

SHC-3

issue A Feb 04

PANEL OPERATION

The SHC-3 operator display panel has five cursor control buttons, four menu function buttons and a LCD screen. The buttons are used to select, display and change chiller parameters locally at the panel.

Cursor control buttons are vertical **Up** and **Down** arrows, horizontal **Left** and **Right** arrows and a central **Enter** button.

The four Menu buttons functions are dependent on the LCD display above.

On power up the **Product Startup** screen opposite is briefly displayed with product name and software version number.



DISPLAY



Display - Pack Overview

The default display is an overview of SHC-3 operating conditions with alarm status for measured values and compressor states. Values with unaccepted alarms flash and go steady black when accepted.

Time and date is displayed at the top right of the display.

When **Alarm** is pressed, the Alarm beeper is muted and any external flashing beacon is stopped.

Repeatedly pressing **Escape** or always reverts back to this display.



Further details of a particular section of the chiller are selected by using the keypad vertical and horizontal arrows to highlight the appropriate display tile name e.g. Chiller, Compressor 1 to 3 etc, followed by pressing **Enter**.

Alternatively, pressing the **Menu** button and then using the vertical and horizontal arrow buttons to select **Display, Chiller or Compr-'n'** followed by pressing the **Enter** button, also displays more details for the selected area.



Display Details - Chiller

The Chiller Details display provides value display and bar graph icons of measured temperatures and capacity with alarm status and operating control mode, status and trip input conditions.

Values with unaccepted alarms flash and go steady black when accepted. When **Alarms** is pressed, the Alarm beeper is muted and any external flashing beacon is stopped.

Pressing **Escape** reverts back to the previous screen display.



Display Details - Compressor 1-3

The detail display for each individual compressor gives pack control mode and status, measured values of chiller outlet temperature and compressor capacity with associated bar graph icons and alarm states. In addition, the display includes values of the compressor timer, hours run by the compressor, any active safety trips, plus the appropriate compressor motor relay output state icon..

Using the horizontal and vertical arrows to select a display tile followed by **Enter** displays the appropriate parameter settings (if available) for the selected item.(see Change Compressor Settings later)

Pressing **Alarms** gives the Alarm List below.

Pressing **Escape** reverts back to the previous screen display.

CONTROL



PACK AUTO,HAND,OFF Control

If Logon has been selected then **Control** is displayed on the Pack Overview Menu bar for changing pack control mode.

When **Control** is pressed the Control Mode selection icon is displayed. Pack Control Mode is changed by using the vertical arrows to select the new mode **Auto**, **HAND**, **OFF**, followed by **Enter**.

When **Auto** is selected, the pack controls the chiller temperature automatically by increasing/decreasing the pack capacity.

The Pack status tile displays **Auto**.

When **HAND** is selected, **????**

When **OFF** is selected all compressors in the pack are immediately stopped.

The Pack status tile displays **OFF**.

Compressor Hand Control

If Logon has been selected then **Control** is displayed on each Compressor Detail Menu bar. When **Control** is pressed the Control Mode selection icon is displayed. Compressor Control Mode is changed by using the vertical arrows to select the new mode for the selected compressor:- **Auto**, **HAND**, **OFF**, followed by **Enter**.

When **Auto** is selected, the compressor reverts to automatic control. The Compressor status tile displays **Run** or **Stop**.

When **HAND** is selected, the compressor menu bar is changed to allow operator control of the individual compressor motor compressor **Start** (if stopped) or **Stop** (if running) and capacity control using **Raise**, **Lower** buttons.

The Compressor status tile displays **HAND**.

When **OFF** is selected the compressor is immediately put out of use and stopped. The Compressor status tile displays **OFF**

The compressor will not restart until **HAND** or **Auto** are reselected for the compressor.



ALARMS



Alarm List

The first page of the **Alarm List** is displayed either by pressing the **Alarms** menu button on the Menu Bar or by pressing the **Menu** button and then using the vertical arrow buttons to select **Alarm List** followed by pressing the **Enter** button.



The **Alarm List** is displayed with most recent alarms at the top with eight messages per page. The alarm list holds the last 100 alarm messages generated for the system. Each message includes the time and date of occurrence, the system reference number and the reason for the alarm.

Accepted alarms have the alarm reason in black.

Unaccepted alarms are flashing.

Alarms are selected by the vertical arrow buttons prior to selecting the **ACCEPT** or **RESET** menu buttons.

Selecting the **down** arrow on the last item of the list displays the next eight messages.

Pressing **Escape** reverts back to the previous screen display.



MENU

SETUP - Change Settings

General

Pressing the **Menu** button allows vertical and horizontal arrow selection of **Setup** parameters for Pack, Chiller, Compressors 1-3 and control Unit.

Pressing **Enter** displays the selected **Setup** screen.

Prior to any change of settings the correct Logon passcode must have been entered.

If the logon passcode is entered incorrectly then the settings may be displayed but not changed.

Language and other system settings such as time & date and display contrast etc. are changed using the **System** menu selection

Select Setup parameter group

To change parameter settings, press **Menu** and then use vertical arrows to select **Setup**.

Use horizontal and vertical arrows to select the required parameter group:- **Pack, Chiller, Compr-1 to 3, or Unit** and then press **Enter**.



Pack	SETUP	Value	Units
00001	Current transformer size (0=No CT)	100	Wamp
00002	High total current AMPS alarm level	100	Wamp
00003	High level guardtime	0	mins
00004	Fastband up	0.5	°C
00005	Fastband up control algorithm	9	
00006	Fastband Down	0.3	°C
00007	Fastband down control algorithm	9	
00008	L.P. Fault reset (Manual/Auto)	Manual	

The appropriate **Setup** screen is then displayed with all parameters associated with the item.

The five digit number in front of each parameter line is the **Modbus Point Number** for the parameter.

Use the **up, down** vertical arrows to select the parameter setting to be changed and press **Enter**.

Display	Pack	Timer
Setup	Chiller	
Logon	Compr-1	
Logoff	Compr-2	
Alarm List	Compr-3	
Language	Unit	
System		

To change **Pack Timers** parameter settings, press **Menu** and then use vertical arrows to select **Setup**.

Use horizontal and vertical arrows to select group:- **Pack, Timers** and then press **Enter**.

Pack Timer	SETUP	Value	Units
00017	Stage up time	1	mins
00018	Stage down time	1	mins
00019	Capacity increase	28	secs
00020	Capacity decrease	30	secs
00021	After stop delay time	1	mins
00022	Starts per hour allowed for compressor	10	
00023	Power on restart delay	1	mins

Provided Logon is selected, the setting change icon is displayed with either latest setting value, maximum and minimum limits or selection names text eg Yes/ No.

Use vertical arrows to increase or decrease value or select text.

Press **Enter** to enter new setting.

Press **Escape** to ignore changes

Press **Escape** again to return to previous screen.

Chiller Outlet	SETUP	Value	Units
00009	Chiller Temperature Cutin setpoint	4.5	°C
00010	Control deadband (Cutout=Cutin-db)	0.2	°C
00011	Temperature Low Trip limit	3.0	°C
00012	Temperature Low alarm limit	3.5	°C
00013	Low level guardtime	0	mins
00014	Temperature High alarm limit	6.0	°C
00015	High level guardtime	1	mins

Other Setup Screens for the SHC-3 are as follows.

These Setup screens can be also be selected from Detail display screens by pressing **Enter** when appropriate display tile has been selected by horizontal arrows.

Compressor	SETUP	Value	Units
00025	Chiller Type (SHC)	SHC-2	
01001	Compressor 1 Enable	Yes	
02001	Compressor 2 Enable	Yes	
03001	Compressor 3 Enable	No	
01002	Adjust Compressor 1 Run Hours	64000	hrs
02002	Adjust Compressor 2 Run Hours	56000	hrs
03002	Adjust Compressor 3 Run Hours	25000	hrs

Unit	SETUP	Value	Units
Unit RS485 Comms Active		Yes	
Alarms Active		Yes	
Panel Reference		01	
Unit No.		01	
Modbus slave address		25	
Unit Model for SHC 3		SHC-2	
Power ON wait delay		0	mins

Menu Alarms Escape

LOGON



LOGON

The correct Logon code must be entered prior to any change of passcode protected settings or control action.

The passcode is entered after pressing **Menu** followed by vertical arrow selection of **Logon** followed by Enter.

This displays the passcode change icon with setting value, maximum and minimum limits.

Use the vertical arrows to increase or decrease the displayed number to the correct passcode value.

Press **Enter** to set the passcode. A marker block next to Logon indicates that the passcode has been successfully entered.

Pressing **Escape** reverts back to the previous screen display.

LOGOFF



LOGOFF

To logoff, press **Setup** and use vertical arrows to select **Logoff** and press **Enter**. A marker block next to Logon moves to Logoff to indicate that the system is now passcode protected.

The panel automatically reverts back to the previous screen display.

LANGUAGE



LANGUAGE

To change display screen Language, press **Menu** button and use vertical and horizontal arrows buttons to select **Language**, **English** or **Chinese** and then press **Enter**.

All subsequent display screens are in the selected Language

SYSTEM



Change TIME and DATE

The Time and Date is normally displayed in the box at the top right of the display screen.

To change Time and Date, press **Menu** button and use vertical and horizontal arrows buttons to select menus **System, Time & Date** and then press **Enter**.

This displays the TIME & DATE screen with latest time and date clock values.



Use vertical arrows to select parameter setting to be changed and press **Enter**. This displays the setting change icon with setting value, maximum and minimum limits.

Use vertical arrows to increase or decrease value.

Press **Enter** to enter new setting.

Press **Escape** to ignore change

Pressing **Escape** again reverts back to the previous screen display.



Change LCD Display CONTRAST

The LCD Panel contrast can be altered by pressing **Menu** button and use vertical and horizontal arrows buttons to select menus **System, Contrast** and then press **Enter**.

This displays the setting change icon with setting value, maximum and minimum limits.

Use vertical arrows to increase or decrease new contrast value.

Press **Enter** to enter new passcode setting.

Press **Escape** to ignore change



Change PASSCODE

To change the passcode, press **Menu** button and use vertical and horizontal arrows buttons to select menus **System, Passcode** and then press **Enter**.

This displays the setting change icon with setting value, maximum and minimum limits.

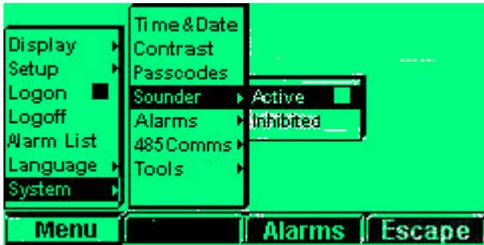
Use vertical arrows to increase or decrease new passcode value.

Press **Enter** to enter new passcode setting.

Press **Escape** to ignore change

Pressing **Escape** again reverts back to the previous screen display
Subsequent Logon passcode entries will only work with the new passcode.

If the passcode is set to 00 or default -01 then Logon is permanently active and passcode protection facilities are ignored.



Change System settings for Sounder,

To activate or deactivate the Alarm sounder in the panel, press **Menu** button and use vertical and horizontal arrows buttons to select menus **System, Sounder, Active** or **Inhibited** and then press **Enter**.

This activates or inhibits the Sounder and indicates the current selection with a marker block.



Change System settings for Alarms,

To activate or deactivate all alarms, press **Menu** button and use vertical and horizontal arrows buttons to select menus **System, Alarms, Active** or **Inhibited** and then press **Enter**.

This activates or inhibits all Alarm actions and indicates the current selection with a marker block.



Change System settings for RS485 Communications.

To activate or deactivate all RS485 communications, press **Menu** button and use vertical and horizontal arrows buttons to select menus **System, 485 Comms, Active** or **Inhibited** and then press **Enter**.

This activates or inhibits all RS485 communication scanning and indicates the current selection with a marker block.

Special Functions

Clear Alarm List

The contents of the Alarm List may be cleared by simultaneously holding down the **Accept** and **Reset** buttons for 10 seconds when the Alarm List is on display.

Forgotten Passcode

Powering up the SHC-3 panel with the **Up** and **Down** vertical arrow buttons pressed for 5 seconds will clear a forgotten passcode and give a permanent Logon.

The following message is displayed:-

"Passcode has been set to default. Release buttons to continue."

A new passcode can be entered in the normal manner after selecting:- **Menu, System, Passcodes.**

Modbus Addressing for GC064



For correct SHC-3 operation, GC064 digital I/O Compressor extension units need to be setup with Modbus Addresses 1,2 and 3. for compressors 1,2 and 3.

This is done using the **SET** pushbutton and **LED** on the GC064 front panel

Address Check Procedure

For each unit power off, depress the pushbutton with a pencil / ballpoint pen and power on. The LED lights.

Release the pushbutton. The LED goes out, waits and then flashes the current address eg 3 pulses for Modbus address 3, waits again and then goes steady.

Address Change Procedure

For each unit power off, depress the pushbutton with a pencil / ballpoint pen and power on. The LED lights.

Release the pushbutton. The LED goes out, waits and then flashes the current address eg 3 pulses for Modbus address 3, waits again. Before the lamp comes on steady again, quickly depress the pushbutton the number of times for the new address e.g. press twice for address 2. The Led lamp then waits, flashes the new address, waits and then goes steady.

The new address selection can be checked as above.