ALPHA 4
FIRE ALARM SYSTEM

INSTALLATION AND OPERATING INSTRUCTIONS

Applications
ALPHA 4 fire alarm systems are the ideal choice for small to medium size buildings such as:
- Motels
- Boarding houses
- Hostels
- Town houses
- Factories
- Warehouses
- Churches
- Community Centres

Properly installed fire alarm systems using *ALPHA 4* and approved fire detectors and/or manual call points and alerting devices can comply with the requirements of the NZ Building Code where fire safety precautions types 2, 3, or 4 (non-connected), or Type 7 (non-connected) are specified. *ALPHA 4* also complies with NZS 4512:2003 and is FPA(NZ) listed for use in automatic and manual fire alarm systems.

ALPHA 4 is compatible with indicating heat detectors, 2-wire smoke detectors and indicating manual call points as detailed below. An optional "legacy mode" is available for retrofit (affects all circuits), offering compatibility with clean contact (normally closed) heat detectors and manual call points and 2-wire smoke detectors.

Ordering Information:
Panels and Accessories

FP0674	*ALPHA 4* Fire Alarm System
FA2438	Rear Service Index (Spare)
FP0549	Test Probe
LT0182	*ALPHA 4* Fire Alarm System Technical Manual
RR0038	Circuit EOLR 2k7
RR0045	Evacuation EOLR 10k
RR0048	Evacuation EOLR 18k
RR0050	Evacuation EOLR 27k
PA1028	*ALPHA 4* PCB Assembly
HW0226	Spare door key
HW0213	Spare keyswitch key

Compatible Detectors (see page 3 for circuit limits)
1841 Manual Call Point (indicating)
Heat Detector (clean contact) *
Manual Call Point (clean contact) *
Indi-V*IGIL* Indicating Heat Detector
Any clean contact normally-closed detector *
System Sensor 1151 Smoke Detector with B401 or B110 base (2-wire)
System Sensor 2151 Smoke Detector with B401 or B110 base (2-wire)
System Sensor 1400 Smoke Detector (2-wire)
System Sensor 2400 Smoke Detector (2-wire)
System Sensor 1451 Smoke Detector with B401 or B110 base (2-wire)
System Sensor 2451 Smoke Detector with B401 or B110 base (2-wire)

* Use of clean contact devices requires "Legacy Mode". See "Configuration".

Expected Times for Standby Operation (assumes a battery in good condition)

Configuration	Battery Capacity	*ALPHA 4*
5 x 2-wire smoke detectors or 24 indicating heat detectors, 1A sounder load.	4Ah	83 hours
5 x 2-wire smoke detectors or 24 indicating heat detectors, 3.5A sounder load.	6.5Ah	83 hours
40 x 2-wire smoke detectors or 192 indicating heat detectors, 3.5A sounder load.	6.5Ah	75 hours

Installation

ALPHA 4 is designed for window mounting or 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.
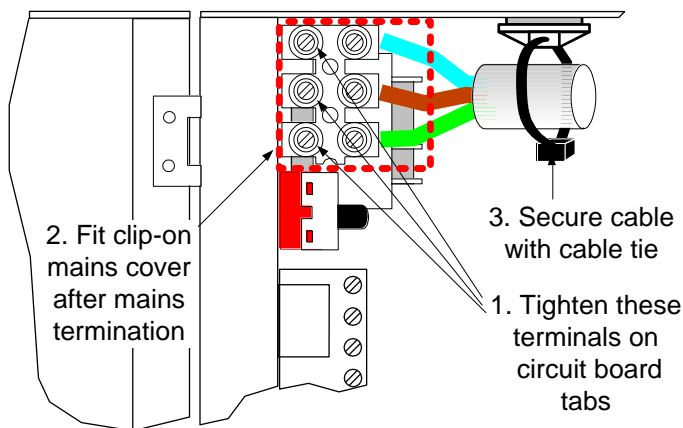
The location of *ALPHA 4* should be chosen with these factors in mind:

- 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.

If a brigade index is needed, bend the 6 rear LEDs by 90° to the edge of the PCB. Fit the PCB to the cabinet so that the 6 rear LEDs will protrude through the back 6 holes of the cabinet. Align the brigade index at the back of the cabinet so that the 6 rear LEDs will fit through the 6 holes on the brigade index too. Use the 4 screws supplied (SC0142) to mount the index securely at the 4 corners.

Connect the 3-way mains connector block to the incoming mains lead, before fitting the connector to the circuit board, as shown in these diagrams.

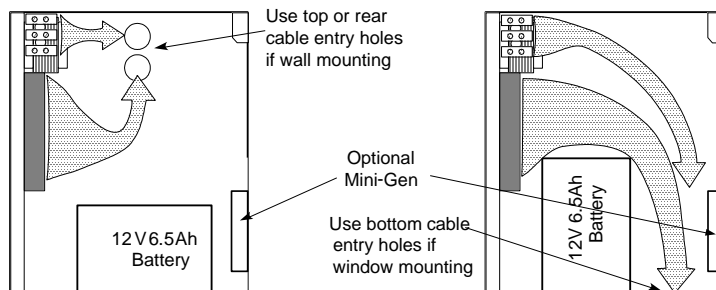**WARNING**: REMEMBER TO ISOLATE THE SUPPLY CIRCUIT BEFORE WIRING THE *ALPHA 4*.

250mm

1.0-1.3m

Recommended Mounting Clearances

Phase (brown)

Neutral (blue)

Earth (green/yellow)

Tighten terminals on wires

Prewiring Mains Terminal Block

2. Fit clip-on mains cover after mains termination

3. Secure cable with cable tie

1. Tighten these terminals on circuit board tabs

Fitting Mains Terminal Block to Circuit Board

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.

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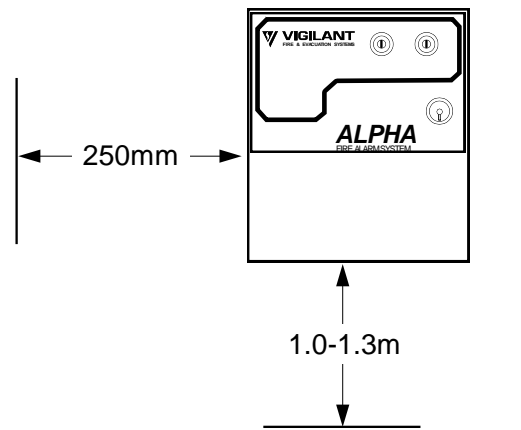 holes. A Mini-Gen tone generator may be fitted on the 4 PBR standoffs on the right wall of the cabinet if needed. The wiring details are shown in **Detector & Alerting Device Wiring**.
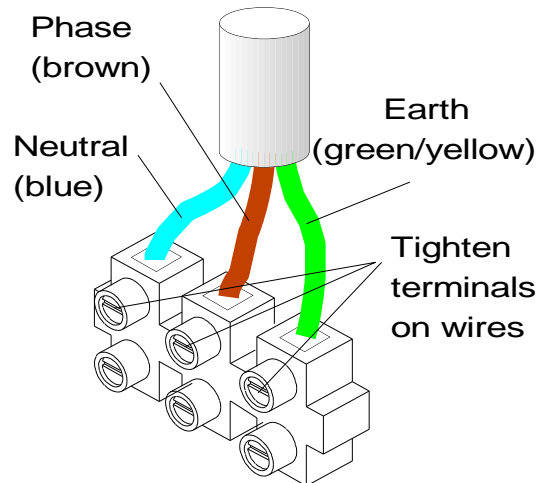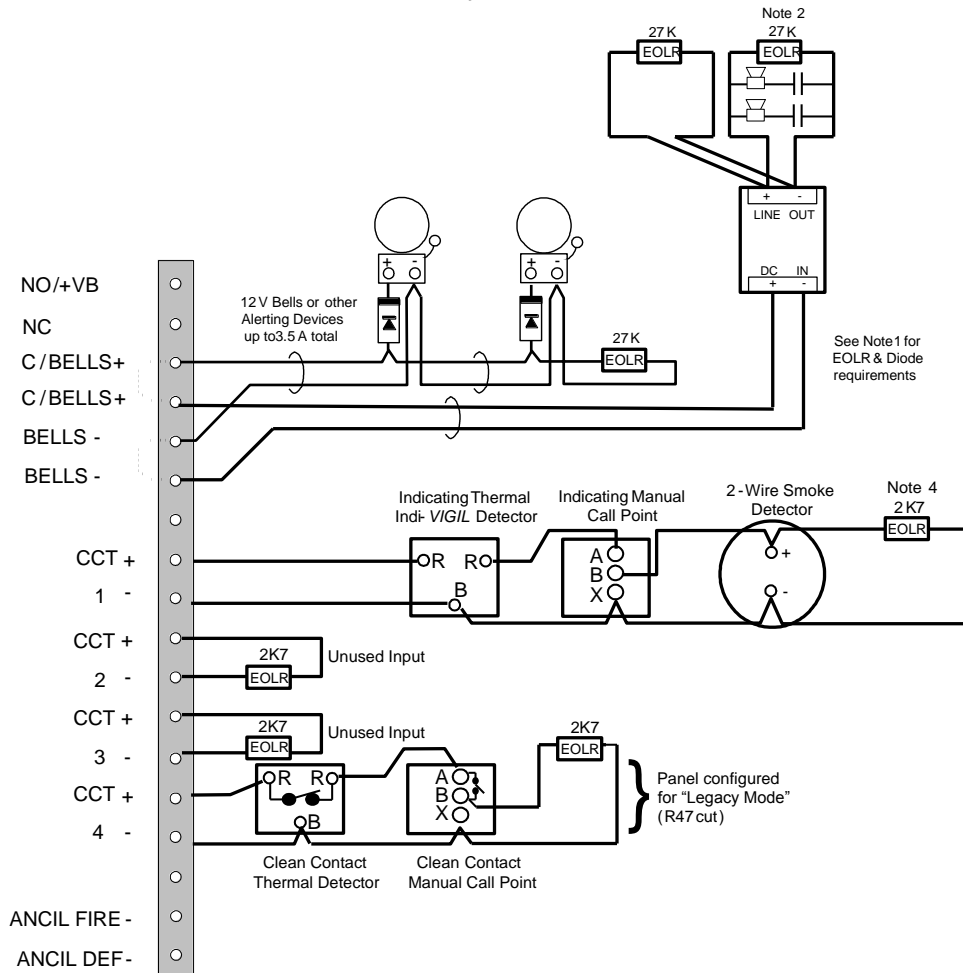
Configuration

- 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**.
- R47 **CUT R47 "LEGACY MODE"**: If compatibility with clean contact heat detectors and

Use top or rear cable entry holes if wall mounting

Optional Mini-Gen

Use bottom cable entry holes if window mounting

12 V 6.5Ah Battery

12 V 6.5Ah Battery

Recommended Cable Routing Options within Cabinet

manual call points is required, cut R47. This operation does not comply with NZS4512:2003 and is not compatible with indicating manual points. Cutting R47 selects this mode for all 4 detection circuits.

Detector and Alerting Device Wiring

This diagram shows the general format for connecting alerting devices or Mini-Gen tone generator 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 (not required for Mini-Gen tone generator) as shown. A 1N4004 type diode is suitable for most small bells and sirens. The correct EOLR value depends on the number of wiring branches: 1 branch - 10kΩ, 2 branches - 18kΩ each,
3 branches - 27kΩ each. Monitoring may be disabled if not required (see **Configuration**).

Note 2: Each branch from the Mini-Gen LINE OUT counts as a branch out of the maximum of three. Only use 27kΩ EOLR on branches of loud speaker wiring. If there are fewer than 3 branches, connect the remaining 27kΩ EOLRs across the Mini-Gen DC IN terminals.

Note 3: 4-Wire detectors are not supported.

Note 4: 2-Wire Smoke Detectors or Indi-*VIGIL* indicating heat detectors or 1841 indicating manual call points: up to 1.2mA total quiescent current per circuit (= 10 System Sensor 2-wire smoke detectors or 48 Indi-*VIGIL* indicating heat detectors or 1841 indicating manual call points). Detector Circuit Limits : Clean Contact Thermal Detectors or Manual Call points in "Legacy Mode": any number. Loop resistance limit for both types is 32Ω.

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's wiring and detectors, EOL, etc.
- 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 LEDs flashes to identify the type of fault (see **Defect** under **Operation**).

Operation

Indicators

- **Normal** -
    - On steady with 0.5 second pulse, "winking" off every 8 seconds: mains on.
    - On steady with 0.5 second pulse, "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, or detector gating/reset is in progress.
- **Defect** - Gives a set of six 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 / Disconnected or Fuse Blown
3rd = Evacuation Defect	4th = Silence Alarms operated
5th = Isolated Circuit	6th = 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. Winking on the 5th defect flash (with NLT on): Circuit is isolated (from Silence Alarms).
- **Buzzer** - Single beep: a defect is present. Double beep: non-latching test mode is on. Continuous beeping: the door is closed with the internal Silence Alarms switch on.

Controls

- **Silence Alarms** keyswitch and internal switch - Either control prevents the alerting devices from operating. A defect is shown while the keyswitch is operated. Internal Silence Alarms switch is interlocked with the door. When the external Silence Alarms is operated, then restored to normal again, any alarmed circuits will be isolated and a defect condition initiated. This will be shown by the Defect LED flashes (see **Defect** under **Operation** above).
- **Evacuation** keyswitch - Unconditionally operates the alerting devices.
- **Reset** button - Clears latched (not current) alarm indications, circuit isolations, and historical defect indications (hold for 1 second for best results).
- **NLT** switch - Enables non-latched test mode if system is normal. Alerting devices operate for 1.5 seconds (0.5 seconds if in "Legacy Mode") when any detector operates, but Alarm indicators latch. Smoke detectors are automatically reset on *ALPHA 4*. Also enables display of latched as well as current defects (Circuit Alarm LEDs show which circuits have or have had defects).
- **Lamp Test** - Operate both External and Internal Silence Alarm switches to illuminate all LEDs.

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 on *ALPHA 4*	J16 (0V) or Battery (-)ve	Each CCT+	Circuit Alarm after ~9 seconds gating delay
	J15 (+VB) or Battery (+)ve	Each CCT+	Defect (or immediate Circuit alarm in "Legacy mode").
Evac. Monitor	J16 (0V) or Battery (-)ve	C/BELLS+	Defect

- 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 4 has no date functions, so is not affected by the "Year 2000" problem.