FireChase™ 2-Zone Detection System

SKU: 103-2ZIP

EC Declaration of Conformity

In accordance with EN 45014:1998

2-Zone FireChase Detection System Model 2ZNDFC in accordance with the following Directive:

73/23/EEC - The Low Voltage Directive and its amending directives

has been designed and manufactured to the latest issues of the following specifications:

AS 1603-4	Control and Indicating Equipment, Automatic Fire
ISO 7240-2	Detection and Alarm System
AS 3000	SAA Wiring Rules
AS 2546-3	Design and Use of Printed Boards
AS 1981	Stationary Batteries of the Lead-acid Pasted Plate Type

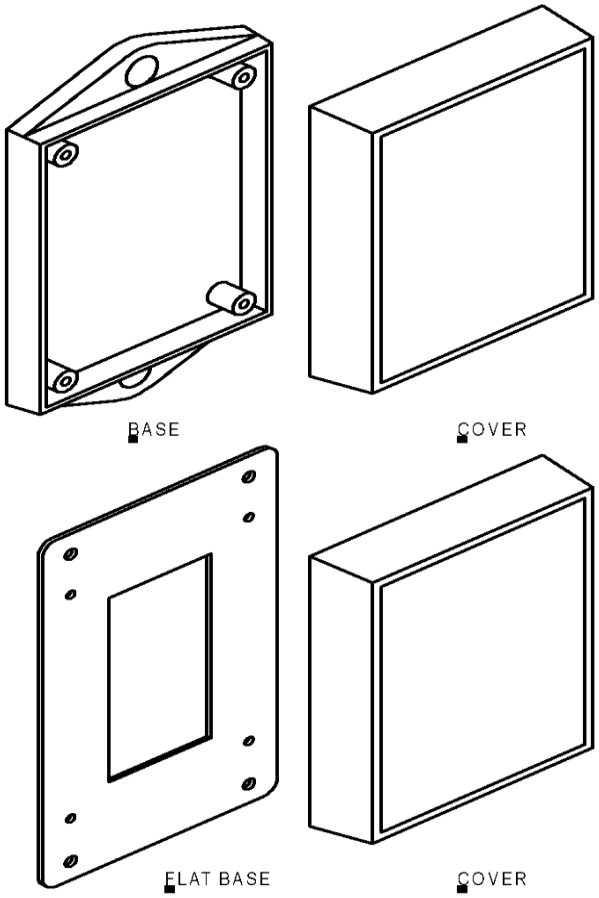
Done in Sydney, on the 23rd of March, 2006.

Table of Contents

1. Specifications

Dimensions	143mm high, 84mm wide, 31mm deep
Enclosure Material	ABS plastics, black colour
Operating Voltage	12-30V DC
Operating Current	50mA on 12V 74mA on 24V
Power Supply Inputs	Main and backup
Number of Fire Detector Zones	2
Acceptable Detectors	All commercial thermal, photo-optical and ionization detectors, manual cell points, and temperature-sensitive detector wires
Detector Operating Voltage	Same as power supply voltage
Max. Number of Detectors per Zone	30
Outputs	Siren: Max 1A at 12V or 24V DC
Output Protection	1A polyswitch resettable fuse on the siren output
Fault-Sensing	• Detector wiring open circuit • Siren wiring open circuit • Polyswitch fuse operated • Loss of internal 5V supply • Internal microprocessor malfunction
Director End-of-Line	4K7
Discharge End-of-Line	Diode
Alarm Sensing Threshold	3.6V
Fault Sensing Threshold	0.53V
Operating Temperature Range	0° to 70° Celsius (standard) -40° to 85° Celsius (at special request)

2. Mounting



The panel is mounted vertically by the means of 2 screws through the mounting holes, as shown in the diagram below. It is necessary to complete the wiring before mounting the panel.

Open up the 2 parts of the panel by undoing the 4 screws at the base. There are 12 terminals on the circuit card in the panel cover. Wiring to the panel can be from the back of the base by drilling a hole of an appropriate size, or from the side of the base by cutting a slot.

A flat base is also available as an accessory for flush-mounting. It is made of 1.5mm steel, and powder-coated matt black. It will reduce the total panel thickness by 11mm.

3. Terminals and Cable Size

Maximum cable size: 1.5mm^2
Terminal 1 – Main supply +ve
Terminal 2 – Main supply –ve
Terminal 3 – Backup supply +ve
Terminal 4 – Backup supply –ve
Terminal 5 – Siren terminal W, –ve on normal, +ve on alarm, end-of-line diode (cathode or bar end)
Terminal 6 – Siren terminal R, +ve on normal, –ve on alarm
Terminal 7 – NOT USED
Terminal 8 – NOT USED
Terminal 9 – Zone 1 detector +ve, end-of-line 4K7
Terminal 10 – Zone 1 detector –ve
Terminal 11 – Zone 2 detector +ve, end-of-line 4K7
Terminal 12 – Zone 2 detector –ve

4. Siren Output

The siren output can be used to operate audio-visual alarms such as strobe lights and sirens for the purpose of fire alert, as well as operating the exhaust fans and other fire protection equipment. The panel is only capable of supplying 1A output at the panel operating voltage. If this output is insufficient, a monitored power-booster relay is available to drive outputs up to 5A. Please refer to **Section 8** for accessories.

5. Wiring

Apart from the main power source, which may be 12 or 24VDC, there should be a backup power source of standby batteries of the same voltage. A diode of sufficient current rating should be wired in order to charge the standby batteries by the main power source charging unit. The panel has no built-in fuses. In-line fuses of sufficient current rating must be provided for both power sources.

All wiring should be done with at least 0.5mm2 fire-rated cable through metal conduits. Care must be taken so that the cable will never be chafed or cut by the metal conduits, since the power supply negative may be earthed or joined to the same metal surface as the conduits. If thicker wires up to 1.5mm2 are used, use thinner wires to extend to larger terminal blocks where the thicker field wires can be terminated more easily.

The panel monitors the continuity of all wiring, except the power supplies. Short-circuits are not monitored. The principle of end-of-line must be thoroughly understood. The end-of-line (either resistor or diode) draws a small monitoring current through the field wiring, and the loss of this current is monitored as a fault condition.

All detectors have IN and OUT terminals on the detector bases, and the terminals are shorted by the detector heads. The removal of any detector head will open-circuit the field wiring. At the last detector, a 4K7 end-of-line resistor is installed in the OUT terminals.

The monitoring of the siren output is done in a slightly different way. This is necessary because the small monitoring current can cause the sirens to emit a low-volume sound, particularly if they are piezo sirens. The monitoring voltage on the siren output has reversed polarities opposite to those of the normal alarm operation. This allows the use of a diode as the end-of-line, which becomes reverse-biased during normal alarm operation. The diode produces just a small voltage across the sirens, in the order of 0.7VDC, so that it is insufficient to generate any low-volume sound from the sirens during monitoring. The sirens must be wired in the IN-OUT fashion like the detectors, to ensure that the removal of a siren will open circuit the field wiring. The siren terminals are denoted R and W, for RED and WHITE, because they change polarities, and cannot be labelled + and -.

The diagram on the **last page** (page 8) shows the wiring.

6. Operation

6.1 Indications

The panel has 6 LED indications. These are:

Green – MAIN POWER ON, in-line fuse OK
Green – BACKUP POWER ON, in-line fuse OK
Red – CIRCUIT 1 ALARM
Red – CIRCUIT 2 ALARM
Amber – FAULT, system fault
Amber – ISOLATED, system isolated

Under NORMAL conditions, only the 2 green LEDs should be on.

6.2 Switch

Pressing the switch until 1 beep is heard from the panel sounder, then releasing the switch:

The panel is in the isolation mode. The circuits continue to monitor the fire detectors for alarm and fault, and show the alarm and fault indications, but will not operate the siren. If an alarm or fault condition exists before the switch is pressed, then pressing the switch will silence the siren and the panel sounder, but will not cancel the alarm or fault indication. When a panel is in isolation, any change in the detector status, such as an alarm or a fault occurring, will cause the panel sounder to operate for 1 second as an alert of the status change, but the panel stays in isolation. Pressing the switch again will remove the isolation condition, and restore the panel to normal.

Pressing the switch until 1 beep, then 2 beeps, are heard from the panel sounder, then releasing the switch:

The panel is put into the isolation mode at the sound of 1 beep, and the detectors are reset at 2 beeps. The supply voltage to the detectors is removed for 1 second to reset the detectors. Pressing any single switch again will restore the panel to normal.

Pressing the switch until 1 beep, then 2 beeps, then 3 beeps, are heard from the panel sounder, then releasing the switch:

The panel is put into the isolation mode at the sound of 1 beep, and the detectors are reset at 2 beeps. At 3 beeps the panel is in the TEST mode, at which all the panel LEDs, the panel sounder and the siren output are operated for 2 seconds in order to check if they are healthy. At the end of the test, the panel automatically returns to normal. There is no need to press the switch again.

7. Fault Sensing and the Panel Sounder

The panel has a comprehensive fault monitoring system. It detects any open-circuit in the field wiring to the detectors and the siren. It also monitors internal malfunctions:

1. Loss of the 5V power supply to the microprocessor – panel sounder continuous
2. Microprocessor malfunction – panel sounder pulsating

In the event of an external fault, the panel sounder is continuous, but can be isolated by pressing a single switch till 1 beep. This is used to differentiate from the loss of the internal 5V supply where the sounder cannot be isolated.

If an external fault does not disable a fire detector, then the panel alarm function is still operating, even though it is in a fault condition. The fault indicator LED remains lit as a reminder that a fault exists.

The panel sounder will operate when there is an alarm, or a fault, or when a switch is pressed. When the panel is isolated, the occurrence of an alarm or a fault will also operate the sounder for 1 second as an alert, even though the panel stays isolated.

8. Fault Finding

Since there is only one FAULT indicating LED for a host of possible fault conditions, fault-finding can be difficult unless it is done in a methodical way. In general, there are 2 types of faults, internal – which cannot be isolated, and external – which can be isolated.

8.1 Internal fault

If a fault occurs and cannot be isolated by pressing a single switch once, then it is an internal fault. This can be:

A) loss of the internal 5V supply, turning on the fault LED and a steady sounder

B) loss of the watch-dog circuit, turning on the fault LED and a steady sounder

C) loss of the microprocessor, turning on the fault LED and a pulsing sounder

Disconnect power to the panel by unplugging the 1-6 connector. Wait a few seconds and then re-plug the 1-6 connector again. By powering down the panel and powering up again, the system may be reset to normal conditions. If the fault persists, the panel will have to be repaired by the manufacturers.

8.2 External Fault

If a fault occurs and can be isolated by pressing the switch once, then it is an external fault. This can be:

A) Loss of a siren/strobe, or an open-circuit in the output wiring
B) Loss of a detector head, or an open-circuit in the detector wiring

Make sure there is no alarm in the system and isolate the panel by pressing the switch once.

Temporarily short-circuit the siren/strobe output terminals 5 and 6. If the fault disappears, then there is an open-circuit in the output wiring.

Temporarily short-circuit the zone 1 detector terminals 9 and 10. If the fault disappears, then there is an open-circuit in the zone 1 detector wiring.

Temporarily short-circuit the zone 2 detector terminals 11 and 12. If the fault disappears, then there is an open-circuit in the zone 2 detector wiring.

If the fault cannot be fixed or identified, return the panel to the manufacturers for checking and repair.

9. Accessories

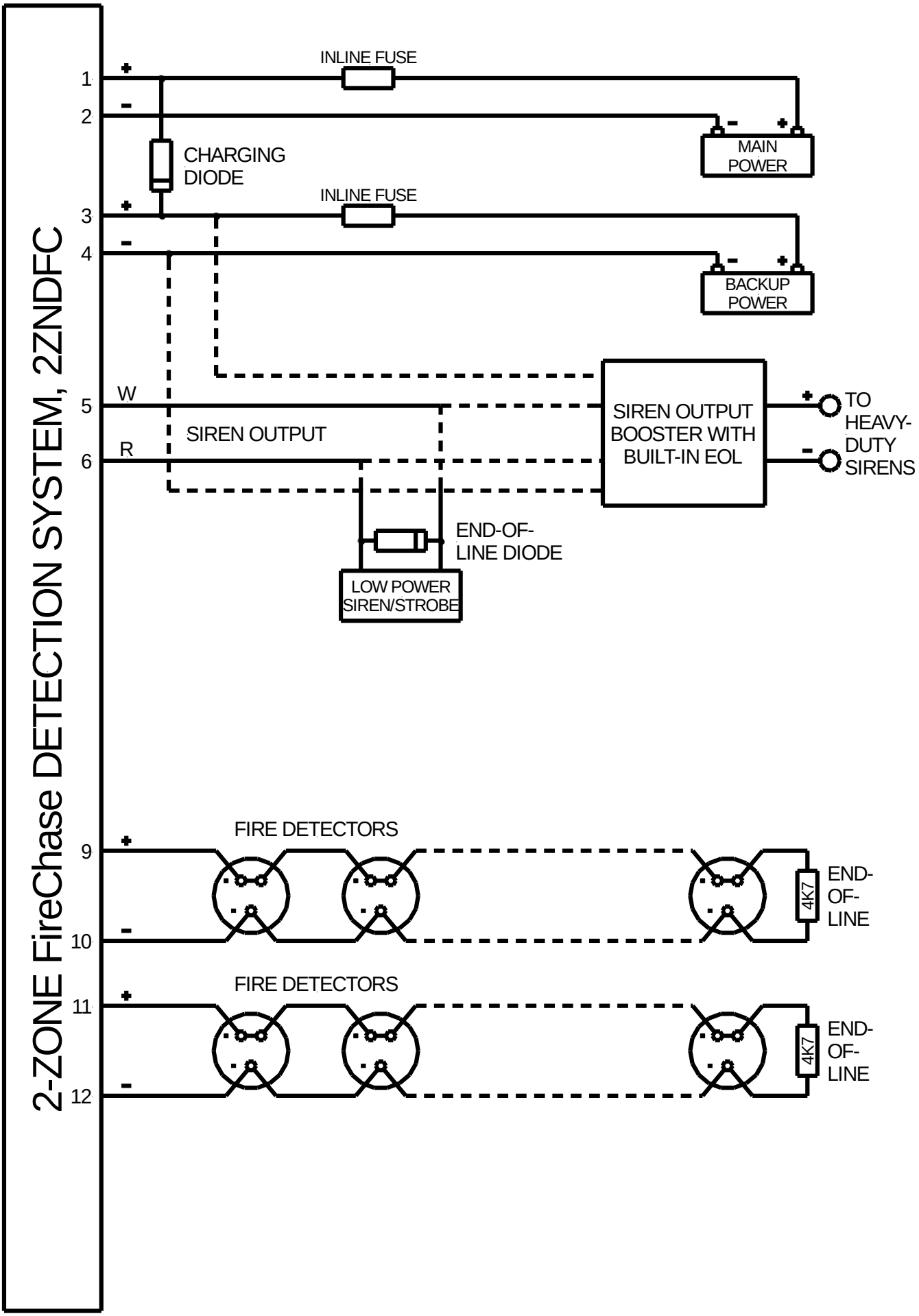
The following accessories are supplied with the panel:

- 2x 4K7 end-of-line resistors for the detector circuits
- 1x 1N4004 end-of-line diode for the siren
- 1x 1N5404 charger diode
- 1x Operator's manual
- 4x Self-tap screws

The following accessories are available:

- Light-duty combination siren and strobe with built-in end-of-line
- Heavy-duty combination siren and strobe with built-in end-of-line
- Siren output power booster relay
- Fixed-temperature fire wire
- Photo-optical smoke detector
- Ionization smoke detector
- Thermal detector
- Surface-mounted red breakglass for alarm
- 12V 7AH battery
- Battery box
- Flush-mounting flat base

Wiring Diagram:



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