

TECHNICAL USER MANUAL



Wellington™



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Saving Generation for the Next Generation

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WARNINGS!

Quick Read

Please read the following warnings to maintain the safe function and continued performance of your Wellington Drive Technologies Limited **SCS™ Connect** controller:

- Installation; Installation of the **SCS Connect** controller other than in accordance with the “Description & Install” section of this manual will invalidate the warranty. The **SCS™ Connect** must only be installed and configured by trained and authorized staff.
- Washdown; The front of the unit may be exposed to water jets. **Warning!** The rear of the unit must not be exposed to high pressure water jets or temporary submersion, as this will invalidate the warranty, and may damage electronic circuits leading to premature failure or unsafe operation. Mounting of the unit must be in accordance with orientation as specified in the “Description & Install” section. **Warning!** Risk of electrocution.
- Chemicals; The **SCS Connect** controller’s housing is made of polycarbonate, and should not be exposed to chemicals which attack this material, as this will invalidate the warranty and may damage the housing, leading to unsafe operation. **Warning!** Risk of electrocution
- Temperature; The **SCS Connect** controller must only be subjected to temperatures as specified in the “Technical Specifications” section of this manual. Exceeding these ranges, either in operation, installation, transportation, or storage, will invalidate the warranty, and may damage electronic circuits and housing components, leading to premature failure.
- Vibration and impact; The unit **MUST** be installed in such a way as to be protected from impact in operation. Do not hit or drop the unit. Exposure to impacts, either in operation, installation, transportation, or storage, may damage electronic circuits and housing components, leading to premature failure, and may cause the **SCS Connect** controller to become unsafe. Any impact which causes visual damage to the controller casing will invalidate the warantee.
- No serviceable parts; There are no serviceable parts inside the **SCS Connect** controller. Do not open the housing, except for the rear cover, as described in the “Description and Installation” section of this manual. Opening of the electronics housing, altering or modifying the **SCS Connect** controller will invalidate the warranty and can cause risk of electrocution.

Important Do's and Dont's:

- Do not use water jets on the rear of the unit. **Warning!** Risk of electrocution. If correctly installed, powerful water jets may be applied only to the front of the unit.



- Do not drop the **SCS Connect**.



- There are no serviceable parts inside the **SCS Connect**. Do not open the housing. **Warning!** Risk of electrocution.



Quick Read

Warnings - cont

- The following parts are considered to be subject to normal wear and tear, and as such are not covered by warranty
 - Scratches and other visual damage to front panel
- Voltages;

The **SCS Connect** controller must only be connected to power supplies which comply with the acceptable voltage ranges specified in the “Technical Specification” section of this manual. Connection to supply voltages outside of these ranges can damage electrical circuits, leading to premature failure, and may cause the **SCS Connect** controller to become unsafe. All **SCS Connect** controller’s ship from the factory with voltage limits enabled. Disabling this protection invalidates any warranty due to incorrect voltages.

Maximum voltages are logged by the **SCS Connect** controller.
- Voltage fluctuations and surges;

SCS Connect controller has surge protection as specified in the “Technical Specification” section of this manual. Exposure to surge voltages outside these limits, or excessively repeated surges within these limits, may cause damage to electrical circuits, leading to premature failure. Failure due to excessive surge voltages is not covered by warranty.
- Currents;

SCS Connect controller outputs should not be connected to short circuits or to loads which exceed the currents specified in the “Technical Specification” section of this manual. Doing so may cause the controller to fail prematurely or immediately, and possibly to damage the connected load. Connection to incorrect loads voids the warranty.

Phase and relay terminals may carry currents high enough to overheat cable terminations, if these are not correctly specified and crimped. This may cause risk of electrocution or fire. Care must be taken to ensure that cables and terminations are safely terminated.
- Segregation of power and signal cabling;

Correct segregation of power and signal cabling must be followed. Do not run power and signal cables together in the same conduit. Induction from power cables may corrupt data signals, leading to incorrect operation.
- Consequential failures;

SCS Connect controller includes features to protect both itself and connected components in the event of a failure. However failure of connected components may cause damage to the **SCS Connect** controller, and failure of the **SCS Connect** controller may cause damage to connected components. Critical or vulnerable components should be protected independently against failure. SCS Connect controller is not warranted against damage caused by or to other components.

- Do not connect the **SCS Connect** controller to the incorrect voltage supply.



- Ensure phase and relay terminals are correctly crimped. Risk of fire.



- Do not run power and signal cables together in the same conduit. Warning! Risk of electrocution.



Quick Read

Warnings - cont

 Fit for purpose;

The **SCS Connect** controller must only be used for the purpose and functions described in this manual. While Wellington Drive Technologies Limited may provide technical support on suitable applications and configuration of the **SCS Connect** controller (where such a relationship may exist), no liability, responsibility or risk is accepted in determining if the **SCS Connect** controller is fit for purpose for any particular application. As each different application requires a different configuration of controlling parameters, no liability, responsibility or risk is accepted by Wellington Drive Technologies Limited for the correct operational function of any particular installation or configuration.

 Continuous development;

Wellington Drive Technologies Limited undertakes to continuously develop and improve products and services. The design and specification for the **SCS Connect** controller is subject to change without warning. The contents of this manual are subject to change without warning. While every endeavour is made to ensure that all specifications and documents are current and complete, Wellington Drive Technologies Limited accepts no liability, responsibility or risk due to omissions or changes caused by continuous improvement and design changes. Users of this manual should verify that they have the current released version (published on the Wellington Drive Technologies website www.wdtl.com) before proceeding.

 Correct disposal;

The **SCS Connect** controller is subject to EU Directive 2002/96/EC (WEEE) for e-waste. It may also be subject to other national legislation for the safe disposal of e-waste. The **SCS Connect** controller must not be disposed off in municipal collections; it must be disposed off through an approved WEEE collection point. Alternatively, the **SCS Connect** controller may be returned to an authorized Wellington Drive Technologies Limited distributor at the end of its working life. Penalties may be applicable for incorrect disposal, as specified by national legislation. The circuit board may contain hazardous substances which could affect health and the environment if disposed off incorrectly. The **SCS Connect** controller complies with EU Directive 2002/95/EC (RoHS).

- The **SCS Connect** controller must only be used for the purposes described in this manual.



- The design and specification of the **SCS Connect** controller is subject to change without warning.



- The **SCS Connect** controller must not be disposed off in municipal collections; it must be disposed off through an approved e-waste collection point.



INTRODUCTION

Quick Read

The **SCS Connect** controller by Wellington is an electronic refrigeration control unit designed to provide a very high level of flexibility for manufacturers of refrigeration units.

The interface system permits different groups of users to have different levels of control, based upon their levels of expertise and their actual control needs.

A unique feature is a mobile app that gives authorized Service Technicians full wireless access to data logging and diagnostic control.

The **SCS Connect** controller's housing meets industry benchmarks for compact size and exceeds benchmarks for sealing at the front face. The appearance of the **SCS Connect** controller can be customized to suit the brand requirements of end customers.

- Highly flexible and configurable
- Definable levels of control
- Mobile app with intuitive touch screen interface
- Wireless data logging and diagnostic control
- Compact size
- Sealed
- Customized branding available



PRODUCT DESCRIPTION

Quick Read

The **SCS Connect** controller consists of three main groups of features:

- The Front Display Panel with the user interface controls.
- The Rear Connector Panel where the input and output cables are connected.
- The Main Housing which includes the mounting clips, gasket and faceplate trim used for installation.

- Three main feature locations:
- Front Display Panel
- Rear Connector Panel
- Housing Installation Features

Front Display Panel



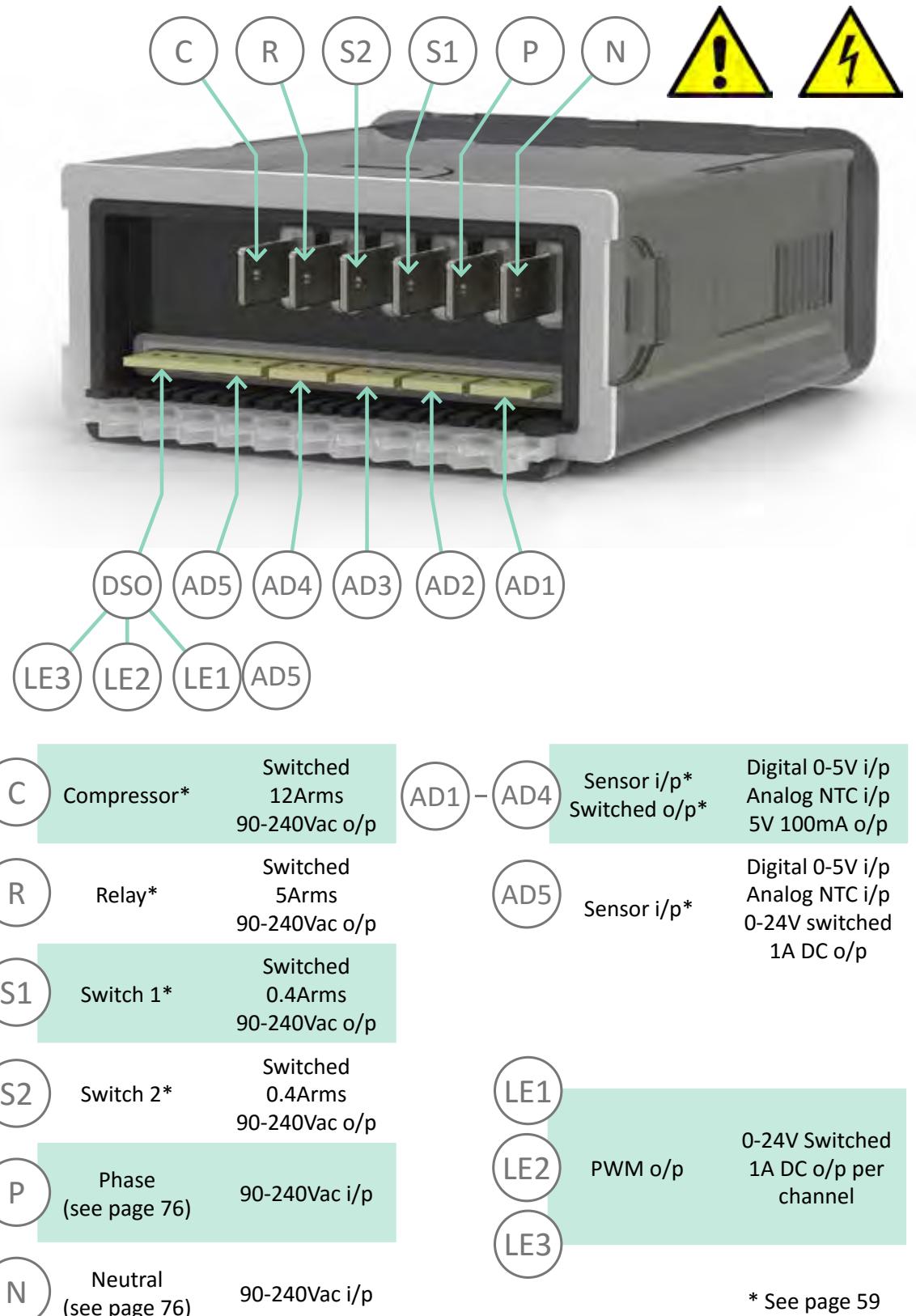
If the Indicator LEDs are lit this means that the function is currently active.

- 1 Night Mode Indicator (see page 18)
- 2 Three Digit LED Display
- 3 Back / Abort Button (see page 18)
Night Mode Button (see page 18)
- 4 Up Button (see page 18)
- 8 Alarm Indicator (see page 85)
- 9 Compressor Indicator (see page 54)
- 10 Defrost Mode Indicator (see page 68)
- 11 Fan Indicator (see page 30)

- 5 Bluetooth® Wireless Indicator (see page 22)
- 6 Defrost Mode Button (see page 18)
Next / Enter Button (see page 18)
- 7 Down Button (see page 18)

Product Description

Rear Connector Panel



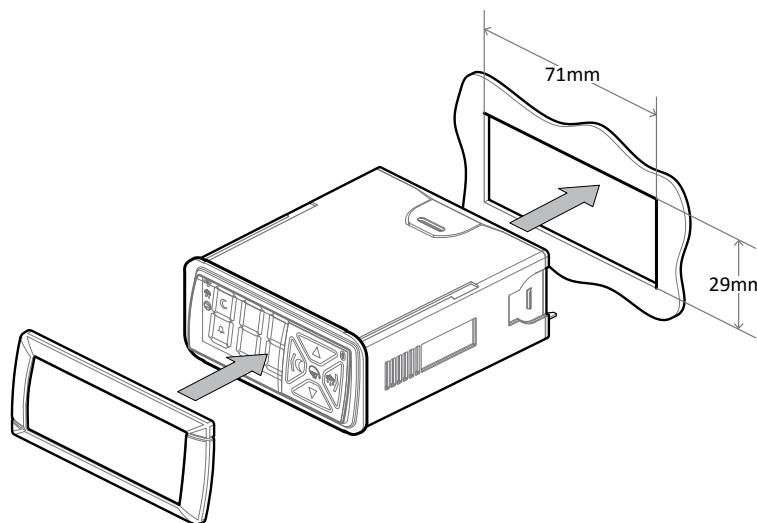
Installation

Installation Diagrams

INSTALLATION PROCEDURE

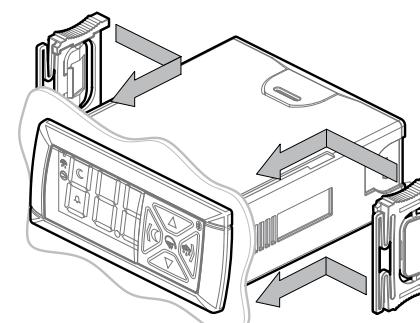
STEP 1

Clip on the Front Fascia Panel. Cut a rectangular aperture in the Mounting Panel which measures 71mm wide by 29mm high. Insert the SCS™ Connect into the hole. **IMPORTANT:** The maximum permitted mounting panel thickness is 9mm. Ensure there are no obstructions 7mm to the left and right of the hole, and 4mm above and below. This will ensure there is clearance with the Front Fascia. Ensure the hole is free of burrs and sharp edges.



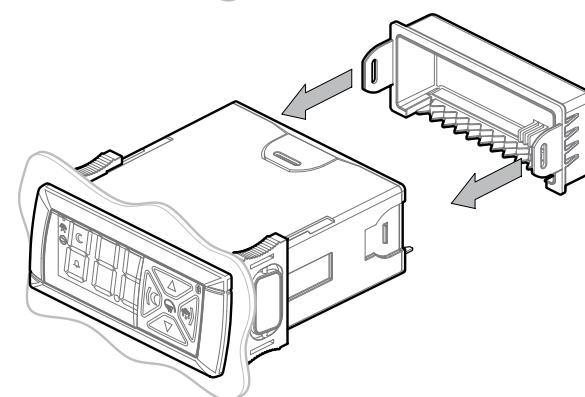
STEP 2

Insert the Side Clips into the slots on the side of the body, and slide these forwards until the SCS™ Connect is held securely against the mounting panel. To disengage the Side Clips, press the back half of the button pad inwards, and then slide the clips backwards.



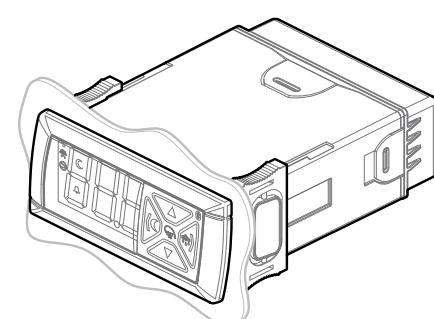
STEP 3

Attach all cables from sensors and hardware to the controller connectors. Please refer to page 11 for a list of the terminals and ports and page 11 for the Hardware Set Up (HSu) parameters.



STEP 4

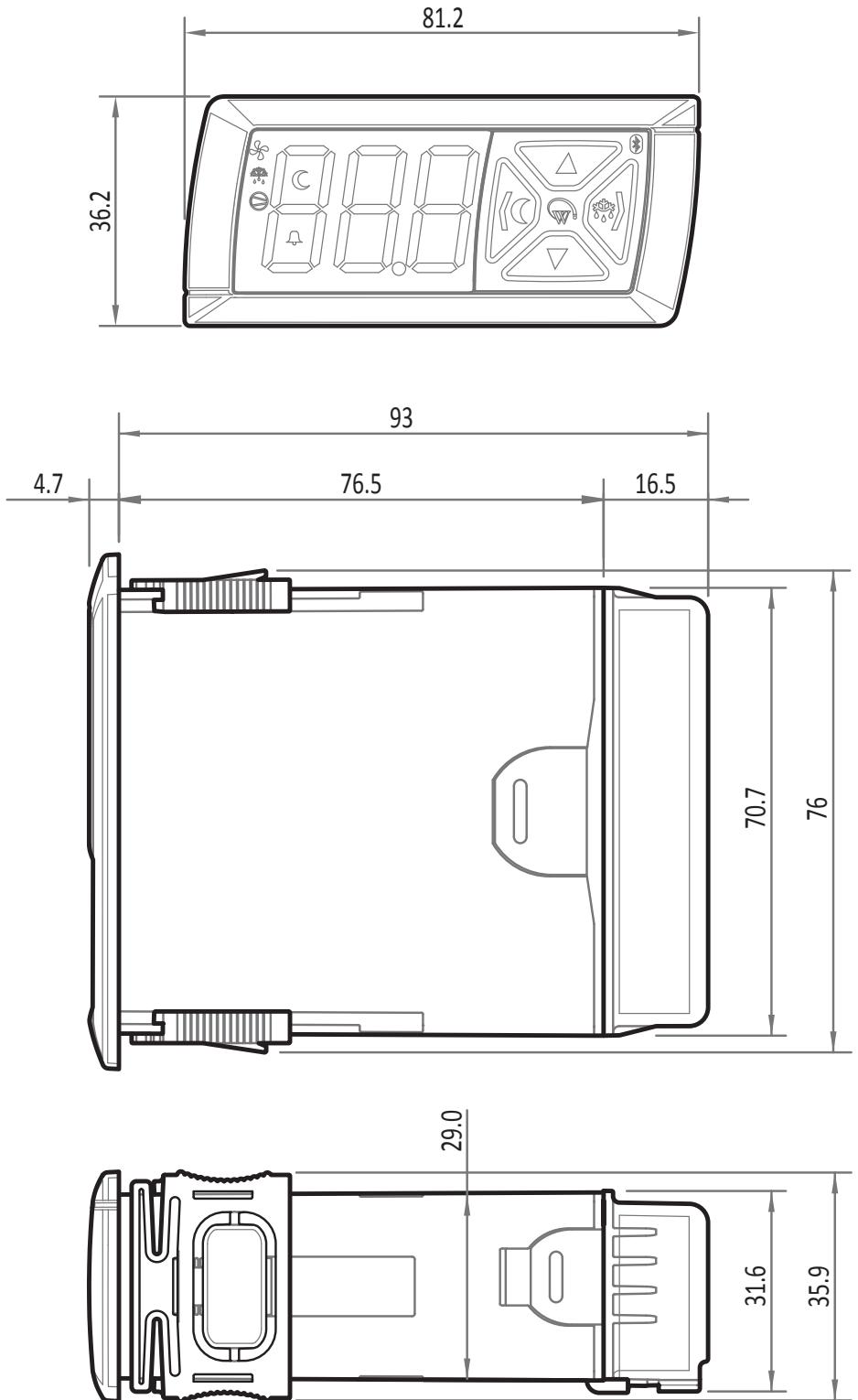
Slide the rear cover forwards and attach using the two outside clips. **IMPORTANT:** Turn off and isolate the power supply before removing this cover. Danger! Risk of electrocution!



To remove the cover, gently disengage the two clips and slide the cover backwards. **IMPORTANT:** Never use an un-insulated screwdriver to remove this cover. Danger! Risk of electrocution!

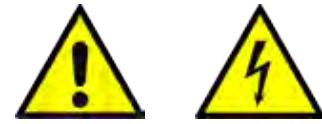
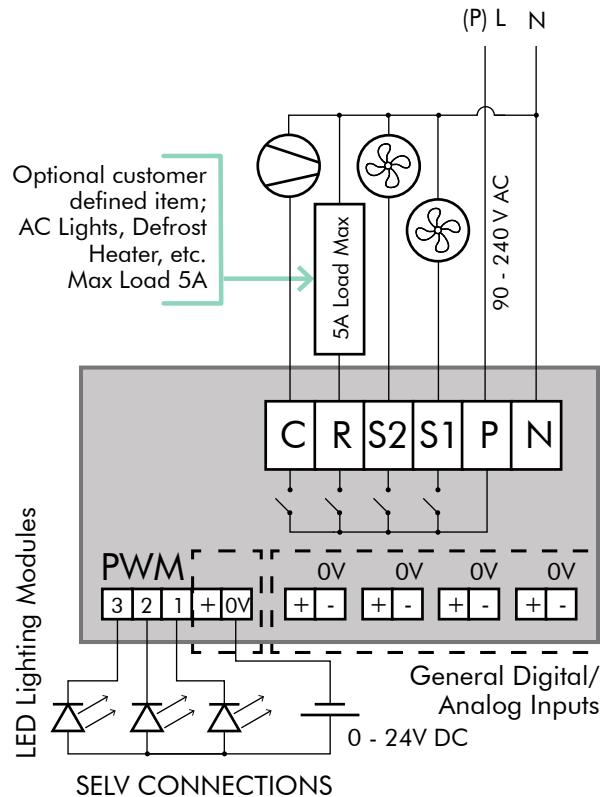


Overall Dimensions

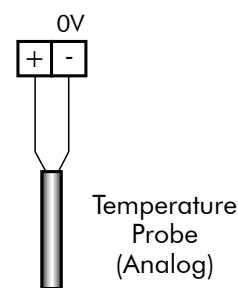
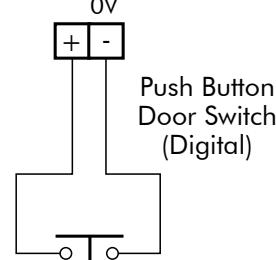


Wiring Diagrams

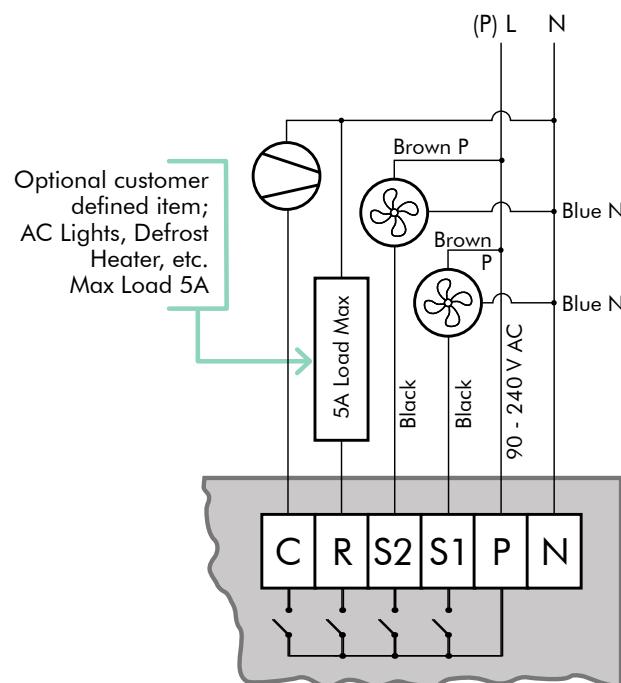
Standard Installation



MAINS CONNECTIONS
Warning!
Risk of Electrocution



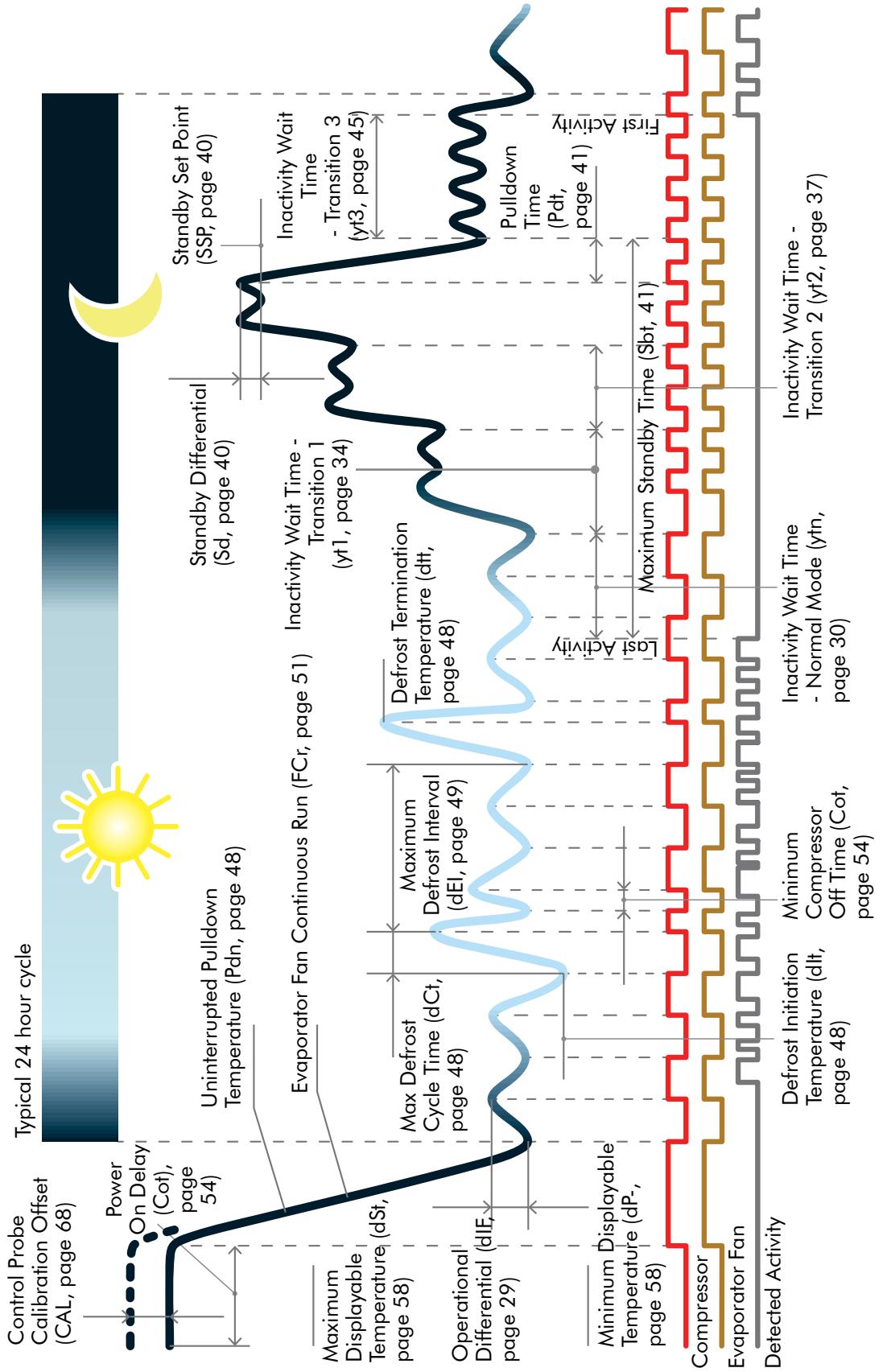
*Variable Speed Motors



MAINS CONNECTIONS
Warning!
Risk of Electrocution

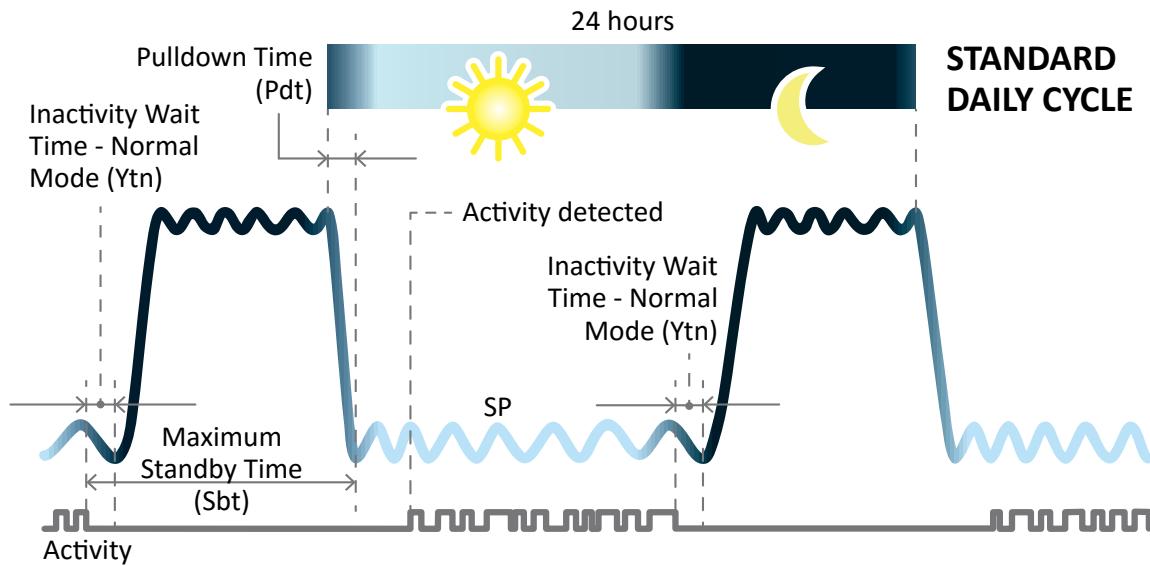
*Alternative connection method for Wellington Variable Speed Motors.

Operating Cycle

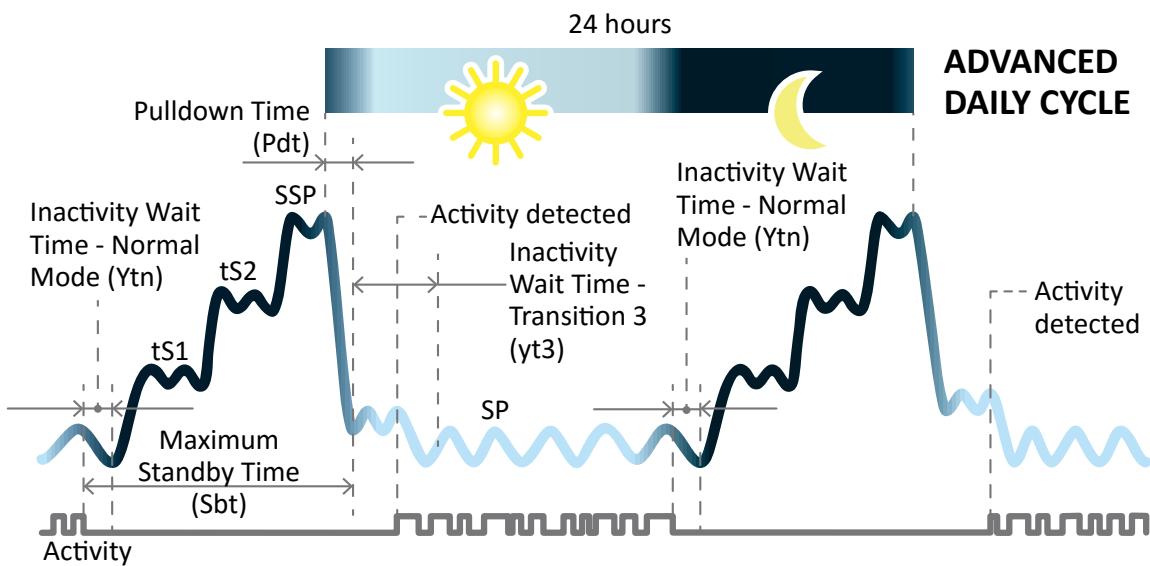


| | | | | | | | | | |
|------------|-------------------------|-----------------|--------------------|------------|--------------------------|----------------------------|----------------------------|-------------------------|-------------------|
| APPENDICES | TECHNICAL SPECIFICATION | FAULTS & ALARMS | UPGRADING FIRMWARE | PARAMETERS | GRAPHICAL USER INTERFACE | FRONT PANEL USER INTERFACE | DESCRIPTION & INSTALLATION | INTRODUCTION & WARNINGS | TABLE OF CONTENTS |
|------------|-------------------------|-----------------|--------------------|------------|--------------------------|----------------------------|----------------------------|-------------------------|-------------------|

Standby Refrigeration Cycles

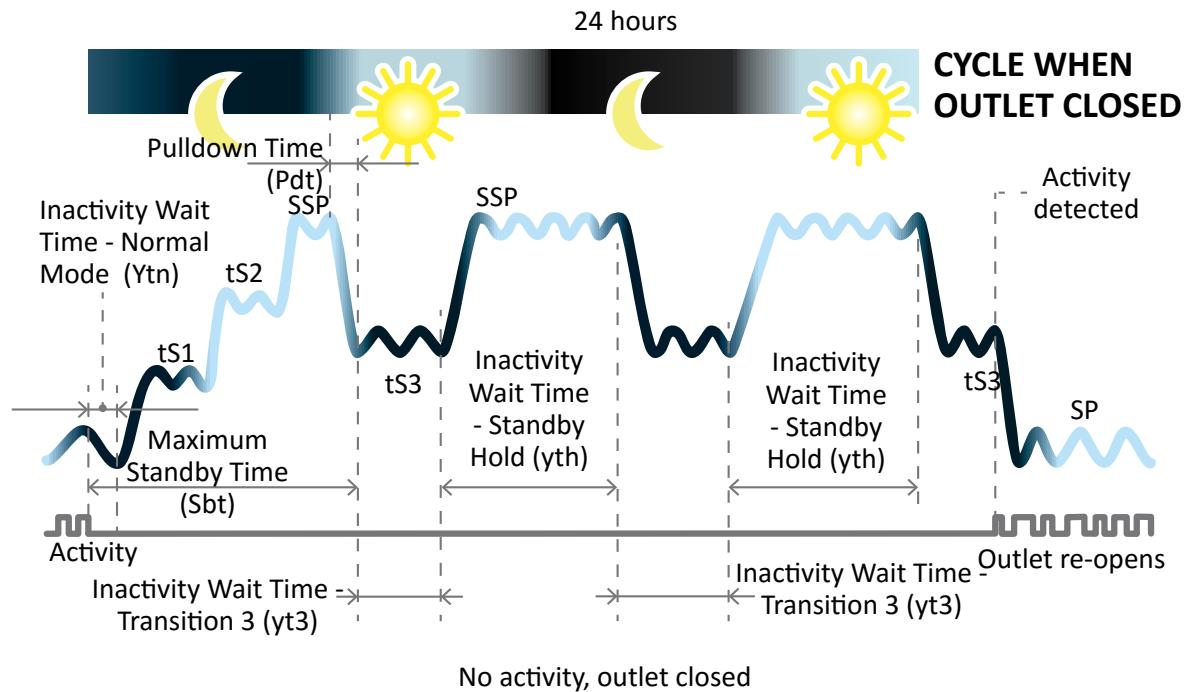


When in Non-Perishable Mode, the SCS™ Connect enters Standby Mode at night to save energy. At the start of each day, it leaves Standby Mode and commences a Pulldown. The start of the Pulldown is timed to ensure that the Operational Set Point (SP) is reached before the first customer Activity is expected. When the Operational Set Point (SP) is reached the SCS™ Connect enters Normal Mode.



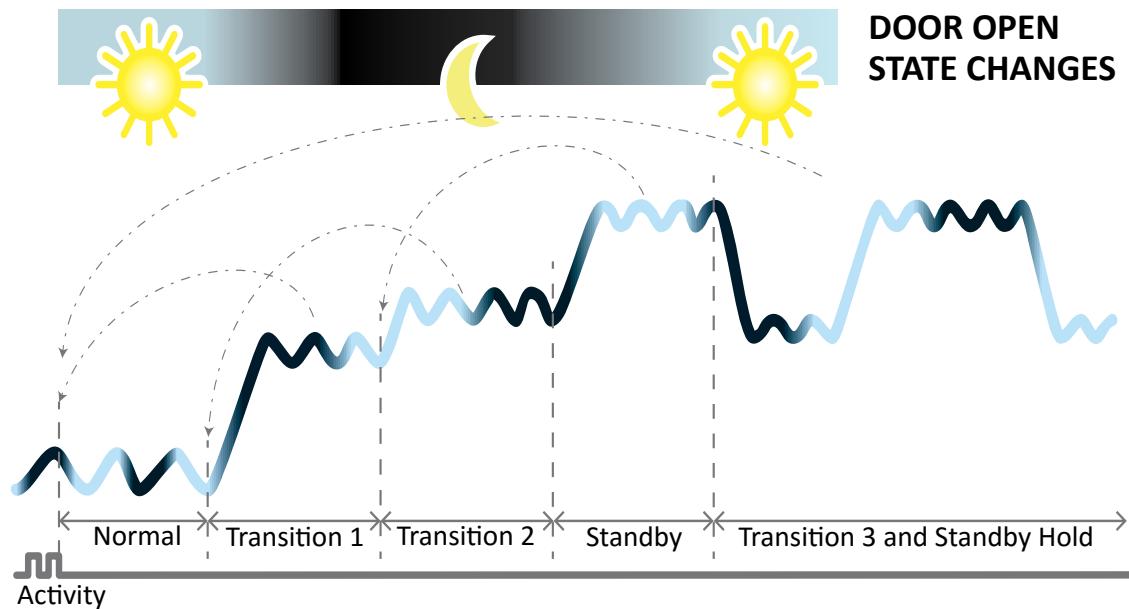
When using the Advanced Daily Cycle, the SCS™ Connect enters and leaves Standby Modes in progressive stages to save energy. At the start of each day, it leaves Standby Mode and commences a Pulldown. This continues until Transition 3 Set Point (tS3) is reached and the Inactivity Wait Time – Transition 3 (yt3) commences. During this time if any activity is detected, the Pulldown continues until the Operational Set Point (SP) is reached. When this is reached the SCS™ Connect enters the Normal Mode.

Standby Refrigeration Cycles



If a Retail Outlet does not open on a particular day, to save energy the system returns to full Standby. This can occur in several stages. If no activity is detected during the Inactivity Wait Time – Transition 3, the SCS™ Connect returns to Full Standby Mode, and is then ready to start the Pulldown again at the start of the next day as per normal. Should any activity be detected while in Full Standby mode, the SCS™ Connect will immediately commence a Pulldown.

Standby Refrigeration Cycles



If the cooler is in Normal mode and an activity is seen, the “Inactivity Wait Timer - Normal Mode” will be reset.

If the cooler is in Transition 1 Mode and an activity is seen, the cooler will move back to Normal Mode, and the “Inactivity Wait Timer - Normal Mode” will be reset.

If the cooler is in Transition 2 Mode and an activity is seen, the cooler will move back to Transition 1 Mode, and the “Inactivity Wait Timer - Transition 1” will be reset.

If the cooler is in Standby Mode and an activity is seen, the cooler will move back to Transition 2 Mode, and the “Inactivity Wait Timer - Transition 2” will be reset.

If the cooler is in Transition 3 Mode or Standby Hold Mode and an activity is seen, the cooler will move back to Normal Mode, and the “Inactivity Wait Timer - Normal Mode” will be reset.

START UP SEQUENCE

Start-Up Sequence

Power cycling the SCS™ Connect initiates the start up sequence, which goes through the following steps:

Step 1.

Displays “SCS”.

Step 2.

The current Firmware Version is briefly displayed. This is a 6 digit number. The first 3 digits are displayed for 2 seconds, then the remaining 3 digits for 2 seconds.

Step 3. (not yet implemented)

The loaded Parameter Set Name is briefly displayed. This is a 6 character alpha-numeric name created by the customer. The first 3 characters are displayed for 2 seconds, then the remaining 3 characters for 2 seconds.

Step 4.

The SCS™ Connect cycles through the outputs displaying “CoP”, “FAn”, “Lit” as it self-tests the outputs.

Step 5.

The SCS™ Connect displays the current temperature and enters Normal Mode.

Parameter Set Name

The Parameter Set Name is a 6 character alpha-numeric code created by the customer to uniquely identify the type of refrigeration system in use and the associated parameter configuration loaded into the SCS™ Connect. For clarity on the display we recommend that the name should be created using the following characters:

Upper Case Characters:

A C E F G J L P S U

Lower Case Characters:

b d h n o r t y

Numerals:

1 2 3 4 5 6 7 8 9 0 - _

Quick Read

- Step 1: Displays “SCS”.
- Step 2: Displays the Firmware Version.
- Step 3: Displays the Parameter Set Name. (not yet implemented).
- Step 4: Cycles through a self-test routine.
- Step 5: Displays the current temperature (running in Normal Mode).

FRONT PANEL USER INTERFACE

User Mode

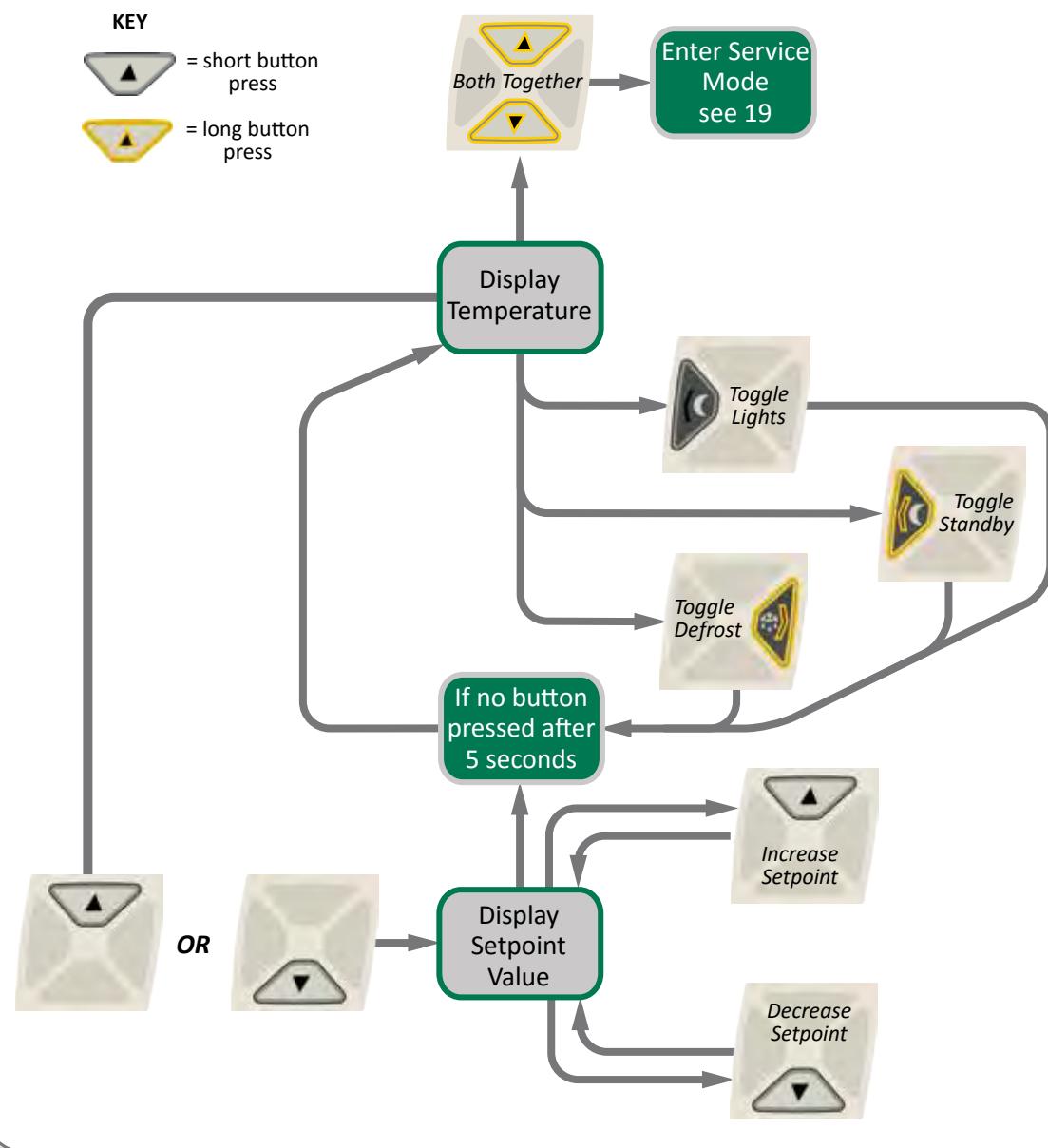
These are the essential functions that retail staff can control:

- Manually toggle the Lights on and off.
- Manually toggle Standby Mode on and off.
- Manually initiate a Defrost.
- Adjust the Set Point Temperature within a pre-determined range.

Quick Read

- Controls the essential end-user functions; Lights, Transition Mode, Defrost Mode, Set Point Temperature.
- A PIN code is required to enter the Service Mode menus.

User Mode Flow Chart



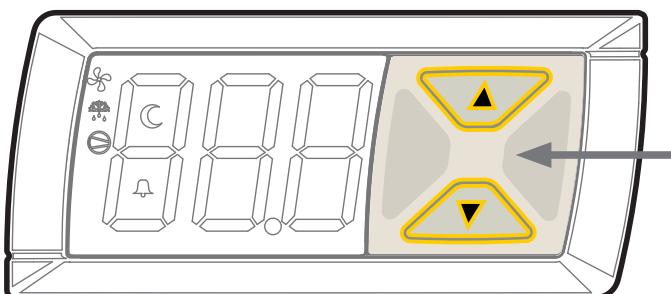
SERVICE MODE UI

Service Mode

The Service Mode is entered from the User Mode by holding down the Up and Down buttons together.

To access the Service Mode parameters, a 9 digit PIN code must be entered, consisting of L=left, R=right, U=up, D=down. The pin code is displayed in the “SCS Field” app against the companies you are activated to. (See page 23)

To Enter Service Mode



Press Up and Down Button together to enter Service Mode, followed by the 9-digit PIN code

There are 5 categories main Service Mode catagories:

- Parameters: For details on configuring parameters please refer to page 27.
- Reset*: Returns the **SCS Connect** controller back to Factory or Default Settings.
- Manual Test*: Allows Service Staff to inspect input values from sensors and check the effects of output adjustments to peripherals, and to run preset test routines.
- Statistics*: Displays logged values and event counts to help Service Staff fine tune and trouble shoot the system.
- About*: Lists the properties of the refrigeration system and the controller, including cooler model codes, firmware, hardware and software versions.

There are two different User Interface Flow Charts to follow depending on which of these categories are selected:

- For the Parameter, Reset and Manual Test categories, please refer to the UI Flow Chart on page 20.
- For the Statistics and About categories, please refer to the UI Flow Chart on page 21.

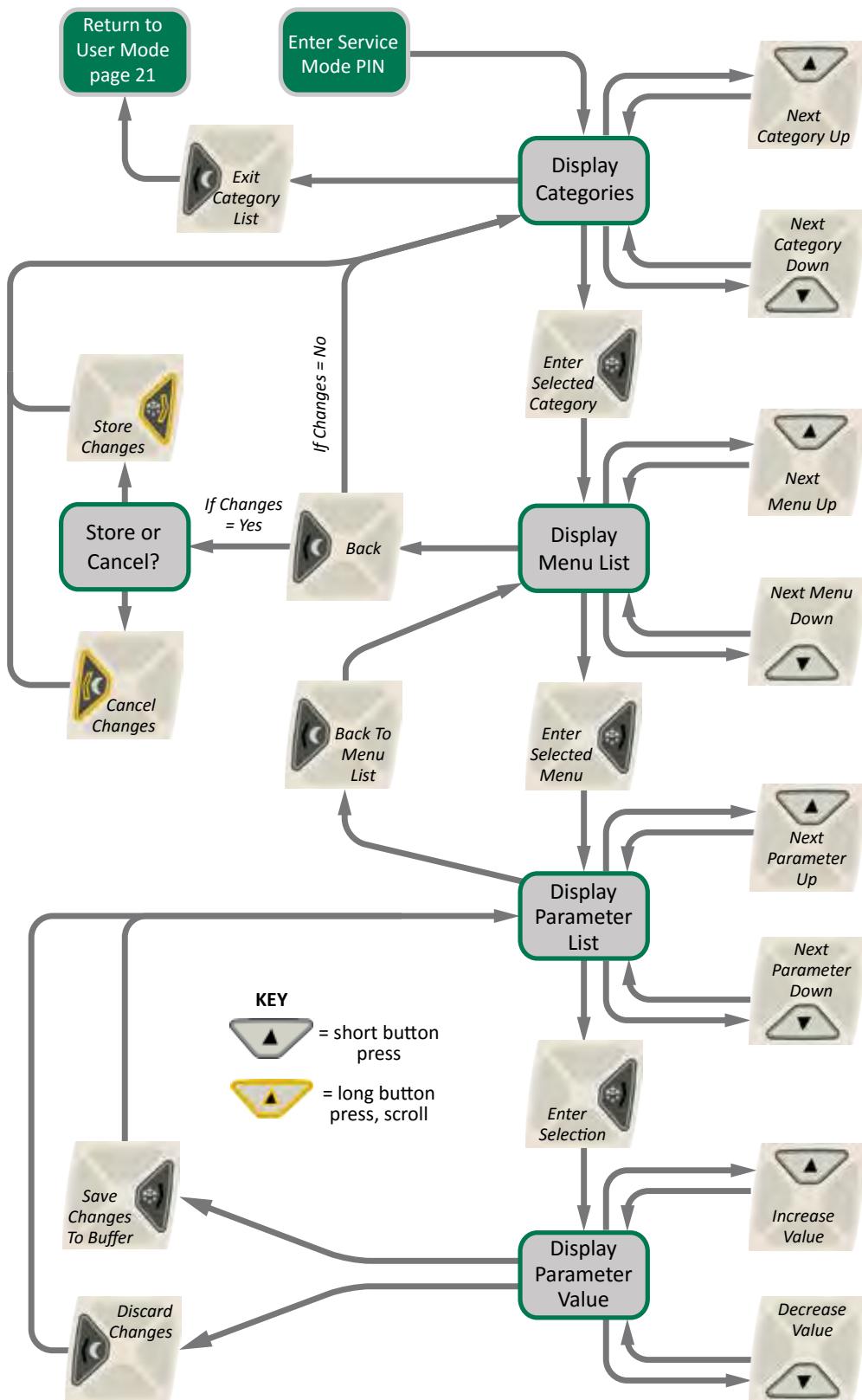
* Not yet implemented

Five main Categories to select from:

- Parameters
- Reset
- Manual Test
- Statistics
- About

Two User Interface Flow Charts:

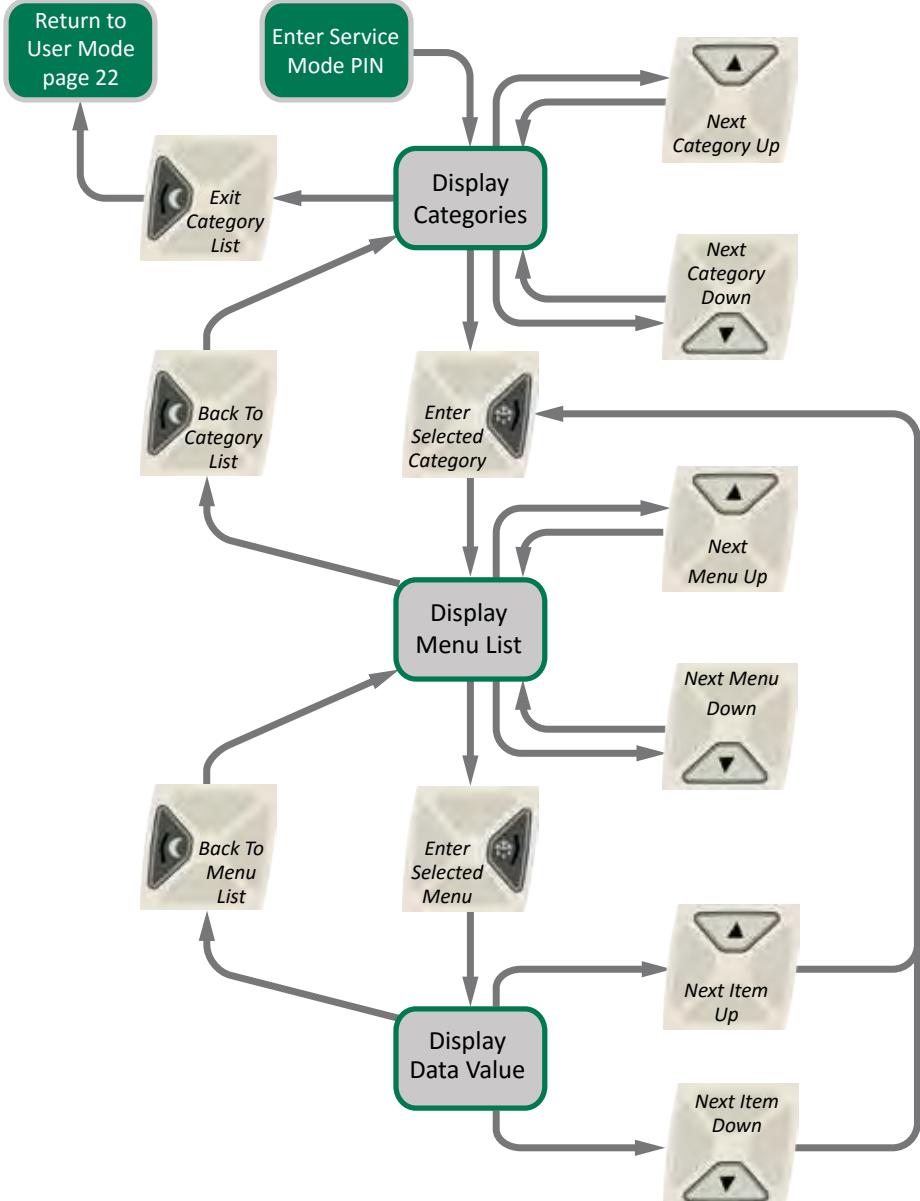
- Parameter, Reset and Manual Test categories, page 20.
- Statistics and About categories, page 21.

Parameters Flow Chart**SERVICE MODE UI - cont****Reset Flow Chart****Manual Test Flow Chart**

Statistics Flow Chart

SERVICE MODE UI - cont

About Flow Chart



GRAPHICAL USER INTERFACES

Quick Read

The Wellington **SCS Connect** controller App provides a wireless connection to the **SCS Connect** controller from mobile devices fitted with Bluetooth® LE. This gives users and technicians an unprecedented level of visibility, control and diagnostic tools to optimise the controller's performance and to troubleshoot any problems. The following guide provides an overview of the app and its capabilities.

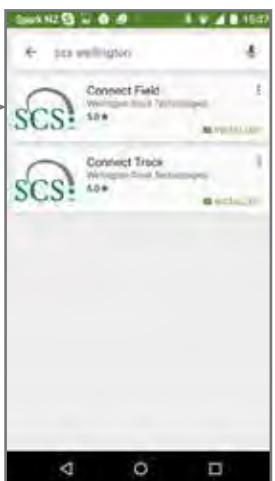
Note: Screen shots shown are indicative only. Different devices have different screen ratios, sizes and resolutions. The actual image seen on your device may vary from the screen shots shown in this guide. Holding your device in portrait or landscape mode may have an effect on appearance and may change how the various windows and graphics are displayed and arranged on your screen.

- Wellington SCS Connect controller App:
- Bluetooth® LE compliant.
- Wireless diagnostics and control.
- Designed for mobile devices using a touch screen interface.
- Customized app branding available on special request.
- Secure, only authorized connections permitted.

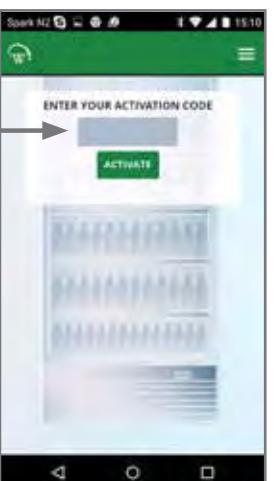
User Interfaces*



* Customisation using company colours and logos are also available. Please see Wellington for further details.

MOBILE GUI - cont**Authentication****Step 1**

Download and install the Connect Field app from Google Play (Search for “scs wellington” to find it)

Step 2

When you first run “Connect Field”, you will be requested to enter an activation code. Contact your User Manager or Wellington to receive your activation code (You must be connected to the internet at the time of activation).

Note:

Your activation code is unique to you, and should NEVER be shared with anyone else, as it determines your personal access level for the app. The same code will give you access to all SCS apps you are authorised to use.

Step 3

Once activation is complete, you must define a 4-digit PIN code. This can be any code unique to you. Each time you start the app, you will be required to enter this same PIN code. This is to prevent other people accessing the app from unlocked phones.

Step 4

Your 9-digit touch panel code

You can see which databases you are activated against from the “Settings” screen. You can be activated to more than one database at the same time. Simply select “ACTIVATE ANOTHER DATABASE”, and enter the new databases unique activation code, as in Step 2.

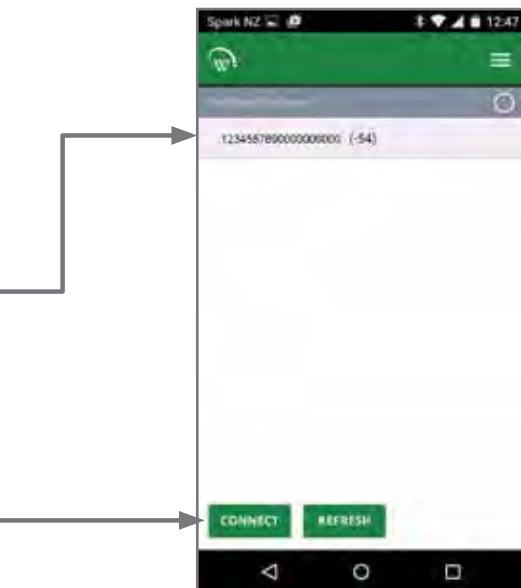
Connecting to a Device

Note: If the Bluetooth™ logo on the top right of the SCS™ Connect button panel is lit, then the Bluetooth™ signal is broadcasting and the device should be visible. This logo will start flashing when connected to a device

Select a device to connect to from the list of visible devices

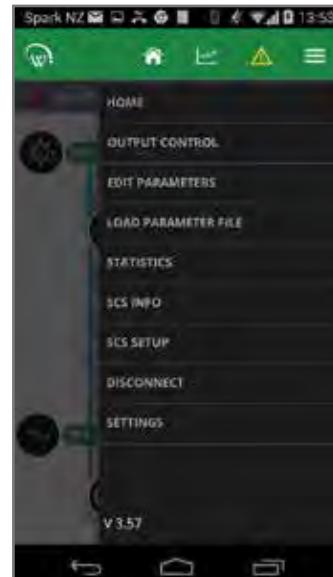
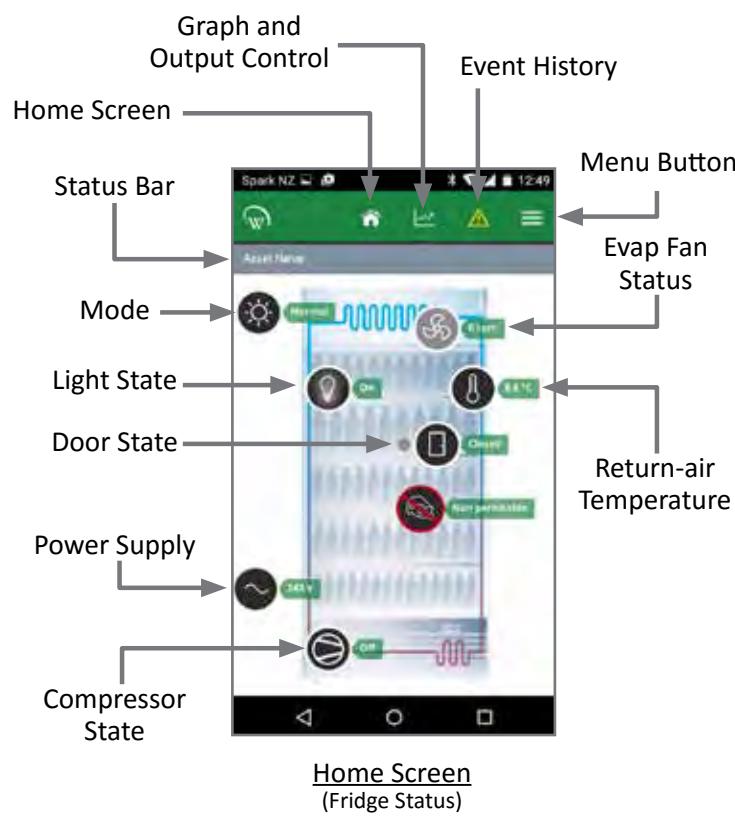
Note: This list is filtered by your activation permissions, so devices you are not authorised to connect to will not be displayed.

Select “Connect” to connect to the cooler



Home Screen

The Home Screen shows a graphic representation of the current state of the refrigeration unit being controlled.



Parameter Editing**Step 1**

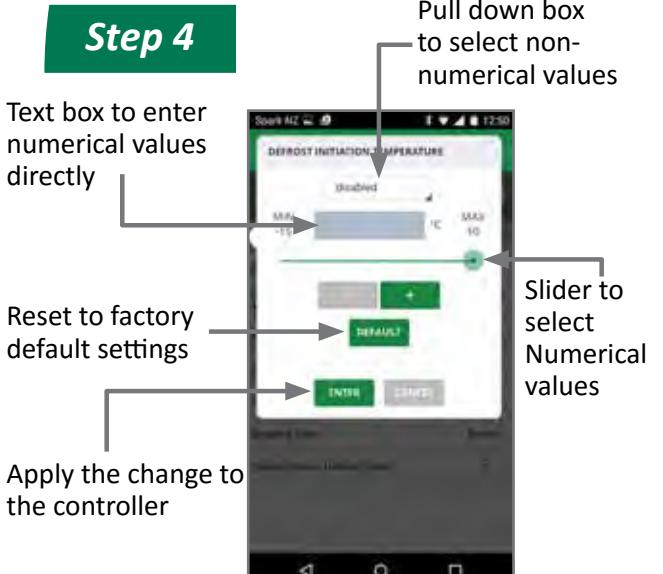
Select “EDIT PARAMETERS” from the Main menu

Step 2

Select the parameter Category you want to view

Step 3

Select the Parameter you want to edit

Step 4

Edit the parameter, then press “ENTER” to set it in the controller.

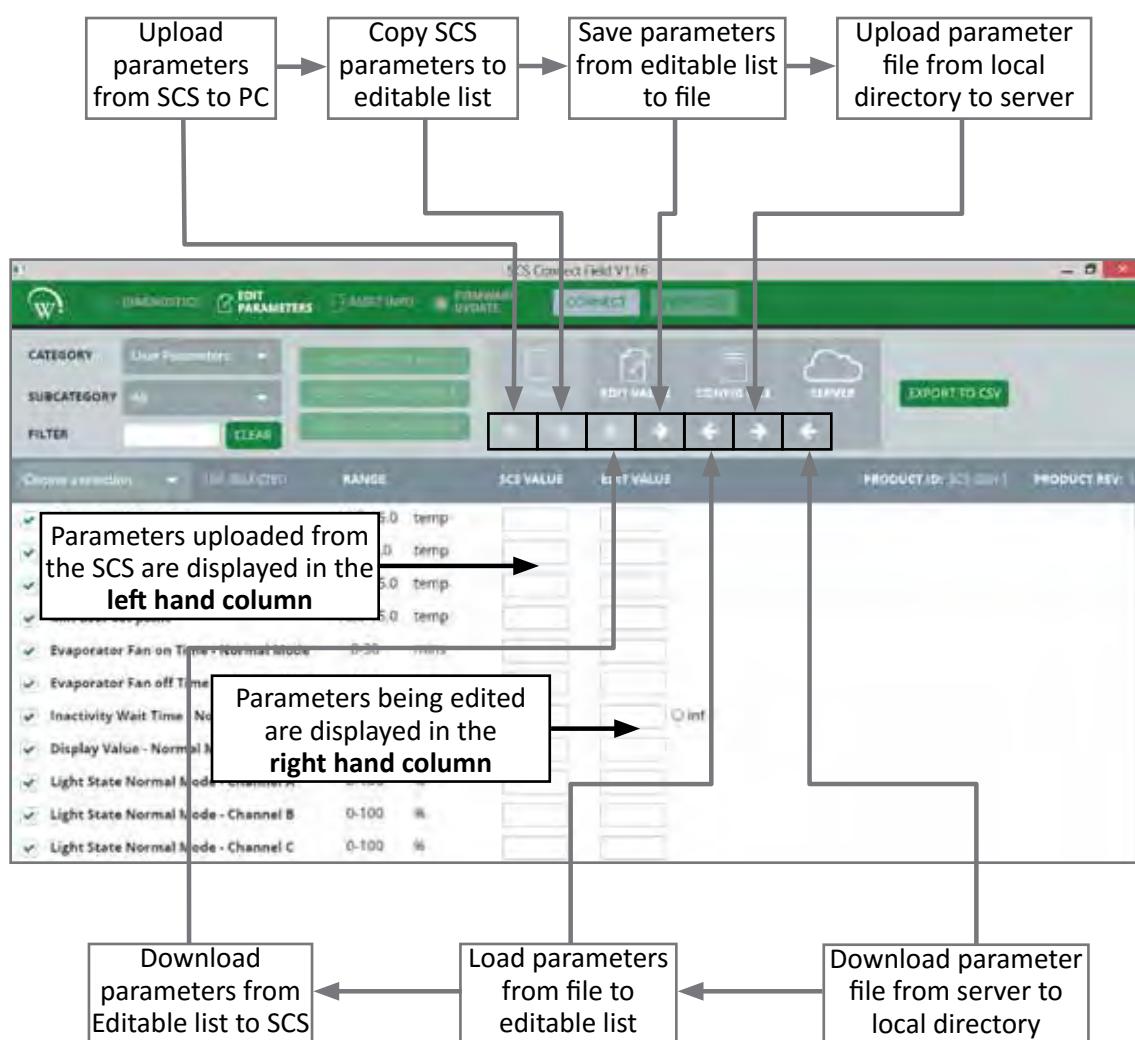
Parameter Editing - Desktop

The Desktop App is intended for OEM's and manufacturers. It supports easy creation, checking and saving of parameter files for Lab and Production use:

- Requires a Blue-Giga USB dongle to support BT-LE

Due to the poor handling of Bluetooth LE by Windows, use of the desktop app on Windows computers requires an external Bluetooth device ("dongle"). The supported dongle is Blue-Giga model BLED112, available from Blue-Giga stockists or from Wellington.

- Uses the same activation code as for all other apps
- Connects to the controller in the same way as the mobile app
- Basic 4-screen interface (no hidden menus)
 - Diagnostics
 - Edit Parameters
 - Asset Info
 - Firmware Update



PARAMETERS

Quick Read

The **SCS Connect** parameters have been grouped together as follows:

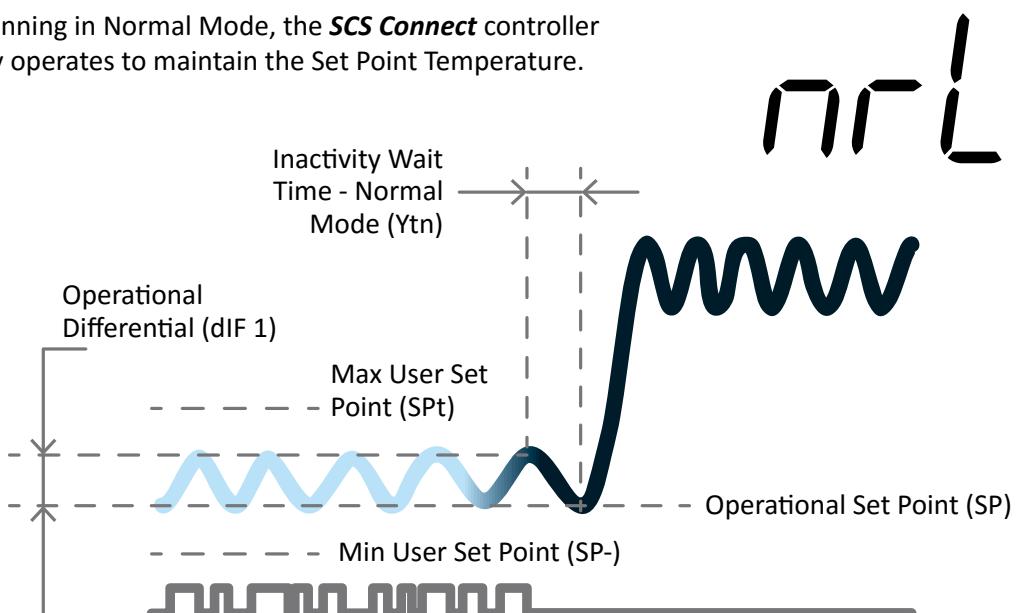
- Normal Mode (nrL) page 27.
- Transition 1 Mode (tn1) page 33.
- Transition 2 Mode (tn2) page 36.
- Standby Mode (SdY) page 39
- Transition 3 Mode (tn3) page 44.
- Defrost Mode (dEF) page 68.
- Door Menu (dor) page 51.
- Compressor Menu (CoP) page 54.
- Supply Menu (nrG) page 56.
- Display Menu (dSP) page 57.
- Hardware Set Up Menu (HSu) page 59.
- General Alarms Menu (GAL) page 72.

A full alphabetical summary list of all available parameters can be found on Pg 96.

Parameters shown here are correct for firmware versions 1557 to 1558. Earlier or later firmware versions may vary.

Normal Mode (nrL)

When running in Normal Mode, the **SCS Connect** controller primarily operates to maintain the Set Point Temperature.



PARAMETERS

Normal Mode (nrL) - cont

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---------------------------------------|-----------------|-------|--------------------|-----------------------------|----------|
| TEMPERATURE | | | | | |
| Operational Set Point | SP | 29 | 0.1 °C | -10.0 to 15.0 °C | 3.5 °C |
| Operational Differential | dIF | 29 | 0.1 °C | 0.1 to 10.0 °C | 3.0 °C |
| Maximum User Set Point | SPt | 29 | 0.1 °C | -10.0 to 15.0 °C | 3.5 °C |
| Minimum User Set Point | SP- | 29 | 0.1 °C | -10.0 to 15.0 °C | 3.5 °C |
| EVAPORATOR | | | | | |
| Evaporator Fan On Time - Normal Mode | Fot | 30 | 1 min | 0 to 30 mins | 2 mins |
| Evaporator Fan Off Time - Normal Mode | FoF | 51 | 1 min | 0 to 30 mins | 2 mins |
| TIME | | | | | |
| Inactivity Wait Time - Normal Mode | Ytn | 30 | 0.5 hours | 0.5 to 24 hours or InFinite | 2 hours |
| LIGHTING & DISPLAY | | | | | |
| Display Value During Normal Mode | dis | 30 | integers | 0 | 0 |
| Light State Normal Mode - Channel A | LnA | 31 | 1% | 0% to 100% | 100% |
| Light State Normal Mode - Channel B | LnB | 31 | 1% | 0% to 100% | 100% |
| Light State Normal Mode - Channel C | LnC | 31 | 1% | 0% to 100% | 100% |
| ALARMS | | | | | |
| High Temperature Alarm Set Point | htA | 32 | 0.1 °C | disabled | disabled |
| Low Temperature Alarm Set Point | ltA | 32 | 0.1 °C | disabled | disabled |

PARAMETERS**Normal Mode (nrL) - cont****OPERATIONAL SET POINT (SP)**

The temperature at which the Compressor will turn off, when the system is running in Normal Mode. If the temperature is below this value, the Compressor will remain off.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|----------------------|
| SP | Temperature | -10.0 to 15.0 °C | 0.1 °C | 3.5 °C | dIF 1, SP-, SPt, dlt |

SP

OPERATIONAL DIFFERENTIAL (dIF)

The temperature differential (ΔT) above the Operational Set Point (SP) temperature, which will cause the Compressor to turn on when in Normal Mode. The Compressor will remain on until the temperature reaches the Operational Set Point (SP) temperature.

Turn On Temperature = SP + dIF

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dIF | Temperature | 0.1 to 10.0 °C | 0.1 °C | 3.0 °C | SP |

dIF

MAXIMUM USER SET POINT (SPt)

The highest temperature that the Retail Staff can adjust the cabinet to run at.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| SPt | Temperature | -10.0 to 15.0 °C | 0.1 °C | 3.5 °C | SP, SP- |

SPt

MINIMUM USER SET POINT (SP-)

The lowest temperature that the Retail Staff can adjust the cabinet to run at.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| SP- | Temperature | -10.0 to 15.0 °C | 0.1 °C | 3.5 °C | SP, SPt |

SP-



PARAMETERS**Normal Mode - cont****EVAPORATOR FAN ON TIME – NORMAL MODE (Fot)**

The time the fan is on if the Evaporator Fan is set to cycling in (FCn) and the Compressor is off.

Please note: The total Evaporator Fan cycle = the on time + the off time. Please also refer to FoF.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Fot | Evaporator | 0 to 30 mins | 1 min | 2 mins | FoF, FCr |

EVAPORATOR FAN OFF TIME – NORMAL MODE (FoF)

The time the fan is off if the Evaporator Fan is set to cycling in (FCn) and the Compressor is off.

Please note: The total Evaporator Fan cycle = the on time + the off time. Please also refer to FCr.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| FoF | Evaporator | 0 to 30 mins | 1 min | 2 mins | FCr, Fot |

INACTIVITY WAIT TIME – NORMAL MODE (ytn)

The time the SCST™ Connect will wait in Normal Mode without any activity being seen before it will move to Transition 1 Mode. An activity is any interaction with the cabinet which is detected by a sensor, such as the opening of the cabinet door.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------|--------------------|---------|---------------|
| ytn | Time | 0.5 to 24 hours or infinite | 0.5 hours | 4 hours | tS1, tS2 |

DISPLAY VALUE DURING NORMAL MODE (dis)

Selects what is displayed during Normal Mode:

0 = Displays the temperature.

1* = Displays the Set Point Temperature.

2* = Display is left blank.

* not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dis | Lighting & Display | 0 | integers | 0 | SP |

Normal Mode - cont

LIGHT STATE - NORMAL MODE CHANNEL A (LnA)

The illumination level during Normal Mode of Channel A as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel A is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LnA | Lighting & Display | 0% to 100% | 1% | 100% | Ldn |

LIGHT STATE - NORMAL MODE CHANNEL B (Lnb)

The illumination level during Normal Mode of Channel B as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel B is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Lnb | Lighting & Display | 0% to 100% | 1% | 100% | Ldn |

LIGHT STATE - NORMAL MODE CHANNEL C (LnC)

The illumination level during Normal Mode of Channel C as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel C is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LnC | Lighting & Display | 0% to 100% | 1% | 100% | Ldn |

PARAMETERS

Normal Mode - cont

* HIGH TEMPERATURE ALARM SET POINT (htA)

The Set Point Temperature above which an alarm is triggered. This function is linked to HACCP applications where it is critical that the product inside the cabinet stays within a specific temperature range (eg; vaccines). Please also refer to the 'Perishable' function (Per).



htA

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| htA | Alarms | disAbled | 0.1 °C | disAbled | PPer |

* LOW TEMPERATURE ALARM SET POINT (LtA)

The Set Point Temperature which triggers a low temperature alarm. This function is linked to HACCP applications where it is critical that the product inside the cabinet stays within a specific temperature range (eg; vaccines). Please also refer to the 'Perishable' function (Per).



LtA

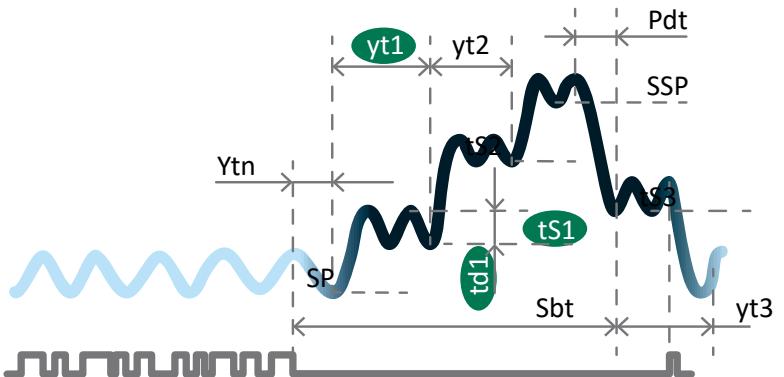
* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| LtA | Alarms | disAbled | 0.1 °C | disAbled | PPer |

PARAMETERS

Transition 1 Mode (tn1)

The Transition Modes are used to minimize Pulldown times. Transitional set point temperatures are used that are in between the Operational Set Point and full Standby Set Point. The Transition Modes may be most useful if the retail outlet opening hours vary, or if customer demand varies, such that a regular Pulldown time is uncertain.



| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|-------------------|---------|
| TEMPERATURE | | | | | |
| Transition 1 Set Point | tS1 | 34 | 0.1 °C | -10.0 to 15.0 °C | 5.0 °C |
| Transition 1 Differential | td1 | 34 | 0.1 °C | 0.1 to 10.0 °C | 3.0 °C |
| TIME | | | | | |
| Inactivity Wait Time - Transition 1 | yt1 | 34 | 0.5 hours | 0.0 to 24.0 hours | 1 hours |
| LIGHTING & DISPLAY | | | | | |
| Light State Transition 1 Mode - Channel A | L1A | 35 | 1% | 0% to 100% | 50% |
| Light State Transition 1 Mode - Channel B | L1b | 35 | 1% | 0% to 100% | 50% |
| Light State Transition 1 Mode - Channel C | L1C | 35 | 1% | 0% to 100% | 50% |

PARAMETERS

Transition 1 Mode (tn1) - cont

TRANSITION 1 SET POINT (tS1)

The temperature at which the Compressor will turn off, when the system is running in Transition 1 Mode. Transition 1 Mode is the first step in the Standby process to conserve power during prolonged periods of inactivity.

ESI

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| tS1 | Temperature | -10.0 to 15.0 °C | 0.1 °C | 5.0 °C | td1 |

TRANSITION 1 DIFFERENTIAL (td1)

The temperature above the Transition 1 Set Point (tS1) temperature, which will cause the Compressor to turn on when in Transition 1 Mode. The Compressor will remain on until the temperature reaches the Transition 1 Set Point (tS1) temperature.

Turn On Temperature = tS1 + td1

tdi

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| td1 | Temperature | 0.1 to 10.0 °C | 0.1 °C | 3.0 °C | tS1 |

INACTIVITY WAIT TIME - TRANSITION 1 (yt1)

The maximum time permitted in Transition 1 Mode without any detected activity, before switching to Transition 2 Mode.

YI

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| yt1 | Time | 0 to 24 hours | 0.5 hours | 1 hours | yt2, Ytn |

PARAMETERS

Transition 1 Mode (tn1) - cont**LIGHT STATE TRANSITION 1 MODE – CHANNEL A (L1A)**

The illumination level during Transition 1 Mode of Channel A as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel A is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L1A | Lighting & Display | 0% to 100% | 1% | 50% | LSA, L1b, L1C |

LIGHT STATE TRANSITION 1 MODE – CHANNEL B (L1b)

The illumination level during Transition 1 Mode of Channel B as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel B is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L1b | Lighting & Display | 0% to 100% | 1% | 50% | LSA, L1A, L1C |

LIGHT STATE TRANSITION 1 MODE – CHANNEL C (L1C)

The illumination level during Transition 1 Mode of Channel C as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel C is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

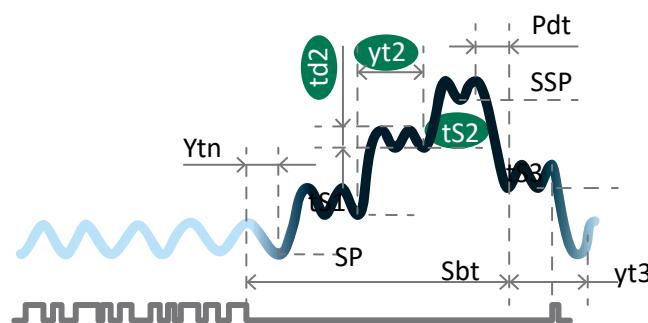


| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L1C | Lighting & Display | 0% to 100% | 1% | 50% | LSA, L1A, L1b |

PARAMETERS

Transition 2 Mode (tn2)

The Transition Modes are used to minimize Pulldown times. Transitional set point temperatures are used that are in between the Operational Set Point and full Standby Set Point.



L_n2

The Transition Modes may be most useful if the retail outlet opening hours vary, or if customer demand varies, such that a regular Pulldown time is uncertain.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|-------------------|---------|
| TEMPERATURE | | | | | |
| Transition 2 Set Point | tS2 | 37 | 0.1 °C | -10.0 to 15.0 °C | 7.0 °C |
| Transition 2 Differential | td2 | 37 | 0.1 °C | 0.1 to 10.0 °C | 2.0 °C |
| TIME | | | | | |
| Inactivity Wait Time - Transition 2 | yt2 | 37 | 0.5 hours | 0.0 to 24.0 hours | 1 hour |
| LIGHTING & DISPLAY | | | | | |
| Light State Transition 2 Mode - Channel A | L2A | 38 | 1% | 0% to 100% | 0% |
| Light State Transition 2 Mode - Channel B | L2b | 38 | 1% | 0% to 100% | 0% |
| Light State Transition 2 Mode - Channel C | L2C | 38 | 1% | 0% to 100% | 0% |

PARAMETERS

Transition 2 Mode (tn2) - cont**TRANSITION 2 SET POINT (tS2)**

The temperature at which the Compressor will turn off, when the system is running in Transition 2 Mode. Transition 2 Mode is the second step in the Standby process to conserve power during prolonged periods of inactivity.

E52

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| tS2 | Temperature | -10.0 to 15.0 °C | 0.1 °C | 7.0 °C | td2 |

TRANSITION 2 DIFFERENTIAL (td2)

The temperature above the Transition 2 Set Point (tS2) temperature, which will cause the Compressor to turn on when in Transition 2 Mode. The Compressor will remain on until the temperature reaches the Transition 2 Set Point (tS2) temperature.

Turn On Temperature = tS2 + td2

E02

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| td2 | Temperature | 0.1 to 10.0 °C | 0.1 °C | 2.0 °C | tS2 |

INACTIVITY WAIT TIME - TRANSITION 2 (yt2)

The maximum time permitted in Transition 2 Mode without any detected activity, before switching to full Standby Mode.

Y12

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| yt2 | Time | 0 to 24 hours | 0.5 hours | 1 hour | yt1, Ytn |

PARAMETERS***Transition 2 Mode (tn2) - cont*****LIGHT STATE TRANSITION 2 MODE – CHANNEL A (L2A)**

The illumination level during Transition 2 Mode of Channel A as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel A is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L2A | Lighting & Display | 0% to 100% | 1% | 0% | LSA, L2b, L3A |

LIGHT STATE TRANSITION 2 MODE – CHANNEL A (L2b)

The illumination level during Transition 2 Mode of Channel B as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel B is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L2b | Lighting & Display | 0% to 100% | 1% | 0% | LSA, L2A, L2C |

LIGHT STATE TRANSITION 2 MODE – CHANNEL A (L2C)

The illumination level during Transition 2 Mode of Channel C as a percentage of full illumination.

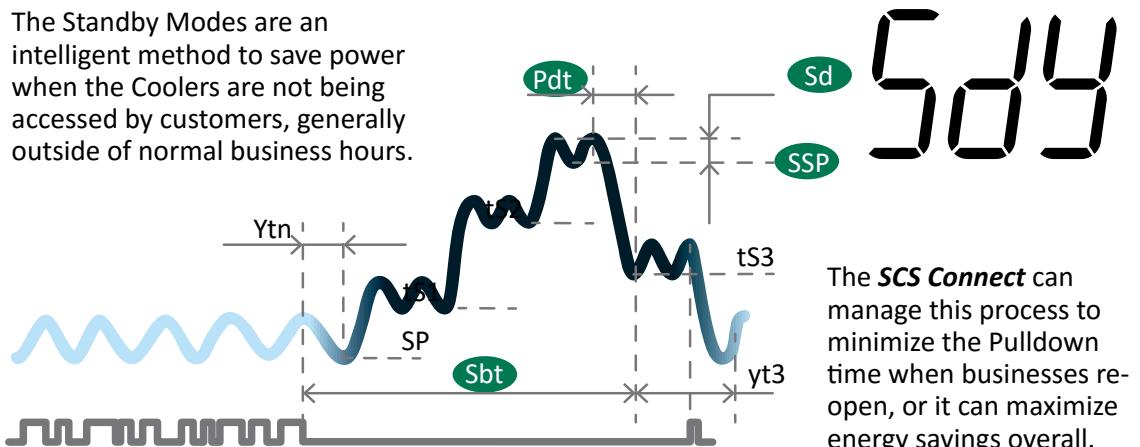
Note: Light levels of between 0% and 100% are only available if Channel C is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L2C | Lighting & Display | 0% to 100% | 1% | 0% | LSA, L2A, L2b |

PARAMETERS

Standby Mode (SdY)

The Standby Modes are an intelligent method to save power when the Coolers are not being accessed by customers, generally outside of normal business hours.



The **SCS Connect** can manage this process to minimize the Pulldown time when businesses re-open, or it can maximize energy savings overall.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|--------------------------------------|-----------------|-------|--------------------|-------------------------------|----------|
| TEMPERATURE | | | | | |
| Standby Set Point | SSP | 40 | 0.1 °C | -10.0 to 15.0 °C | 8.5 °C |
| Standby Differential | Sd | 40 | 0.1 °C | 0.1 to 10.0 °C | 2.0 °C |
| Perishable Mode | PEr | 40 | text | on or off | off |
| TIMERS & COUNTERS | | | | | |
| Maximum Standby Time | Sbt | 41 | 0.5 hour | 0.0 to 24.0 hours | 10 hours |
| Pulldown Time | Pdt | 41 | 0.5 hour | 0.0 to 12.0 hours | 1 hours |
| Inactivity Wait Time - Standby Hold | yth | 41 | 0.5 hours | 0.0 to 24.0 hours or infinite | 4 hours |
| LIGHTING & DISPLAY | | | | | |
| Light State Standby Mode - Channel A | LSA | 42 | 1% | 0% to 100% | 0% |
| Light State Standby Mode - Channel B | LSb | 42 | 1% | 0% to 100% | 0% |
| Light State Standby Mode - Channel C | LSC | 42 | 1% | 0% to 100% | 0% |
| Display Control During Standby Mode | dSy | 43 | integers | 0 | 0 |
| Marketing Mode | tnG | 43 | text | on or off or c01 | off |

PARAMETERS***Standby Mode (SdY) - cont*****STANDBY SET POINT (SSP)**

The temperature at which the Compressor will turn off, when the system is running in Standby Mode. The Standby Modes are a sequence of settings that progressively conserve power during prolonged periods of inactivity. The multi-step process meets two requirements; it conserves power and it brings the product in the cabinet back to the correct temperature as quickly as possible when sales activity restarts.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| SSP | Temperature | -10.0 to 15.0 °C | 0.1 °C | 8.5 °C | Sd |

STANDBY DIFFERENTIAL (Sd)

The temperature above the Standby Set Point (SSP) temperature, which will cause the Compressor to turn on when in Standby Mode. The Compressor will remain on until the temperature reaches the Standby Set Point (SSP) temperature. Compressor Turn On Temperature = SSP + Sd

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Sd | Temperature | 0.1 to 10.0 °C | 0.1 °C | 2.0 °C | SSP |

PERISHABLE MODE (PEr)

Selects whether or not the product in the cabinet must remain cold at all times. This is required for certain food stuffs and medicines, such as those under HACCP regulations. If this function is set to 'on', all Temperature and Evaporator settings will use the Normal Mode values to maintain the temperature at the Operational Set Point (SP) temperature. All other parameters (such as Lights and Display) will use the Transition Mode and Standby Mode settings.

Note: Pulldown time will be overridden to zero, as the product will remain at temperature.

on = Product kept at Set Point Temperature. Standby & Transition Modes control Lights only.

oFF = Runs in Normal Mode.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|------------------------|
| PEr | Temperature | on or oFF | text | oFF | SP, SP-, SPt, LnA, htA |

PARAMETERS**Standby Mode (SdY) - cont****MAXIMUM STANDBY TIME (Sbt)**

The maximum time permissible for the system to remain in standby without any detected activity. Pull Downs are started to ensure that the product in the cabinet reaches the Transition 3 Set Point (tS3) within Maximum Standby Time (Sbt) hours from the last detected activity.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| Sbt | Time | 0 to 24 hours | 0.5 hour | 10 hours | Pdt |

PULLDOWN TIME (Pdt)

The maximum time it will take for the product in the cabinet to reach either; Operational Set Point (SP), or if it is used Transition 3 Set Point (tS3), after leaving Standby Mode. This parameter is used to determine when the Pulldown should commence to ensure that the product is at the correct temperature when the store opens at the start of the day.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Pdt | Time | 0 to 12 hours | 0.5 hour | 1 hours | Sbt, SP, tS3 |

INACTIVITY WAIT TIME - STANDBY HOLD (yth)

The time the system will remain in standby with no activity before transitioning back to Transition 3 Mode.

Note:

If OCS = 0, the system will instantly return to Normal Mode
If OCS>0 and the OCS time is reached without an activity then:

If T3 > 0, The system will return to Transition 3 Mode
If T3 = 0, the system will return to Normal Mode

If OCS = inf, the system will remain indefinitely in standby until an activity is seen

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|---------------------------|--------------------|---------|---------------|
| yth | Time | 0 to 24 hours or InFinite | 0.5 hours | 4 hours | |

PARAMETERS***Standby Mode (SdY) - cont*****LIGHT STATE STANDBY MODE – CHANNEL A (LSA)**

The illumination level during Standby Mode of Channel A as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel A is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LSA | Lighting & Display | 0% to 100% | 1% | 0% | LnA, LSb, LSC |

LIGHT STATE STANDBY MODE – CHANNEL B (LSb)

The illumination level during Standby Mode of Channel B as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel B is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LSb | Lighting & Display | 0% to 100% | 1% | 0% | LnA, LSA, LSC |

LIGHT STATE STANDBY MODE – CHANNEL C (LSC)

The illumination level during Standby Mode of Channel C as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel C is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LSC | Lighting & Display | 0% to 100% | 1% | 0% | LnA, LSA, LSb |

PARAMETERS***Standby Mode (SdY) - cont*****DISPLAY CONTROL DURING STANDBY MODE (dSy)**

Selects what is displayed during full Standby Mode:

0 = Displays the temperature.

1* = Displays the Set Point Temperature.

2* = Display is left blank.

* Not yet enabled

**MARKETING MODE (tnG)**

Selects whether or not the lights stay on at all times.

on = Light levels and effects during Transition and Standby Modes controlled by Normal Mode settings.

off = Light levels and effects controlled by the current Mode settings.

c01 = Custom setting 01. All 3 LED lighting channels cycle continuously from 0 to 100%. Used for RGB lighting to cycle colours. Door state and mode is ignored

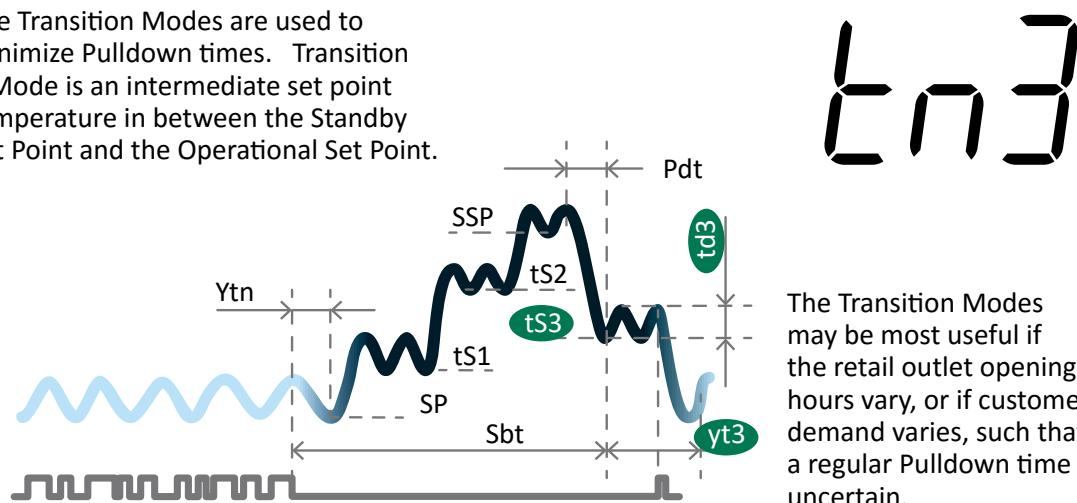


| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|-------------------------|
| tnG | Lighting & Display | on or off or c01 | text | off | LnA, LSA, L1A, L2A, L3A |

PARAMETERS

Transition 3 Mode (tn3)

The Transition Modes are used to minimize Pulldown times. Transition 3 Mode is an intermediate set point temperature in between the Standby Set Point and the Operational Set Point.



The Transition Modes may be most useful if the retail outlet opening hours vary, or if customer demand varies, such that a regular Pulldown time is uncertain.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|-------------------|---------|
| TEMPERATURE | | | | | |
| Transition 3 Set Point | ts3 | 45 | 0.1 °C | -10.0 to 15.0 °C | 5.5 °C |
| Transition 3 Differential | td3 | 45 | 0.1 °C | 0.1 to 10.0 °C | 2.0 °C |
| TIME | | | | | |
| Inactivity Wait Time - Transition 3 | yt3 | 45 | 0.5 hours | 0.0 to 24.0 hours | 1 hour |
| LIGHTING & DISPLAY | | | | | |
| Light State Transition 3 Mode - Channel A | L3A | 46 | 1% | 0% to 100% | 0% |
| Light State Transition 3 Mode - Channel B | L3b | 46 | 1% | 0% to 100% | 0% |
| Light State Transition 3 Mode - Channel C | L3C | 46 | 1% | 0% to 100% | 0% |

PARAMETERS**Transition 3 Mode (tn3) - cont****TRANSITION 3 SET POINT (tS3)**

The temperature at which the Compressor will turn off, when the system is running in Transition 3 Mode. Transition 3 Mode an intermediate step between Standby Set Point and Operational Set Point, and is used to conserve power in the event that there is no sales activity detected.

E53

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| ts3 | Temperature | -10.0 to 15.0 °C | 0.1 °C | 5.5 °C | td3 |

TRANSITION 3 DIFFERENTIAL (td3)

The temperature above the Transition 3 Set Point (tS3) temperature, which will cause the Compressor to turn on when in Transition 3 Mode. The Compressor will remain on until the temperature reaches the Transition 3 Set Point (tS3) temperature.

Turn On Temperature = tS3 + td3

E03

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| td3 | Temperature | 0.1 to 10.0 °C | 0.1 °C | 2.0 °C | tS3 |

E13

INACTIVITY WAIT TIME - TRANSITION 3 (yt3)

The maximum time permitted in Transition 3 Mode without any detected activity, before switching to full Standby Mode.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| yt3 | Time | 0 to 24 hours | 0.5 hours | 1 hour | Pdt |

PARAMETERS***Transition 3 Mode (tn3) - cont*****LIGHT STATE TRANSITION 3 MODE – CHANNEL A (L3A)**

The illumination level during Transition 3 Mode of Channel A as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel A is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L3A | Lighting & Display | 0% to 100% | 1% | 0% | LSA, L3b, L3C |

LIGHT STATE TRANSITION 3 MODE – CHANNEL B (L3b)

The illumination level during Transition 3 Mode of Channel B as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel B is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L3b | Lighting & Display | 0% to 100% | 1% | 0% | LSA, L3A, L3C |

LIGHT STATE TRANSITION 3 MODE – CHANNEL C (L3C)

The illumination level during Transition 3 Mode of Channel C as a percentage of full illumination.

Note: Light levels of between 0% and 100% are only available if Channel C is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% illumination level.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| L3C | Lighting & Display | 0% to 100% | 1% | 0% | LSA, L3A, L3b |

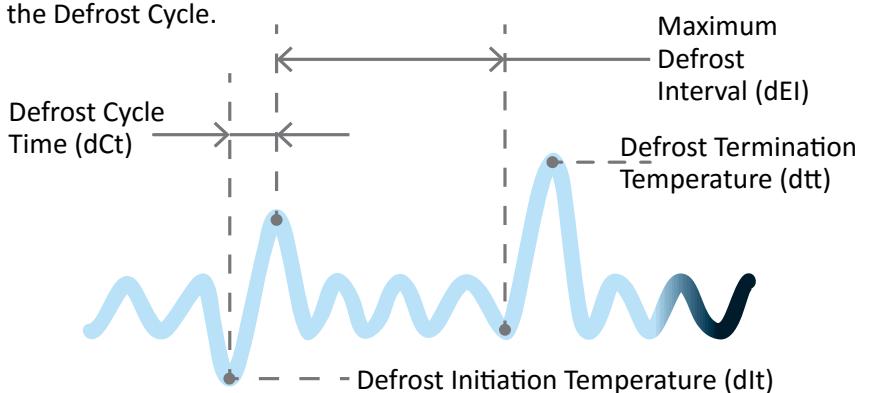
Defrost Mode (dEF)

The Defrost Cycle can be initiated or terminated by either time or temperature. During the Defrost Cycle the Normal Operational Mode is over ridden to control the Compressor, Evaporator Fan, Lights, and if used, any valves or heater elements connected to the Relay.

Supported Defrost Cycle methods are; hot gas defrost (reverse cycle), ambient defrost (with the compressor turned off), and a forced defrost (with an electric heater element).

These parameters provide the options to control and configure the Defrost Cycle.

DEF



| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|-------------------------------------|-----------------|-------|--------------------|-------------------------|----------|
| TEMPERATURE | | | | | |
| Defrost Initiation Temperature | dIt | 48 | 1°C | -15 to 10°C or disabled | disabled |
| Defrost Termination Temperature | dtt | 48 | 1°C | 0 to 30°C | 10°C |
| Uninterrupted Pull Down Temperature | Pdn | 48 | 1 °C | disabled | disabled |
| TIME | | | | | |
| Maximum Defrost Cycle Time | dCt | 48 | 1 min | 1 to 30 mins | 10 mins |
| Maximum Defrost Interval | dEI | 49 | 1 hour | 1 to 48 hours | 3 hours |
| Defrost Type | dtP | 49 | integers | 0 - 3 | 3 |
| Dripping Time | dPt | 49 | 1 min | 0 to 30 mins | 0 min |
| LIGHTING & DISPLAY | | | | | |
| Display Value During Defrost Cycle | ddE | 50 | integers | 3 | 3 |

PARAMETERS***Defrost Mode (dEF) - cont*****DEFROST INITIATION TEMPERATURE (dlt)**

The temperature below which a Defrost cycle will be initiated. The cycle will run until either the Defrost Termination Temperature (dtt) is reached, or the Defrost Cycle Time (dCt) is met. Operation is dependent upon the settings in Defrost Type (dtP)

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------------|--------------------|----------|---------------|
| dlt | Temperature | -15 to 10°C or dISabled | 1°C | dISabled | dtt, dCt |

DEFROST TERMINATION TEMPERATURE (dtt)

The temperature at which the Defrost Cycle will terminate to prevent an excessive internal temperature.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dtt | Temperature | 0 to 30°C | 1°C | 10°C | dCt, dlt |

*** UNINTERRUPTED PULLDOWN TEMPERATURE (Pdn)**

The temperature, which if exceeded for over an hour, will enable a Pulldown. During Pulldown, the Compressor will run continuously and Defrost Mode will be disabled. Pulldown ends when the Operational Set Point (SP) is reached.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| Pdn | Temperature | dISabled | 1 °C | dISabled | SSP |

MAXIMUM DEFROST CYCLE TIME (dCt)

The maximum allowable time for a Defrost Cycle. This parameter is used to stop the Defrost Cycle if it hasn't cut out earlier due to temperature.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dCt | Time | 1 to 30 mins | 1 min | 10 mins | dtt |

PARAMETERS

Defrost Mode (dEF) - cont**MAXIMUM DEFROST INTERVAL (dEI)**

The maximum permitted time between the finish of a Defrost Cycle and the start of the next one. This parameter is used to start the Defrost Cycle if it hasn't started earlier due to temperature.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dEI | Time | 1 to 48 hours | 1 hour | 3 hours | dCt, dlt |

DEFROST TYPE (dtP)

Selects which defrost method is to be used:

0 = Disabled.

1 = Defrost Cycle using an electric heater.

[Defrost ON - Evap OFF - Comp/Cond ON]

2* = Defrost Cycle using hot gas (Reverse Cycle).

3 = Defrost Cycle by turning off the Compressor (Ambient Defrost).

[Defrost OFF - Evap ON - Comp/Cond OFF]

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dtP | Time | 0 - 3 | integers | 3 | dPt, dFS |

DRIPPING TIME (dPt)

The time needed for excess moisture to drip off the Evaporator, to help prevent freeze up. Used for hot gas and electric heater defrosts only. This wait time occurs after the Defrost has been terminated by either time or temperature, but before exiting the Defrost Cycle and returning to the non-defrost operational state. During this time, the Evaporator Fan, Condenser Fan and Compressor remain off.

0 = Disabled.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dPt | Time | 0 to 30 mins | 1 min | 0 min | dPt |

PARAMETERS

Defrost Mode (dEF) - cont

DISPLAY VALUE DURING DEFROST CYCLE (ddE)

Selects what is displayed during the Defrost Cycle:

0* = Displays the temperature.

1* = Displays the Set Point Temperature.

2* = Display is left blank.

3 = Display shows 'dEF'.

4* = Display shows 'dEF', blinking intermittently.

* Not yet enabled

dDE

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| ddE | Lighting & Display | 0 to 4 | integers | 3 | SP |

PARAMETERS**Door Menu (dor)**

The **SCS Connect** uses the cabinet door switch as an input device to help control the Evaporator Fan, Lights and to initiate Alarms. Please note: Should the door switch fail, these parameters will not function correctly.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|------------------------------------|-----------------|-------|--------------------|-----------------------------------|----------|
| TEMPERATURE | | | | | |
| Door Open Evap Continuous Run Temp | FCr | 51 | 1 °C | 0 °C to 30 °C or dis abled | 30 °C |
| TIME | | | | | |
| Door Open Delay | drd | 52 | 10 secs | 0 to 1800 secs | 180 secs |
| LIGHTING & DISPLAY | | | | | |
| Light State Door Open - Channel A | LdA | 52 | 1% | 0% to 100% or dis abled | 100% |
| Light State Door Open - Channel B | Ldb | 52 | 1% | 0% to 100% or dis abled | 100% |
| Light State Door Open - Channel C | LdC | 53 | 1% | 0% to 100% or dis abled | 100% |

DOOR OPEN EVAP CONTINUOUS RUN TEMP (FCr)

The temperature above which the evaporator fan will remain on, when the cabinet door has been opened, even if the fan is configured to be off when the cabinet door is opened. This helps prevent condensation build up in high humidity environments by ensuring airflow inside the cabinet. This condition is only overriden when in defrost mode

Note: FdC should be greater than the standby setpoint + differential to ensure normal fan operation.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------------|--------------------|---------|---------------|
| FCr | Temperature | 0 °C to 30 °C or dis abled | 1 °C | 30 °C | |



PARAMETERS

Door Menu (dor) - cont

DOOR OPEN DELAY (drd)

The time between the cabinet door opening (and staying open), and the Door Open Alarm triggering.

After this time, the evaporator fan and compressor will remain OFF until either the door closes, or the system determines that the door switch has failed open (10mins).

If the door switch is considered to have failed open, the alarm will be cleared, and the door state ignored until a closed door is seen.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|---------------------|--------------------|----------|---------------|
| drd | Time | 0 secs to 1800 secs | 10 secs | 180 secs | drs |

LIGHT STATE DOOR OPEN – CHANNEL A (LdA)

The Channel A illumination level when the door is open, as a percentage of full illumination. If disabled, then light level is unaffected by opening the door.

Note: Light levels of between 0% and 100% are only available if Channel A is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% light level.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------------|--------------------|---------|--------------------|
| LdA | Lighting & Display | 0% to 100% or disabled | 1% | 100% | LnA, L1A, L2A, L3A |

LIGHT STATE DOOR OPEN – CHANNEL B (Ldb)

The Channel B illumination level when the door is open, as a percentage of full illumination. If disabled, then light level is unaffected by opening the door.

Note: Light levels of between 0% and 100% are only available if Channel B is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% light level.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------------|--------------------|---------|--------------------|
| Ldb | Lighting & Display | 0% to 100% or disabled | 1% | 100% | LnA, L1A, L2A, L3A |

Door Menu (dor) - cont**LIGHT STATE DOOR OPEN – CHANNEL C (LdC)**

The Channel C illumination level when the door is open, as a percentage of full illumination. If disabled, then light level is unaffected by opening the door.

Note: Light levels of between 0% and 100% are only available if Channel C is assigned to an LED output. If assigned to a digital output, then any level other than 0% will result in 100% light level.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|--------------------------------|--------------------|---------|--------------------|
| LdC | Lighting & Display | 0% to 100% or dis abled | 1% | 100% | LnA, L1A, L2A, L3A |

PARAMETERS

Compressor Menu (CoP)

These parameters provide options to control and configure the Compressor during different parts of the refrigeration cycle and to configure the Compressor Alarms.

COP

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|------------------------------------|-----------------|-------|--------------------|-----------------------------|----------|
| TEMPERATURE | | | | | |
| Condenser High Temperature Limit | Cht | 68 | 1°C | 60 °C to 150 °C or dISabled | 85 °C |
| TIMERS and COUNTERS | | | | | |
| Minimum Compressor Off Time | Cot | 54 | 10 secs | 10 to 1800 secs | 180 secs |
| Compressor Maximum Starts per Hour | CSh | 55 | 1 count | dISabled | dISabled |
| ALARMS | | | | | |
| Refrigeration System Failure Time | rSF | 55 | 1 hour | 0 to 100 hours or dISabled | 48 hours |

CONDENSER HIGH TEMPERATURE LIMIT (Cht)

The temperature that turns off the Compressor for safety and protection of the system. The Compressor will turn off once this temperature has been exceed longer than 10 seconds, and will not turn back on until the temperature has dropped 20° C for 3 minutes.

CHT

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------|--------------------|---------|----------------|
| Cht | Temperature | 60 °C to 150 °C or dISabled | 1°C | 85 °C | Not applicable |

MINIMUM COMPRESSOR OFF TIME (Cot)

The minimum amount of time that has to elapse between when the Compressor is turned off to when the Compressor is allowed to start again. This time period allows the system pressures to equalize and helps prevent the Compressor from overheating.

COT

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|----------------|
| Cot | Time | 10 to 1800 secs | 10 secs | 180 secs | Not applicable |

PARAMETERS**Compressor Menu (CoP) - cont****COMPRESSOR MAXIMUM STARTS PER HOUR (CSh)**

The maximum number of starts a compressor can make in 1 hour, before it has to wait for the hour to elapse to start again. This is to prevent overheating where there is a fault in the system.

Note: This protective function cannot be reset by power cycling the cabinet on and off

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|----------------|
| CSh | Counts | disAbled | 1 count | disAbled | Not applicable |

REFRIGERATION SYSTEM FAILURE TIME (rSF)

The maximum permitted time that the Compressor can run continuously before the system is shut down and an alarm is triggered.

Important Note: This protective function cannot be reset by power cycling the cabinet on and off; it can only be reset by an authorized Service Technician.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|----------------------------|--------------------|----------|----------------|
| rSF | Alarms | 0 to 100 hours or disAbled | 1 hour | 48 hours | Not applicable |

PARAMETERS

Supply Menu (nrG)

The Supply Parameters are used to configure the acceptable limits for the Voltage supply and to configure the associated alarms. This is required to protect the refrigeration system from electrical damage.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|----------------------------------|-----------------|-------|--------------------|-----------------------------------|---------|
| SUPPLY | | | | | |
| Maximum Run/Start Voltage | hPC | 56 | 1 V | 100 V to 265 V or dISabled | 254 V |
| Minimum Start Compressor Voltage | LPC | 56 | 1 V | 79 V to 203 V or dISabled | 90 V |

MAXIMUM RUN/START VOLTAGE (hPC)

The maximum Voltage at which the Compressor is allowed to start and run. After detecting an Over Voltage condition the Compressor is turned off. The minimum compressor off time must be exceeded before the compressor can turn back on. These events are logged in the SCS™ Connect. Please also refer to oPt for the restart sequence.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------------|--------------------|---------|---------------|
| hPC | Supply | 100 V to 265 V or dISabled | 1 V | 254 V | oPt, LPC |

MINIMUM START COMPRESSOR VOLTAGE (LPC)

The minimum Voltage during which the Compressor is allowed to start. If it is below this Voltage then the Compressor cannot start. If the Voltage rises to an acceptable level then the Compressor can start, but only after the Voltage has been maintained for a delay period. These events are logged in the SCS™ Connect.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|--------------------------------|--------------------|---------|---------------|
| LPC | Supply | 79 to 203 V or dISabled | 1 V | 90 V | hPC, oPt |

PARAMETERS**Display Menu (dSP)**

These parameters configure what is shown on the display during different control modes and conditions.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---------------------------------|-----------------|-------|--------------------|--------------------|---------|
| DISPLAY | | | | | |
| Temperature Display Units | tdu | 57 | °C or °F | °C or °F | °C |
| User Set Point Keypad Lock | uSL | 57 | text | Unlocked or Locked | Locked |
| Maximum Displayable Temperature | dSt | 58 | 0.1 °C | -10.0 to 30.0 °C | 30 °C |
| Minimum Displayable Temperature | dP- | 58 | 0.1 °C | -10.0 to 30.0 °C | -10 °C |
| TIME | | | | | |
| Temperature Display Filter | tdF | 58 | 1 secs | 0 to 30 secs | 5 secs |

TEMPERATURE DISPLAY UNITS (tdu)

Selects which temperature scale is displayed; Fahrenheit or Celsius. This selection automatically converts all temperature displays, from all menus, into the selected scale.

C = °C

F = °F

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|-------------------|
| tdu | Display | °C or °F | °C or °F | °C | SP, SSP, tS1, tS2 |

USER SET POINT KEYPAD LOCK (uSL)

Locks the front keypad, to prevent the setpoint temperature being modified by shop owners or passers by. Setpoint can still be changed via the app, or after a password has been entered into the front keypad

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|--------------------|--------------------|---------|---------------|
| uSL | Display | Unlocked or Locked | text | Locked | |

PARAMETERS**Display Menu (dSP) - cont****MAXIMUM DISPLAYABLE TEMPERATURE (dSt)**

The maximum temperature that will be displayed.

Temperatures above this amount will be displayed as “-”.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| dSt | Display | -10.0 to 30.0 °C | 0.1 °C | 30 °C | SPt |

MINIMUM DISPLAYABLE TEMPERATURE (dP-)

The minimum temperature that will be displayed by the unit.

Temperatures below this amount will be displayed as “--”.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| dP- | Display | -10.0 to 30.0 °C | 0.1 °C | -10 °C | SP- |

TEMPERATURE DISPLAY FILTER (tdF)

The time constant of the response of the temperature display when a temperature change is detected. This prevents the temperature display showing any misleading temperature spikes.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|----------------|
| tdF | Time | 0 to 30 secs | 1 secs | 5 secs | Not applicable |

PARAMETERS

Hardware Set Up Menu (HSu)

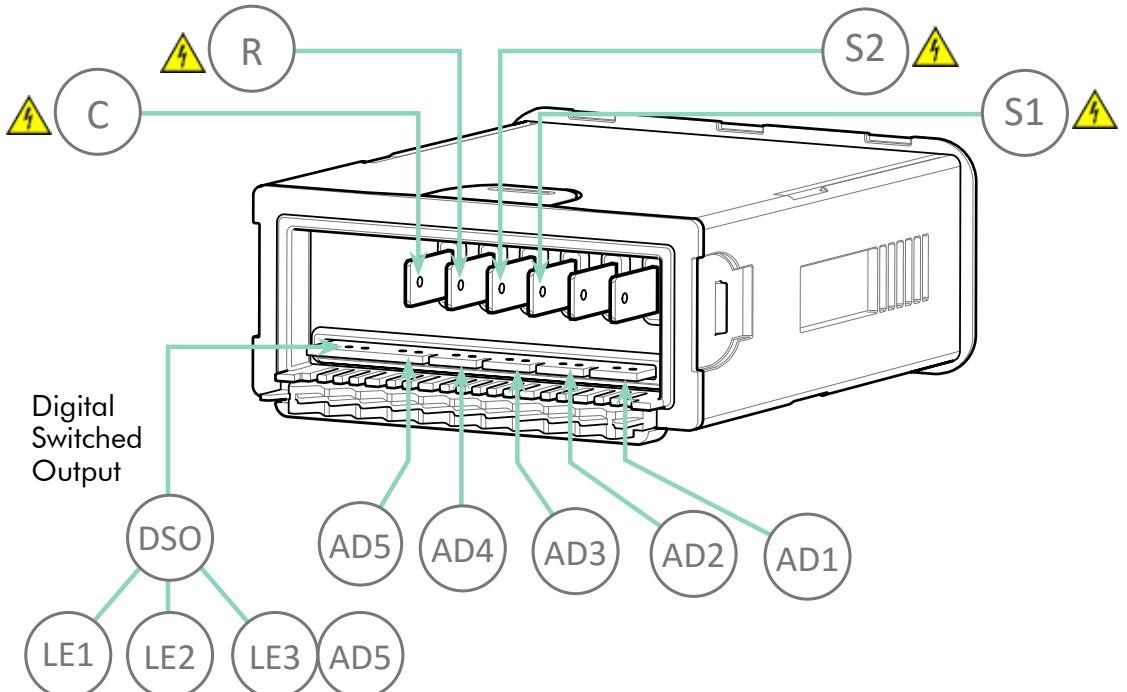
The Hardware Set Up Parameters define how the peripheral Refrigeration System components are connected to the **SCS Connect** for input and output control.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|------------------------------------|-----------------|-------|--------------------|-------------------|---------|
| INPUTS | | | | | |
| Control Probe Calibration Offset | CAL | 68 | 0.1 °C | -10.0 to 10.0 °C | 0.0 °C |
| Control Probe Response | CPb | 61 | 1 sec | 5 secs | 5 secs |
| Return Air Temperature Port | rtP | 62 | Port ID | AD1 - AD5 or N.C. | AD1 |
| Condensor Temperature Port | CdP | 62 | Port ID | AD1 - AD5 or N.C. | N.C. |
| Ambient Temperature Port | tPt | 62 | Port ID | AD1 - AD5 or N.C. | N.C. |
| Evap' Coil Temperature Port | ELt | 68 | Port ID | AD1 - AD5 or N.C. | N.C. |
| Compressor Body Temperature Port | CPP | 63 | Port ID | AD1 - AD5 or N.C. | N.C. |
| Compressor Inlet Temperature Port | CtP | 63 | Port ID | AD1 - AD5 or N.C. | N.C. |
| Door Sensor Port Configuration | dSC | 63 | Port ID | AD1 - AD5 or N.C. | AD4 |
| Doorswitch State | drS | 63 | integers | 0 or 1 | 0 |
| Activity Sensor Port Configuration | SCF | 64 | Port ID | AD1 - AD5 or N.C. | N.C. |
| Activity Sensor State | SrS | 64 | integers | 0 or 1 | 0 |
| NTC 1 Beta value | n1b | 64 | integers | 3400-4000 | 3960 |
| NTC 1 Resistance | n1r | 65 | 1 ohm | 1000-15000 | 10,000 |
| NTC 2 Beta value | n2b | 65 | integers | 3400-4000 | 3960 |
| NTC 2 Resistance | n2r | 65 | 1 ohm | 1000-15000 | 10,000 |
| AD1 NTC Type | Ad1 | 65 | integers | 1-2 | 1 |
| AD2 NTC Type | Ad2 | 65 | integers | 1-2 | 1 |
| AD3 NTC Type | Ad3 | 66 | integers | 1-2 | 1 |
| AD4 NTC Type | Ad4 | 66 | integers | 1-2 | 1 |
| AD5 NTC Type | Ad5 | 66 | integers | 1-2 | 1 |

PARAMETERS

Hardware Set Up (HSu) - cont

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|-----------------------------------|---------|
| OUTPUTS | | | | | |
| Output Interval Time | oPt | 66 | 1 second | 0 secs | 0 secs |
| Compressor Port Configuration | CPC | 67 | Port ID | R, C or N.C. | C |
| Compressor State | CPS | 67 | integers | 0 or 1 | 0 |
| Evaporator Fan Port Configuration | EFC | 67 | Port ID | S1, S2, S1&S2, R or N.C. | S1 |
| Evaporator Fan Control Type | ECt | 67 | text | on/off or Var | on/off |
| Evaporator Fan Direction | EFd | 68 | Dir | CW or CCW | CCW |
| Condenser Fan Port Configuration | CdC | 68 | Port ID | S1, S2 or N.C. | N.C. |
| Condenser Fan Control Type | CCt | 68 | text | on/off or Var | on/off |
| Condenser Fan Direction | CFd | 68 | Dir | CW or CCW | CCW |
| Defrost Port Configuration | dFc | 69 | Port ID | R, C or N.C. | N.C. |
| Defrost State | dfs | 69 | integers | 0 or 1 | 0 |
| Lighting Port Configuration - Channel A | LCA | 69 | Port ID | LE1,LE2,LE3, S1, S2, R, C or N.C. | R |
| Lighting Port Configuration - Channel B | LCb | 70 | Port ID | LE1,LE2,LE3, S1, S2, R, C or N.C. | N.C. |
| Lighting Port Configuration - Channel C | LCC | 70 | Port ID | LE1,LE2,LE3, S1, S2, R, C or N.C. | N.C. |
| Lighting State Channel A | LEA | 70 | integers | 0 or 1 | 0 |
| Lighting State Channel B | LEb | 71 | integers | 0 or 1 | 0 |
| Lighting State Channel C | LEC | 71 | integers | 0 or 1 | 0 |

PARAMETERS**Hardware Set Up (HSu) - cont****Port Identification****CONTROL PROBE CALIBRATION OFFSET (CAL)**

The offset amount applied to the Control Probe output to compensate between the measured value and the actual product temperature inside the cabinet. This parameter is not configurable in the field.

CAL

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|------------------|--------------------|---------|---------------|
| CAL | Hardware Set Up | -10.0 to 10.0 °C | 0.1 °C | 0.0 °C | HSu |

*** CONTROL PROBE RESPONSE (CPb)**

Dampens the response time of the Control Probe to minimize the effect of momentary temperature spikes which may otherwise trigger unnecessary system cycles. A rolling average is calculated over the chosen amount of time.

CPb

* Not yet adjustable

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CPb | Hardware Set Up | 5 secs | 1 sec | 5 secs | HSu |

PARAMETERS

Hardware Set Up (HSu) - cont

RETURN AIR TEMPERATURE PORT (rtP)

Selects the Return Air Temperature Probe connection port:

N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

rtP

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|------------------------|
| rtP | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | AD1 | CAL, SP, SSP, tS1, tS2 |

CONDENSER TEMPERATURE PORT (CdP)

Selects the Condenser Temperature Probe connection port.

This may also be called the Gas Cooler Probe in CO₂ systems:

N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

CdP

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| CdP | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | N.C. | Cht |

AMBIENT TEMPERATURE PORT (tPt)

Selects the Ambient Temperature Probe connection port.

N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

tPt

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|------------------------|
| tPt | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | N.C. | SP, SSP, tS1, tS2, dEF |

EVAPORATOR COIL TEMPERATURE PORT (ELt)

Selects the Evaporator Coil Temperature Probe connection port:

N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

ELt

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| ELt | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | N.C. | EFC |

PARAMETERS***Hardware Set Up (HSu) - cont*****COMPRESSOR BODY TEMPERATURE PORT (CPP)**

Selects the Compressor Body Temperature Probe connection port.
N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| CPP | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | N.C. | CPS, CtP |

COMPRESSOR INLET TEMPERATURE PORT (CtP)

Selects the Compressor Inlet Temperature Probe connection port:
N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| CtP | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | N.C. | CPP, CPS |

DOOR SENSOR PORT CONFIGURATION (dSC)

Selects the Door Sensor connection port. Please also refer to 'Door Switch State' (drS).

N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| dSC | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | AD4 | drS |

DOOR SWITCH STATE (drS)

Selects the sensor state when the cabinet door is open. Please also refer to 'Door Sensor Port Configuration' (dSC).

0 = The cabinet door is open when the i/p has high impedance.
1 = The cabinet door is open when the i/p has low impedance.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| drS | Hardware Set Up | 0 or 1 | integers | 0 | dSC |

PARAMETERS

Hardware Set Up (HSu) - cont

ACTIVITY SENSOR PORT CONFIGURATION (SCF)

Selects the Activity Sensor connector port. Please also refer to 'Activity Sensor State' (SrS).

N.C. = Not Connected

AD1 – AD5 = Analog or Digital i/p

SCF

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| SCF | Hardware Set Up | AD1 - AD5 or N.C. | Port ID | N.C. | SrS |

ACTIVITY SENSOR STATE (SrS)

Selects which state the Relay is in when the Activity Sensor detects activity. Please also refer to 'Activity Sensor Port Configuration' (SCF).

0 = The Activity Sensor detects activity when the i/p has high impedance.

1 = The Activity Sensor detects activity when the i/p has low impedance.

SrS

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| SrS | Hardware Set Up | 0 or 1 | integers | 0 | SCF |

NTC 1 BETA VALUE (n1b)

The beta value use for NTC type 1. Two different NTC types can be used simultaneously.

n 1b

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| n1b | Hardware Set Up | 3400-4000 | integers | 3960 | n1r |

NTC 1 RESISTANCE (n1r)

The resistance at 25°C for NTC type 1. Two different NTC types can be used simultaneously.

n 1r

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| n1r | Hardware Set Up | 1000-15000 | 1 ohm | 10000 | n1b |

PARAMETERS**Hardware Set Up (HSu) - cont****NTC 2 BETA VALUE (n2b)**

The beta value use for NTC type 2. Two different NTC types can be used simultaneously.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| n2b | Hardware Set Up | 3400-4000 | integers | 3960 | n2r |

NTC 2 RESISTANCE (n2r)

The resistance at 25°C for NTC type 2. Two different NTC types can be used simultaneously.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| n2r | Hardware Set Up | 100-15000 | 1 ohm | 10000 | n2b |

AD1 NTC TYPE (Ad1)

Determines which NTC type is connected to AD1. The NTC type is defined by beta value and resistance.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------------|
| Ad1 | Hardware Set Up | 1-2 | integers | 1 | n1b,n1r, n2b,n2r |

AD1 NTC TYPE (Ad2)

Determines which NTC type is connected to AD2. The NTC type is defined by beta value and resistance.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------------|
| Ad2 | Hardware Set Up | 1-2 | integers | 1 | n1b,n1r, n2b,n2r |

PARAMETERS

Hardware Set Up (HSu) - cont

AD1 NTC TYPE (Ad3)

Determines which NTC type is connected to AD3. The NTC type is defined by beta value and resistance.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------------|
| Ad3 | Hardware Set Up | 1-2 | integers | 1 | n1b,n1r, n2b,n2r |

Ad3

AD1 NTC TYPE (Ad4)

Determines which NTC type is connected to AD4. The NTC type is defined by beta value and resistance.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------------|
| Ad4 | Hardware Set Up | 1-2 | integers | 1 | n1b,n1r, n2b,n2r |

Ad4

AD1 NTC TYPE (Ad5)

Determines which NTC type is connected to AD5. The NTC type is defined by beta value and resistance.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------------|
| Ad5 | Hardware Set Up | 1-2 | integers | 1 | n1b,n1r, n2b,n2r |

Ad5

* OUPUT INTERVAL TIME (oPt)

The time delay between any two devices turning on to prevent overloading. The start up sequence for connected devices is as follows:

1. Lights
2. Evaporator Fan
3. Compressor
4. Condenser Fan

* Not yet adjustable

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| oPt | Hardware Set Up | 0 secs | 1 second | 0 secs | hPC |

oPt

PARAMETERS***Hardware Set Up (HSu) - cont*****COMPRESSOR PORT CONFIGURATION (CPC)**

Selects the Compressor connection port:

N.C. = Not Connected

R = 5A Relay o/p

C = 12A Relay o/p

CPC

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CPC | Hardware Set Up | R, C or N.C. | Port ID | C | hPC, LPC |

COMPRESSOR STATE (CPS)

Selects the Relay state when the Compressor is on. This function is only used when an External Relay is fitted to the Compressor.

0 = Normally open (Relay contact open when Compressor is off). Default.

1 = Normally closed (Relay contact closed when Compressor is off).

CPS

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CPS | Hardware Set Up | 0 or 1 | integers | 0 | CPP, CtP |

EVAPORATOR FAN PORT CONFIGURATION (EFC)

Selects the Evaporator Fan connection port.

N.C. = Not Connected

S1 & S2 = 0.4/0.6A Solid State Relay o/p

EFC

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------------|--------------------|---------|---------------|
| EFC | Hardware Set Up | S1, S2, S1&S2 R or N.C. | Port ID | S1 | ECt |

EVAPORATOR FAN CONTROL TYPE (ECt)

Selects whether the Evaporator Fan Port operates as an ON/OFF switch or as a variable speed fan control output.

0 = Normal Switch

1 = Variable Speed Fan Control

ECt

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| ECt | Hardware Set Up | on/off or var | text | on/off | |

PARAMETERS

Hardware Set Up (HSu) - cont

EVAPORATOR FAN DIRECTION (EFd)
Selects the direction of the evaporator fan rotation

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| EFd | Hardware Set Up | CW or CCW | text | CCW | |

EFd

CONDENSER FAN PORT CONFIGURATION (CdC)
Selects the Condenser Fan connection port:
N.C. = Not Connected
S1 & S2 = 0.4/0.6A Solid State Relay o/p

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CdC | Hardware Set Up | S1, S2 or N.C. | Port ID | N.C. | Cht |

CdC

CONDENSER FAN CONTROL TYPE (CCT)
Selects whether the Condenser Fan Port operates as an ON/OFF switch or as a variable speed fan control output.
0 = Normal Switch
1 = Variable Speed Fan Control

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CCt | Hardware Set Up | on/off or var | text | on/off | |

CCt

CONDENSER FAN DIRECTION (CFd)
Selects the direction of the condenser fan rotation

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CFd | Hardware Set Up | CW or CCW | text | CCW | |

CFd

PARAMETERS***Hardware Set Up (HSu) - cont*****DEFROST PORT CONFIGURATION (dFC)**

Selects the Defrost Coil connection port. This function is only used with a Heated Defrost Cycle. Please also refer to 'Defrost State' (dFS).

N.C. = Not Connected

R = 5A Relay o/p

C = 12A Relay o/p


DEFROST STATE (dFS)

Selects the Relay state when the Defrost Cycle is off. Please also refer to 'Defrost Port Configuration' (dFC).

0 = Normally open (Relay contact open when Defrost Cycle not running). Default.

1 = Normally closed (Relay contact closed when Defrost Cycle not running).

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dFS | Hardware Set Up | 0 or 1 | integers | 0 | dFC |

LIGHTING PORT CONFIGURATION – CHANNEL A (LCA)

Selects the lighting connection Port. Please also refer to Lighting State Channel A (LEA).

N.C. = Not Connected

R = 5A Relay o/p

C = 12A Relay o/p

S1, S2 = 0.4/0.6A Solid State Relay o/p

LE1 – LE3 = Switched 24V o/p

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------------|--------------------|---------|---------------|
| LCA | Hardware Set Up | LE1,LE2,LE3, S1, S2, R, C or N.C. | Port ID | R | LEA, LEB, LEC |



PARAMETERS

Hardware Set Up (HSu) - cont

LIGHTING PORT CONFIGURATION – CHANNEL B (LCb)

Selects the lighting connection Port. Please also refer to Lighting State Channel B (LEb).

N.C. = Not Connected

R = 5A Relay o/p

C = 12A Relay o/p

S1, S2 = 0.4/0.6A Solid State Relay o/p

LE1 – LE3 = Switched 24V o/p

LCb

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------------|--------------------|---------|---------------|
| LCb | Hardware Set Up | LE1,LE2,LE3, S1, S2, R, C or N.C. | Port ID | N.C. | LEA, LEb, LEC |

LIGHTING PORT CONFIGURATION – CHANNEL C (LCC)

Selects the lighting connection Port. Please also refer to Lighting State Channel C (LEC).

N.C. = Not Connected

R = 5A Relay o/p

C = 12A Relay o/p

S1, S2 = 0.4/0.6A Solid State Relay o/p

LE1 – LE3 = Switched 24V o/p

LCC

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------------------------|--------------------|---------|---------------|
| LCC | Hardware Set Up | LE1,LE2,LE3, S1, S2, R, C or N.C. | Port ID | N.C. | LEA, LEb, LEC |

LIGHTING STATE CHANNEL A (LEA)

Selects the state when the lighting is off. Please also refer to the Lighting Port Configuration – Channel A (LCA).

0 = Normally Open (Relay contact open when lights are off)
(Switched 24V open when lights are off)

1 = Normally Closed (Relay contact closed when lights are off)
(Switched 24V closed when lights are off)

LEA

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LEA | Hardware Set Up | 0 or 1 | integers | 0 | LCA, LCb, LCC |

PARAMETERS

Hardware Set Up (HSu) - cont**LIGHTING STATE CHANNEL B (LEb)**

Selects the state when the lighting is off. Please also refer to the Lighting Port Configuration – Channel B (LCb).

0 = Normally Open (Relay contact open when lights are off)
(Switched 24V open when lights are off)

1 = Normally Closed (Relay contact closed when lights are off)
(Switched 24V closed when lights are off)

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LEb | Hardware Set Up | 0 or 1 | integers | 0 | LCA, LCb, LCC |

LIGHTING STATE CHANNEL C (LEC)

Selects the state when the lighting is off. Please also refer to the Lighting Port Configuration – Channel C (LCC).

0 = Normally Open (Relay contact open when lights are off)
(Switched 24V open when lights are off)

1 = Normally Closed (Relay contact closed when lights are off)
(Switched 24V closed when lights are off)

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| LEC | Hardware Set Up | 0 or 1 | integers | 0 | LCA, LCb, LCC |

General Alarms Menu (GAL)

The General Alarm Parameters are global parameters which apply across all Functional Categories.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|----------------------|-----------------|-------|--------------------|-----------|---------|
| ALARMS | | | | | |
| Clear Terminal Alarm | CtA | 72 | n/a | yES or no | no |

CLEAR TERMINAL ALARM (CtA)

Clears all terminal system alarms and resets all terminal alarm counters back to zero. To clear the terminal alarms the value must be manually changed to the 'yES' option and entered. After this has been done and the terminal alarms have been successfully cleared, the display will revert back to the default 'no'.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| CtA | Alarms | yES or no | text | no | rSF |

Logging Menu (LoG)

The Logging Parameters define how data is logged and sent to the cloud

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---------------------------|-----------------|-------|--------------------|------------|---------|
| TIMERS AND COUNTER | | | | | |
| Logging Interval | LGt | 73 | mins | 30 to 1440 | 30 |

LOGGING INTERVAL (LGt)

Sets the time in mins between logging of statistics. Statistics are uploaded via the asset tracking application to the cloud for viewing of historical statistics.

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|----------------|
| LGt | Logging | 30 to 1440 mins | 1 min | 30 mins | not applicable |

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UPGRADING FIRMWARE

SCS Programming Steps

Firmware can be updated from either the mobile or desktop app. The steps are the same for both. Screenshots used are from the mobile app, but look the same on the desktop app

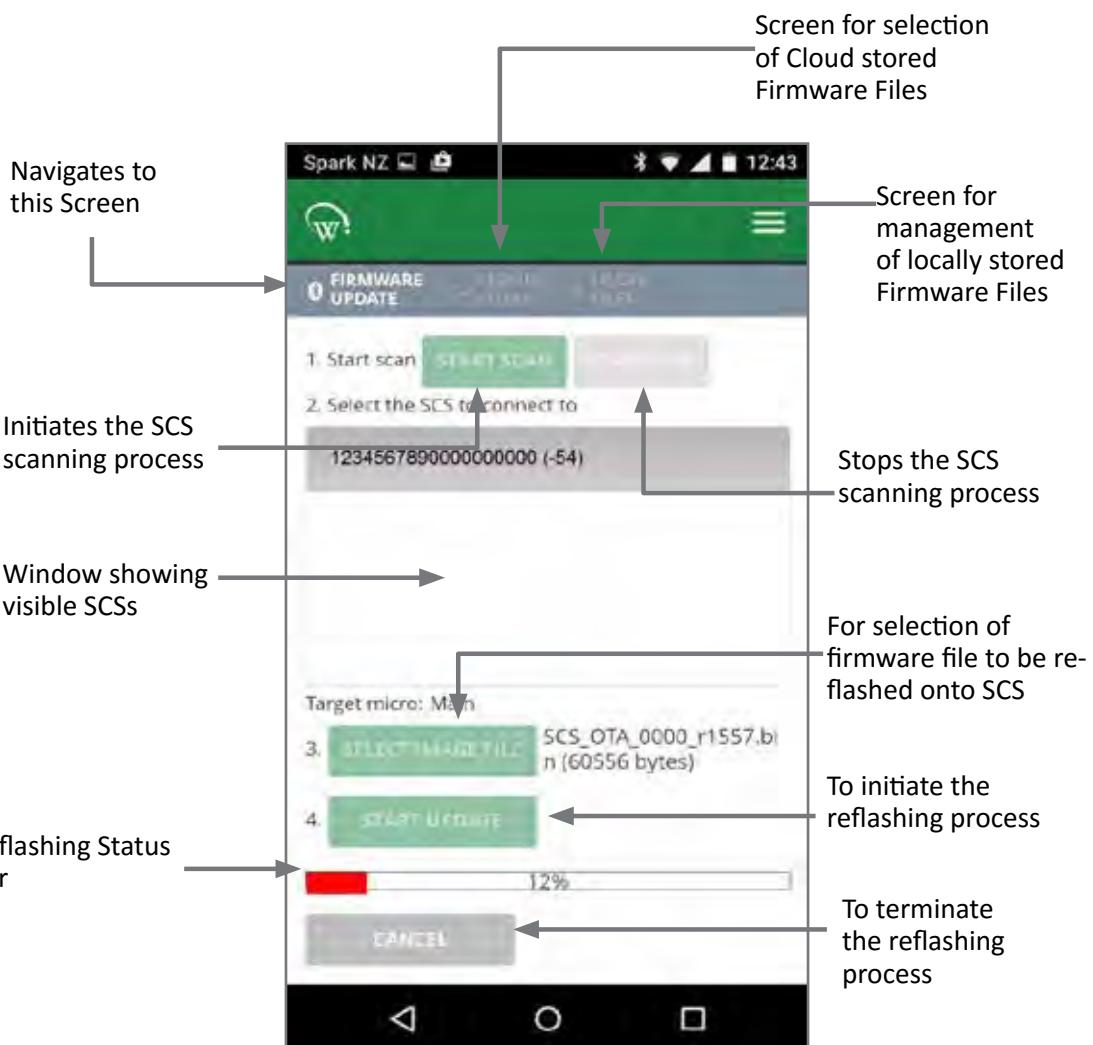
The SCS contains two microprocessors.

- Hi-side micro
Responsible for all voltage, power and current monitoring and S1 and S2 switching
- Main micro
Responsible for all control algorithms

Quick Read

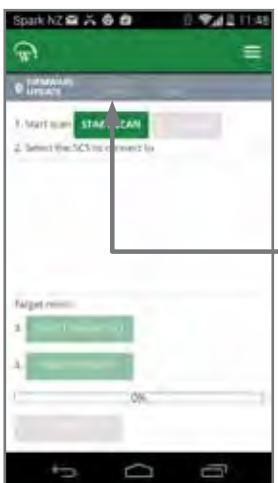
- Step 1: Select controller.
- Step 2: Select Bin File.
- Step 3: Connect.
- Step 4: Verify and Program.

FIRMWARE UPDATE Screen



UPDATE PROCESS

Step 1



Step 1:
Select Cloud
Stored Firmware
Files

Step 2

Step 2a:
Select the file
you want to use

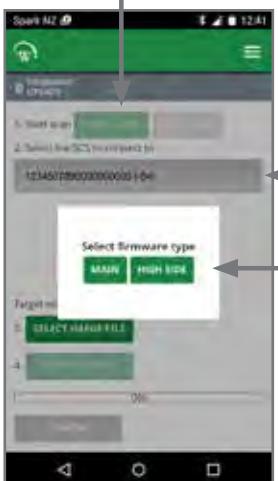


Step 2b:
Choose
DOWNLOAD

Note:
SCS_OTA are Main micro files
SCS_HS are Hi-side micro files

Step 3

Step 3a:
Start scanning for
SCS to upgrade

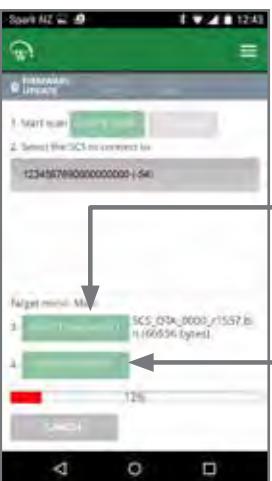


Step 3b:
Select SCS to Upgrade
(Bluetooth Indicator will
flash on selected SCS once
successfully connected)

Step 3c:
Choose which
micro* to upgrade

Step 4

Step 4a:
Select Locally
Stored Firmware
file for Upgrade



Step 4b:
Start the upgrade

Step 4c:
Ensure "Firmware Update Complete" is
displayed after programming. Otherwise,
you will need to try again.



Note:
If you choose "Main Micro", the SCS will
reset itself, and display "OtA", which means
it is ready to upgrade the main micro.

* For hi-side upgrades, early versions of code require an additional step not documented here. Please contact Wellington for further details

TECHNICAL SPECIFICATIONS

Technical Specification Table

| POWER | |
|-------------------------------|--|
| Power Supply | 90 - 240Vac +10/-15% 50/60Hz |
| Input Connectors | 6.08mm x 0.81mm QC tabs Maximum rated current per terminal 12A |
| Power Consumption | 3.5W maximum |
| Voltage Protection | Compressor Over Voltage Protection Compressor Under Voltage Protection |
| HV OUTPUTS | |
| Output Ratings | C: Switched 12Arms* R: Switched 5Arms* S1: Switched 0.4Arms* (Switched 0.6Arms)** S2: Switched 0.4Arms* (Switched 0.6Arms)** Maximum total rated current 12A |
| Relay Operating Cycles | EN60730-1: 30,000 operations UL: 30,000 operations |
| Output Connectors | 6.08mm x 0.81mm QC tabs Maximum cable length: 10m |
| LV INPUTS/OUTPUTS | |
| Sensor Temperature Range | -50°C to 90°C @ 0.1°C (-50°C to 300°C measurement range, limited only by NTC capability) |
| Ratings | SELV Digital 0 - 5V i/p Analog NTC i/p 5V, 100mA o/p (AD4 only) |
| LV Connectors | 2-way Stocko 7234-202-000-960-000-00-G 5-way Stocko 7234-005-000-960-000-00-G Maximum cable length: 10m*** |
| Supported Temperature Sensors | NTC - 1k to 15k @ 25°C, Beta Value 3400 to 4000 |
| Supported Digital Inputs | High impedance voltage input |
| PWM outputs | 0 - 24Vdc, PWM, 1A (x4) |
| UART | Half duplex and Full duplex |

* At 55°C with 105°C wire or at 42°C with 90°C wire

**At 42°C with 105°C wire

*** 2m when not installed in a cabinet (EN55014-1)

SPECIFICATIONS

Specifications Table - cont

| ENVIRONMENTAL | |
|--------------------------------------|---|
| Operational Temperature Range | -20°C to +55°C <90% RH non-condensing |
| Storage Conditions | -40°C to +80°C <90% RH non-condensing |
| CONNECTIVITY | |
| Bluetooth™ Capability | Bluetooth™ LE |
| Supported Windows O/S for GUI module | Windows XP SP 2 Windows Vista Windows 7 Windows 8 Windows 8.1 |
| Supported Mobile App Devices | Android with BT 4.0 and OS 4.4.3 or above iPhone 4S or later iPAD 3rd Gen or later iPAD mini |
| PHYSICAL | |
| Dimensions | SCS Overall Dimensions: 36.2mm (H) x 81.2mm (W) x 97.7mm (D) Aperture Dimensions: 29mm (H) x 71mm (W) Maximum Mounting Panel Thickness: 9mm Clearance Required for Escutcheon: 4mm above and below and 7mm to the left and right of aperture hole. |
| Display | 3 Digit LED Display, Digits 20mm high Minimum Resolution: 0.1°C Colours: Green, Blue, Red |
| Activity Indicators | Fan Indicator Defrost Mode Indicator Compressor Indicator Night Mode Indicator Alarm Indicator Bluetooth™ Indicator |
| Interface | 4 capacitive touch buttons |
| Housing Materials | Escutcheon: ABS, Color: Please enquire Main Housing: PC, Color: Grey tinted clear Seals: Silicone, Color: Black Rear Cover: PC, Color: Gray tinted clear Retaining Clips: POM, Color: Black |
| Cleaning | Use only a damp cloth with neutral detergents |



SPECIFICATIONS

Specifications Table - cont

| COMPLIANCE AND APPROVALS | |
|---|---|
| Fire Rating | UL94-V0 |
| Electrical Insulation Rating | Class II (when correctly installed) |
| Immunity against Voltage Surges | 4000V (per EN61000-6-2) |
| Software Classification | Class A |
| Safety Compliance | IEC-60335 IEC-60730* UL-60730* cUL* |
| Ingress Protection | Front Panel: IP 68 Rear (Connectors enclosure): IP x5 |
| Explosive Environments | ATEX*, HC Compatible* |
| EMC | Immunity: EN6100-6-2, EN 301 489-1, EN301 489-17 Emmissions: EN55014-1 , EN301 489-17 , EN300 328 V1.8.1 EN50371 FCC Part 15B and 15C EN 300 328 ICES-001, RSS-247, RSS-102 AS/NZS 4268, AS/NZS CISPR 22 |
| European Directive: Restriction of Hazardous Substances | EU Directive 2002/95/EC (RoHS) |
| European Directive: Waste Electrical and Electronic Equipment | EU Directive 2002/96/EC (WEEE) |

* Pending

FCC Declaration

Information to the user (FCC Part 15.105)

CLASS B DEVICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

This device complies with Innovation, Science and Economic Development (ISED) Canada's licence-exempt RSS standards. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

DÉCLARATION DE CONFORMITÉ À LA FCC/IC

Cet appareil est conforme avec Innovation, Sciences et Développement économique Canada RSS standard exempts de licence(s). Son utilisation est soumise à Les deux conditions suivantes:

1. cet appareil ne peut pas provoquer d'interférences et
2. cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif

CAN ICES-3 (B)/NMB-3(B)

Warning: Any changes or modifications not expressly approved by Wellington Drive Technologies Ltd could void the user's authority to operate this equipment



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GLOSSARY

| Term Used | Definition |
|------------------------------|--|
| AC | Alternating Current. |
| Activity | An activity is defined as a human interaction with the cabinet, such as opening the cabinet door to access the product inside. |
| Activity Sensor State | Using input sensors to determine if there has been any activity or interaction with the cooler unit. |
| Alarm | An audible or visual signal from the controller which warns that one or more parameters are outside of requirements. |
| Ambient Temperature | The average air temperature outside of the cooler unit. |
| ATEX Mark | The ATEX Mark signifies that the product conforms to the relevant category standards for devices located in potentially explosive environments, required by the European Economic Area (EEA). |
| CCC Mark | The CCC Mark signifies that the product conforms to the relevant product standards required by China. |
| CE Mark | Conformité Européenne. The CE mark signifies that the product conforms to all applicable European Directives required by the European Economic Area (EEA). |
| Compressor | A device for compressing the refrigerant medium to change it from vapour to liquid in the condenser coil. |
| Compressor Inlet Temperature | The temperature detected on the outside of the compressor inlet. |
| Condenser | The part of the refrigeration system where the refrigeration medium changes phase from vapour to liquid through external cooling. |
| Configuration | A configuration of a given parameter is where a particular setting or value of a parameter has been saved into the SCS Connect controller. The parameter is then said to be configured. |

Term Used**Definition**

| | |
|--------------------------------|--|
| Control Probe | An input device which provides data about a parameter. |
| Cooler Unit | The unit containing the refrigeration system and an insulated space for storing and displaying product. |
| Counts | Counts are the number of recorded instances of a particular event, most usually associated with Alarm Parameters. |
| cUL Mark | The cUL Mark signifies that the product conforms to the relevant safety compliance required by the USA and Canada. |
| DC | Direct Current. |
| Defrost Cycle | A mode where the refrigeration system switches off the compressor to defrost the evaporator coil. This may be assisted by heating and by the evaporator fan blowing air across the evaporator coil. |
| Diagnostics | The process of analyzing data from the controller to determine the current function of the unit, particularly for initial set up and fault finding. |
| Differential | Used to moderate, modify or calibrate a given parameter, a Differential is an offset difference between the usual upper and lower values of the parameter and the point where something is triggered. |
| Duty Cycle | The ratio of Compressor on time to off time. |
| Energy Management | A category of parameters concerned with energy efficiency. |
| EU Directive 2002/95/EC (RoHS) | The EU Directive which governs the Restriction of Hazardous Substances (RoHS) in goods. This directive is closely linked with the Waste Electrical and Electronic Equipment directive (WEEE). |
| EU Directive 2002/96/EC (WEEE) | The Waste Electrical and Electronic Equipment directive (WEEE), which governs the collection, recycling and disposal of electrical and electronic goods. This directive is closely linked with the Restriction of Hazardous Substances directive (RoHS). |
| Evaporator Fan | The fan which is used to blow internal air over the evaporator coil. The evaporator coil takes heat away from the air, cooling the air down. |



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Term Used

Definition

| | |
|------------------------|--|
| Evaporator Temperature | The temperature detected on the outside of the evaporator coil. |
| GUI | Graphical User Interface. |
| HACCP | Hazard Analysis & Critical Control Points is a preventive approach to food safety and storage of medicines, where refrigeration control is recognized as a critical control point. |
| HC Compatible | Suitable for use with flammable refrigerants in refrigerators complying with IEC60335-2-89. |
| High Voltage | Any part of the refrigeration system which operates on voltages that are hazardous. |
| Impedance | The opposition to the flow of electrical current in an electrical circuit when a voltage is applied. |
| Input Ports (i/p) | These are the connector ports on the back of the controller unit for inbound control signals. |
| Internal Temperature | The temperature detected inside the cooler unit where the product is placed. |
| IRAM Mark | The IRAM Mark signifies that the product conforms to the relevant product standards required by Argentina. |
| LED | Light Emitting Diode. |
| N.C. | 'Not Connected', in relation to the Hardware Set Up parameters. |
| Normal Mode | The standard automatic running mode. |
| NSF Mark | The NSF Mark signifies that the product conforms to the relevant food safety regulations from the independent NSF organisation. |
| OEM | Original Equipment Manufacturer. |

Term Used**Definition****Output Ports (o/p)**

These are the connector ports on the back of the controller unit for outbound signals to controlled devices.

Over Voltage

A state where the supply power voltage is higher than the design limits of the equipment.

Parameter

A quantifiable measure of some kind. Parameters are used to control the refrigeration system. Examples of parameters are temperature and time.

Perishable Mode

The mode used when the goods being stored can be damaged if not kept continuously cool, for example medicines and dairy products. Standby modes are disabled. This function complies with rules and regulations under HACCP.

Probes

Probes are devices which generate a signal used to control devices as a result of a detected environmental change. Probes are a kind of sensor, and the two terms are often used interchangibly.

Products

Products are the items being stored inside the refrigerated cabinet, for example chilled drinks.

Pulldown Time

The time taken between when the compressor and evaporator fan starts working and when the cooled product reaches the required temperature.

PWM

Pulse Width Modulation, a method of controlling supplied power using high frequency switching.

Refrigeration System

The components comprising the complete refrigeration circuit, including controller, evaporator, expansion valve, condenser, compressor and evaporator fan.

Relays

These are the high voltage switched connectors on the back of the controller unit for controlling high voltage AC devices, such as the compressor and evaporator fan.

SELV

Safety Extra Low Voltage. An electrical system in which the voltage cannot exceed 50Vrms under normal conditions, and under single-fault conditions.

| | |
|--|----------------------------|
| | TABLE OF CONTENTS |
| | INTRODUCTION & WARNINGS |
| | DESCRIPTION & INSTALLATION |
| | FRONT PANEL USER INTERFACE |
| | GRAPHICAL USER INTERFACE |
| | PARAMETERS |
| | UPGRADING FIRMWARE |
| | FAULTS & ALARMS |
| | TECHNICAL SPECIFICATION |
| | APPENDICES |

Term Used

Definition

| | |
|------------------|--|
| Sensor | Sensors are devices which generate a signal used to control devices as a result of a detected environmental change. Probes are a kind of sensor, and the two terms are often used interchangeably. |
| Setpoint | The preferred target value for a given parameter. |
| Soft Start | A controlled time delay between when the power comes on and when the compressor is allowed to start. |
| Standby Modes | A sequence of control modes used to save energy during periods of lower use. |
| States | The state of a device (eg; 'on' or 'off') is used by the SCS Connect controller to make logic decisions when controlling the device. |
| Terminal Alarm | A Terminal Alarm is caused by a significant fault. If the Terminal Alarm fault count exceeds a certain number, then the refrigeration system is shut down to protect it against damage. |
| Thermostat | A switch or signal device, activated by changes in temperature. |
| Transition Modes | A series of "inbetween" modes that can be used to adjust set-point and lighting levels, without fully changing between Normal and Standby mode. |
| UL Mark | The UL Mark signifies that the product conforms to the relevant safety compliance standard published by Underwriters Laboratories Inc. |
| Under Voltage | A state where the supply power voltage is lower than the requirements of the equipment. |
| VDE Mark | The VDE Mark signifies that the product conforms to the relevant electrical equipment safety regulations from the independent VDE organisation. |

FAULTS AND ALARMS

Quick Read

The **SCS Connect** contains the following fault protection mechanisms:

FAULTS (Displays Alarm Symbol)

- Door Fail
- Excessive Door Open Counts
- Over Voltage
- Under Voltage
- Condenser Overtemp
- Maximum Compressor Starts in 1hr *

ALARMS (Displays Alarm Symbol and Alarm Code)

- Door Left Open Alarm (AL1)
- Excessive Condenser Overtemp (AL15) *
- NTC Failure (AL17)
- Refrigeration Fail (AL19)
- Return Air Under Temp (AL20)
- Triac Overcurrent (AL22 , AL23)

FAULTS are logged, but do not affect product temperature, and require no action by the Shop Owner.

ALARMS are logged, but they can result in warm product.
Some faults can be cleared by the store owner, but others can only be cleared by a service technician.

* Not yet implemented



Alarms

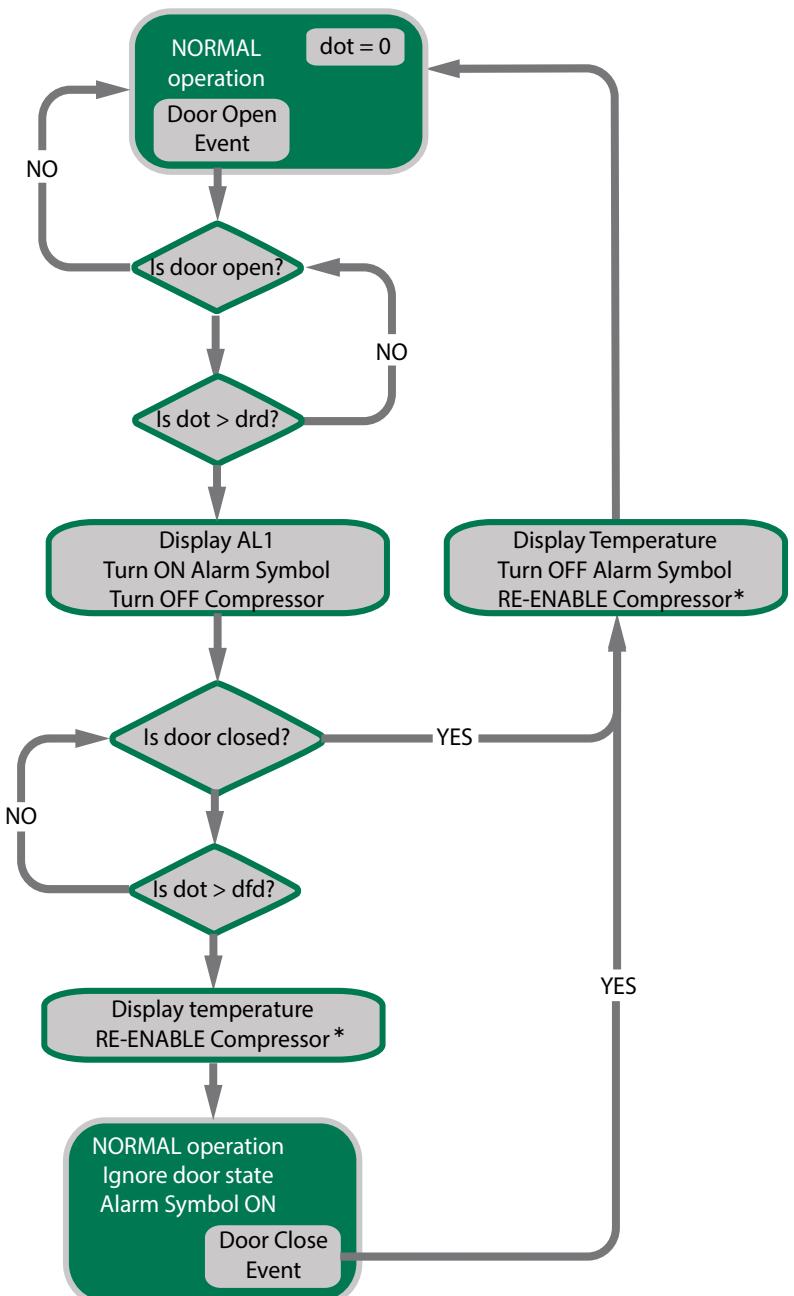
Alarm Codes

Reporting an alarm early will minimise the down time of the cooler. An alarm code should always be supplied when reporting an alarm.

| Fault Code | Fault | Possible Causes and Actions |
|------------|---|---|
| 1 | Door Open The door has been left open | Closing the door will clear this fault. The door may not be close properly due to sagging, and may require adjustment. |
| 15 | Excessive Condenser Overtemp The condenser has seen multiple overtemperature conditions in a short space of time. | Check that nothing is blocking the condenser e.g. boxes, and then reset by power cycling. If this fault continues to happen, check that the condenser fan is functioning correctly. |
| 17 | NTC Failure Either the main temperature sensor probe or the condenser temperature probe (if fitted) has failed. | The temperature probe needs replacing. The system will not run while this fault is present. |
| 19 | Refrigeration Failure The compressor has run continuously for the configured time without reaching the setpoint temperature | Multiple possibilities, preventing the system from achieving temperature. The system will not reset by power cycling, only by writing to the "Clear Terminal Alarm" parameter (see page 72) |
| 20 | Return Air Under Temp The temperature has dropped below the normal mode setpoint by a specified amount | The product temperature keeps getting colder, even when the compressor is turned off. Check the compressor is correctly wired, and that the "Compressor State" parameter is set correctly. Can also be due to an external secondary compressor relay failure. (See page 67) |
| 21 | Triac S1 Overcurrent The loading on S1 draws too much current | A high current component, such as the compressor, has incorrectly been connected to the S1 output. Check the wiring. |
| 22 | Triac S2 Overcurrent The loading on S1 draws too much current | A high current component, such as the compressor, has incorrectly been connected to the S1 output. Check the wiring. |

Fault Logic

Door Open and Door Fail

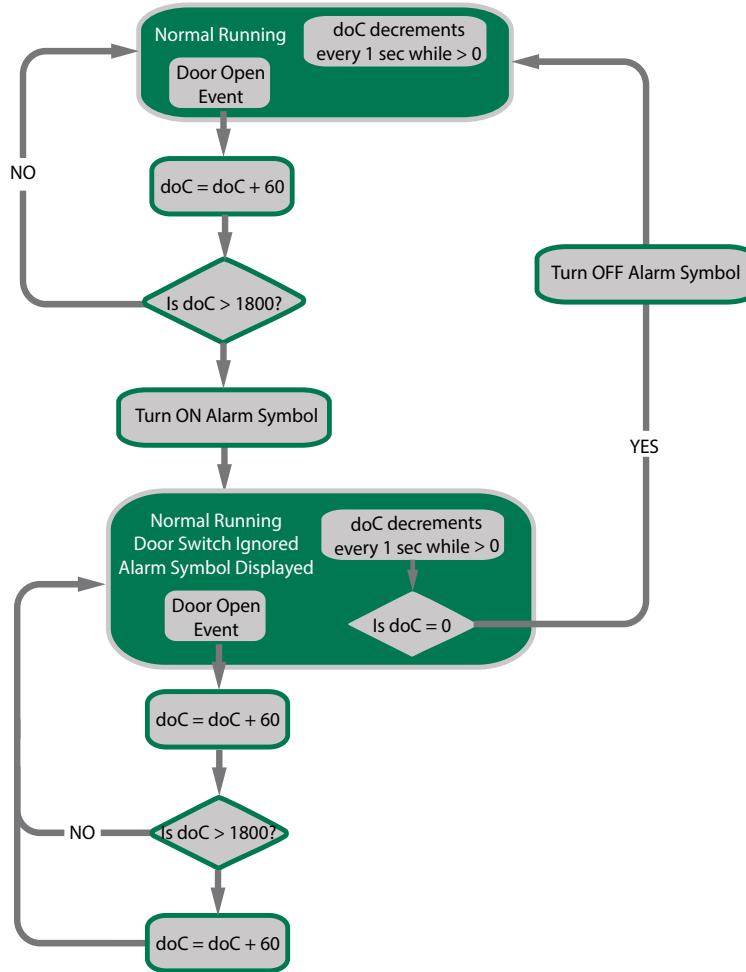


* Compressor will not re-start unless it has been off for the minimum off time

| Variable | Type | Description |
|----------|-------|-----------------|
| dot | Timer | Door Open Time |
| drd | Limit | Door Open Delay |
| dfd | Limit | Door Fail Delay |

Fault Logic

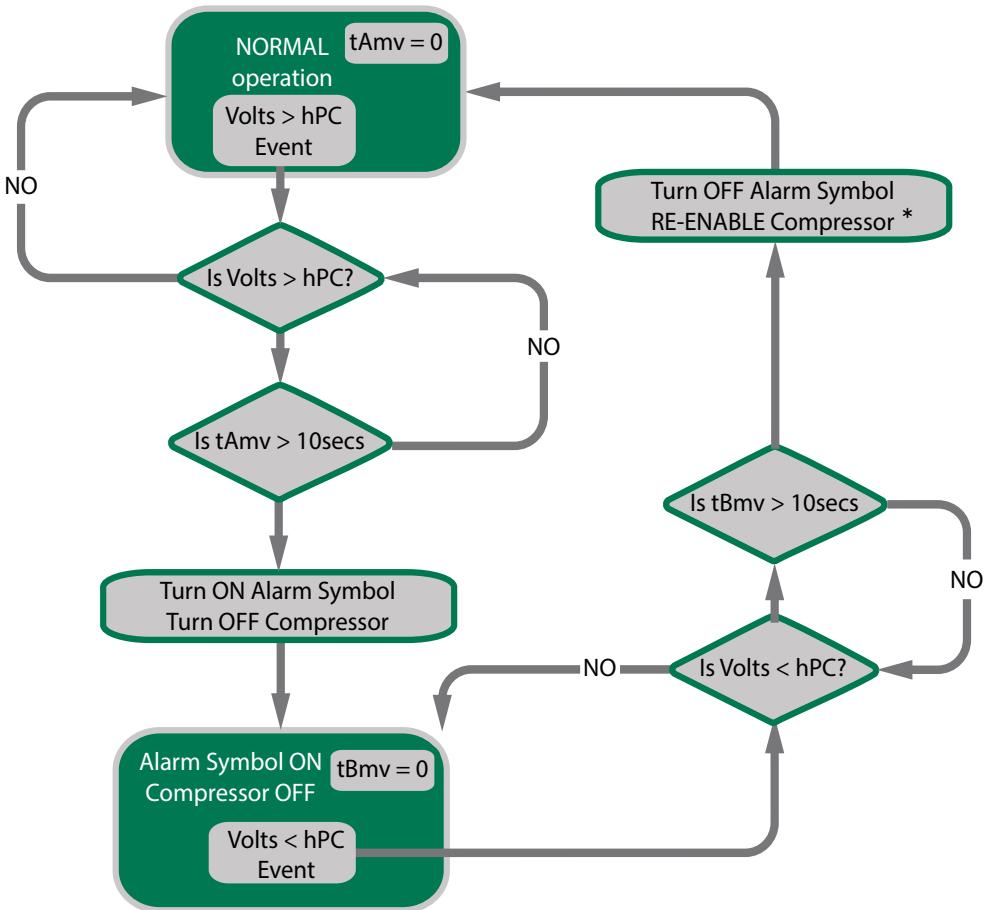
Excessive Door Openings



| Variable | Type | Description |
|----------|-------|-----------------|
| doC | Limit | Door Open Count |

Fault Logic

Over Voltage

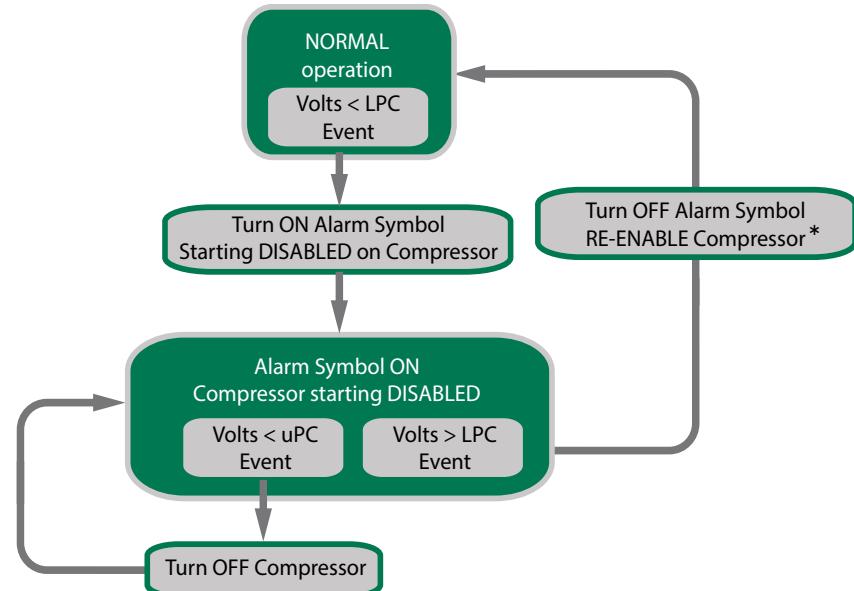


* Compressor will not re-start unless it has been off for the minimum off time

| Variable | Type | Description |
|----------|-------|----------------------------|
| Volts | Input | Current voltage level |
| hPC | Limit | Maximum Run/Start Voltage |
| tAmv | Timer | Time ABOVE maximum voltage |
| tBmv | Timer | Time BELOW maximum voltage |

Fault Logic

Under Voltage

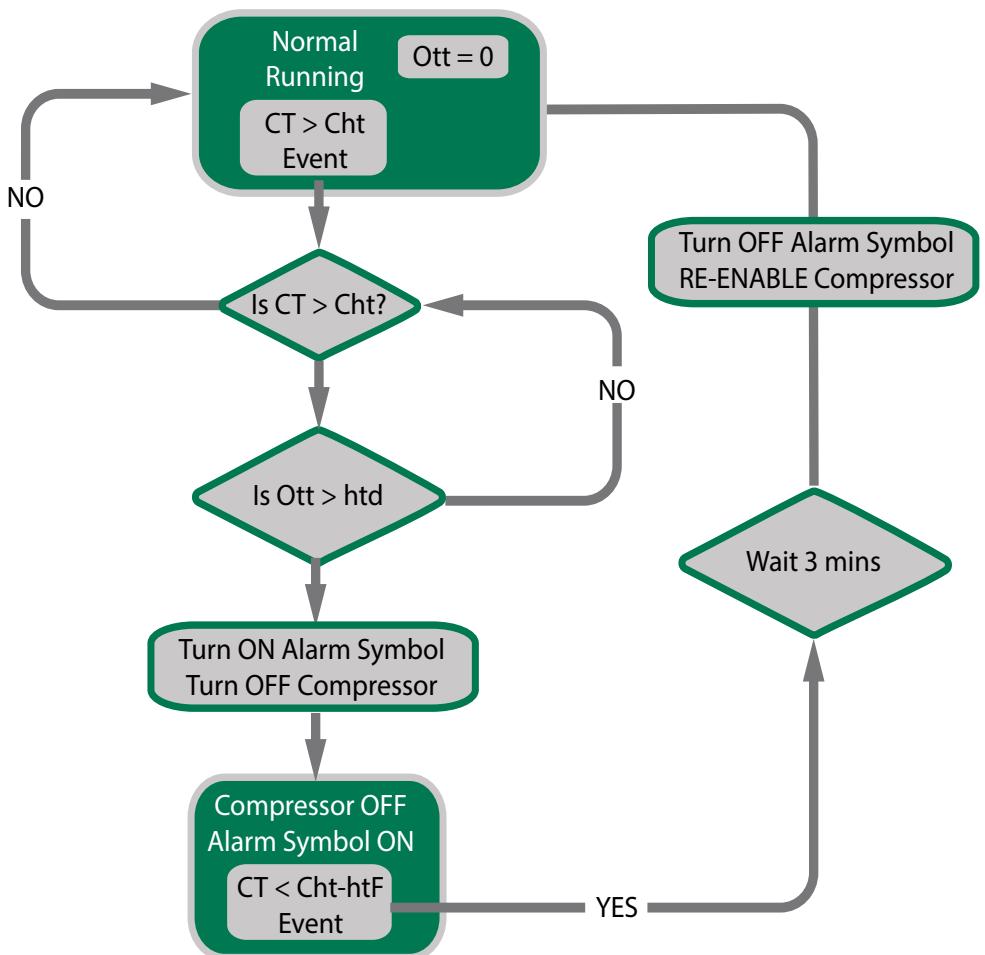


* Compressor will not re-start unless it has been off for the minimum off time

| Variable | Type | Description |
|----------|-------|----------------------------------|
| LPC | Limit | Minimum Start Compressor Voltage |
| uPC | Limit | Minimum Run Compressor Voltage |

Fault Logic

Condenser Over Temp

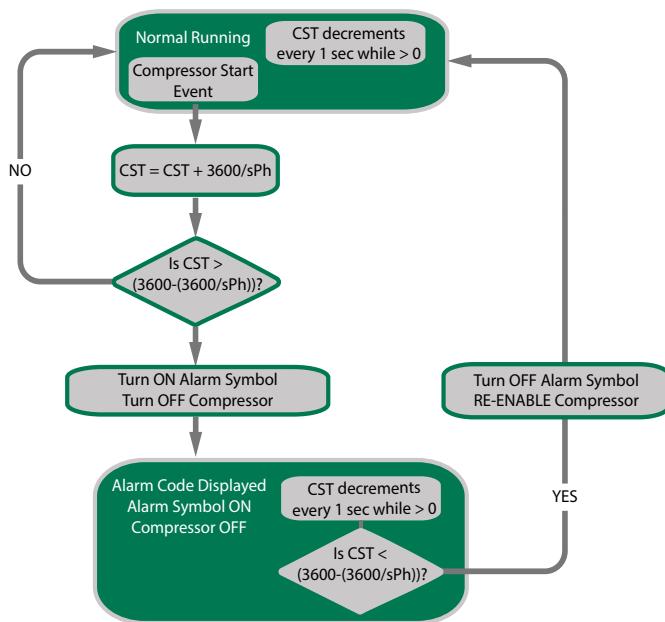


| Variable | Type | Description |
|----------|-------|------------------------|
| CT | Input | Condenser Temperature |
| ott | Timer | Over Temperature Timer |

| Variable | Type | Description |
|----------|-------|----------------------------------|
| Cht | Limit | Condenser High Temperature Limit |
| htd | Limit | High Temperature Delay |
| htf | Limit | High Temperature Differential |

Fault Logic

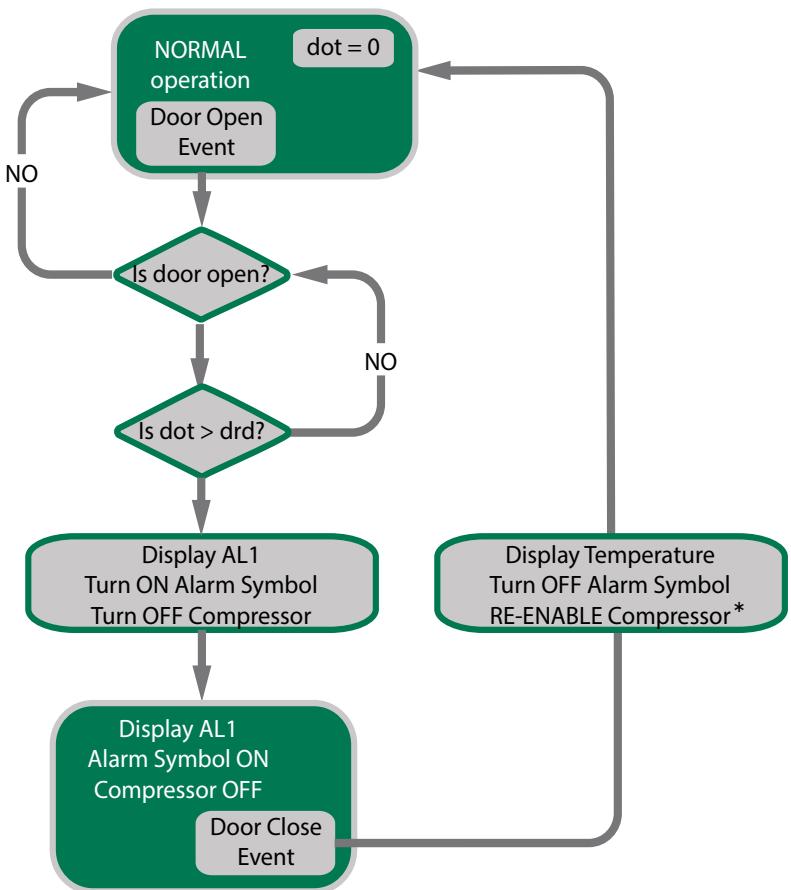
Max Compressor Starts in 1 hr



| Variable | Type | Description |
|----------|-------|----------------------------|
| sPH | Limit | Compressor Starts per Hour |
| CST | Timer | Compressor Starts Timer |

Alarm Logic

Door Left Open

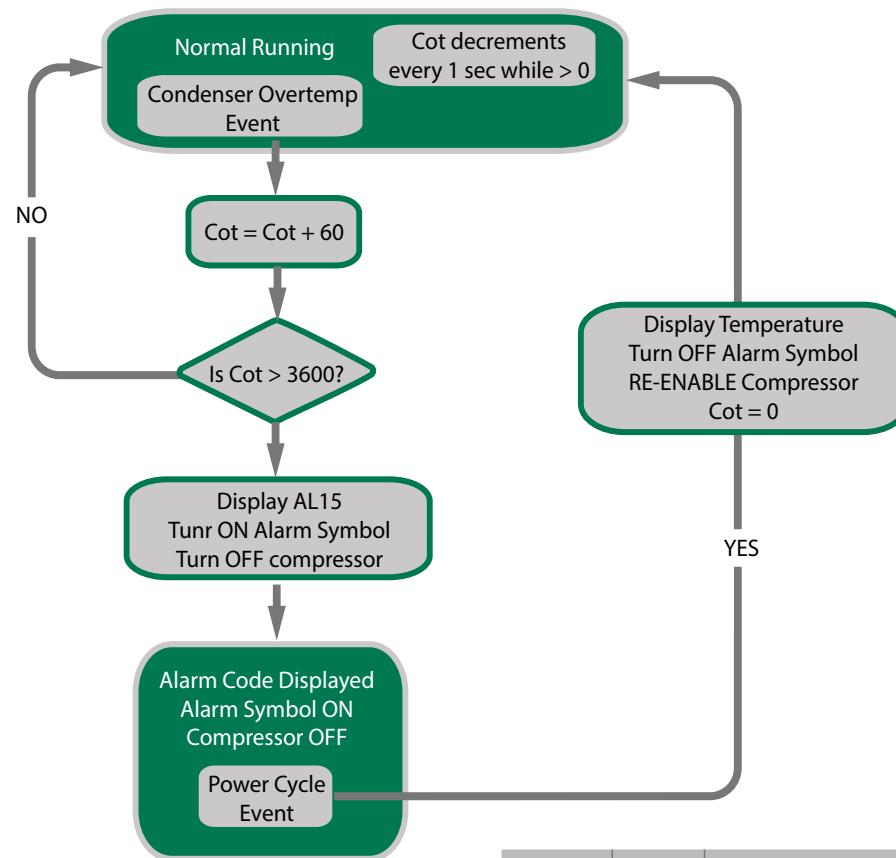


* Compressor will not re-start unless it has been off for the minimum off time

| Variable | Type | Description |
|----------|-------|-----------------|
| dot | Timer | Door Open Time |
| drd | Limit | Door Open Delay |

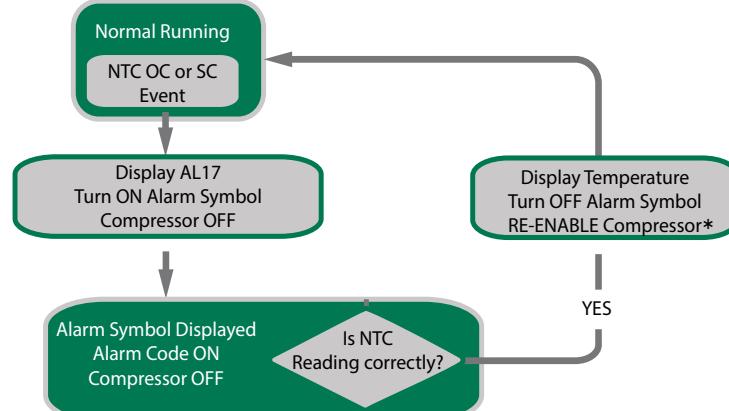
Alarm Logic

Excessive Condenser Over Temp



| Variable | Type | Description |
|----------|-------|---------------------------|
| SP | Limit | Current Mode Set-point |
| Cot | Timer | Compressor Overtemp Timer |

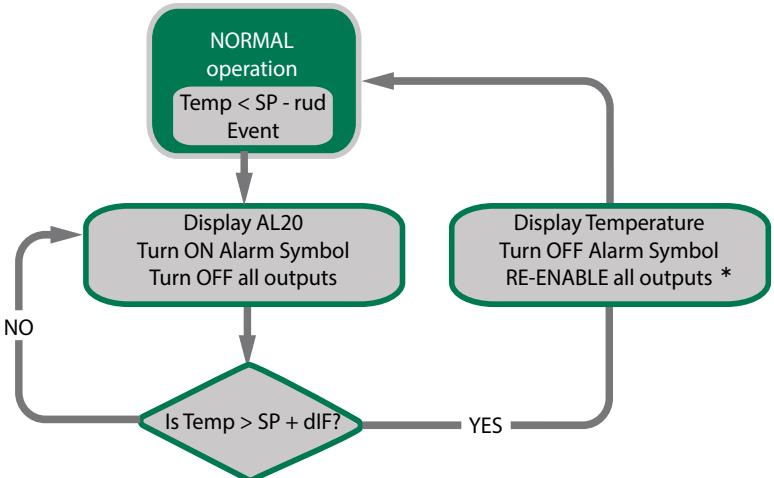
NTC Failure



* Compressor will not re-start unless it has been off for the minimum off time

Alarm Logic

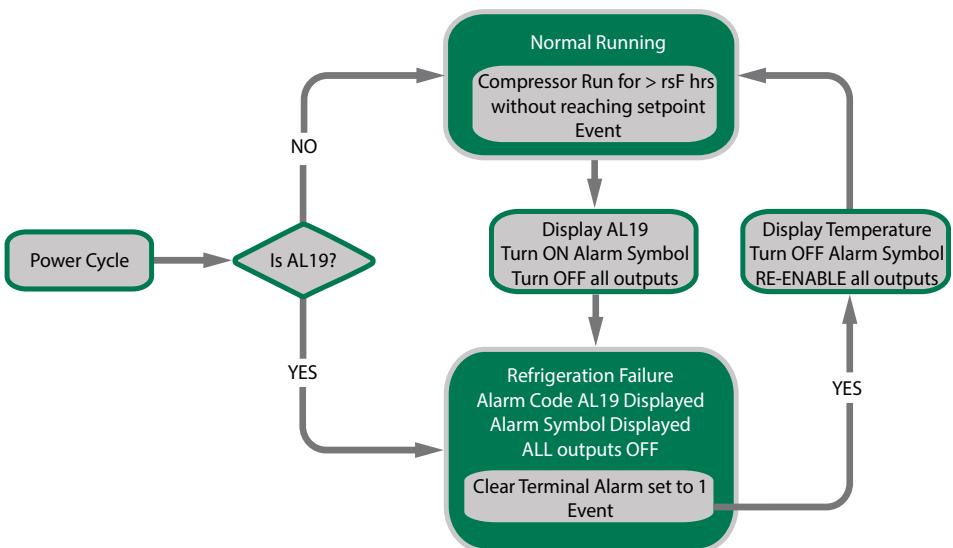
Return Air Under Temp



* Compressor will not re-start unless it has been off for the minimum off time

| Variable | Type | Description |
|----------|-------|-----------------------------------|
| SP | Limit | Current Mode Set-point |
| diff | Limit | Current mode differential |
| rud | Limit | Return-Air Undertemp Differential |

Refrigeration Failure



| Variable | Type | Description |
|----------|-------|-----------------------------------|
| rsF | Limit | Refrigeration System Failure Time |

APPENDIX 1

Quick Read

The following table lists all configurable parameters. In electronic format, click on page numbers or the display code to go directly to the relevant section.

Click on page numbers to go to relevant section.

Full Parameter List

| PARAMETER NAME | SCS DISPLAY | MENU | PAGES |
|------------------------------------|-------------|---------------------|-------|
| Activity Sensor Port Configuration | SCF | Hardware Set-up | 64 |
| AD1 NTC Type | Ad1 | Hardware Set-up | 65 |
| AD2 NTC Type | Ad2 | Hardware Set-up | 65 |
| AD3 NTC Type | Ad3 | Hardware Set-up | 66 |
| AD4 NTC Type | Ad4 | Hardware Set-up | 66 |
| AD5 NTC Type | Ad5 | Hardware Set-up | 66 |
| Ambient Temperature Port | tPt | Hardware Set-up | 62 |
| Clear Terminal Alarm | CtA | General Alarms Menu | 72 |
| Compressor Body Temperature Port | CPP | Hardware Set-up | 63 |
| Compressor Inlet Temperature Port | CtP | Hardware Set-up | 63 |
| Compressor Maximum Starts per Hour | CSh | Compressor Menu | 55 |
| Compressor Port Configuration | CPC | Hardware Set-up | 67 |
| Compressor State | CPS | Hardware Set-up | 67 |
| Condenser Fan Direction | CFd | Hardware Set-up | 68 |
| Condenser Fan Port Configuration | CdC | Hardware Set-up | 68 |
| Condenser Temperature Port | CdP | Hardware Set-up | 62 |
| Condenser Fan Control Type | CCt | Hardware Set-up | 68 |
| Condensor High Temperature Limit | Cht | Compressor Menu | 68 |
| Control Probe Calibration Offset | CAL | Hardware Set-up | 68 |
| Control Probe response | CPb | Hardware Set-up | 61 |
| Defrost Initiation Temperature | dIt | Defrost | 48 |
| Defrost Port Configuration | dFC | Hardware Set-up | 69 |

APPENDIX 1

Full Parameter List- cont

| PARAMETER NAME | SCS DISPLAY | MENU | PAGES |
|--|-------------|-------------------|-------|
| Defrost State | dFS | Hardware Set-up | 69 |
| Defrost Termination temperature | dtt | Defrost | 48 |
| Defrost Type | dtP | Defrost | 49 |
| Display Value - Defrost Cycle | ddE | Defrost | 50 |
| Display Value - Normal Mode | dIS | Normal Mode | 30 |
| Display Value - Standby Mode | dSy | Standby Mode | 43 |
| Door Open Delay | drd | Door Menu | 52 |
| Door Open Evap Continuous Run Temp | FCr | Door Menu | 51 |
| Door Sensor Port Configuration | dSC | Hardware Set-up | 63 |
| Door Switch State | drS | Hardware Set-up | 63 |
| Dripping Time | dPt | Defrost | 49 |
| Evaporator Coil Temperature Port | ELt | Hardware Set-up | 68 |
| Evaporator Fan Control type | ECt | Hardware Set-up | 67 |
| Evaporator Fan Direction | Efd | Hardware Set-up | 68 |
| Evaporator Fan off Time - Normal Mode | FoF | Normal Mode | 51 |
| Evaporator Fan on Time - Normal Mode | Fot | Normal Mode | 30 |
| Evaporator Fan Port Configuration | EFC | Hardware Set-up | 67 |
| High Temperature Alarm Set Point | htA | Normal Mode | 32 |
| Inactivity Wait Time - Normal Mode | Ytn | Normal Mode | 30 |
| Inactivity Wait Time - Standby Hold Mode | yth | Standby Mode | 41 |
| Inactivity Wait Time - Transition 1 | yt1 | Transition 1 Mode | 34 |
| Inactivity Wait Time - Transition 2 | yt2 | Transition 2 Mode | 37 |
| Inactivity Wait Time - Transition 3 | yt3 | Transition 3 Mode | 45 |
| Light State - Channel A | LEA | Hardware Set-up | 70 |
| Light State - Channel B | LEb | Hardware Set-up | 71 |
| Light State - Channel C | LEC | Hardware Set-up | 71 |
| Light State Door Open - Channel A | LdA | Door Menu | 52 |
| Light State Door Open - Channel B | Ldb | Door Menu | 52 |
| Light State Door Open - Channel C | LdC | Door Menu | 53 |
| Light State Normal Mode - Channel A | LnA | Normal Mode | 31 |
| Light State Normal Mode - Channel B | LnB | Normal Mode | 31 |

Full Parameter List- cont

| PARAMETER NAME | SCS DISPLAY | MENU | PAGES |
|---|-------------|-------------------|-------|
| Light State Normal Mode - Channel C | LnC | Normal Mode | 31 |
| Light State Standby Mode - Channel A | LSA | Standby Mode | 42 |
| Light State Standby Mode - Channel B | LSb | Standby Mode | 42 |
| Light State Standby Mode - Channel C | LSC | Standby Mode | 42 |
| Light State Transition 1 Mode - Channel A | L1A | Transition 1 Mode | 35 |
| Light State Transition 1 Mode - Channel B | L1b | Transition 1 Mode | 35 |
| Light State Transition 1 Mode - Channel C | L1C | Transition 1 Mode | 35 |
| Light State Transition 2 Mode - Channel A | L2A | Transition 2 Mode | 38 |
| Light State Transition 2 Mode - Channel B | L2b | Transition 2 Mode | 38 |
| Light State Transition 2 Mode - Channel C | L2C | Transition 2 Mode | 38 |
| Light State Transition 3 Mode - Channel A | L3A | Transition 3 Mode | 46 |
| Light State Transition 3 Mode - Channel B | L3b | Transition 3 Mode | 46 |
| Light State Transition 3 Mode - Channel C | L3C | Transition 3 Mode | 46 |
| Lighting Port Configuration - Channel A | LCA | Hardware Set-up | 69 |
| Lighting Port Configuration - Channel B | LCb | Hardware Set-up | 70 |
| Lighting Port Configuration - Channel C | LCC | Hardware Set-up | 70 |
| Logging Interval | LGt | Logging | 73 |
| Low Temperature Alarm Set Point | LtA | Normal Mode | 32 |
| Marketing Mode | tnG | Standby Mode | 43 |
| Max user set point | SPt | Normal Mode | 29 |
| Maximum Defrost Cycle Time | dCt | Defrost | 48 |
| Maximum Defrost Interval | dEI | Defrost | 49 |
| Maximum Displayable Temperature | dSt | Display Menu | 58 |
| Maximum Run/Start Compressor Voltage | hPC | Supply Menu | 56 |
| Maximum Standby Time | Sbt | Standby Mode | 41 |
| Min user set point | SP- | Normal Mode | 29 |
| Minimum Compressor Off Time | Cot | Compressor Menu | 54 |
| Minimum Displayable Temperature | dP- | Display Menu | 58 |
| Minimum Start Compressor Voltage | LPC | Supply Menu | 56 |
| NTC 1 Beta value | n1b | Hardware Set-up | 64 |

APPENDIX 1

Full Parameter List- cont

| PARAMETER NAME | SCS DISPLAY | MENU | PAGES |
|--|-------------|-------------------|-------|
| NTC 1 Resistance | n1r | Hardware Set-up | 65 |
| NTC 2 Beta value | n2b | Hardware Set-up | 65 |
| NTC 2 Resistance | n2r | Hardware Set-up | 65 |
| Operational Differential | dIF | Normal Mode | 29 |
| Operational Set Point | SP | Normal Mode | 29 |
| Output Interval Time | oPt | Hardware Set-up | 66 |
| Perishable Mode | Per | Standby Mode | 40 |
| Pulldown Time | Pdt | Standby Mode | 41 |
| Refrigeration System Failure Time | rSF | Compressor Menu | 55 |
| Return Air Temperature Port | rtP | Hardware Set-up | 62 |
| Standby Differential | Sd | Standby Mode | 40 |
| Standby Set Point | SSP | Standby Mode | 40 |
| Temperature Display Filter | tdF | Display Menu | 58 |
| Temperature Display Units | tdU | Display Menu | 57 |
| Transition 1 Differential | td1 | Transition 1 Mode | 34 |
| Transition 1 Set Point | tS1 | Transition 1 Mode | 34 |
| Transition 2 Differential | td2 | Transition 2 Mode | 37 |
| Transition 2 Set Point | tS2 | Transition 2 Mode | 37 |
| Transition 3 Differential | td3 | Transition 3 Mode | 45 |
| Transition 3 Set Point | tS3 | Transition 3 Mode | 45 |
| Uninterrupted Pull Down Activation Temperature | Pdn | Defrost | 48 |
| User Set Point Keypad Lock | uSL | Display Menu | 57 |

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APPENDIX 2

Quick Read

Advanced parameters

Normal - Adv (nrL)

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|-----------------|-----------------|
| EVAPORATOR | | | | | |
| Evaporator Fan Control - Normal Mode | FCn | | integers | 0 - 4 | 0 |
| Evaporator Fan Setpoint - Normal Mode | FSP | | 0.1 °C | -10 to 15 °C | 3.5 °C |
| Evaporator Fan Differential - Normal Mode | Fnd | | 0.1 °C | 0.1 to 10 °C | 3 °C |
| Evaporator Fan Start Delay | Fod | | 1 sec | 0 secs | 0 secs |
| Evaporator Fan Stop Delay | FSd | | 1 sec | 0 secs | 0 secs |
| ALARMS | | | | | |
| High and Low Temperature Alarm Delay | tdy | | 1 min | 0 to 15 mins | 0 |
| High and Low Temperature Alarm Differential | tAd | | 0.1 °C | 0.1 °C to 5 °C | 1 °C |
| Product Out Of Specification Alarm | PCA | | 1 min | dISabled | dISabled |

Normal - Adv (nrL) - cont**EVAPORATOR FAN CONTROL - NORMAL MODE (FCn)**

Selects how the Evaporator Fan is controlled in Normal Mode:

0 = The Evaporator Fan is on at DEFAULT speed when the Compressor is on, and cycles at DEFAULT speed with the duty parameters when the Compressor is off.

1 = The Evaporator Fan is on at DEFAULT speed when the Compressor is on, and cycles at LOW speed with the duty parameters when the Compressor is off.

2 = The Evaporator Fan is on or off at DEFAULT speed depending on the Evaporator Fan temperature. This is independent of the Compressor state.

3 = The Evaporator Fan is on or off at DEAFULT speed depending on the Evaporator Fan temperature when the Compressor is ON, and cycles with the duty parameters at DEAFULT speed when the Compressor is OFF.

4 = The Evaporator fan speed is variably linearly controlled from Low Speed at the current modes setpoint to Default Speed at Variable-Evap-Fan-Temp-Range ABOVE the current modes setpoint

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| FCn | Evaporator | 0 - 3 | integers | 0 | SP, dlt, SSP |

EVAPORATOR FAN SET POINT (°C) (FSP)

The Set Point Temperature when the Evaporator Fan is in Temperature Control Mode. This is used to control the Evaporator Fan by Fan temperature rather than Compressor cycles or duty cycles. Please also refer to FCn.

Note: This function is only used when the Evaporator Fan is set to temperature control in the FCn Menu (1 or 2).

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| FSP | Evaporator | -10 to 10 °C | 1 °C | 3.5 °C | EFt, FCn |

EVAPORATOR FAN DIFFERENTIAL (°C) (Fnd)

The temperature differential when the Evaporator Fan is in Temperature Control Mode. This is used to control the Evaporator Fan by Fan temperature rather than Compressor cycles or duty cycles. Please also refer to FCn.

Note: This function is only used when the Evaporator Fan is set to temperature control in the FCn Menu (1 or 2).

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Fnd | Evaporator | 0.1 to 10 °C | 1 °C | 3 °C | FCn |

APPENDIX 2

Normal - Adv - cont

* EVAPORATOR FAN START DELAY (Fod)

The time delay between when the Compressor starts and when the Evaporator Fan is allowed to start.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Fod | Evaporator | 0 secs | 1 sec | 0 secs | FSd |

Fod

* EVAPORATOR FAN STOP DELAY (FSd)

The time delay between when the Compressor stops and when the Evaporator Fan is allowed to stop.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| FSd | Evaporator | 0 secs | 1 sec | 0 secs | Fod |

FSd

* HIGH & LOW TEMPERATURE ALARM DELAY (tdy)

The maximum permitted time that Set Point Temperatures can be exceeded before triggering an alarm. This time delay prevents alarms triggering due to momentary temperature spikes.

This function is disabled when set to 'oFF'.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| tdy | Alarms | oFF | 1 min | oFF | SP |

tdy

* HIGH & LOW TEMPERATURE ALARM DIFFERENTIAL (tAd)

The differential below the High Temperature Alarm Set Point (htA), and above the Low Temperature Alarm Set Point (LtA) which resets the audible alarm.

Note that the alarm will still be shown on the display until it is acknowledged by the user.

* Associated alarm not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| tAd | Alarms | 0 °C to 5 °C | 1 °C | 1 °C | htA, LtA, tdy |

tAd

Normal - Adv (nrL) - cont*** PRODUCT OUT OF SPECIFICATION ALARM (PCA)**

The duration of the audible alarm due to the Product stored in the cabinet being out of temperature specification. Please also refer to the htA and LtA parameters which define the temperatures which will trigger this audible alarm. If the audible alarm times out, the alarm will still be shown on the display until it is acknowledged by the user.

oFF = Fully disabled alarm. The alarm display and the audible alarm are both disabled.

0 mins = Partially disabled alarm. The alarm shows on the display, but is disabled audibly.

Note: even when 'oFF' is chosen, the alarm event is still logged and can be viewed by Service Technicians at a later date.

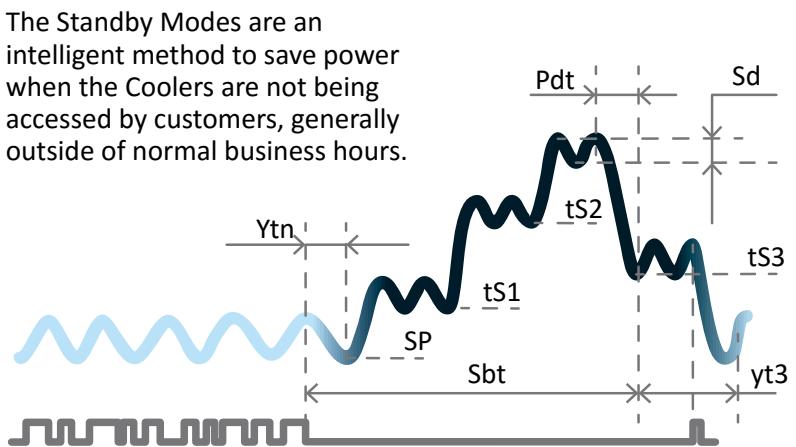
* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| PCA | Alarms | diSabled | 1 min | diSabled | htA, LtA 1 |

PCA

Standby - Adv (SdY)

The Standby Modes are an intelligent method to save power when the Coolers are not being accessed by customers, generally outside of normal business hours.



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The SCS™ Connect can manage this process to minimize the Pulldown time when businesses re-open, or it can maximize energy savings overall.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|----------------------------------|-----------------|-------|--------------------|-------------|---------|
| EVAPORATOR | | | | | |
| Evaporator Fan Control - Standby | Fby | | integers | 0 - 2 | 2 |
| Evaporator On Time - Standby | Fts | | 1min | 0 - 30 mins | 2 mins |
| Evaporator Off Time - Standby | Fos | | 1min | 0 - 30 mins | 2 mins |

Standby - Adv (SdY) - cont**EVAPORATOR FAN CONTROL - STANDBY MODE (Fby)**

This configures how the Evaporator Fan is controlled when the SCS™ Connect is in Standby Mode:

0 = The Evaporator Fan is on at LOW speed when the Compressor is on, and cycles with the NORMAL MODE duty parameters at LOW speed when the Compressor is off.

1 = The Evaporator Fan is on at LOW speed when the Compressor is on, and cycles with the STANDBY duty parameters at LOW speed when the Compressor is off.

2 = Follows ALL Normal Mode settings and parameters.

F_by

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Fby | Evaporator | 0 - 2 | integers | 2 | SSP, FtS |

EVAPORATOR FAN ON TIME – STANDBY MODE (FtS)

The length of time the Evaporator Fan is on when the Compressor is off during full Standby Mode.

0 = The Evaporator Fan is always off.

Please note: The total Evaporator Fan cycle = the on time + the off time. Please also refer to FoS.

Note: This is only active when Fby = 1

F_ts

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| FtS | Evaporator | 1 to 180 secs | 1 sec | 120 secs | FoS |

EVAPORATOR FAN OFF TIME – STANDBY MODE (FoS)

The length of time the Evaporator Fan is off when the Compressor is off during full Standby Mode.

0 = The Evaporator Fan is always on.

Please note: The total Evaporator Fan cycle = the on time + the off time. Please also refer to FtS.

Note: This is only active when Fby = 1

F_os

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| FoS | Evaporator | 0 to 180 secs | 1 sec | 0 secs | FtS |

Variable Speeds - Adv (???)

The Variable Speed settings are used to set different speeds when running in variable speed mode. If the evaporator and Condenser fan are both set to on/off mode, these parameters have no effect.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|-------------------------------------|-----------------|-------|--------------------|--------------|----------|
| TEMPERATURE | | | | | |
| Variable Evap Fan Temperature Range | Etr | 106 | 0.1 °C | 5.0 to 50 °C | 5.0 °C |
| SPEED | | | | | |
| Variable Evap Fan Speed - Default | ESd | 106 | 10rpm | 500 to 2300 | 1800 rpm |
| Variable Evap Fan Speed - Low | ESL | 106 | 10rpm | 500 to 2300 | 1300 rpm |
| Variable Cond Fan Speed - Default | CSD | 106 | 10rpm | 500 to 2300 | 1800 rpm |
| Variable Cond Fan Speed - Low | CSL | 106 | 10rpm | 500 to 2300 | 1300 rpm |
| TIME | | | | | |
| Variable Cond Fan Reverse Time | CRt | 106 | 1 min | 0 to 15 | 0 mins |

PARAMETERS

Variable Speeds - Adv (???) - cont

VARIABLE EVAP FAN TEMPERATURE RANGE (Etr)

The temperature ABOVE the current modes setpoint, at which the evap fan will run at the Variable Evap Fan Speed - Default. Speed increases linearly with temperature from Variable Evap Fan Speed - Default when control temperature equals setpoint temperature

Note: Only active when FCn = 4

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Etr | Temperature | 5.0 to 50.0 °C | 0.1 °C | 5.0 °C | |

Etr

VARIABLE EVAP FAN SPEED - DEFAULT (ESd)

The speed used for all basic evaporator fan operation when using a speed controlled motor. If a non-speed controlled motor is being used, this parameter is ignored

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| ESd | Speed | 500 to 2300rpm | 10 rpm | 1800 rpm | |

ESd

VARIABLE EVAP FAN SPEED - LOW (ESL)

The speed used as the evaporator fan slower speed if required based on configuration

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| ESL | Speed | 500 to 2300rpm | 10 rpm | 1300 rpm | |

ESL

VARIABLE COND FAN SPEED - DEFAULT (CSd)

The speed used for all basic condenser fan operation

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| CSd | Speed | 500 to 2300rpm | 10 rpm | 1800 rpm | |

CSd

PARAMETERS

Variable Speeds - Adv (???) - cont

[CSL]

VARIABLE COND FAN SPEED - LOW (CSL)

The speed used as the condensor fan slower speed if required based on configuration

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| CSL | Speed | 500 to 2300rpm | 10 rpm | 1300 rpm | |

[CRT]

VARIABLE COND FAN REVERSE TIME (Crt)

The time which the condensor fan will run in reverse at the low speed, before stopping, after the compressor has just been turned off. Only active with a speed controlled motor. If a non-speed controlled motor is being used, this parameter is ignored

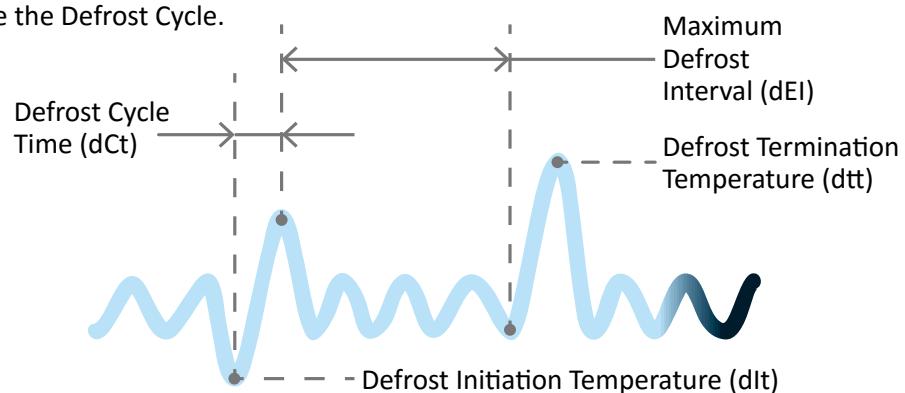
| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Crt | Time | 0 to 15 mins | 1 min | 0 mins | |

Defrost - Adv (dEF)

The Defrost Cycle can be initiated or terminated by either time or temperature. During the Defrost Cycle the Normal Operational Mode is over ridden to control the Compressor, Evaporator Fan, Lights, and if used, any valves or heater elements connected to the 5A Relay.

Supported Defrost Cycle methods are; hot gas defrost (reverse cycle), ambient defrost (with the compressor turned off), and a forced defrost (with an electric heater element).

These parameters provide the options to control and configure the Defrost Cycle.



| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|----------|----------|
| TEMPERATURE | | | | | |
| Freeze Up Protection Temperature | FPt | | 1 °C | disAbled | disAbled |
| TIME | | | | | |
| Defrost Initiation Delay | ddy | | 1 sec | 0 secs | 0 secs |
| Defrost Relay Output On Time Delay | dod | | 1 sec | 0 secs | 0 secs |
| No Downwards Tendency Defrost Time | ndt | | 1 hr | disAbled | disAbled |
| LIGHTING & DISPLAY | | | | | |
| Temperature Display Lock Time After Defrost | tdL | | 1 min | 0 mins | 0 mins |
| Force Lights On During Defrost | lod | | n/a | no | no |
| ALARMS | | | | | |
| Defrost Termination by Alarm Count | dtA | | 1 count | disAbled | disAbled |
| Freeze Up Protection Delay | FPd | | 1 min | 0 mins | 0 |

APPENDIX 2

Defrost - Adv (dEF) - cont*** FREEZE UP PROTECTION TEMPERATURE (FPt)**

The Evaporator Coil temperature below which the Compressor will turn off and the Evaporator Fan will turn on. This is to provide smart freeze up protection of the evap coil. Evaporator Fan on/off timers will be suspended until the temperature has risen above the Freeze-up protection temperature, and normal control has resumed.

Note: Only applicable when Evaporator Fan Coil sensor is allocated

* Not yet enabled

*** DEFROST INITIATION DELAY (ddy)**

The time the control temperature must be below the Defrost Initiation Temperature (dlt) before Defrost will be activated.

Please note: If the control temperature rises above the Defrost Initiation Temperature (dlt), the Defrost Initiation Delay (ddy) counter will be reset.

* Not yet enabled

*** DEFROST RELAY OUTPUT ON TIME DELAY (dod)**

The time needed to build up sufficient hot gas for a hot gas type defrost. This function is only used for hot gas type Defrost Cycles. It is defined as the amount of time the Compressor keeps running after a Defrost Cycle is triggered, while the Defrost Cycle Relay remains off. After this time has elapsed the Compressor turns off and the Defrost Cycle Relay turns on. This parameter is only used when dtP is set to 2.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dod | Time | 0 secs | 1 sec | 0 secs | dtP, dFS |

Defrost - Adv (dEF) - cont*** NO DOWNTURNS TENDENCY DEFROST TIME (ndt)**

The time allowed while the compressor is on without the temperature reducing, before a defrost cycle is forced.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| ndt | Time | disabled | 1 sec | 0 secs | dtP, dFS |

*** TEMPERATURE DISPLAY LOCK TIME AFTER DEFROST (tdL)**

The time the display will continue to show the value as defined by Display Value During Defrost Cycle (ddE) once the Defrost Cycle has finished. This delay allows the internal cabinet temperature to re-stabilize before displaying the actual temperature. If the cabinet temperature reaches the Operational Set Point Temperature (SP) before the Lock Time (tdL) has elapsed, the display will revert to Normal Display Mode (dis).

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| tdL | Lighting & Display | 0 mins | 1 min | 0 mins | ddE, dis, SP |

*** FORCE LIGHTS ON DURING DEFROST (lod)**

Forces the cabinet lights to come on during a Defrost, should the lights be turned off. This helps warm up the cabinet. This function is of most use when fluorescent lamps are fitted.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| lod | Lighting & Display | no | n/a | no | LSy |

APPENDIX 2

* DEFROST TERMINATION BY TIME ALARM COUNT (dtA)
The number of defrost termination by time instances that can occur before an alarm is triggered. Used where defrost termination by temperature is the expected norm.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| dtA | Alarms | disAbled | 1 count | disAbled | |

* FREEZE UP PROTECTION DELAY (FPd)

Temperature below which the compressor will turn off and the evaporator fan will turn on, overriding any other settings. This is to prevent the evaporator coils from freezing up in the case of a low temperature overshoot.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| FPd | Alarms | 0 mins | 1 min | 0 | |

APPENDIX 2

Door - Adv (dor)

The SCS™ Connect uses the cabinet door switch as an input device to help control the Evaporator Fan, Lights and to initiate Alarms. Please note: Should the door switch fail, these parameters will not function correctly.

dor

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---------------------------------------|-----------------|-------|--------------------|--------------------|---------|
| TEMPERATURE | | | | | |
| Sensorless Door Threshold | sdt | | 0.01 °C | 0 .10°C to 1.00 °C | 0.5 °C |
| EVAPORATOR | | | | | |
| Evaporator Fan Control When Door Open | Fdo | | integer | 0 - 3 | 0 |
| TIME | | | | | |
| Door Switch Fail Delay | dFd | | 1 min | 5 mins to 15 mins | 10 mins |

SENSORLESS DOOR THRESHOLD (sdt)

The sensitivity to a temperature change for determining a sensorless door opening.

sdt

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|--------------------|--------------------|---------|---------------|
| sdt | Temperature | 0.10 °C to 1.00 °C | 0.01 °C | 5.00 °C | |

EVAPORATOR FAN CONTROL WHEN CABINET DOOR OPEN (Fdo)

Selects how the Evaporator Fan is controlled when the door is open. This is to allow the fan to continuously run, which can be beneficial by maintaining an air curtain.

0 = The Evaporator Fan is turned off while the door is open.
1 = The Evaporator Fan is turned on at DEFAULT speed while the door is open.

2 = The Evaporator Fan is turned on at LOW speed while the door is open.

3 = The Evaporator Fan is controlled as if the door was not open.

Fdo

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Fdo | Evaporator | on or off | text | off | Fby, FCn |

APPENDIX 2

Door - Adv (dor) - cont

DOOR SWITCH FAIL DELAY (dFd)

The time after a door is seen as open, before the system determines the door switch has failed. After this time, the system will ignore the door switch and run normally, until a door closed state is seen, which resets the timer.



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| dFd | Time | 5 mins to 15 mins | 1 min | 10 mins | |

Compressor - Adv (CoP)

These parameters provide options to control and configure the Compressor during different parts of the refrigeration cycle and to configure the Compressor Alarms.

CoP

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|-------------------|-----------------|
| TEMPERATURE | | | | | |
| Return Air Under Temp Differential | rud | | 0.1 °C | 0.1 °C to 15.0 °C | 3 °C |
| TIME | | | | | |
| Minimum Run Time | rnt | | 10 sec | 0secs | 0 secs |
| Sensor Failure Compressor Override Time | SCt | | 1 hour | dISabled | dISabled |
| Sensor Failure Compressor Off Time | SCo | | 1 min | 1 to 60 mins | 30 mins |
| Sensor Failure Compressor On Time | SCR | | 1 min | 1 to 60 mins | 10 mins |
| ALARMS | | | | | |
| High Temperature Delay | htd | | 1 sec | 10 secs | 10 secs |
| High Temperature Differential | htF | | 1 °C | 20 °C | 20 °C |
| High Temperature Lockout Count | htC | | counts | dISabled | dISabled |
| Condenser High Temperature Alarm | ChA | | 1 min | dISabled | dISabled |

APPENDIX 2

Compressor - Adv (CoP) - cont

RETURN AIR UNDER TEMP DIFFERENTIAL (rud)

The temperature below the normal mode setpoint at which all outputs will be turned off. This is to compensate for incorrect wiring, where the compressor may be wired to a different output, resulting in continuous compressor running, even though the controller thinks the compressor is off. Normal operation will resume once the setpoint + differential of the current mode is reached.

rud

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-------------------|--------------------|---------|---------------|
| rud | Temperatuue | 0.1 °C to 15.0 °C | 0.1 °C | 3 °C | |

* MINIMUM RUN TIME (rnt)

The minimum time that the Compressor will run, unless a protective control limit stops it. This function is used to reduce the number of Compressor starts per hour to improve efficiency.

rnt

* Not yet adjustable

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| rnt | Time | 0 secs | 10 secs | 0 secs | Pod, Cot |

* SENSOR FAILURE COMPRESSOR OVERRIDE TIME (SCt)

Time after the control temperature sensor has failed, in which the compressor will run using the ON/OFF times, before the compressor will shut down.

SCt

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| SCt | Time | disAbled | 1 hour | disAbled | |

* SENSOR FAILURE COMPRESSOR OFF TIME(SCo)

The OFF duty time of the compressor, when the control temperature probe has failed

SCo

* Functionality not yet enabled (See SCt)

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| SCo | Time | 1 to 60 mins | 1 min | 30 mins | |

Hardware - Adv (dSP) - cont**ELECTRONIC EXPANSION VALVE PORT CONFIGURATION (EEC)**

Selects the Electronic Expansion Valve Port.

N.C. = Not Connected

DSO* = Digital Switched Output:

AD5 = Digital 0 – 5V i/p, Analog NTC i/p, 5V 300mA o/p

LE1 – LE3 = PWM 0V 2A DC per channel

* Not yet enabled

EEC

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| EEC | Outputs | N.C. | Port ID | N.C. | |

Compressor - Adv (CoP) - cont

* SENSOR FAILURE COMPRESSOR ON TIME (SCr)

The ON duty time of the compressor when the control temperature probe has failed

* Functionality not yet enabled (See SCt)



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| SCr | Time | 1 to 60 mins | 1 min | 10 mins | |

* HIGH TEMPERATURE LOCK OUT COUNT (htC)

The number of times that the Condenser can exceed the Condenser High Temperature Limit (hCt) before it is locked out to prevent damage. Important Note: This protective function cannot be reset by power cycling the cabinet on and off; it can only be reset by an authorized Service Technician.

* Not yet enabled



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| htC | Alarms | disAbled | single counts | disAbled | ASP |

* HIGH TEMPERATURE DIFFERENTIAL (htF)

The temperature below the Condenser High Temperature Limit (hCt), which will allow the Compressor to turn back on after a Condenser High Temperature Limit (hCt) event. The temperature must remain below this level for the time period defined in High Temperature Reset Delay (htr) before the Compressor will turn back on.

* Not yet adjustable



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| htF | Alarms | 20 °C | 1 °C | 20 °C | htA, htr |

Compressor - Adv (CoP) - cont*** HIGH TEMPERATURE LOCK OUT COUNT (htC)**

The number of times that the Condenser can exceed the Condenser High Temperature Limit (hCt) before it is locked out to prevent damage. Important Note: This protective function cannot be reset by power cycling the cabinet on and off; it can only be reset by an authorized Service Technician.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| htC | Alarms | diSabled | single counts | diSabled | ASP |

*** CONDENSER HIGH TEMPERATURE ALARM (ChA)**

The duration of the audible alarm due to the Condenser Temperature being continuously above normal operating temperature. Please refer to the Condenser High Temperature Limit (Cht) parameter.

oFF = Fully disabled alarm. The alarm display and the audible alarm are both disabled.

0 mins = Partially disabled alarm. The alarm shows on the display, but is disabled audibly.

Note: even when 'oFF' is chosen, the alarm event is still logged and can be viewed by Service Technicians at a later date.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| ChA | Alarms | diSabled | 1 min | diSabled | Cht |

Supply - Adv (nrG)

The Supply Parameters are used to configure the acceptable limits for the Voltage supply and to configure the associated alarms. This is required to protect the refrigeration system from electrical damage.



| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|--------------------------------|-----------------|-------|--------------------|-----------------------------------|------------------|
| SUPPLY | | | | | |
| Minimum Run Compressor Voltage | LrC | | 1 V | 79 V to 203 V or dis abled | 80 V |
| Voltage Cut-In/Out Delay | Plo | | 1 sec | 10 secs | 10 secs |
| Out Of Voltage Count Limit | oPC | | counts | dis abled | dis abled |
| ALARMS | | | | | |
| Duration High Voltage Alarm | dhA | | 1 min | 0 mins | 0 mins |
| Duration Low Voltage Alarm | dLA | | 1 min | 0 mins | 0 mins |

MINIMUM RUN COMPRESSOR VOLTAGE (Lrc)

The minimum Voltage during which the Compressor is allowed to continue to run. If it is below this Voltage the Compressor cannot run and turns off. If the Voltage rises to an acceptable level then the Compressor can restart, but only after the Voltage has been maintained for a delay period. These events are logged in the SCS™ Connect.

oFF = Run Voltage equals Start Voltage.

*** VOLTAGE CUT-IN/OUT DELAY (Plo)**

The time that the power supply must exceed the Over Voltage or Under Voltage conditions, before devices are turned off. The purpose of this time delay is to allow for momentary spikes in the power supply.

* Not yet adjustable



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| Plo | Supply | 0 to 20 secs | 1 sec | 10 secs | hPC, LPC, Lrc |



Supply - Adv (nrG) - cont*** OUT OF VOLTAGE COUNT LIMIT (oPC)**

The number of Over Voltage or Under Voltage instances permitted in a 24 hour period before an alarm is triggered. Selecting '0' as the count number will cause an alarm to trigger on every event.

* Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| oPC | Supply | diSabled | single counts | diSabled | hPC, LPC, LrC |

*** DURATION HIGH VOLTAGE ALARM (dhA)**

The duration of the audible alarm due to excessive High Voltage. Please also refer to the Maximum Run/Start Voltage (hPC).

oFF = Fully disabled alarm. The alarm display and the audible alarm are both disabled.

0 mins = Partially disabled alarm. The alarm shows on the display, but is disabled audibly.

Note: even when 'oFF' is chosen, the alarm event is still logged and can be viewed by Service Technicians at a later date.

* Not yet adjustable

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dhA | Alarms | 0 mins | 1 min | 0 mins | hPC |

*** DURATION LOW VOLTAGE ALARM (dLA)**

The duration of the audible alarm due to Under Voltage. Please also refer to the LPC and LrC parameters.

oFF = Fully disabled alarm. The alarm display and the audible alarm are both disabled.

0 mins = Partially disabled alarm. The alarm shows on the display, but is disabled audibly.

Note: even when 'oFF' is chosen, the alarm event is still logged and can be viewed by Service Technicians at a later date.

* Not yet adjustable

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| dLA | Alarms | 0 mins | 1 min | 0 mins | LPC, LrC |

Display - Adv (dSP)

These parameters configure what is shown on the display during different control modes and conditions.



| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|--------------------------------------|-----------------|-------|--------------------|----------|----------|
| TIME | | | | | |
| Downwards Temperature Display Filter | ddF | | 1 secs | disAbled | disAbled |

*** DOWNWARDS TEMPERATURE DISPLAY FILTER (ddF)**

The time constant of the response of the display during a downwards temperature change when required to be different to an upwards temperature change. This prevents misleading temperature spikes being shown, while allowing a fast downwards response. If this is disabled, then the filter value used will be the same as that chosen for udf.

* Not yet enabled



| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|----------|---------------|
| ddF | Time | disAbled | 1 secs | disAbled | udF |

Hardware - Adv (???)

These parameters configure what is shown on the display during different control modes and conditions.

| Parameter Name | Digital Display | Pages | Increments & Units | Range | Default |
|---|-----------------|-------|--------------------|--------|---------|
| OUTPUTS | | | | | |
| External Buzzer Port Configuration | EbC | | Port ID | N.C. | N.C. |
| External Buzzer State | EbS | | integers | 0 or 1 | 0 |
| Electronic Expansion Valve Port Configuration | EEC | | Port ID | N.C. | N.C. |

EXTERNAL BUZZER PORT CONFIGURATION (EbC)

Selects the External Buzzer Port. Please also refer to External Buzzer State (EBS)

N.C. = Not Connected

AD5* = Switched 24V o/p

*Not yet enabled

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| EbC | Outputs | N.C. | Port ID | N.C. | |

EXTERNAL BUZZER STATE (EbS)

Selects the state when the Buzzer is off. Please also refer to the External Buzzer Port Configuration (EBC).

0 = Switched 24V open when buzzer off

1 = Switched 24V closed when buzzer off

* Functionality not yet enabled (See EbC)

| Digital Display | Functional Category | Parameter Range | Increments & Units | Default | Related Menus |
|-----------------|---------------------|-----------------|--------------------|---------|---------------|
| EbS | Outputs | 0 or 1 | integers | 0 | |