ALPHA

FIRE ALARM SYSTEM

INSTALLATION AND OPERATING INSTRUCTIONS

Applications

The *ALPHA* series fire alarm systems are the ideal choice for small to medium size buildings such as:

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

Ordering Information: Panels and Accessories

FP0673	*ALPHA 1* Fire Alarm System
FP0674	*ALPHA 4* Fire Alarm System
FP0642	*ALPHA 4* Mimic Display Panel
FA1378	*ALPHA 4* Mimic Display Spare Index
FP0549	Test Probe
LT0182	Alpha Fire Alarm System Technical Manual
RR0753	Circuit EOLR 2k7
RR0045	Evacuation EOLR 10k
RR0048	Evacuation EOLR 18k
RR0050	Evacuation EOLR 27k
PA0729	12V EOL Supervision Relay
PA0762	*ALPHA 1* PCB Assembly
PA0763	*ALPHA 4* PCB Assembly
HW0036	Spare door key
HW0213	Spare keyswitch key

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.

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 suffix e or f are specified. *ALPHA 4* also complies with NZS 4512:1997 Part 2 and is FPIS listed for use in automatic and self-monitored manual systems.

Compatible Detectors

(see page 3 for circuit limits)

	ALPHA 1	*ALPHA 4*
Vigilant 1841 Manual Call Point	✓	✓
Vigilant Heat Detector (clean contact)	✓	✓
Vigilant Indi-V*IGIL* Indicating Heat Detector	no	✓
Any clean contact normally-closed detector	✓	✓
Any clean contact normally-open detector	✓	no
System Sensor 1151 Smoke Detector with B401 or B110 base (2-wire)	no	✓
System Sensor 2151 Smoke Detector with B401 or B110 base (2-wire)	no	✓
System Sensor 1412 Smoke Detector (4-wire) *	✓	✓
System Sensor 2412 Smoke Detector (4-wire) *	✓	✓
System Sensor 1112/24R Smoke Detector (4-wire) *	✓	✓
System Sensor 2112/24R Smoke Detector (4-wire) *	✓	✓
System Sensor 1400 Smoke Detector (2-wire)	no	✓
System Sensor 2400 Smoke Detector (2-wire)	no	✓
System Sensor 1451 Smoke Detector with B401 or B110 base (2-wire)	no	✓
System Sensor 2451 Smoke Detector with B401 or B110 base (2-wire)	no	✓

* 4 wire detectors do not comply with NZS4512:1997 minimum operating voltage requirements (clause 211.5), so cannot be used for NZS4512 compliance.

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

Configuration	Battery Capacity	*ALPHA 1*	*ALPHA 4*
No smoke detectors (*ALPHA 1*), 5 x 2-wire smoke detectors (*ALPHA 4*), 1A sounder load.	2.2Ah	45 days	72 hours
No smoke detectors (*ALPHA 1*), 5 x 2-wire smoke detectors (*ALPHA 4*), 2A sounder load.	4Ah	2 months	120 hours
No smoke detectors (*ALPHA 1*), 5 x 2-wire smoke detectors (*ALPHA 4*), 3.5A sounder load.	6.5Ah	3 months	180 hours
5 x 4-wire smoke detectors (*ALPHA 1*), 40 x 2-wire smoke detectors (*ALPHA 4*), 3.5A sounder load.	6.5Ah	2 months	150 hours

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Telephone +64-3-389 5096
Facsimile +64-3-389 5938

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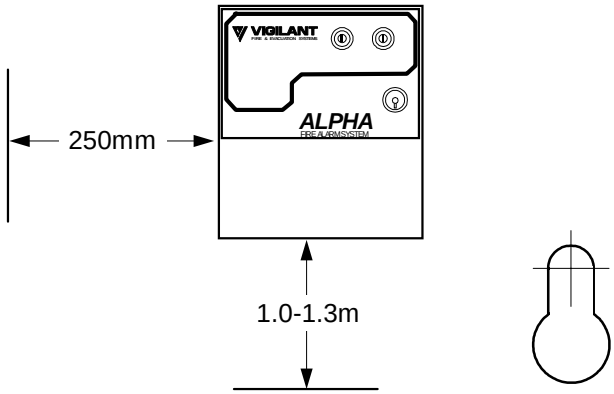
Facsimile +64-9-827 2288

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.

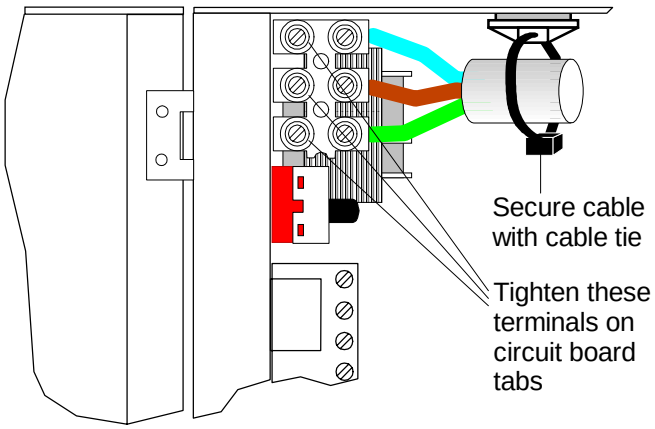
The location of *ALPHA* should be chosen with these factors in mind:

- 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.

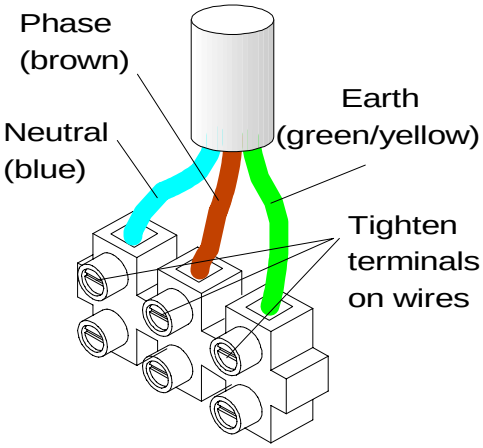


Recommended Mounting Clearances

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.



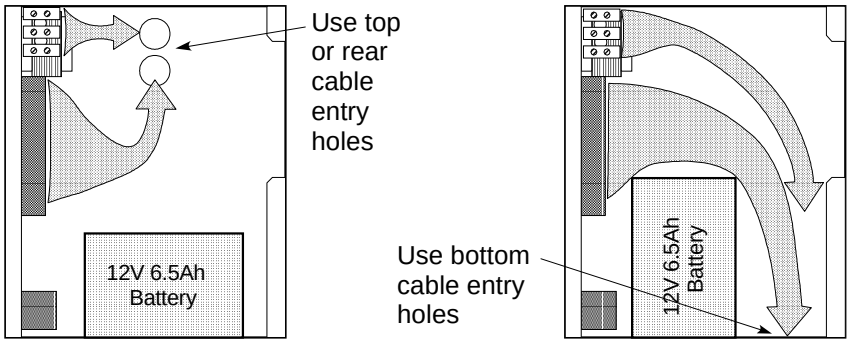
Fitting Mains Terminal Block to Circuit Board



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.

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.



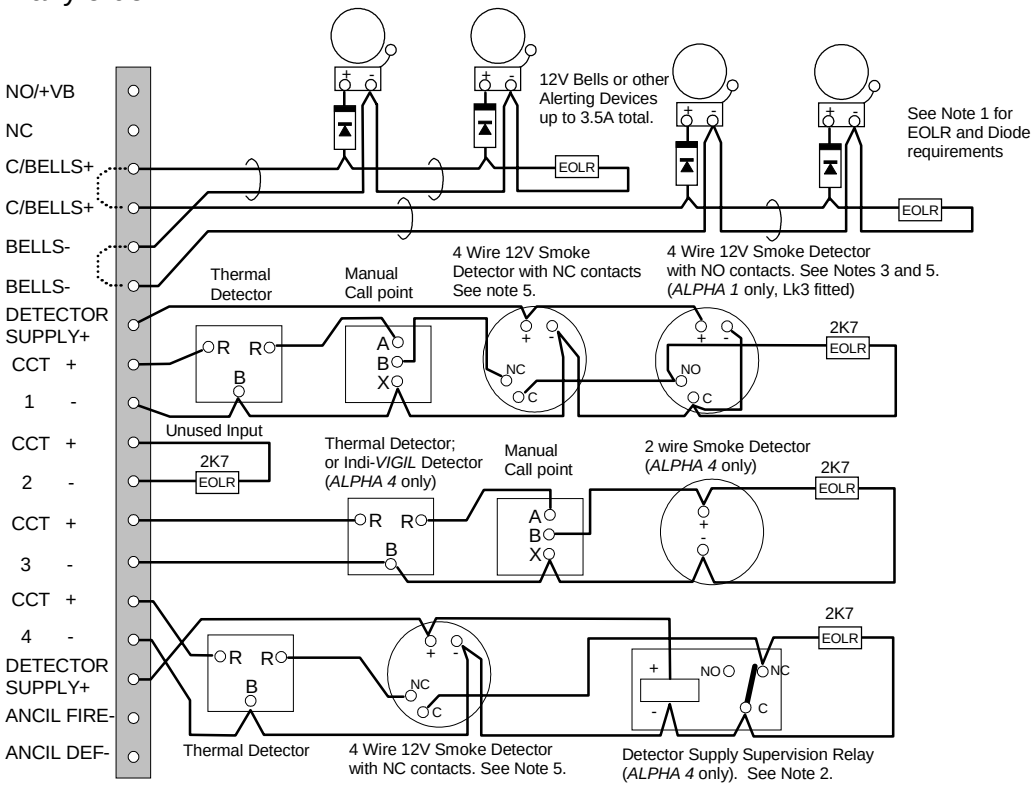
Recommended Cable Routing Options within Cabinet

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** (*ALPHA 1*) : See **Operation** (back page).
- Lk3 **S/C ALM** (*ALPHA 1*) : 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.

Detector and Alerting Device Wiring

This diagram shows the general format for connecting alerting devices and detectors. Unless otherwise stated, the wiring examples apply to both *ALPHA 1* and *ALPHA 4*. 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. 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: If using a 4-Wire Detector and a 12V Detector Supply Supervision relay with *ALPHA 4*, do not use Indi-*VIGIL* or 2-Wire Smoke Detectors on the same circuit. The relay short-circuits the detector circuit to show a supply fault, which prevents any 2-Wire Detector from operating. Clean contact devices are not affected. A suitable relay is Vigilant part number PA0729 (see **Accessories**).

Note 3: Use of 4-Wire Smoke Detectors with normally open contacts does not comply with NZS4512.

Note 4: Detector Circuit Limits: Thermal Detectors or Manual Call points: any number. 4-Wire Smoke Detectors: any number, but quiescent current reduces standby operation time. 2-Wire Smoke Detectors or Indi-*VIGIL* (*ALPHA 4* only): up to 1.2mA total quiescent current per circuit (= 10 System Sensor detectors or 48 Indi-*VIGIL* detectors). Loop resistance limit for both types is 32Ω.

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 **S/C ALM** is selected on *ALPHA 1*).
- 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, or detector gating/reset is in progress (*ALPHA 4*).
- **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 / Disconnected or 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. Continuous beeping (*ALPHA 4*): the door is closed with the internal Silence Alarms switch on.

Controls

- **Silence Alarms/Reset** keyswitch (*ALPHA 1*) - 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.
- **Silence Alarms** keyswitch and internal switch (*ALPHA 4*) - 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.
- **Evacuation** keyswitch (*ALPHA 4*) - Unconditionally operates the alerting devices.
- **Reset** button (*ALPHA 4*) - Clears latched (not current) alarm indications, and historical defect indications. Two presses 10 seconds apart are needed to clear alarms from 4-wire smoke detectors.
- **NLT** switch/link - Enables non-latched test mode if system is normal. Alerting devices operate for ½ second 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** (*ALPHA 4*) - 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 1*	J16 (0V) or Battery (-)ve	Each CCT+	Defect, or Alarm if **S/C ALM** link fitted
	J15 (+VB) or Battery (+)ve	Each CCT+	Immediate Circuit Alarm
Detector Circuits on *ALPHA 4*	J16 (0V) or Battery (-)ve	Each CCT+	Circuit Alarm after ~7 seconds gating delay
	J15 (+VB) or Battery (+)ve	Each CCT+	Immediate Circuit Alarm
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 has no date functions, so is not affected by the “Year 2000” problem.