

# ALPHA 1

## FIRE ALARM SYSTEM

### INSTALLATION AND OPERATING INSTRUCTIONS

#### Applications

The *ALPHA 1* fire alarm system is the ideal choice for small buildings such as:

- Motels
- Boarding houses
- Hostels
- Town houses
- Factories
- Warehouses

#### Complies with NZ Building Code and NZS 4512

Properly installed fire alarm systems using *ALPHA 1* and approved manual call points and alerting devices can comply with the requirements of the NZ Building Code where fire safety precaution type 1 is specified. *ALPHA 1* also complies with NZS 4512:1994 Part 3 and is FPIS listed for use in non-monitored manual fire alarm systems. *ALPHA 1* has no provision for Brigade connection. 4-wire smoke detectors can be connected for supplementary detection, but not for NZS4512 compliance.

#### Ordering Information: Panel and Accessories

FP0673 *ALPHA 1* Fire Alarm System  
 FP0549 Test Probe  
 RR0753 Circuit EOLR 2k $\Omega$   
 RR0045 Evacuation EOLR 10k $\Omega$   
 RR0048 Evacuation EOLR 18k $\Omega$   
 RR0050 Evacuation EOLR 27k $\Omega$   
 DD0003 1N4004 1A Diode for sounders  
 DD0004 1N5404 3A Diode for sounders  
 PA0762 *ALPHA 1* PCB Assembly  
 HW0213 Spare keyswitch key

#### Compatible Detectors

**ALPHA 1**

(see page 3 for circuit limits)

Vigilant 1841 Manual Call Point	✓
Vigilant Heat Detector (clean contact)	✓
Any clean contact normally-closed detector	✓
Any clean contact normally-open detector	✓
System Sensor 1412 Smoke Detector (4-wire) *	✓
System Sensor 2412 Smoke Detector (4-wire) *	✓
System Sensor 1112/24 Smoke Detector (4-wire) *	✓
System Sensor 2112/24 Smoke Detector (4-wire) *	✓

\* 4-wire smoke detectors do not comply with NZS4512 minimum operating voltage requirements.

#### Expected Times for Standby Operation

(periods are in days, and assume a battery in good condition)

Number of Detectors	Sounder Load (A)	Battery Capacity (Ah)				
		2.0	2.6	3.0	4.0	6.5
Heat detectors and Manual Call Points only (any number).	1.0	43	62	74	101	158
	2.0	•	33	46	77	139
	3.5	•	•	•	35	105
Heat detectors, MCPs (any number), 5 Smoke Detectors (4-wire type) (0.5mA extra quiescent current)	1.0	32	47	56	78	126
	2.0	•	•	35	59	110
	3.5	•	•	•	•	84
Heat detectors, MCPs (any number), 10 Smoke Detectors (4-wire type) (1.0mA extra quiescent current)	1.0	•	34	42	58	96
	2.0	•	•	•	44	84
	3.5	•	•	•	•	64

**Note:** NZS4512:1994 requires that the standby time be at least as long as the maximum time between tests. Only standby times longer than one month are listed in this table.

Manufactured by: Vigilant Fire & Evacuation Systems,  
 211 Maces Road, PO Box 19-545,  
 Christchurch, New Zealand  
 Telephone +64-3-389 5096  
 Facsimile +64-3-389 5938

Distributed in New Zealand by:

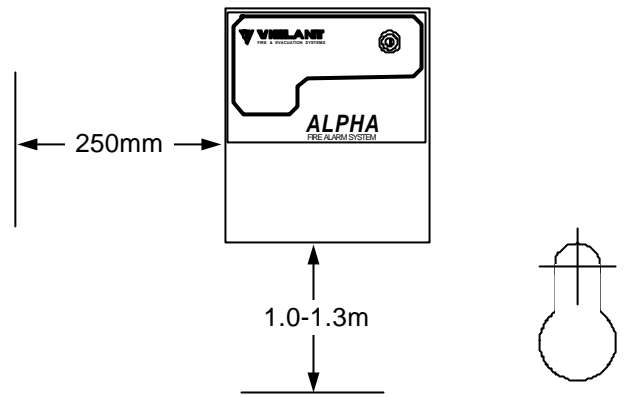
Grinnell Supply Sales,  
 4 Portage Road, PO Box 15-492,  
 Auckland, New Zealand.  
 Telephone +64-9-827 2290  
 Facsimile +64-9-827 2288

## Installation

ALPHA is designed for surface mounting, but can also be inset if required. This page has a full size hole marking template, when using the mounting holes in the rear of the cabinet.

The location of ALPHA should be chosen with these factors in mind:

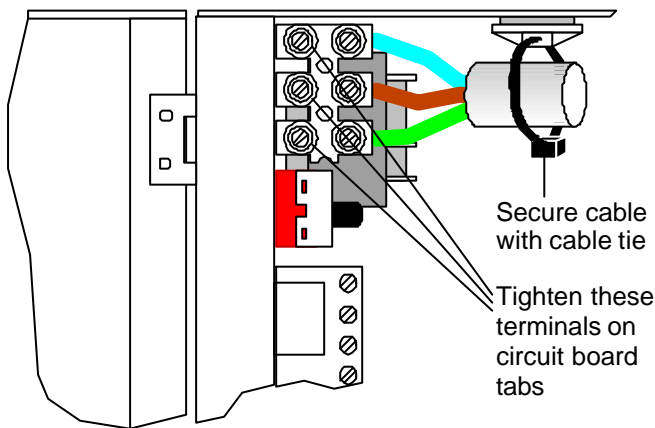
- Avoid excessively hot locations; this greatly reduces battery life.
- Avoid humid or damp locations; condensation can cause faults or incorrect operation.
- Avoid direct sunlight on the front panel; this can make the indicators hard to read.
- Allow for adequate clearances and easy access.



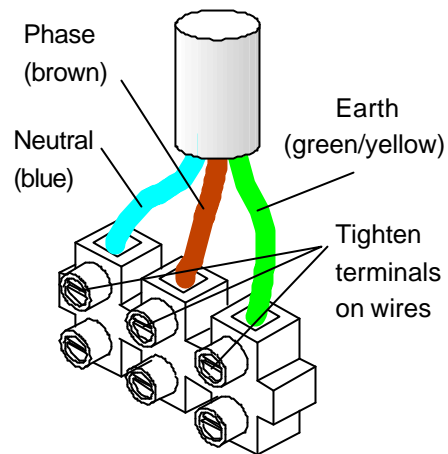
Recommended Mounting Clearances

A separate mains sub-circuit should be used to supply the ALPHA. Connect the 3-way mains connector block to the incoming mains lead, before fitting the connector to the circuit board, as shown here.

**WARNING:** REMEMBER TO ISOLATE THE SUPPLY CIRCUIT BEFORE WIRING THE ALPHA.



Fitting Mains Terminal Block to Circuit Board



Prewiring Mains Terminal Block

**NOTE:** To comply with electrical safety requirements, the mains cable must be restrained by fastening with the supplied cable tie to the adjacent cable holder as shown here.

Due to the compact cabinet, some care must be taken routing cables within the cabinet. The battery can be positioned in several ways as shown to give access to the various cable entry holes.

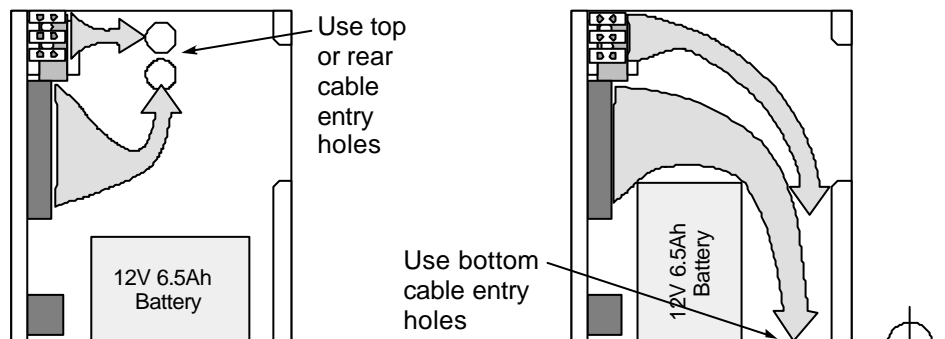
## Configuration

- Lk1 **EVAC MON/NORM**: If defect monitoring of the alerting devices wiring is required, fit the link to the upper position **EVAC MON** (EOL resistors are then required on alerting device circuits - see the wiring diagram). Otherwise, fit this link to the lower position **NORM**.



- Lk2 **NLT**: See **Operation** (back page).

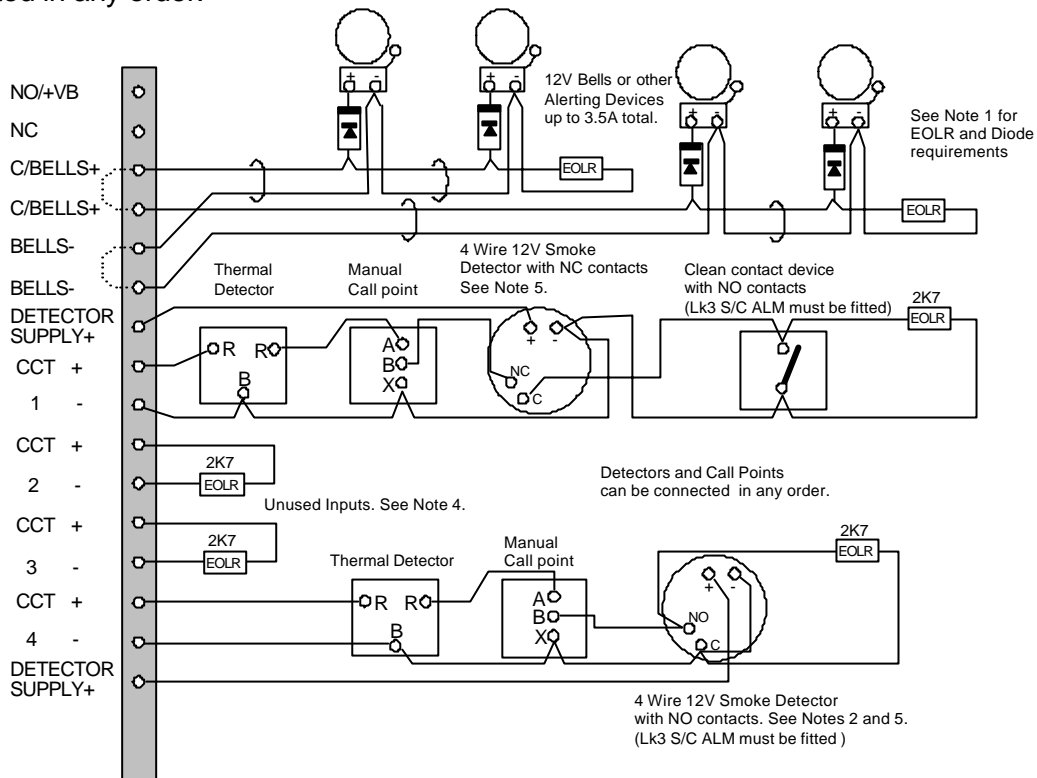
- Lk3 **S/C ALM**: If detectors with normally open contacts (closing on alarm) are being used, connect them according to the wiring diagram, and fit this link to select a short circuit to be an alarm instead of a defect.



Recommended Cable Routing Options within Cabinet

## Detector and Alerting Device Wiring

This diagram shows the general format for connecting alerting devices and detectors. Detectors can be connected in any order.



Note 1: If Evacuation Monitoring is selected (see **Configuration**), all alerting devices must have a diode fitted in series as shown. A 1N4004 type diode is suitable for most small bells and sirens (see **Accessories** information on page 1).

The correct EOLR value depends on the number of wiring branches:

1 branch - 10k $\Omega$ , 2 branches - 18k $\Omega$  each, 3 branches - 27k $\Omega$  each.

Monitoring may be disabled if not required (see **Configuration**).

Note 2: Use of 4-Wire Smoke Detectors with normally open contacts does not comply with NZS4512:1994.

Note 3: Detector Circuit Limits:

- Thermal Detectors or Manual Callpoints: any number.
- 4-Wire Smoke Detectors: any number, but the extra quiescent current reduces standby operation time.
- Looped circuit wiring resistance limit is 32 $\Omega$ .

Note 4: All unused detector circuit inputs must have a 2k7 EOLR fitted, otherwise these circuits will be permanently in alarm.

Note 5: For NZS4512 compliance, detectors must have a minimum operating voltage of 9.6V or less.

No currently available 4-wire smoke detectors meet this requirement.

## Commissioning

### Initial Powering Up

- Operate the external Silence Alarms keyswitch before initially applying power to the ALPHA, to prevent accidental operation of the alerting devices.
- Connect the battery leads to a charged battery. The Defect LED should start flashing immediately (due to Silence Alarms being operated).
- Switch the mains on. The Defect flash should change to the "mains on" pattern.

### Fault Finding

- If any Circuit Alarm LED goes on, check that circuit wiring for open circuit, (or short circuit if Lk3 S/C ALM is fitted).
- If no Circuit Alarm LED is on, turn the Silence Alarms switch to normal. If there are no other faults, the Defect LED will go out, and the Normal LED come on. If not, check the Defect LED flashes to identify the type of fault (see **Defect** under **Operation**).

## Operation

### Indicators

- **Normal** -
  - On steady, “winking” off every 8 seconds: mains on.
  - On steady, “winking” off every 2 seconds: battery test in progress.
  - Off, winking on every 4 seconds: mains off.
  - Off steady: the panel is in defect, or alarm, or alarms are silenced, or non-latching test mode is on.
- **Defect** - Gives a set of five flashes if a defect is present. These repeat after 2 seconds (mains on) or 25 seconds (mains off). Each flash represents a type of defect; a long flash means that a particular type of defect is present.  
Historical information is also displayed in the same format if the **NLT** link/switch is fitted/operated.
  - 1st: Circuit Defect
  - 2nd: Battery Low or Detector Supply fuse blown
  - 3rd: Evacuation Defect
  - 4th: Silence Alarms operated
  - 5th: Hardware Defect
- **Circuit Alarm** - On steady: a detector on this circuit has operated. Winking on with the first defect flash (when NLT is on): this circuit is in defect or has had a defect since the last Reset.
- **Buzzer** - Single beep: a defect is present. Double beep: non-latching test mode is on.

### Controls

- **Silence Alarms/Reset** keyswitch - Prevents the alerting devices from operating, immediately, if they are already on, otherwise after 1½ seconds. A single beep and the Defect LED show when this has happened. Restoring the switch to normal resets latched (not current) alarms, and historical defect indications. Alerting devices are re-enabled after 5 seconds.  
For (Trial) Evacuation, turn the keyswitch on for 1 second then off again.
- **NLT** link - Enables non-latched test mode if system is normal. Alerting devices operate for ½ second when any detector operates, but Alarm indicators latch.  
Also enables display of historical as well as current defects (Circuit Alarm LEDs show which circuits have or have had defects).

## Regular Testing

Use the FP0549 Test Probe to test the detector circuits and evacuation monitor (if enabled). Operate the Silence Alarms control to prevent disturbance from the alerting devices when testing for alarm.

TO TEST	CONNECT CROCODILE CLIP TO	TOUCH PROBE TO	EXPECTED RESPONSE
Detector Circuits	J16 (0V) or Battery (-)ve	Each CCT+	Defect, or Alarm if <b>S/C ALM</b> link fitted
	J15 (+VB) or Battery (+)ve	Each CCT+	Alarm
Evac. Monitor	J16 (0V) or Battery (-)ve	C/BELLS+	Defect if <b>EVAC MON</b> link fitted

### - WARNING -

NZS4512 and the NZ Building Code contain important requirements for the installation, commissioning, and testing of fire alarm systems. You must comply with the requirements of these documents, and any other statutory or regulatory requirements, in addition to the information contained in these instructions.

*ALPHA* has no date function, so it is not affected by the “Year 2000” problem.