—– Guardian 41® Temperature and Defrost Controller —–

Features

- Digital displays with four status LED indicators
- Four (4) button keypad
- 24-hour system clock for timing defrost cycles
- Audible alarm
- Field programmable
- Nonvolatile memory for preset data storage
- Password entry to prevent tampering

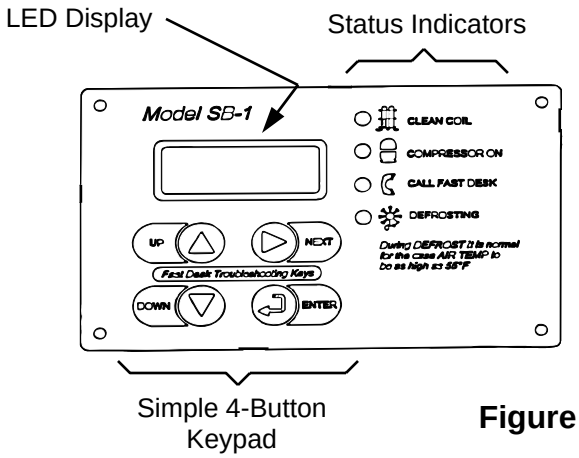

Figure 1

Overview of Guardian 41® Case Controller

CONTROLLER OVERVIEW

The GUARDIAN 41® Case Controller maintains specific air temperature, controls refrigeration system defrost (temperature & time) and safeguards against iced coil, dirty condenser and other system failures.

OVERVIEW FUNCTION

The Guardian 41® Case Controller uses three probes located in the return air, on the evaporator coil and on the condenser coil. The controller monitors the probes to ensure that temperatures remain within the programmable parameters. The LED display will indicate the stauts of the system (see Figure 1).

DETAILED DESCRIPTION

The temperature/defrost control process is primarily maintained by the two Normal Operation Control Loops: (1) Normal Thermostat Cycle, and (2) Normal Defrost Cycle. Depending on the operating status of the refrigeration system, variations of these two control loops may be enabled by a third loop called the Exceptions Processor. The Exceptions Processor (1) monitors the refrigeration environment, comparing it against both the user and factory preset values stored in non-volatile memory, (2) identifies and ranks malfunctions in order of priority, and (3) activates the appropriate control loop to keep the unit operable during any one of the combination of sensor failures or alarm events.

Keyboard Instructions

OVERVIEW

Figure 1 (above) illustrates a simple keypad menu for displaying and entering system parameters using the four-button keypad.

Note: The NEXT key is used to advance to the next column or digit. The UP and DOWN keys are used to scroll through items under a given menu and are also used for increasing and decreasing numbers in the edit mode. The ENTER key is used to change a parameter and store its value in the nonvolatile memory.

Keyboard Instructions, Continued

INSTRUCTIONS TO DISPLAY TEMPERATURE AND VIEW SYSTEM CLOCK

The default on the digital display is the current Air Temperature. Note: While displaying air temperature, the display will alternate between the probe locations (I.e. Air, EVAP or Cond) with the corresponding temperature value.

DISPLAY EVAPORATOR TEMPERATURE: Press the DOWN arrow key once.

DISPLAY CONDENSER TEMPERATURE: Press the DOWN arrow key twice.

DISPLAY TIME: Press the DOWN arrow key three times. Note: Time displays in 24-hour format.

TO CHANGE THE SET POINT TEMPERATURE

1) Press the NEXT key once. The display will flash between (SP) Set Point and (U00) User.

2) Press the ENTER key to display the actual Set Point value. Note: Set Point default is 42°F. To change the value, press either the UP or DOWN key to the desired temperature.

3) Press the ENTER key. Note: The Controller will automatically return to its default display (air temperature) within five minutes.

TO MANUALLY DEACTIVATE THE DEFROST

Note: The manual defrost mode can be enabled using the following steps:

1) Press the NEXT key twice. The display will flash between DEF and RUN.

2) Press the ENTER key. This will allow the defrost mode to be turned ON or OFF, as indicated on the display, using the UP or DOWN keys then followed by the ENTER key.

3) Press the ENTER key again to activate.

TO CHANGE THE FACTORY PRESET CONTROLLER PARAMETERS

SB-1 Controller Overview (Page 1 of 5) describes the parameters of the Guardian 41® and the associated factory settings. To change these settings you will first need to enter the PASSWORD. Note: This should be done by a designated refrigeration contractor.

TO ENTER PASSWORD (Note: During this operation, the digit being changed will be illuminated)

1) Press the NEXT key three times, until the display reads PASS.

2) Press the ENTER key and input the password by using the UP and DOWN keys one digit at a time. Note: The password is 4321. Digits may be selected by using the UP and DOWN keys and the NEXT key.

3) Press the ENTER key again. This will accept the password entry and allow common and user parameters to be changed.

TO CHANGE FROM FAHRENHEIT TO CELSIUS

Note: You must enter the password.

Note: If you change the temperature unit to Celsius, all temperature parameters must be changed for the proper operation.

1) Press the DOWN key once to change the temperature unit selection. Note: 0 = Fahrenheit; 1 = Celsius.

2) Press the ENTER key to set your selection.

TO SET THE TIME

Note: You must enter the Password.

1) Press the DOWN key twice (until C02 is displayed).

2) Press the ENTER key. Note: The digit to change will be brighter than the others.

Keyboard Instructions, Continued

TO SET THE TIME, Continued

3) Press the UP key until the correct number is displayed.

4) Press the NEXT key to move to the next number (repeat steps 3 & 4 until desired time is shown).

5) Press the ENTER key to set the time.

TO CHANGE CONTROL PRESETS

Note: You must enter the Password.

Caution: Changing presets will affect case performance.

1) Press the DOWN key to select the appropriate preset to be changed. Then press ENTER. Note: Pressing the NEXT key will exit the menu.

2) Press the UP or DOWN keys to increase or decrease the value. Then press ENTER to store the value and proceed to the next menu item.

3) Press the NEXT key to exit the menu.

STATUS LEDs

INDICATOR LIGHT	STATUS	ACTION
1) **CLEAN COIL**	Light is flashing/Buzzer is sounding	Condenser Coil requires cleaning
2) COMPRESSOR ON	Light is solid. Light is off.	Thermostat cycle in progress Compressor deactivated
3) CALL SUPPORT	Light is flashing / Buzzer is sounding	Call refrigeration contractor
4) DEFROSTING	Light is solid	Case is in defrost

Four indicator LEDs will illuminate according to the operating status of the temp/defrost controller:

FACTORY PRESET PARAMETERS (TABLE 1)

FUNCTION CODE	PARAMETERS	FACTORY SETTINGS MED TEMP	RANGE
C00	Temperature Units Select	0_2	0 = Fahrenheit 1 = Celsius
C01	Refrigeration Application	1_2	1= MED TEMP
C02	Time of Day	$00:00_2$	0 = 0:00 TO 23:59
U00	Thermostat SET POINT	42°F	TSC_Lo_Lim to TSC_Hi_Lim
U01	Thermostat Hysteresis	3°F	0°F to 20°F
U02	Daily Initial Defrost Time	2	0 hours to 23 hours
U03	Defrost Interval	4 Hours	0 hours to 24 hours
U04	Defrost Termination Temperature	45°F	High Limit / Low Limit

FACTORY PRESET PARAMETERS (TABLE 1), Continued
Temperature/Defrost Controller Program Parameters

User (Pre-Settable) Parameters

FUNCTION CODE	PARAMETERS	FACTORY SETTINGS MED TEMP	RANGE
U06	Defrost Cycle Duration	45 Minutes	0 to 90 Minutes
U07	Condenser Coil Cut-Out Temperature	135°F	High Limit/Cond Cut-In
U08	Condenser Coil Cut-In Temperature	110°F	Cond Cutout/Low Limit
U09	Evaporator Coil Cut-Out Temperature	10°F	High Limit/Low Limit
U10	Low Charge Temperature	85°F	High Limit/Low Limit
U11	Low Charge Cycle Time	10 Minutes	0 to 90 Minutes

TROUBLESHOOTING AND SERVICE TIPS

LED CODE	CONDITION	TROUBLESHOOTING	SOLUTION
Clean Cond LED light illuminated Audible alarm for 3 Minutes	• Condenser Coil Needs Cleaning	• N/A	• Vacuum compressor condenser coil to remove collected dust & debris
LOCH & COND Audible alarm - 3 minutes	• Refrigerant with low charge or leak • Electrical problem • Locked compressor	• Check Sight Glass 1) Check voltage supply at source 2) Check voltage supply at compressor 3) Check Start components • Check start & run windings	• Find leak/add refrigerant 1) If low voltage, refer to electrical contractor 2) If no voltage, check contactor board. Call SCC® Technical Service Department 3) Replace as required • Repair/replace compressor
PF1 Audible alarm - 1 minute	• Return air temperature sensor reading outside of acceptable limits	• Check for loose connection or break in wire	• Repair/replace as required
PF2 Audible alarm - 1 minute	• Evaporator Coil temperature sensor reading outside of acceptable limits	• Check for loose connection or break in wire	• Repair/replace as required
PF3 Audible alarm - 1 minute	• Condenser coil temperature sensor reading outside of acceptable limits	• Check all probe wires for loose connections or breaks	• Repair/replace as required
FAIL Audible alarm - 3 minutes	• Multiple sensor failure	• Check all probe wires for loose connections or breaks	• Repair/replace as required
BLANK Unit shut down	• Not power to face plate	• Check connections on power supply contactor board • Check fuse on power supply contactor board	• Repair/replace as required