GUARDIAN CONTROLS
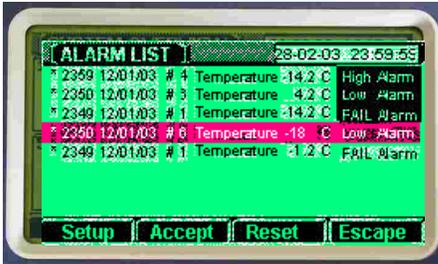international

REFRIGERATION CONTROL & MONITORING

TM-8

Temperature Monitor

TM-8 provides display of measured values, alarm limits adjustment and alarm status monitoring from up to **eight** PT100 temperature probes.
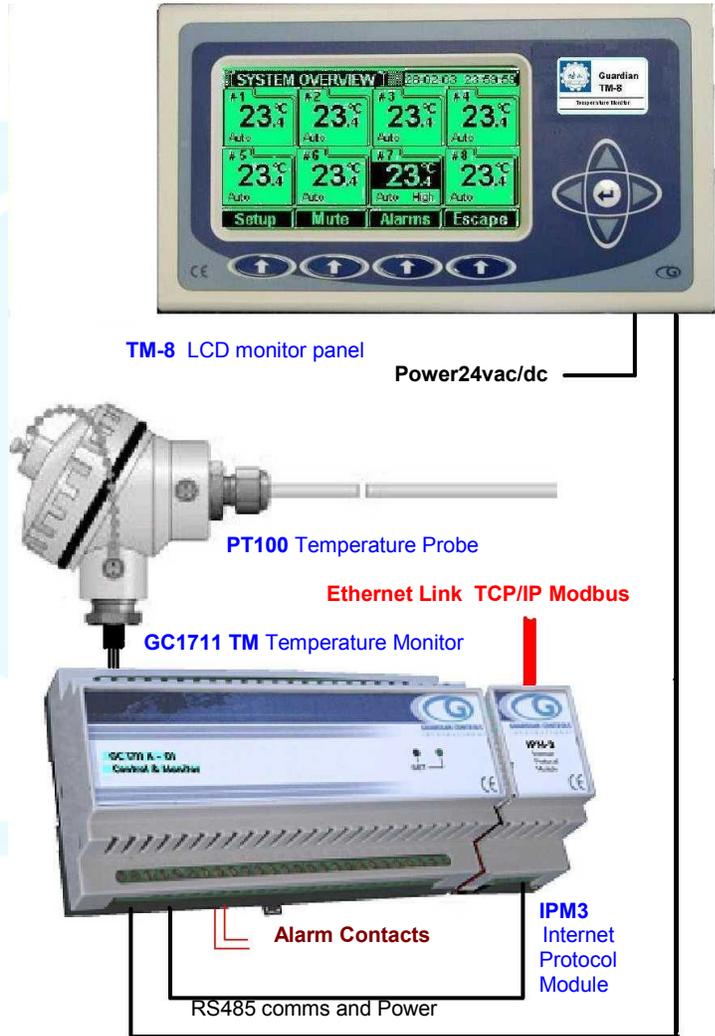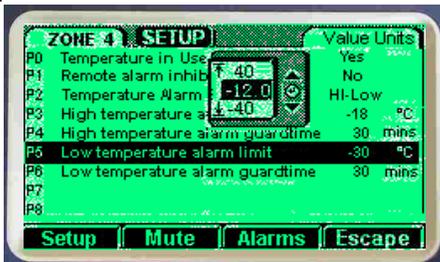
Large character LCD displays of temperature values and flashing alarm states and beeper provide site personnel with instant awareness of any abnormal plant operating conditions.

- Simultaneous display of eight temperatures with alarm status
- Alarm List with date, time and alarm description
- Simple menu setup of Alarm Limit settings
- Alarm contacts for local flashing beacon or remote teledialler
- English-Chinese display language selection
- RS485 Modbus communications
- Panel mounting unit
- Optional IP interface provides Modbus TCP/IP or HTTP protocols for Web pages and Emails

An Alarm List of all alarm messages may be displayed by pressing the 'Alarms' pushbutton.

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Alarms Limits and guard time delays for each temperature zone are easily adjusted using the 'Setup' menu

TM-8 LCD monitor panel

Power24vac/dc

PT100 Temperature Probe

Ethernet Link TCP/IP Modbus

GC1711 TM Temperature Monitor

Alarm Contacts

IPM3
Internet Protocol Module

RS485 comms and Power

Guardian Products incorporate the experience accumulated during two decades of microprocessor control of commercial & industrial refrigeration

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REFRIGERATION CONTROL & MONITORING

SYSTEM OVERVIEW

The LCD 8 -TM Alarm display panel is connected to a GC1711-TM16 monitor unit which measures the temperatures.

The interconnecting cable provides power and RS485 communications between the two units. Communications are 2-wire RS485 Modbus protocol. The two units can be up to 1000 metres apart.
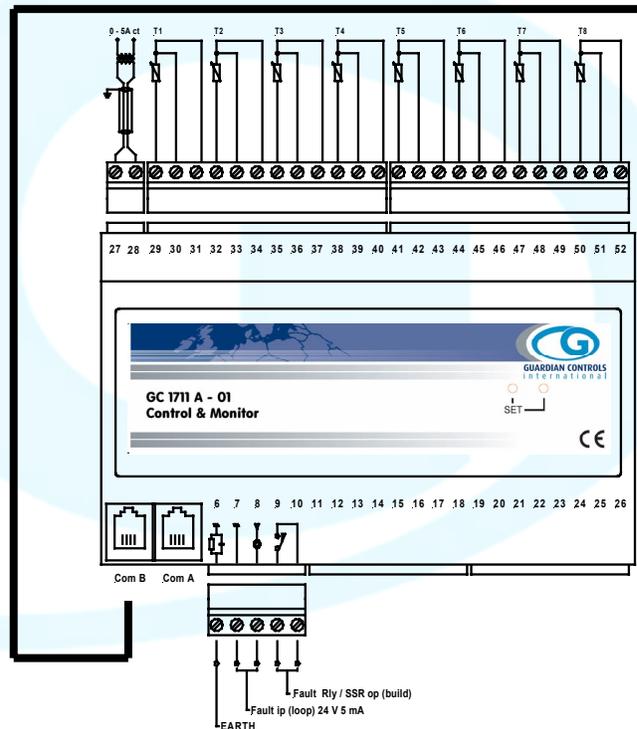
The GC1711-TM monitor unit is configured for measuring the eight PT100 temperature probes. This unit system requires power at 24vac/dc into socket COM A

OPTIONS
Internet

An optional IPM-3 Internet Protocol (IP) module allows network connection to the Internet for remote monitoring using Modbus over TCP/IP, Email alarm messages and Web page displays.

SPECIFICATIONS	LCD 8-TM	GC1711 A-01		
	Alarm Monitor	**Control & Monitor**		
Power	24 V dc	24 V dc		
Operation	0 to 50 C	0 to 50 C	**Analog Inputs**	
Dimensions Height	125 mm	86 mm	3-wire PT100	**8**	PT100 temperatures
Length	210 mm	156 mm			-100.0 C to +200.0 C
Depth	45 mm	59 mm			
Mounting	Door Cutout **115 x200** mm	Rail Mounting	**Relays**		
Communications Links Modbus RS484 @ 19200 baud	COM A, COM B 4-way sockets	COMA, COMB 4-way sockets	5A 230vac	**1**	Alarm relay (n/o)
Approvals	**CE**	**CE**		

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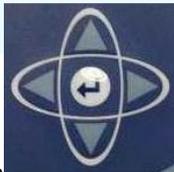REFRIGERATION CONTROL & MONITORING

TM-8   # PANEL OPERATION

The TM-8 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** Arrow
vertical **Down** Arrow
horizontal **Left** Arrow
horizontal **Right** Arrow
and a central **Enter** button.

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

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

OVERVIEW   Escape

Display - Pack Overview
The default display is an overview of Temperature zones with alarm status for measured values
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 zone are selected by using the keypad vertical and horizontal arrows to highlight the appropriate display tile name e.g. Zone 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,** followed by pressing the **Enter** button, also displays more details for the selected area.

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REFRIGERATION CONTROL & MONITORING

ALARMS

Mute

To silence Alarm Sounder press **Mute** button
To inhibit alarm beeper use Menu, System, Sounder as below

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.

Display
Setup
Logon
Logoff
Alarm List
Language
System

Menu

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.

ALARM LIST			28-02-03 23:59:59
2359 21-02-04	#3	Temperature	-14.2 C High
2359 21-02-04	#3	Temperature	4.2 C Low
2359 21-02-04	#5	Temperature	-14.2 C FAIL
2359 21-02-04	#1	Temperature	-18 C Low
2359 21-02-04	#3	Temperature	-1.2 C FAIL

Menu **Accept** **Reset** **Escape**

Alarm Messages

When abnormal temperature conditions are detected the following
alarm messages are displayed in the Alarm List
High   - temperature above High Llimit for longer than Guardtime
Low   - temperature below Low Limit for longer than Guardtime
Fault 01 - probe giving open circuit reading
      02   - probe giving Short circuit reading
      03 - probe wiring incorrect

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REFRIGERATION CONTROL & MONITORING

MENU   Menu   SETUP - Change Settings

General

Pressing the **Menu** button allows vertical and horizontal arrow selection of **Setup** parameters for Zones1-8 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.
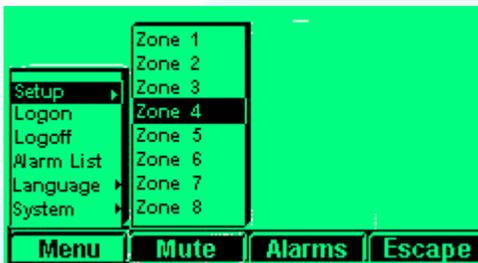
Language and other system settings such as time & date and display contrast etc. are changed using the **System** menu selection

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:-   **Zone 1 to 8** and then press **Enter.**

Just pressing **Enter** with Setup highlighted accesses **Unit** Setup.

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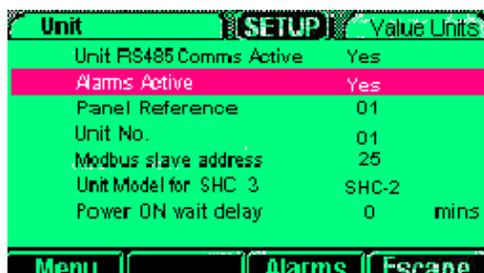
Provided Logon is selected, the setting change icon is displayed with either latest setting value, maximum and minimum limits or selection names text eg Yes/ No.

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.

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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.
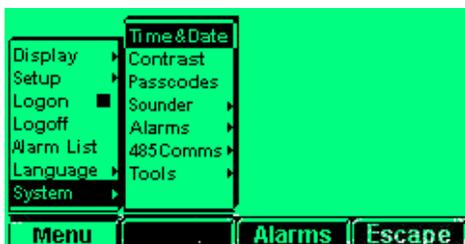
LANGUAGE

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.

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REFRIGERATION CONTROL & MONITORING

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 **Rese**t 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 GC1711 TM

For correct operation, GC1711-TM   units need to be setup with Modbus Address 1

This is done using the **SET** pushbutton and **LED** on the GC1711 front panel .

Address Check Procedure
For each unit power off, depress the pushbutton with a pencil orballpoint 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 or 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 once for address 1. The Led lamp then waits, flashes the new address, waits and then goes steady.
The new address selection can be checked as above.