



# VENTCROFT

*Manufacturing Global Security in Great Britain.....with Pride*

# FT4BS AND FT8BS OPERATING AND INSTALLATION MANUAL

## **Contents**

### **Operating Instructions**

Introduction .....	1
Fire Alarm Procedures .....	2
User Responsibility .....	2
Routine Testing .....	3
Controls and Indicators .....	4

### **Fire Alarm**

Normal Mode .....	7
Fire Condition .....	7
Mute Alarm .....	7
System Reset .....	7
Evacuate .....	8
After a Fire .....	8

### **Fault Condition**

System Faults .....	9
Problem Location Chart .....	11
Isolate and Test Functions .....	12

### **Installation**

General .....	14
Cabinet/Cabling .....	15
Field Devices .....	15
Typical Wiring Schematic .....	16

### **Commissioning**

End Of Line Unit .....	17
Powering the Panel .....	18
Connecting the External Wiring .....	18
Connecting the Battery.....	19
CLASS Input .....	19
AUX 24V Output .....	20
Volt Free Contacts .....	20
Fault Output .....	20

### **Technical Data**

Specifications .....	21
----------------------	----

## **Introduction**

This manual is intended for use with the 4 and 8 zone conventional fire control panels. User operating instructions are in the first part of the manual the Installation, commissioning procedures and technical details are covered in the second part of the manual.

## **System Design and Planning**

It is assumed that the system, of which this control panel is part, has been designed by a competent fire alarm system designer in accordance with the relevant British Standard and any other local codes of practice that are applicable. The design drawings should clearly indicate the position of the field devices and control equipment. The as wired drawings should show the route of the zone and sounder cables.

## **General**

The 4 and 8 zone panels use the same size metal enclosure. The panels are fully self-contained with integral power supply and space for one 12 Volt 7A/H sealed lead acid battery. The internal circuitry of the panel allows one battery to provide sufficient power to back the system in the event of a mains failure.

The 4 and 8 zone panels are microprocessor controlled and feature zone test and zone isolate facilities. Each panel can accept up to 20 automatic detectors and any number of manual call points per zone. End of line monitoring units are provided for each zone and detectors fitted with schottky diodes should be used. The control panel functions are enabled by the operation of a key switch mounted to the front of the panel.

## **Fire Alarm Procedures**

In accordance with BS 5839 Part 1: 1988, written procedures should be laid down for dealing with alarms of fire, fault warnings, and the isolation of any part of the system.

The responsible person should ensure that the users of the system are instructed in its proper use and are familiar with the procedures.

### **On hearing the fire alarm:**

#### **CARRY OUT THE PRESCRIBED PROCEDURE**

Subsequent actions will depend on the circumstances, and may include silencing the audible alarms and resetting the system, as described later.

### **To Evacuate the premises:**

Insert the control panel key and turn it a  $\frac{1}{4}$  turn to the right, then press the EVACUATE push button.

### **Fault Indication:**

If the control panel indicates a fault condition, make a note of illuminated indicators, refer to the chart on page 11, and call the engineer.

## **Users Responsibility**

In addition to the routine testing described on page 3, the user has a responsibility for ensuring certain actions are taken following a fire or fault, and for implementing remedial action following a specified incidence of false alarms.

As a minimum, the user shall record any incident in the log book and inform the servicing organisation, who may be required to re-test the system.

The user's responsibilities are described fully in BS 5839 Part 1: 1988  
Available from:

BSI Customer Services, BSI Standards  
389 Chiswick High Road, London W4 4AL

## Routine Testing

In order to ensure that the system is fully operational, and to comply with the requirements of BS 5839 Part 1: 1988, the following routine attention is recommended:

- |           |  |
|-----------|--|
| Daily     | Check the panel to ascertain that it indicates normal operation. If any fault is indicated check that it has been recorded in the log book and that the appropriate actions have been taken, e.g. informing the maintaining company.   |
| Weekly    | Test at least one detector or call point to confirm the operation of the panel and audible alarms. Test a different zone each week and, if possible, a different device. Keep a record of the device and zone tested each week. Record and report any malfunction.   |
| Quarterly | <p>The responsible person should ensure that every three months the system is checked by a competent person who shall:</p> <ul style="list-style-type: none"><li>Check the log book entries and any action taken</li><li>Check the standby batteries and charger voltage</li><li>Test at least one device in each zone to check the panel functions</li><li>Check the operation of the audible alarms and any link to remote manned centre, central station, etc.,</li><li>Carry out a visual inspection of the installation to check for alterations or obstructions, and issue a certificate of testing.</li></ul> |
| Annually  | The responsible person should ensure that in addition to the quarterly checks, each device on the system is tested and that a visual inspection is made of the cable fittings and equipment.   |

Note. The control panel case should be cleaned periodically by wiping with a soft, damp cloth. **Do Not** use any solvents.

## Controls and Indicators

### **FIRE COMMON**

1 Red Indicator.

This indicator pulses when an alarm condition is detected and will then become steady once the Mute Sounder button is pressed. It goes out when the panel has been reset.

### **FIRE-ZONE**

1 Red Indicator per zone.

These indicators pulse when an alarm condition is detected to indicate the zone in fire. They will then become steady once the Mute Sounder button is pressed, and will go out when the panel has been reset.

### **FAULT-COMMON**

1 Amber Indicator.

This indicator is illuminated when a monitoring circuit in the panel detects a fault. This indicator is extinguished in the event of an alarm condition.

### **FAULT-ZONE**

1 Amber Indicator per zone.

Pulses when a fault is detected on a zone. Becomes steady when the panel sounder is muted. Goes out in the event of an alarm condition.

### **MAINS**

1 Green Indicator.

This indicator is constantly illuminated when a mains supply is connected to the panel

### **POWER FAULT**

1 Amber Indicator.

Pulses when a power or earth fault is detected. Becomes steady when the panel sounder is muted.

controls and Indicators continued...

**SOUNDER FAULT**

1 Amber Indicator.  
Pulses when a sounder circuit fault is detected.  
Becomes steady when the panel sounder is muted.

**SYSTEM FAULT**

1 Amber Indicator.  
Pulses when a CPU fault is detected. Becomes steady when the panel sounder is muted.

**WARNING** If the system fault cannot be cleared by resetting the control panel, the fire alarm system may be inoperative, call the engineer immediately and carry out fire patrols.

**TEST**

1 Amber Indicator.  
Steady when a zone is in test.

**ISOLATE**

1 Amber Indicator.  
Steady when a zone is isolated.

**CONTROLS  
KEYSWITCH**

¼ Turn clockwise enables the control pushbuttons

**EVACUATE**

Operates the sounder circuits.

**MUTE PANEL  
SOUNDER**

Mutes the internal panel buzzer from constant to intermittent

**MUTE SOUNDER**

Mutes the Alarm sounders.

**RESET**

Resets the system to normal following an alarm activation, providing the cause of the activation has been removed.

Controls and Indicators continued...

**TEST** Used to Step through the zones in test/isolate mode. One short press will test panel indicators (Software version 2 only).

**ISOLATE** Used to change the state of the zone in test/isolate mode



## **Fire Alarm**

### **Normal**

In the normal, or quiescent state, the Mains indicator is illuminated, and there should be no other visual or audible indication.

### **Fire Condition**

When a fire condition is detected by the control panel via the operation of an automatic detector or the operation of a manual call point, the red common FIRE indicator will pulse and the relevant zonal fire indicator will also pulse.

The internal buzzer will pulse quickly and the external sounders will be energised.

The fire relay will also be energised, causing any connected device to be activated.

### **Mute Sounder**

The external sounders may be muted by pressing the mute sounder button (before the button will operate you must activate the controls by inserting the isolate key and turning it a  $\frac{1}{4}$  of a turn to the right). The fire indicator will then become steady and the internal sounder will become constant.

### **Mute Panel Sounder**

The panel sounder will change from constant to a slow pulse once the mute panel sounder button is pressed, the fire indicators will remain unchanged

### **Reset**

Do not attempt to reset the system until the cause of alarm has been established and removed. The activation of an automatic smoke detector is indicated by the steady illumination of the indicator on the detector.

To reset the system, momentarily operate the reset pushbutton.

Note. Before the button will operate you must activate the controls by inserting the isolate key and turning it a  $\frac{1}{4}$  of a turn to the right.

fire alarm continued...

**Evacuate** To reactivate the sounders after muting, or activate the sounders at any time irrespective of whether a fire condition is present or not, momentarily operate the evacuate pushbutton.

Note. Before the button will operate you must activate the control by inserting the isolate key and turning it a  $\frac{1}{4}$  of a turn to the right.

**After a Fire.** When the system has successfully reset, i.e. FIRE indicators extinguished, restore the key switch back to the vertical position (a  $\frac{1}{4}$  of a turn to the left) and make an entry into the log book regarding the activation and any follow up procedures that may be required.

## Fault Condition

### **General**

When the system detects a fault the COMMON FAULT indicator will illuminate and the internal buzzer will sound constantly. The fault condition may be accepted by pressing the mute panel sounder push button. This will cause the internal sounder to pulse intermittently.

**Note** Before the button will operate you must activate the controls by inserting the isolate key and turning it a  $\frac{1}{4}$  of a turn to the right.

### **Zone Fault**

In addition to the COMMON FAULT indicator, the relevant ZONE FAULT indicator will flash. Once the mute panel sounder button has been operated the indicator will become steady and the internal sounder will pulse. The zone circuits are monitored for open and short circuits, and the removal of detector heads.

### **Power Fault**

In addition to the COMMON FAULT indicator, the POWER FAULT indicator will flash. Once the mute panel sounder button has been operated the indicator will become steady and the internal sounder will pulse. These faults can be caused by the loss of the mains, battery or a blown fuse. If the mains supply has failed the MAINS indicator will not be illuminated.

### **Sounder Fault.**

In addition to the COMMON FAULT indicator, the SOUNDER FAULT indicator will flash. Once the mute panel sounder button has been operated the indicator will become steady and the internal sounder will pulse. The sounder circuits are monitored for open and short circuits.

fault condition continued...

**System Fault**

The SYSTEM FAULT indicator is illuminated when there is a problem with the panels processor chip. The reset procedure must be carried out to clear this fault and restore the panel to normal operation.

**WARNING** -If the system fault cannot be cleared by resetting the control panel, the fire alarm system may be inoperative, call the engineer immediately and carry out fire patrols.

With the exception of the SYSTEM FAULT, the fault indicators will clear automatically once the cause has been rectified. Records of any fault conditions and work carried out to rectify them should be noted in the log and reported to the maintenance company

## **Problem Location Chart**

**Warning.** High voltages are present within the panel which could cause fatal shock. The front cover should only be opened by a competent engineer with the necessary tools. There are no user serviceable parts within the panel.

<b>Indication</b>	<b>Possible Cause</b>	<b>Action</b>
No indications on panel -no buzzer sounding	No power to Panel	Check mains supply and call engineer
Common fault indication -MAINS extinguished -Power fault pulsing -Constant buzzer	AC mains supply failed - Panel Operating on batteries	Check mains supply to panel - if OK call engineer
Common fault indication -MAINS on -Power fault pulsing -Constant buzzer	Battery disconnected Fuse blown	Carry out visual check and call engineer
Common fault indication -Zone fault pulsing -Constant buzzer	Zone circuit fault	Carry out visual check of zone to ensure all heads are correctly seated and call engineer
System fault indication -Constant buzzer	Processor fail	Reset system. If unable to reset call engineer immediately.
Isolate indicator -Sounder fault -Intermittent buzzer	Sounder circuits isolated	Go to set-up mode and de-isolate sounder
Isolate indicator -Zone fault -Intermittent buzzer	Relevant zone isolated	Go to set-up mode and set zone to normal
Test indicator -Zone fault -Intermittent buzzer	Relevant zone in test	Go to set-up mode and set zone to normal
External sounders Operating, constant Buzzer with no Indication	Evacuate button has been pressed on the panel	Press the silence button then reset the panel
External sounders Operating, no buzzer With no indication	CLASS input operated	Remove input
Unable to reset	Key switch in vertical position Alarm condition still exists	Move key switch ¼turn to the right Check cause of alarm. ensure broken glass is replaced/smoke detector cleared, etc

## **Isolate and Test Functions**

Facilities are incorporated into the panel to allow the isolation of the zones and sounder circuits and there is also a facility to enable a walk test of the zones.

Each individual zone can be put into isolate or test, and the sounder circuits can be isolated.

In the isolated mode, the relevant zone will not respond to any fire condition from any device attached to that zone, or any fault condition from that zone.

**CAUTION.** If the sounders are isolated, then any fire condition that exists on the panel, or any new fire condition will not sound the external alarms.

In the test mode, devices in the relevant zone can be tested without the need to return to the panel to reset the activation (walk test). In this mode when the device is activated the panel will show a fire condition on the corresponding zone and the external sounders will ring for 1-2 seconds the panel will then attempt to reset itself, if the fire condition still remains it will ring the sounders again for 1-2 seconds, this will repeat until the fire condition is cleared.

Whenever the panel is put into isolate or test the internal buzzer will pulse intermittently and cannot be muted, the relevant isolate or test indicators will also be illuminated.

To access the isolate and test procedures it is necessary to enter the **Set-up** mode via the following procedure:

- 1 Activate the controls by inserting the isolate key and turning it a  $\frac{1}{4}$  of a turn to the right.
- 2 Operate the TEST button for at least 3 seconds
- 3 Entry to the SET-up mode is indicated by the pulsing of the SYSTEM FAULT indicator.

**Note.** Whilst in Set-up mode, if a button is not pressed for 30 seconds the panel will exit set-up mode and return to normal operation.

The rapid pulsing of the ZONE 1 FAULT INDICATOR DENOTES THE SELECTION OF THAT ZONE. Each subsequent press of the TEST button will step through each zone in turn and will pulse the relevant ZONE FAULT indicator.

To isolate the Sounders the above procedure is followed until the SOUNDER FAULT indicator flashes.

isolate and test functions continued...

When the required zone (or the sounder circuit) is selected its state can be changed by pressing the ISOLATE button.

Zones have three possible states, i.e. Normal, Isolated and In Test, indicated by the ISOLATE and TEST indicators.

Momentary operation of the ISOLATE push button sequentially selects these states as follows:

Normal      Neither indicator illuminated.

Isolated    The ISOLATE indicator is constantly illuminated.

In Test     The TEST indicator is constantly illuminated.

**Note:** The sounders can only be changed from Normal to Isolate.

When the required mode has been selected return the key switch to the vertical position.

The system is restored to normal operation by repeating the procedures. I.e. selecting a zone or output with the TEST button, and altering its state to Normal with the ISOLATE button. Turn the key switch to the vertical position to return the panel to normal operation.

## Installation

The 4 and 8 zone control panels are simple to install and commission if the following precautions are observed. Do not attempt to install, service or operate the panel until the instructions given in this manual have been read and understood.

It is assumed that the system, of which this control panel is part, has been designed by a competent fire alarm system designer in accordance with the relevant British Standard and any other local codes of practice that are applicable. The design drawings should clearly indicate the position of the fire alarm devices and control equipment.

The as wired drawings should show the route of the zone and sounder cables.

The panels, like all electronic equipment, may be adversely affected by extreme environmental conditions. The position chosen for the installation should be clean and dry, and not subject to high levels of vibration or shock. In general, ambient temperatures should be in the range 5°C to 40°C, and relative humidity below 95% (non-condensing).

Note. The electronic components of these panels use CMOS devices which can be damaged by static charge. **Suitable cautions must be taken when handling circuit boards.**

Like all solid state devices, this system may operate erratically or can be damaged if subject to lightning induced transients. Although no system is completely immune from lightning induced transients and interference, proper earthing will reduce susceptibility. The use of overhead or outside aerial wiring is not recommended due to the increased susceptibility to nearby lightning strikes.

Do not over tighten screw terminals. Over tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with cable removal.

Follow all instructions in this manual. These instructions must be followed to avoid damage to the control panel and associated equipment.



## **Cabinet**

First open the front of the panel by undoing the retaining screw on the right hand side of the panel.

Hold the panel against the wall and mark the position of the fixing holes, ensuring the panel is level. Drill and plug the wall. Prepare the apertures for cable entry.

**Note.** Do not use the bottom entry for cables as it will make it difficult to seat the batteries.

Finally screw the panel to the wall using all four fixing holes.

**Do not attempt to drill through the back box.**

## **Cables**

Cables should be in accordance to BS 5839 Part 1: 1988 and should be brought into the cabinet through the apertures provided in the back box assembly. Tails should be sufficient length to connect to the relevant terminal. Great care should be taken to avoid damage to the PCB

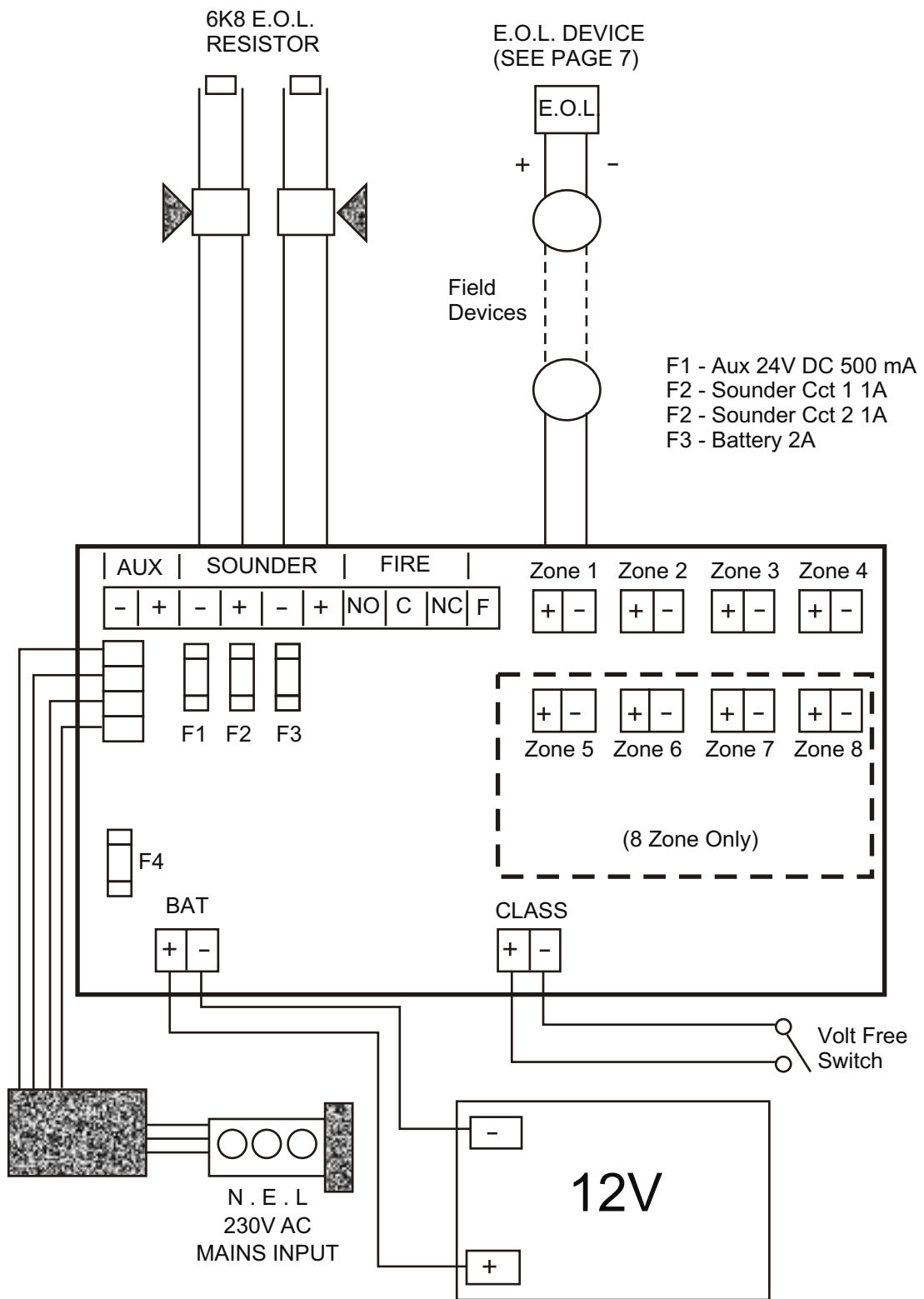
Terminals accept 0.5 to 2.5mm<sup>2</sup> stranded or solid conductor.

EMC Requirements: To meet the EMC requirements of the European Directives, it is necessary to ensure that screened cable or metal sheathed cable is used. It is also important to use only metal glands on the cable and to ensure that the screen or sheath is connected to the gland. Do not allow the cable screen or drain wire to enter the control panel.

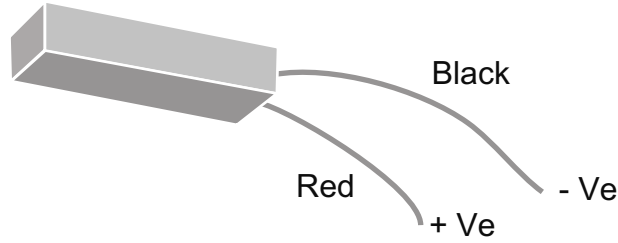
## **Field Devices**

Each of these devices is packed with an instruction leaflet showing the correct interconnections for various applications.

Before connecting the panel or devices, the wiring may be checked for insulation and continuity. Once any components are connected, **do not use** a high voltage tester such as a Meggar on the circuitry; low voltage multimeters may be used.

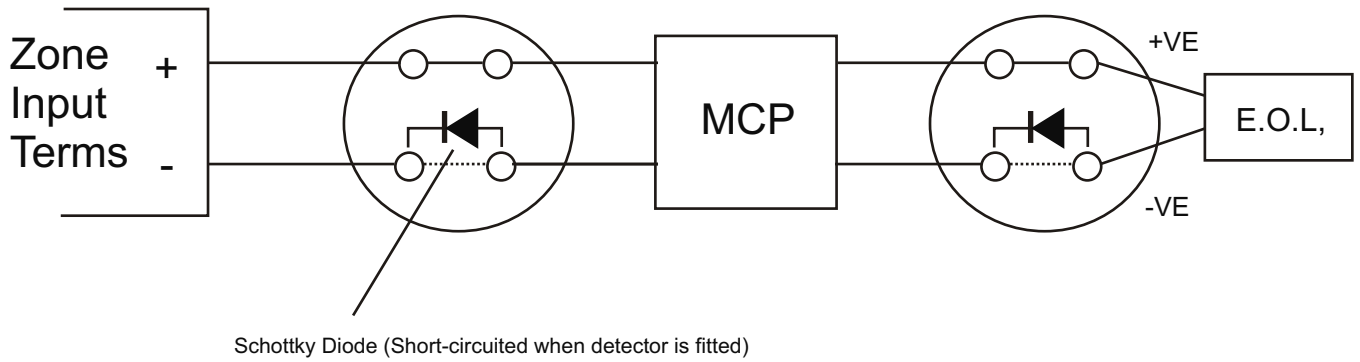


Connect to Last Detector /  
Call Point on Zone



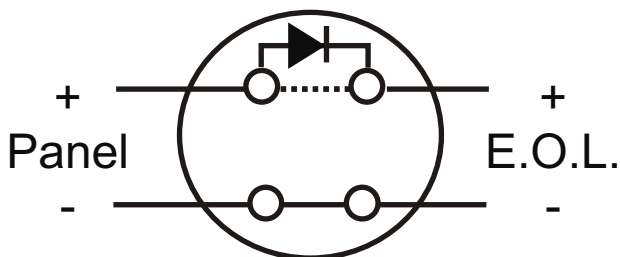
### Zone Wiring

Complies with BS 5839 Part 1 : 1988

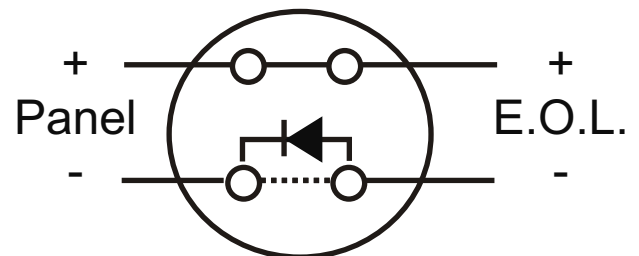


### Typical Bases with Diodes

+Ve Monitoring Type



-Ve Monitoring Type  
(Ventcroft / System Sensor Type)



## Commissioning

Warning - The control panel may be damaged by removing and/or inserting cards or cables while the control panel is energised. Do not attempt to install service or operate this panel until the instructions given in this manual have been read and understood.

It is recommended that the control panel is tested before installation.

Temporarily connect the E.O.L. (supplied) to each of the zone output terminals. Connect a 6k8 resistor into each of the sounder circuits. Temporarily connect a 10k resistor to the battery +ve and ve terminals.

### Powering the Panel

Connect the mains input supply wiring.

**Note** This control panel must be earthed.

Switch on the mains supply. All indicators light in turn the indicators should then extinguish leaving the green MAINS indicator illuminated. If any faults are present, investigate and rectify before connecting any external wiring.

### Connecting External Wiring

If the system has powered up correctly, **switch off** the mains supply and then connect the external wiring as follows:

**Zone Wiring** Remove the E.O.L. from the zone terminals and fit them to the last device (detector or call point) on each zone. Then connect the zone field wiring to the panel observing the correct polarity (see diagram on page 16)

Note. Detectors must be fitted with schottky diodes (see page 17).

**Sounder Ccts.** Remove the 6K8 resistors from the sounder outputs in the panel and fit them at the last sounder on each circuit. Then connect the sounder field wiring to the panel observing the correct polarity (see diagram on page 16)

## Testing

When the circuits have been connected, switch on the mains supply. Rectify any faults indicated before commencing (see table on page 11).

Ensure that a fault is shown when any of the detector heads are removed and when any of the circuits are open or short-circuited.

Check that all call points operate if any head is removed from the system.

Check that all detectors and call points set the panel into a fire condition, and that all the sounders connected operate.

### Connecting the Battery

Before connecting the battery, check the charging voltage by measuring between the positive and negative battery terminals, with the 10k resistor still connected. The voltage should be approximately 13.4 volts DC.

Note. The charging voltage is preset by the manufacturer and should not normally require altering

**Switch off** the mains supply. Remove the 10k resistor from the panel. Connect the two battery leads (supplied) into the positive (red lead) and negative (black lead) battery terminals. Place the batteries on the bottom of the panel.

**Caution.** Short-circuiting the batteries may cause a fire.

**Switch on** the mains supply. Connect the red lead to the positive of the battery and the black lead to the negative of the battery. Check the battery operation by switching the mains supply off, after a few seconds the power fault indicator should pulse and the MAINS indicator will extinguish.

Switch on the mains supply again.

### **Class Input**

Shorting this input will cause the sounder circuits to operate until the short is removed, this facility can be utilised by connecting a volt-free normally-open switch to the input.

## **Auxiliary 24V Output**

This 24V DC output may be utilised to energise a relay on alarm, it is a constant supply and does not drop on reset.

**Note.** This output cannot be used to feed door magnets or other inductive loads directly from the panel.

## **Volt-free Contacts**

Volt-free changeover contacts are provided and operate on the receipt of a fire condition. The relay stays energised until the panel is reset.

**Note.** These contacts are not rated to switch 240V AC

## **Fault Connection**

This output gives a switched negative output under a fault condition and can therefore be used to trigger a fault relay (T-159) or any other fault device that uses a negative trigger.

## Technical Data

### **AC Mains Supply**

Transformed internally from 230V AC +10%  
-15%, internally protected.

### **Standby Current (Quiescent)**

34mA

### **Normal System Operating Voltage**

24V DC

### **Controls**

2 Position Key switch  
Evacuate pushbutton  
Mute Panel Sounder pushbutton  
Mute Sounder pushbutton  
Reset pushbutton  
Test Pushbutton  
Isolate pushbutton

### **Indicators**

FIRE red  
One common/one zonal

Fault amber  
One common/one zonal

Mains green

System Fault amber  
Power Fault amber  
Sounder Fault amber  
Isolate amber  
Test amber

### **Recommended Standby Batteries**

(sealed lead-acid type only)

12 Volt 7A/H Maxim

technical data continued...

**Detector Zones**

Detector line voltage (Quiescent): 24VDC  
+/- 10%  
Detector line voltage (Alarm): Dependant on Device.  
Minimum alarm current: 20mA  
Minimum zone current before fault: 175mA.  
Minimum zone short circuit current: 70mA.  
End of line resistor: EOL device supplied With panel.  
Maximum circuit resistance: 20 Ohms.  
Detector line monitoring: Open and short Circuit.  
Maximum no. of electronic detectors: 20  
Maximum no. of call points: Unlimited.

**Sounder Circuits**

Number of circuits:2  
Sounder line voltage (quiescent): 24V DC Reversed.  
Sounder line voltage (Alarm): 24V DC.  
Circuit fuses: 1 amp  
Circuit monitoring resistors: 4K7  
Sounder monitoring: Open and short circuit.  
Maximum sounder load current: 1 Amp  
Total

**Fuse Values Monitored**

Bell circuits: 1 amp  
Battery: 2 Amp.  
Auxiliary 24V output: 500 mA.

**Internal Power Supply**

Constant voltage charge: 13.8V  
Output current: 1.5 Amp total MAX  
Battery monitoring: O/C, S/C and Reversal.  
Battery charger monitoring: Failure.



Technical Data Continued...

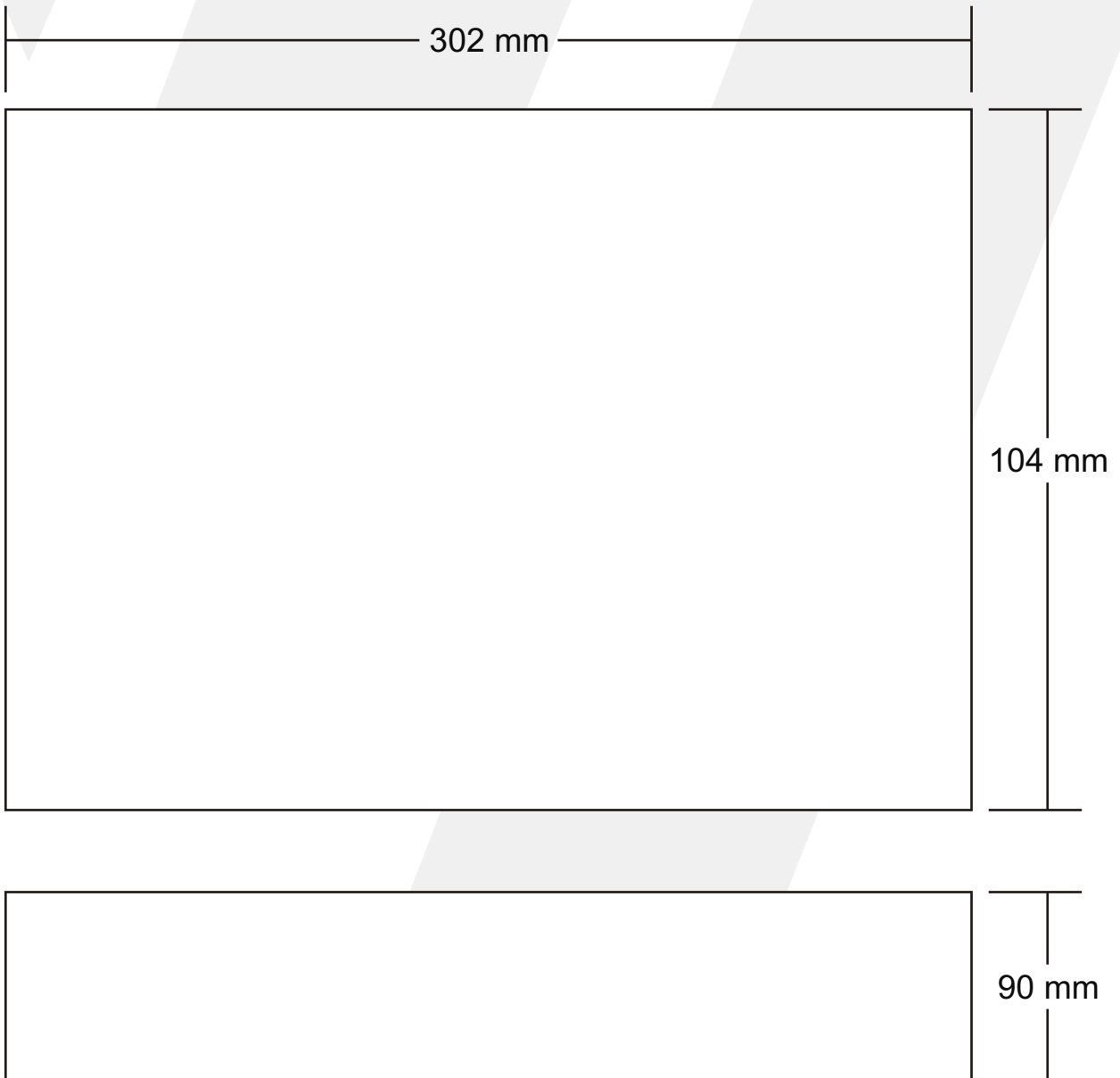
Auxiliary Relay

Change over contacts (2 pairs of Voltage Free) rated at: 3 Amp Max.

Bell Drive Input

Short circuit CLASS terminals to activate The bells. Any local fault will be suppressed. The local mute is also disabled

Dimensions (overall)









Ventcroft Ltd. Goddard Road, Astmoor Industrial Estate, Runcorn,  
Cheshire WA7 1NQ, Great Britain. Tel: +44 (0)1928 581098, Fax: +44(0)1928 581099

[www.ventcroft.co.uk](http://www.ventcroft.co.uk)

*Manufacturing Global Security in Great Britain.....with Pride*

