Refrigeration System
Controller

Alarm Codes

IS10	Sensor #1 Open
IS1S	Sensor #1 Short
IS20	Sensor #2 Open
IS2S	Sensor #2 Short
IS30	Sensor #3 Open
IS3S	Sensor #3 Short
HiP	High Temp
LiP	Low Temp
dH	Def Term Temp
rLy	Compressor Fault

For manual defrost, hold for 30 seconds.

CPC
Control Link
CPC Part #818-0050

120-240
VAC
Power

EMERSON CONTROL LINK CPC® P/N 818-2050 REFRIG. CONTROLLER: INSTALLATION LOCATION

