



**C-VIGIL<sup>LTD</sup>**  
**marine**  
**GUARDIAN SYSTEMS**

2017

# GUARDIAN : THERMOGUARD



User Manual

**solo**  
*lone worker*

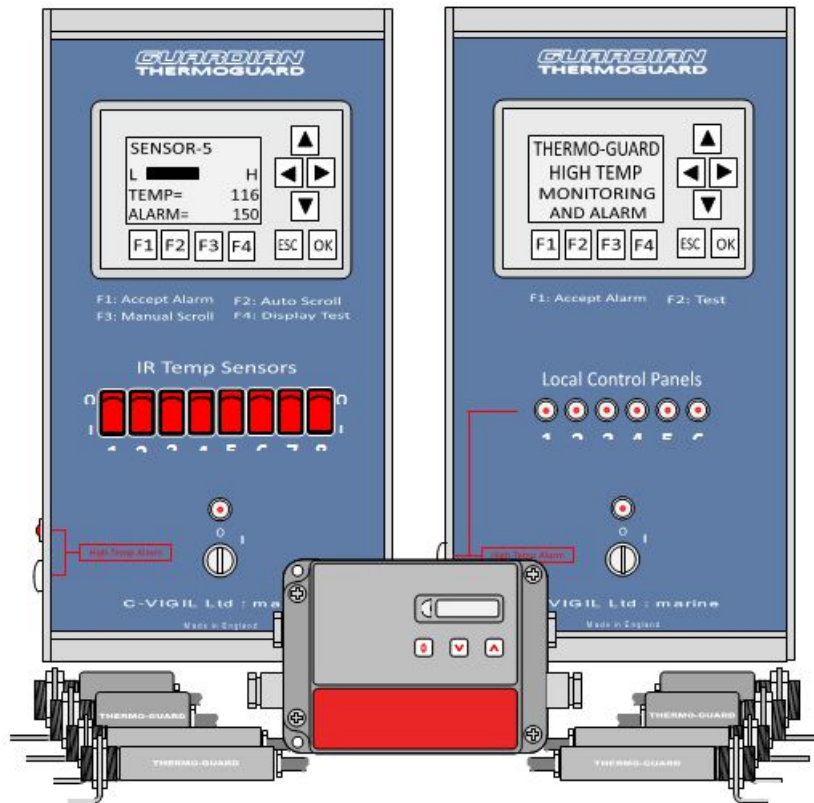
**sea-vu**  
*cctv systems*

**autoguard**  
*intruder detection*

**klarion**  
*arera denial*

**thermoguard**  
*critical °c monitoring*

**elevator**  
*lift car indication*



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# GUARDIAN : THERMOGUARD

## User Manual

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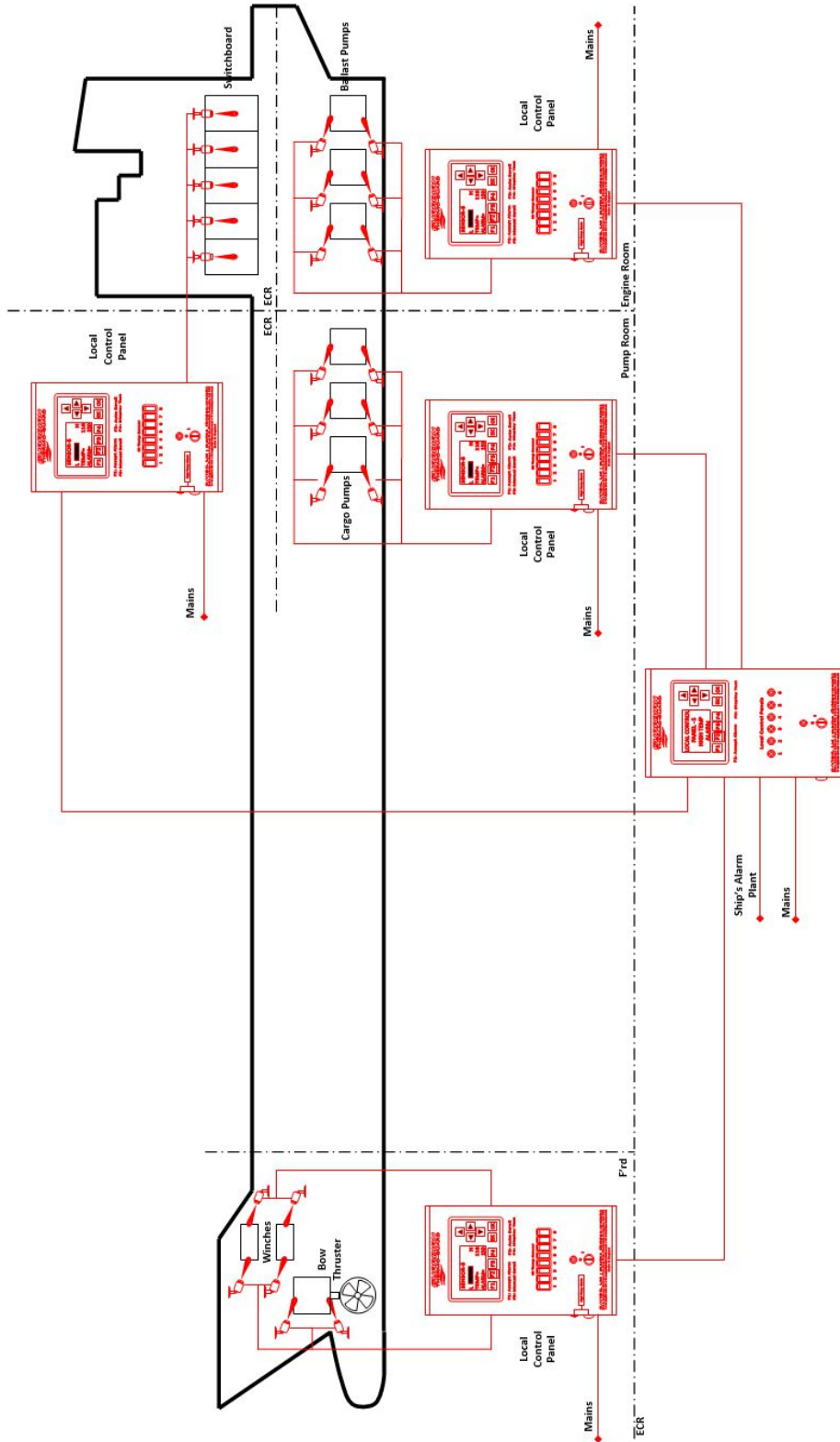
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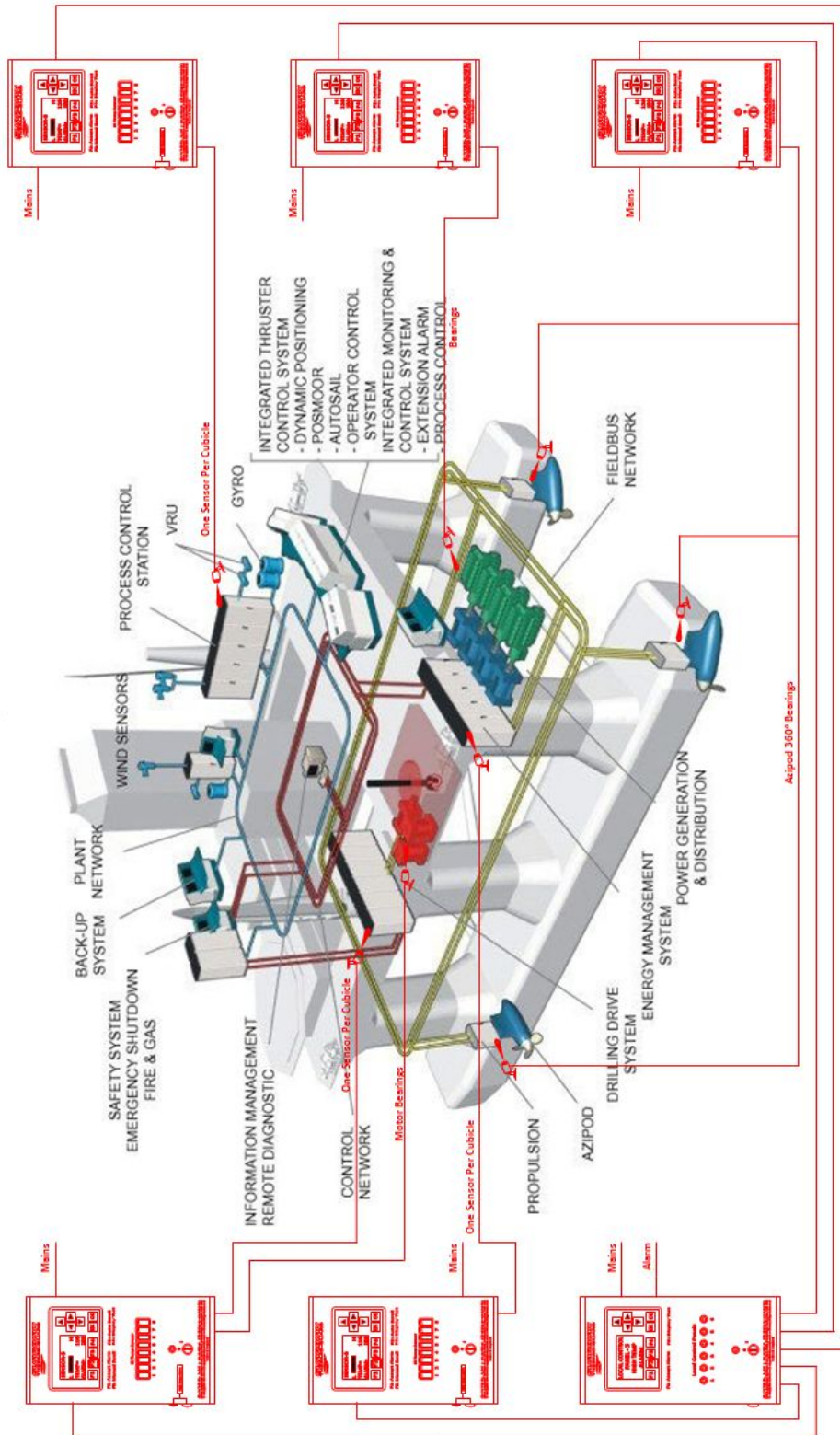
## Specifications

<b>THERMO-GUARD</b>	
<b>LOCAL CONTROL PANEL (LCP)</b>	
SIZE	280MM X 170MM X 90MM
POWER I/P	AC : 86 - 265V AC 50/60HZ or 24V
POWER O/P	24V DC
I/O	I/P : 0-10V O/P : N/O CONTACTS
IR TEMP SENSOR No.	UP TO 8 TEMP SENSORS PER LCP
<b>ALARM PANEL (AP)</b>	
SIZE	280MM X 170MM X 90MM
POWER	AC : 86 - 265V AC 50/60HZ or 24V
I/O	I/P N/O CONTACTS :- O/P : N/O CONTACTS
LCP No.	UP TO 6 LCPs PER ALARM PANEL
<b>IR TEMPERATURE SENSORS</b>	
SENSOR TYPE CT	28MM X 14MM DIA
POWER	24V DC
SENSOR TYPE CS	87MM X 12MM DIA
POWER	24V DC
<b>ATEX (EEX) KIT</b>	
SIZE	122MM X 122MM X 80MM
	24V DC

# Typical Overview - Ships



# Typical Overview - Offshore



# 1. General Description

## 1.1 Introduction

### **GUARDIAN : Thermo-Guard**

#### **Critical Machinery Monitoring : Non-Contact Infra-red (IR) Spot Radiometry Temperature Monitoring.**

**Protection for switchboards, switchgear, transformers, motors, pumps, cargo gear, HV, bearings...etc.**

Compact form non-contact IR sensors can be positioned to permanently monitor rotating contact areas, i.e. motor end covers with bearing keeps, shaft support pillar bearings, pump white metal bearings...etc.

It is often the case that the failure of 'small cost' items, such as bearings, can cause extremely expensive damaged to their associated machinery. As bearings start to deteriorate they tend to generate heat – this can be measured.

By monitoring bearing temperatures, this increase in normal running temperature can be flagged up before total failure and therefore hopefully save the parent machine.

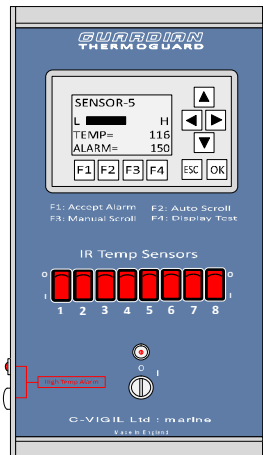
Switchboard failures are often preceded by bus-bar and switchgear temperature rise – again this can be measured.

Bus-bar fish plate joints can, due to vibration, work loose thereby causing heat rise through increased contact resistance. Support insulator breakdown can cause surface tracking - again causing dangerous heat rise.

ATEX (EEX) adapter kit (double zener barriers) available for hazardous area monitoring.

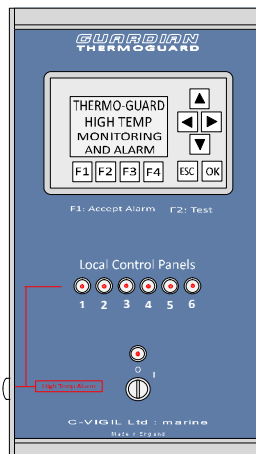
## 2. System Components

### 2.1 Local Control Panel (LCP)



LCP – can include up to 8 IR temperature sensors. The text display indicates the monitored machinery’s temperature and alarm set point. Should the temperature rise above the set point an alarm is initiated and the text display indicates which sensor is in alarm. Can also be connected to the alarm and monitoring system. For multi-panel system the LCP is connected to the Alarm Panel (AP) – see below.

### 2.2 Alarm Panel (AP)



AP – up to 6 LCPs can be connected. As the LCP registers the high temperature alarm, this alarm indication is also indicated on the Alarm Panel. The text display indicates which LP is alarm. Can also be connected to the alarm and monitoring panel.



## 2.3 IR Temperature Sensor – CT Type

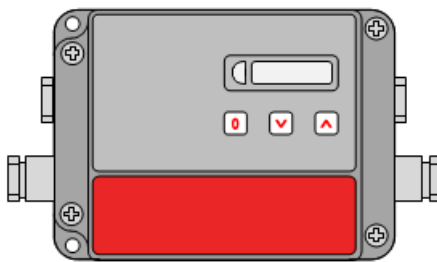


General Use non-contact IR temp sensor.

-50°C to 975°C

Can be used with ATEX kit for hazardous areas applications.

## 2.4 IR Temperature Sensor – CT Type Controller



Controller interface unit for CT type sensors

0-10V or 4-20mA outputs

## 2.5 IR Temperature Sensor – CS Type



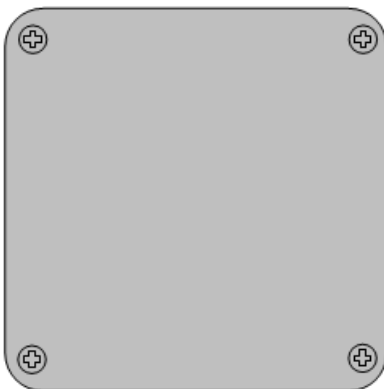
General use non-contact IR temperature sensor

-40°C to 400°C

Integrated electronics

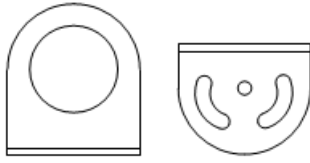
0-10V or 4-20mA outputs

## 2.6 ATEX Conversion Kit



Double zener barrier, housed in rugged enclosure covers the CT type sensor for hazardous area use.

## 2.7 Sensor Mount



Sensor mounts

## 3 Operation

### 3.1 Local Control Panels (LCP)

For single panel systems – to be sited in the vicinity of the control and monitoring centre. Up to 8 IR temperature sensors can be connected to each LCP. For larger installations then further LCPs can be added to increase the number of measured points. Text display indicates sensor(s) actual temperature reading and the alarm set point. Alarm indication should the temperature rise above the set point. Each sensor can be isolated with the front panel illuminated rocker switches. Auto or manual scroll of sensor indication + test facility. On / off key switch for added security.

Rugged enclosure and Class approved electronics for trouble free operation

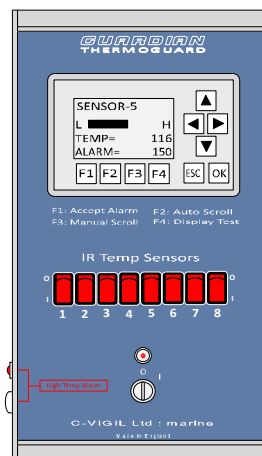


Figure 1 Local Control Panel (LCP)

### 3.2 Alarm Panel (AP)

For the larger multi LCP systems then the LCPs are all connected to the AP. The AP then connects to the alarm and monitoring system. The text display indicates which LCP is in the alarm condition along with an LED for easy identification. Test facility for the text display, alarm sounder and LED indicators.

On / off key switch for added security.

Rugged enclosure and vandal proof indicators for trouble free operation

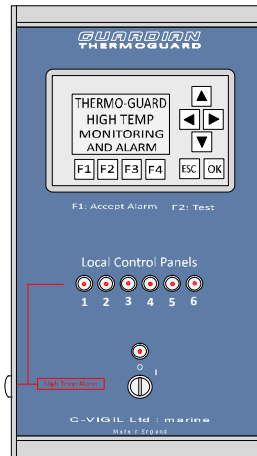


Figure 2 Alarm Panel (AP)

### 3.3 Power – On / Off : LCP & AP

Turn key switch to the 'I' position. The supply on LED should now be lit. After a brief period (2 secs) the alarm sounder and all LEDs should operate for 50ms indicating the logic module has started correctly.

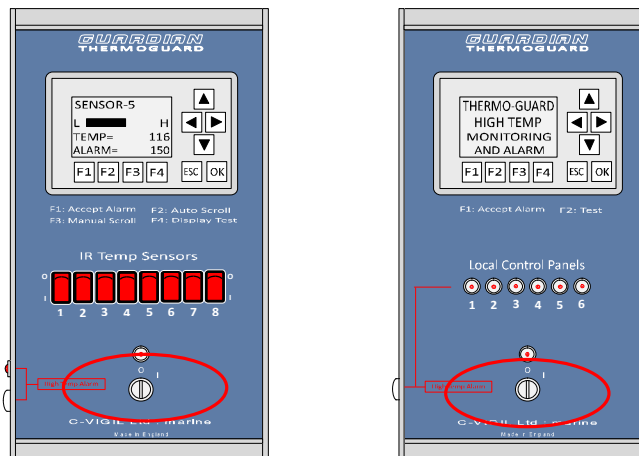


Figure 3 Power On / Off : LCP & AP

### 3.4 LCP Sensor Selection / Isolation

Any of the 8 sensors can be selected using the front panel illuminated rocker switches – depending on what sensors have been installed. Sensors can also be isolated using the same switches. As a sensor is selected its associated switch will illuminated red.

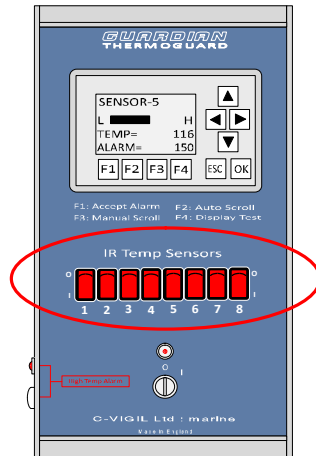


Figure 4 LCP Sensor Selection / Isolation

### 3.5 Sensor High Temperature Indication – LCP

Should any of the attached sensors register a temperature above the set point- a alarm is initiated. This consists of an audible alarm sounder and visual alarm LED.

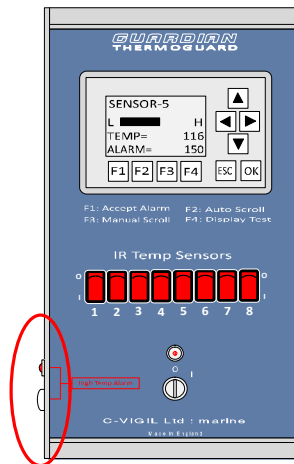


Figure 5 High Temperature Alarm Audible / Visual Indicators

### 3.6 LCP – Text Display

#### 3.6.1 Display Layout

The text display is a 4 line 48 character display with 10 membrane software function keys. F1 to F4 are control keys. The sensor’s measured value is displayed as a bar graph and as an actual value. The alarm set point is also displayed

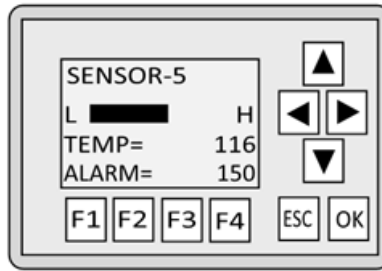


Figure 6 Temperature Text Display

### 3.6.2 High Temperature Alarm Indication

Should any of the attached sensor's measured value rise about the programmed set point an alarm screen is displayed and the audible / visual alarms are initiated.

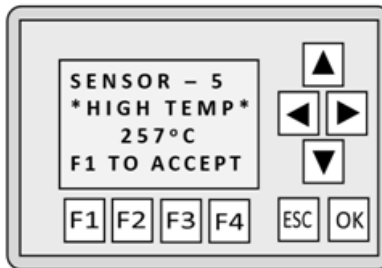


Figure 6 High Temperature Alarm Indication

### 3.6.3 Accept High Temperature Alarm & Silence Audible Alarm

Press membrane software key – F1

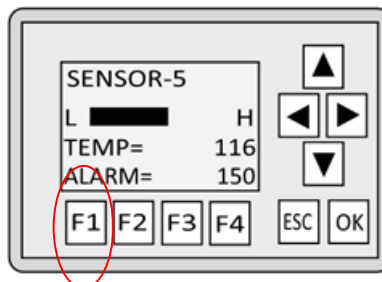


Figure 7 High Temperature Alarm Accept – F1

### 3.6.4 Display – Auto Scroll

Display 'Auto Scroll' – F2. The display will show each attached temperature sensor's screen in order for approx., 5 secs per screen. Press again and the screen will remain blank, although alarm monitoring is still active.

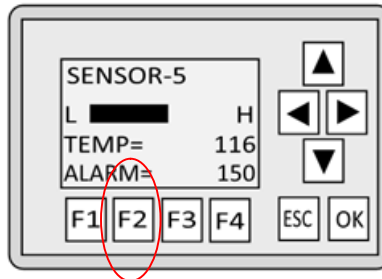


Figure 8 Display Auto Scroll – F2

### 3.6.5 Display – Manual Scroll

Display 'Manual Scroll' – F3. The display will show each attached temperature sensor's screen in order as F3 is pressed. Alarm monitoring is still active whatever screen is selected.

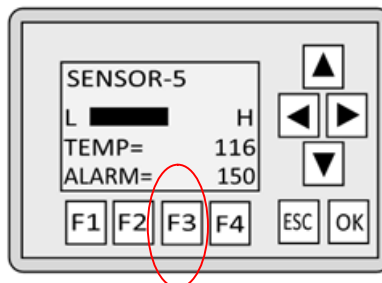


Figure 10 Display Manual Scroll – F3

### 3.6.6 Display - Test

Function test – F4. Pressing F4 for longer than 3 secs (>3s) starts the function test, the display will show the test screen for 5 secs– check that all segments operate correctly. The audible and visual alarms are both activated for 5 secs.

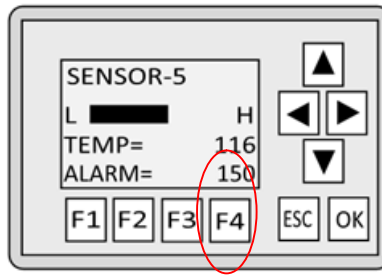


Figure 9 Display Test – F4

### 3.7 Alarm Panel (AP) - Text Display

#### 3.7.1 Display Layout

The text display is a 4 line 48 character display with 10 membrane software function keys. F1 to F4 are control keys. The attached LCP(s) status are displayed as they enter the alarm state.

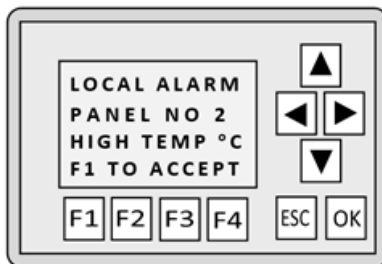
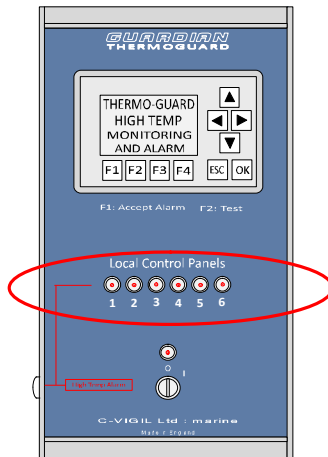


Figure 10 Alarm Panel Display

#### 3.7.2 LCP Alarm Indication

Should any of the attached LCPs enter into alarm, the relevant panel is indicated on the text display and also by the front panel LEDs, the audible alarm is also activated.

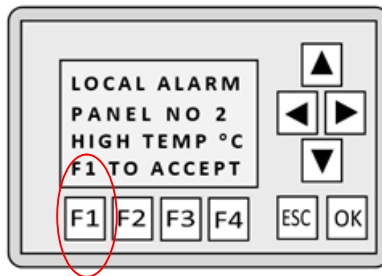




**Figure 11 LCP Alarm Indication**

### 3.7.3 Accept LCP Alarm & Silence Audible Alarm

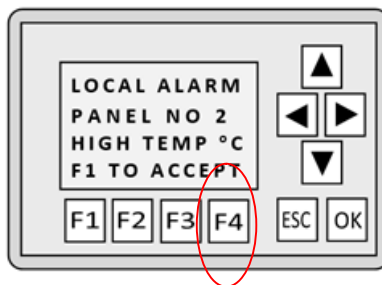
Press membrane software key – F1



**Figure 12 LCP Alarm Accept – F1**

### 3.7.4 Display Test

Function test – F4. Pressing F4 for longer than 3 secs (>3s) starts the function test, the display will show the test screen for 5 secs– check that all segments operate correctly. The audible and visual alarms are all activated for 5 secs.



**Figure 13 Display Test – F4**

### 3.7.5 Unused Keys

F2 & F3 are not used.

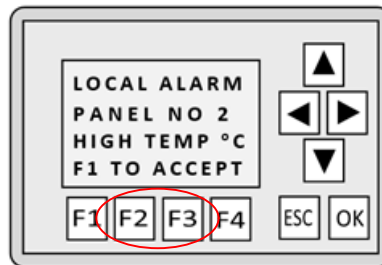


Figure 14 Unused Keys – F2 & F3

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