GENT
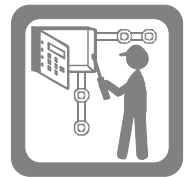
by Honeywell

Installation instructions
Vigilon Compact panel based
Fire detection and alarm system

up to 2km loop

Contents

Preface

This is the third issue of the Installation instructions for the Vigilon Compact panel having 2Km loop card. It covers the approval of 60hz mains frequency, battery charge current data and fire alarm routing options.

These instructions must be read in conjunction with BS 5839 : Part 1, which is the Code of Practice for design, installation, commissioning and maintenance of systems in non-domestic premises.

Associated Documents

- Vigilon compact panel based system - Operating instructions
- Log book

Conventions

> **i** This is a note to highlight important text that is normally hidden in the main text.

> **⚠ i** This is either a caution to prevent damage to the equipment or a warning to inform of dangerous conditions that may result in injury or death.

Abbreviations

ac	Alternating current
dc	Direct current
EOL	End of line
EP	Environmentally protected
ESD	Electrostatic discharge
FARE	Fire Alarm Routing Equipment
FPE	Fire Protection Equipment
I/F	Interface
IO or I/O	Input Output
IP	Ingress protection
LCD	Liquid crystal display
LED	Light emitting diode
LPCB	Loss prevention council certification board
MCB	Master control board (CARD 0)
MCP	Manual call point
MICC	Mineral insulated copper cable
N/C	Normally closed
N/O	Normally open
OC or O/C	Open circuit
PCB	Printed circuit board
PSU	Power supply unit
QB	Quick blow (fuse)
SC or S/C	Short circuit
T	Anti-surge (fuse)

Notes

The power-up of the control panel and commissioning of the system is done by the Servicing organisation.

Installation

It is recommended that the installer follow the general requirements of *BS 5839 : Part 1 : 2013, which is the code of practice relating to fire detection and alarm systems for buildings*. The installer must follow the relevant parts of *BS7671 : 2008 Requirements for Electrical installations, IEE wiring regulations 17th edition* if installation is in the United Kingdom.

Second fix

To prevent the possibility of damage or dirt degrading the performance or appearance of the products, the installation of second fix items should be delayed until all major building work in the area is complete.

> **i** **The installation of all outstanding parts and the panel power up is usually carried out during system commissioning.**

Fixture and fittings

It is the installers responsibility to provide adequate fixtures and fittings for the type of construction surface onto which a product is to be installed, whilst utilising the fixing points on the respective product. As an aid to this decision, the weight and overall size of each full assembly together with implications on cable entries and routing should be taken into consideration.

> **i** **All these procedures assume that the cable, gland, steel box (BESA box) and other related accessories are provided by the installer.**

As fitted drawings

The installer should acquire site specific information from the interested parties, for details on the location of products for installation. The acquired information together with this guide and the relevant standards should be used to assist the work.

Each product assembly can be identified from its package label. The contents of all packages should be checked for any discrepancies.

Cable type and routing

Appropriate attention must be given to ensure the correct cable type is installed in accordance with 'as fitted drawings', site specific information and recommendations of *BS 5839 Part 1 : 2013*. The cables must be installed using cable manufacturers recommended fixing and accessories, see list of approved cables.

Fire sensor covers

Each fire sensor may be supplied with a plastic dust cover. If supplied, the cover must be fitted to prevent dust and dirt from the building work contaminating the fire sensor.

Earth continuity

All earth connection points should be clean to provide a good electrical conductivity path. To maintain the earth continuity: all earth leads and fittings provided should be installed. The loop cable screen must be continued through each system device on the loop circuit, whether the earth is connected to the device or not.

> **i** **Do not use any part of building structure for earthing.**

Some of the system products having metal enclosures have zinc coating around the cable termination points, the coating provides a good electrical conductivity path for cable earth termination. The zinc coating on metal enclosures should not be damaged. Any damage will expose bare metal, which can corrode and make a poor earth connection.

Power supply

The power to the system is derived from the mains and battery supplies. Before removal of a card or disconnection of cable from the panel ensure both mains and battery supplies are disconnected.

Mains supply

Mains supply to any fire alarm control and indicating equipment must be via an unswitched 5A fused spur unit. A disconnect device must be provided to disconnect both poles and must have a minimum gap of 3mm. The disconnect device should be available as part of the building installation and must be easily accessible after installation is complete.

> **i** **All mains powered equipment must be earthed.**

Local Manual Call Point

To comply with the requirements of *EN54-2 : 1997* a conventional manual call point must be installed near the Control panel. The call point must be wired to the monitored line input of the control panel. During commissioning of the system the Command Build No 250 associated with the monitored line input must be set up to evacuate all sectors without delay.

> **i** **Failure to install and configure a local manual call point in the manner described above when delays are set up on the system will result in the panel not complying to *EN54-2 : 1997*.**

EN54 information

Optional functions with requirements of European standard

The Control panel complies with the requirements of *EN54-2 : 1997*. In addition to the basic requirements of the standard the panel conforms to the following optional clauses:

Clause	Description
7.8	Output to fire alarm devices
7.9	Control of Fire Alarm Routing Equipment FARE (options with requirements) sub clause: 7.9.1 Output to FARE
7.10	Output to Fire Protection Equipment FPE (options with requirements) sub clause: 7.10.1 Output Type A
7.11	Delays to action outputs
7.12	Dependencies on more than one alarm signal (options with requirements) sub clause: 7.12.3 Type C dependency
8.3	Fault signals from point
9.5	Disablement of each addressable point
10	Test condition

System wiring

If instructed, the installer may need to terminate as well as connect the cables to the appropriate terminal blocks.

Cable separation

Where the outgoing and return cables of a loop circuit covers more than the equivalent of one zone they must not run together, for example, either close to the Control Panel or in a service duct. There should be as much physical separation as possible between the cables and the mechanical protection of the cable should be to a particularly high standard. This is to minimise the risk of accidental damage to both cables.

Lightning protection

Where a loop cable is mounted to an external wall or between two buildings then consideration should be given to the use of lightning protection devices.

There must be a good earth connection to the voltage surge protection devices.

230V ac

Vigilon Compact
Control Panel

Other loop devices

Interface Unit

Zone circuit

Sounder circuit

Secure Network

230V ac

Vigilon Compact
Control Panel

Other loop devices

Mains powered interface

230V ac

Zone circuit

Sounder circuit

| 1 | Loop voltage surge protection | 2 | Input Output line voltage surge protection |
| 3 | Mains 230Vac voltage surge protection | 4 | Network voltage surge protection |

Cables

Requirements of cables

The British Standard
BS 5839 Part 1 : 2013 Code of practice for system design, installation, commissioning and maintenance states the requirements for standard and fire resisting cables in Clause 26.2 section d & e.

"d) Standard fire resisting cables should meet PH 30 classification when tested in accordance with EN50200 and maintain circuit integrity if exposed to the following test:

- a sample of the cable is simultaneously exposed to flame at a temperature of 830ºC - 0+40ºC and mechanical shock for 15min, followed by simultaneous exposure to water spray and mechanical shock for a further 15min.

e) Enhanced fire resisting cables should meet the PH120 classification when tested in accordance with EN 50200 and maintain circuit integrity if exposed to the following test:

- a single sample of the cable is simultaneously exposed to flame at a temperature of 930ºC - 0+40ºC and mechanical shock for a period of 60min, followed by simultaneous exposure to water spray and mechanical shock for a further 60min."

The cables listed in this manual are those that have been tested/assessed for EMC compliance with the system products.

Mains Supply cable

The mains supply cable must be a standard fire resisting type and should meet PH30 classification, such as standard or enhanced cable.

Repeat indicator to panel cable

A maximum of 1Km cable distance is allowed between Control Panel and Repeat indicator panel

☐ Belden No. 9842 EIA RS485 Applications, O/A Beldfoil® Braid having two twisted pairs

Loop cables

> ℹ️ **There is a maximum limit of 2Km loop cable usage allowed per loop circuit. This maximum limit is the sum of the cable used on main loop circuit, spurs off main loop circuit, plus cable runs to all input / output lines off loop powered interface units installed on the same loop.**
>
> **There is a further maximum limit of 100m cable run allowed per input/output line off loop powered interface unit.**

The device loop cable carries both data and power, therefore its selection is important. Note the following:

◻ In countries where the European EMC directive is in force, only EMC Compliant cables are to be used.

◻ The loop cable usage must not exceed 2Km. This includes the cable used on main loop and spur circuits.

◻ Single pair cable must be used. It is NOT permissible to run mixed loops or outgoing and return pairs in a multi core cable, due to inadequate separation and possible electrical interference problems.

◻ Each core of the loop cable must be 1.5mm^2 cross section area.

◻ the cable screen must be capable of being earthed at each system device (outstation).

◻ Red is the preferred cover sheath for fire applications.

◻ The specified loop circuit cables are also suitable for wiring master alarm, auxiliary relay, input/output lines and mains supply.

Enhanced loop cables

Approved cables for loop wiring (EMC Compliant)

◻ Draka Firetuf FT120 Enhanced - **FTPLUS2EH1.5RD** (formally Firetuf **FT Plus**)

◻ Datwyler Pyrofil Enhanced

◻ Mineral insulated cable (MICC) to BS6207:Part 1

◻ Prysmian (previously Pirelli) **FP PLUS** *

Standard loop cables

Approved cables for loop wiring (EMC Compliant)

◻ AEI Cables **FIRETEC** *

◻ Alcatel cable **PYROLON E** * distributed by Winstonlead

◻ BICC Pyrotenax **FLAMESIL FRC** *

◻ Cavicel SpA **FIRECEL SR 114H** * distributed by Cables Britain

◻ Datwyler Pyrofil Standard * (previously **LIFELINE**)

◻ Draka Firetuf EMC Standard 1.5mm^2 **FTEMC2EH1.5RDR**

◻ Draka Firetuf **FTES2EH1.5** (previously **FTZ2E1.5 FIRETUF OHLS** *) fire resistant data cable

◻ Huber & Suhner **RADOX FR** *

◻ Prysmian (formally Pirelli) **FP200 FLEX** *

◻ Prysmian (formally Pirelli) **FP200 GOLD** *

◻ Raydex **CDT FG950** *

2.5mm² Loop cable (2.5Km loop)

> ℹ️ **The cable reference for a 2.5mm^2 loop cable is similar to 1.5mm^2 cable, for example the cable referece for a Draka Firetuf 1.5mm^2 is FTPLUS2EH1.5 and for a 2.5mm^2 it is FTPLUS2EH2.5, consult cable supplier.**

For cables marked with an * see note on the next page.

ℹ **The cables marked * utilise laminated aluminium tape with a tinned drain wire for electrostatic screening. Under certain environmental conditions galvanic action may take place between the aluminium and the drain wire. This will severely degrade EMC performance as the foil to drain wire impedance will increase. Armoured variants of these can also be used for wiring a loop circuit.**

Network cables

Enhanced Network cables
Approved cables for network wiring (EMC Compliant)

◻ Draka Firetuf FT120 Enhanced FTPLUS3EH1.5 (Previously Firetuf FT Plus) 1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 3 Cores, each having 1.5mm^2 cross section area

◻ Fireshield **Enhanced FSN G2000** 1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 3 Cores (1 pair + 1) and earth
  - each core having 1mm^2 cross section area

◻ **Mineral insulated copper cable** 800m maximum Panel to Panel or Panel to Network node cable distance.
  - BS6207: Part 1
  - 3 parallel cores
  - having continuous metal sheath encapsulating
  - each core having 1.5mm^2 cross section area
  - a red cover sheath (preferred for alarm applications)

◻ Prysmian (formally Pirelli) **FP Plus*** 1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 3 Cores each having 1.5mm^2 cross section area

Standard Network cables
Approved cables for network wiring (EMC Compliant)

◻ **Belden Armoured equivalent** This cable being a two pair cable to BS5308:Part 1 (type 2) 0.5mm^2 (16/0.2mm). 600m maximum Panel to Panel or Panel to Network node cable distance.

◻ **Belden No 9729** (UL Style 2493) 1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 2 twisted pairs
  - Each pair individually screened 24AWG (7 strands x 32 AWG)
  - Capacitance between conductors 39.4pF/m at 1kHz
  - Capacitance conductor to screen 72.2pF/m at 1kHz
  - Temperature range -30°C to +60°C

◻ **Belden No. 9842** EIA RS485 Applications, O/A Beldfoil® Braid 1.2Km maximum Panel to Panel or Panel to Network node cable distance Must have following characteristics:
  - 2 twisted pairs
  - 24AWG (7 strands x 32 AWG) conductors
  - Characteristic impedance - 120ohms
  - Capacitance between conductors - 42pF/m at 1kHz
  - Capacitance conductor to screen - 75.5pF/m at 1kHz

- ☐ **Belden TR No. 89729**
  (Teflon jacketed)
  1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 2 twisted pairs
  - Each pair individually screened 24AWG (7 strands x 32 AWG)
  - Capacitance between conductors 39.4pF/m at 1kHz
  - Capacitance - conductor to screen 72.2pF/m at 1kHz
  - Temperature range up to 200ºC

- ☐ **Datwyler PYROFIL 8750-U/R** *
  1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 4 cores
  - each core having 1.5mm^2 cross section area

- ☐ **Delta Crompton Firetuf FDZ1000***
  1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 3 cores

- ☐ **Doncaster Cables Firesure Plus***
  1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 4 Cores (2- pair plus earth)
  - each core having 1.5mm^2 cross section area

- ☐ **Huber & Schner Radox series FR**
  communication cable*
  1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 3 cores twisted triad screened
  - 1.5mm^2 (7/0.42 stranded) conductors
  - Nominal impedance 200 ohms (1KHz)
  - Capacitance - conductors 110pF/m (1KHz)
  - Capacitance - screen to core 210pF/m (1KHz)
  - Fire resistance tested to BS6387 category CWZ and IEC 331.

- ☐ **Prysmian (formally Pirelli) FP200 Flex***
  800m maximum Panel to Panel or Panel to Network node cable distance
  - 3 Cores, each having 1.5mm^2 cross section area

- ☐ **Prysmian (formally Pirelli) FP200 Gold***
  1.2Km maximum Panel to Panel or Panel to Network node cable distance
  - 3 Cores
  - each core having 1.5mm^2 cross section area

- ☐ **Prysmian (formally Pirelli) FP 400 Armoured**
  800m maximum Panel to Panel or Panel to Network node cable distance
  - 4 Cores, each stranded 1.5mm^2 cross section area

Loop circuit design

It is important that redundancy is built into the system to accommodate for future expansions and change of area usage in the protected premises.

The number of devices on a loop circuit can be limited by the total number of addresses available, the electrical load on the circuit, the maximum cable length and other geographical considerations.

- A loop circuit must not cover more than 10,000m^2 of floor area of a protected site
- In total a maximum of 200 devices are allowed per loop circuit.

Loop Card

Post March 2014 Loop Card

The panel is supplied with one Post March 2014 Loop Card (COMPACT-LPC-EN). If more than one loop is required then acquire additional card for the second loop.

Condition of use

The Loop Card (COMPACT-LPC-EN) must never be fitted as a replacement card in a Vigilon Compact panel where 3400 devices are installed on its loop circuits.

- Up to 2Km loop length is possible with S4 and S3 Mark 2 devices installed on a loop circuit. In this case a rough method for calculating the loop load and loop cable length is shown in the leaflet for the loop card. For a precise loop load and battery standby calculation use the 'Battery Standby and Loop load calculator' tool.

- Up to 1Km loop length is possible with 34000 devices or a mix of 34000, S4 and S3 devices installed on a loop circuit. Again for precise loop load and battery standby calculation use the 'Battery Standby and Loop load calculator' tool.

Battery Standby and Loop load calculator tool

The 'Battery standby and loop load calculator' tool can be downloaded from www.gentexpert.co.uk website by registered users.

Loop Cable length

The loop cable length is defined as the sum of the length of cable used on the main loop plus that used on all the spur circuits off the main loop having system devices.

Loop device load and length calculations for 2Km loop card

There can be up to 200 devices on a loop cable of up to 2Km length when using Loop Card (COMPACT-LPC-EN), where both device count and cable length are dictated by the number of alarm devices on the loop and how they are positioned, distributed or lumped together.

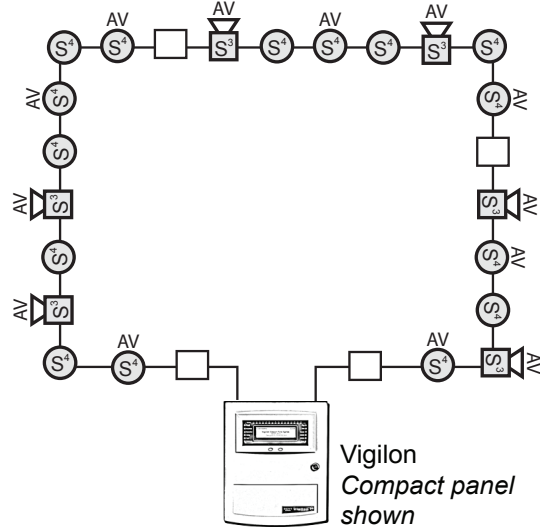# What are Lumped and Distributed alarm device loads?

Example of Lumped alarm device load

Where 35% of the alarm devices AV S³ AV S⁴ are lumped together in 1/4 segment Ⓐ, Ⓑ, Ⓒ or Ⓓ of a loop.
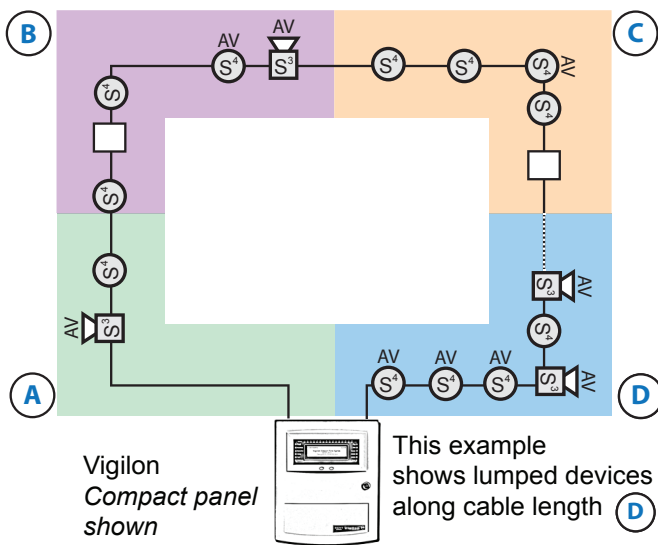
Example of Distributed alarm device load

Distributed alarm devices AV S³ AV S⁴ are evenly spaced along the entire length of the loop cable from end to end.

Vigilon *Compact panel shown*

This example shows lumped devices along cable length Ⓓ

Vigilon *Compact panel shown*

key: AV S³ AV S⁴ - Audio Visual S4 and S3 devices   S⁴ - S4 Sensor only devices   ☐ - Other system devices

Distributed alarm device load

Where the alarm load is distributed along the entire length of the loop using:

◻ 1.5mm² cable, the loop length can be up to 2Km with up to 200 devices

◻ 2.5mm² cable, the loop length can be up to 2.5Km with up to 200 devices.

Lumped alarm device load

If the alarm devices are lumped together on a loop circuit then there is a trade off between the number of alarm devices and loop cable length possible, see also loop card leaflet which can be downloaded by registered users from www.gentexpert.co.uk.

Vigilon Loop Diagnostic tool

The Vigilon Loop Diagnostic Tool can be used to diagnose loop circuits driven by Post March 2014 Loop Cards (COMPACT-LPC-EN) fitted in the panel, this is normally done during commissioning of the system.

Typical Vigilon Compact System

The loop allows wiring of addressable devices like **fire sensors, alarm sounders, call points, interface units, mimic and repeat panels**, a combined maximum of up to **200** devices are allowed per loop circuit.

Repeat indicator panel

Conventional Sounders on (Two master alarm circuits) 250mA per circuit

Secure Network loop circuit

RS485 **Port 0**

RS232 **Port 1 / 2**

Clean contacts rated 1A @ 24Vdc

Monitored Input 230V ac

1 or 2 - loop Vigilon Compact Control Panel

Fire /Fault Two auxiliary relays contacts rated 1A @ 24Vdc

Optional Loop circuits 2

Loop circuit 1

Mimic Panel

230V ac

Input output signals may be used to control and monitor: Plant equipment, Building management system

Conventional 2-wire system equipment (eg 7800 detectors)

230V ac

Magnetic door release

230V ac / 24V dc

Conventional 2-wire system equipment

Output to control plant

FAAST

Spur

Repeat Panel

230V ac

Addressable System Devices

- S-Quad Sensor Speech Sounder & Strobe S^4

- S-Cubed Voice enhanced Speech, Sounder, Strobe Unit S^3

- Manual Call Point

- T Breaker

- Beam sensor Transmitter and receiver Tx Rx

- S4 4-Input/Output loop powered interface (S4 i/o)

- S4 1-Input loop powered interface (S4 i)

- S4 1-Output + Confirmation input loop powered interface (S4 o)

- S4 Mains switching output loop powered interface (S4 o~)

- S4 - Input/Output mains powered interface unit (S4 MP)

- S4 - Input/Output ASD interface unit (S4 ASD)

Conventional Products off interface inputs

- Magnetic door release

- Alarm sounder

- Conventional Fire Detector

- Manual Call Point

- End of Line Unit

LED off S^4 sensor

- Remote LED (L)

Vigilon Compact panel

Features

- Analogue addressable fire detection and alarm control
- Supports up to two loop circuits each up to 2Km in length.
- Up to 200 addressable devices can be connected to a loop circuit, devices like sensors, call point, interface units, repeat and mimic panels
- Supports the connection of up to 31 panels in a secure loop network
- Two master alarm circuits
- RS485 (Port 0) to connect to repeat indicator panel(s)
- RS232 (Ports 1 and 2) to connect to external printer
- USB (Port 0) to connect to a Commissioning computer
- Two sets of auxiliary relay change over contacts configurable to operate with fire, fault or disablement event
- One set of clean voltage-free change over contacts that operate with master alarms
- Monitored input that actions a command build 250
- Standby supply to power the system via batteries for 24 hours plus 0.5 hour alarm load
- LCD with back light to display event information
- Integral 32 zone LEDs (with First fire flashing/steady options and an option to disable the integral zone indicators)
- LED lights for event indication
- Local audible buzzer for event announcement
- Push buttons for essential controls and menu driven commands
- Fire Alarm Routing Active and Fault/Disable LED indications
- Two programmable control buttons U1 and U2.

LPCB

LOSS PREVENTION CERTIFICATION BOARD

042bc

The Vigilon Compact panel is designed to meet the requirements of *EN54-2 : 1997* and *EN54-4 :1997*. The panel can accommodate up to 2 loop circuits each up to 2Km in length that can have Vigilon analogue addressable devices, like fire sensors, manual call points, interface units and repeat panels. A number of Compact panels can be connected together on a secure network loop to give control and indication of network system events at any panel. A panel gives local visual and audible indications of system events, via indicators and message display. An integral mains derived power supply provides power to the panel and loops and the integral batteries provides a standby supply for up to 24 hours plus 0.5 hour alarm. A lockable front door prevents unauthorised access to the fire alarm controls. The panel is designed for both flush and surface mounting and facilitates both rear and top cable entry points.

Technical data
Control panel

Standard	Designed to EN54-2:1997 + A1:2006 (and include optional clauses 7.8, 7.9, 7.9.1, 7.10, 7.10.1, 7.11, 7.12.3, 8.3, 9.5 and 10)
Approval	LPCB approved
Panel dimensions in mm	height 403 x width 338 x depth 101
Panel weight	8.6Kg approximately without batteries 1 - 12V 12Ah battery - 4Kg (2 batteries are required)
Storage temperature	-10ºC to +55ºC
Operating temperature	0ºC to +45ºC
Relative Humidity	up to 90% (Non condensing) Temperature +5ºC to +45°C
Emission	BS EN 6100-6-3 : 2001 Residential, Commercial & Light Industry Class B limits
Immunity	BS EN50130-4 : 1996 Alarm systems: Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems
Ingress Protection	IP31
Colour	Door: Grey (Pantone 422) Backbox: Graphite Grey (RAL 7024)
Plug in Card Card 1 Card 2	1st Loop processor card LPC (supplied) 2nd Loop processor card (optional) and Network card (optional)
Devices per loop	A maximum of up to 200 addressable devices per loop
Device labels	Each device can be given a 32 character label for identification to locate events in the system. Each MCP is restricted to 28 character label. Configurable option for long labels.
Network Card	Supports the connection of up to 31 panels in a secure loop copper network, to give 1.2Km maximum between panels
Clean contacts	1 set of voltage free change over contacts rated 1A @ 24Vdc, active with master alarms
Auxiliary relays Aux relay 1 Aux relay 2	Voltage-free contacts rated 1A @ 24Vdc, 2 sets of change over contacts configured to operate immediately on a Fire event. The relay is normally de-energised 1 set of change over contacts configured to operate immediately on a Fault event. The relay is normally energised The relays can be re-configured to operate with Fire, Fault or Disablement event, with a maximum delay of up to 10 minutes and can operate in a normally energised or de-energised state.
Master alarm circuits voltage and current, protection fuses	2 - (24 V nominal) 250 mA max per circuit MA1 - FS1 T250mAH250V (20 x 5mm) on MCB board MA2 - FS2 T250mAH250V (20 x 5mm) on MCB board
Monitored input	A closed input triggers a command build number 250. The input is normally open.

Ports	*Port 0 and fuse*	*RS485 -Repeat indicator panel (PB15) (Mode: **Repeat**) Includes a 24V supply protected by FS3 Fuse 200mA TE5 on MCB*
	Port 1 and 2	*RS232 -Printer (PB6) (Mode: **Std**, Printer, Universal or Ascom)*
	Port 3	*USB - (P16) Commissioning tool*
	Baud	*The factory set baud rate for Port 0 it is **1200** and for Ports 1 & 2 it is **38400**. Baud rate can be software reconfigured to another setting.*
Display		*Display - 8 lines by 40 character per line, back-lit, (Black characters on green background, liquid crystal display)*
Internal sounder		*Announces Fire & Fault events, plus give key-press confirmation beep.*
Indicators		*Fire (red) 32, Zones (red) hidden till lit, Verify (amber), FARE Active (red), FARE Fault/Dis (amber), Power (green), Fault (amber), Disablement (amber), System fault (amber), Power fault (amber), Sounder (amber), Test (amber) and Delay (amber)*
Controls (with door closed) Access level 1		*Next and Previous buttons operable during Fire condition only*
Controls (with door open)Access level 2		*Sound Alarms, Silence Alarms, Reset, Cancel Buzzer, Verify, F1-F4 keys, Menu On/Off key, Numeric keys, U1-U2 keys available if configured to perform site specific actions by triggering of CB251 and CB252*
Access level 2a		*Customer (Customer PIN)*
Access level 3		*Engineering (Engineers PIN)*
Menus		*[Control], [Setup], [Information] and [Test Engineering] menus.*
Logs		***Active Logs**: Fire, Fault and Disablement* ***Historic log**: All events* ***Event logs**: Fault, Disablement, Warning, Supervisory, Exceptions and Historic fires. (up to 255 events)* ***Fire Log** (up to 100 events)*
24V supply		*FS3 T200mA (TE5) on MCB*

Power supply

> ⚠️ **Always use the recommended replacement batteries, as there is a risk of an explosion if incorrect battery is used.**
>
> **Dispose of used batteries according to the manufacturer's instructions.**

Standard	*Designed to EN54-4:1997 + A1:2002 and A2:2006*
Mains supply voltage and fuses	*230V -15% +10% 50Hz/60Hz* *protected by: FS3 T3.15AH250V Ceramic (20 x 5 mm) on PSU* *Input current - 0.6A*
Nominal supply voltage for master alarm circuits	*24V ± 4V*
Battery circuit 'BAT1' fuse	*FS1 T3.15A (TE5) on PSU board*
PSU volts & fuses *43V (quiescent)* *24V*	*On PSU board:* *FS6 T1A (TE5)* *FS4 T1A (TE5)*
Battery	*Batteries for the panel 2 x Powersonic 12V 12Ahr - (supplied) Model number: PS-12120 F1. The batteries provide 24 hours standby power and 30 minutes alarm, determined by loop loading, reference should be made to the Battery Standby and Loop Load calculator tool*
Lithium Battery	*BATT3 on MCB. Type CR2032 3V cell. Replace only with the same or equivalent type battery.*
Storage temperature	*-10°C to +55°C*
Operating temperature	*0°C to +45°C*
Relative Humidity	*up to 90% (Non condensing) Temperature +5°C to +45°C*
Indicators	***Left LED (yellow)**: battery circuit 2 or 43V supply fault* ***Centre LED (yellow)**: battery circuit 1, 24V supply* ***Right LED (green)**: mains supply fault.*
Maximum current from battery without mains connected	*3.15A*
EN54 Part 4 data *I max a*	*126mA-> O/P 1 (43V)* *43mA-> O/P 2 (27.5V)* *29mA -> O/P 3 (5V)*
I max b	*850mA -> O/P 1 (43V)* *570mA -> O/P 2 (27.5V)* *290mA -> O/P 3 (5V)*
I min	*28mA -> O/P 1 (43V)* *43mA -> O/P 2 (27.5V)* *25mA -> O/P 3 (5V)*
UVLO	*20.7V ± 0.4V*
Ri max	*1.3R*

> ⚠️ **After panel power down hazardous voltages may still be present even when the indicators are extinguished.**

Panel installation

The Vigilon Compact Panel is supplied in parts, it is important to check the contents of each package:

☐ Back box assembly
☐ Inner door assembly
☐ Outer door assembly
☐ 2 x 12V 12Ah Batteries

	Parts in the Spares pack	Qty
	Fuse T3.15AL250V 20mm x 5mm	1
	Fuse T3.15A (TE5)	2
	Fuse T1A (TE5)	2
	Fuse T200mA (TE5)	2
	10K Ohms Resistor	4
	Battery Link	1
	Battery Lead	1

Cardboard cover protecting the Master Control Board and Loop Card

Plastic cover protecting PSU

Product No: COMPACT-24-N
Rated Voltage: 230V A.C.
Rated Current: 0.6A
Rated Frequency: 50Hz/60Hz
Mains Fuse: FS1 T3.15AL250V
Manufactue date: xx/xx/xx

GENT by Honeywell

Back box

REMOVE ONLY DURING COMMISSIONING

Warning removal of cover exposes live parts

CAUTION
Ensure correct fuses are fitted

Earth lead from back box - inner door

ESD Earth Bonding point

Battery bracket
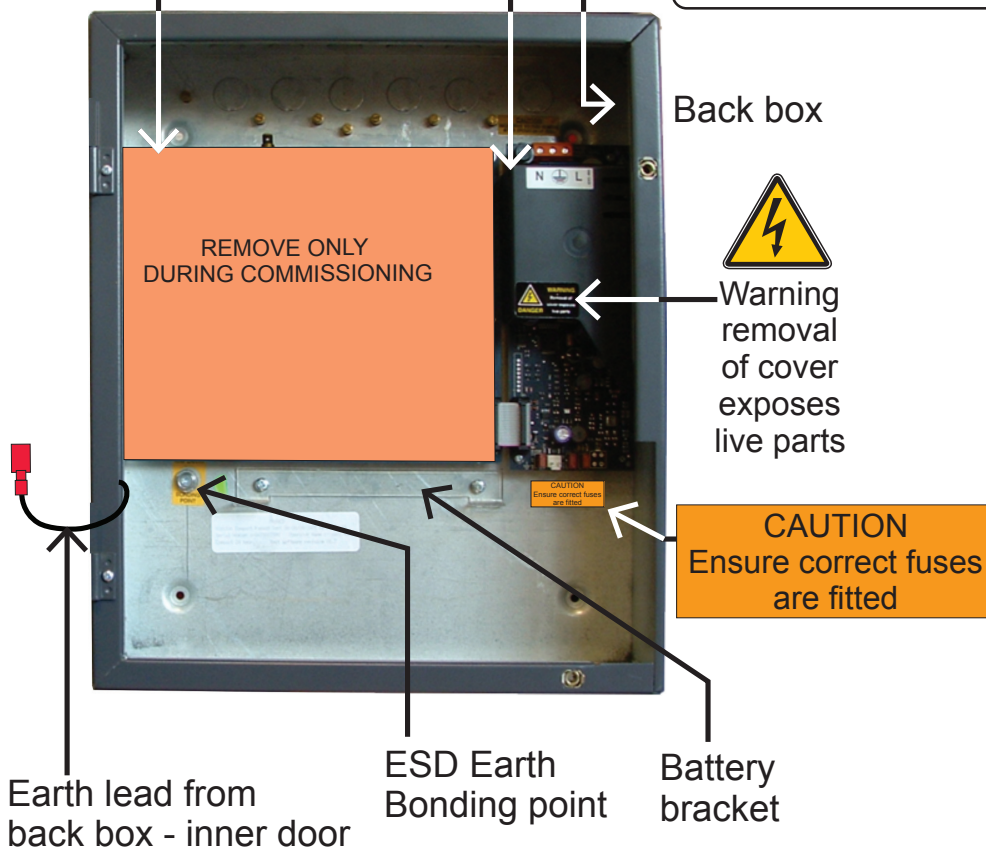
Mounting & cable entry points

Any unused knockouts that have been removed should not be left open.

All other cable entry

RS485   RS232s   Mon I/P
                            Clean Cont.   **Mains
                                                cable
Network   Aux. Relays   Loops   Master   entry**
                                alarms

7 Earth points

Cable entry points
13 - Top
6 - back

REMOVE ONLY
DURING COMMISSIONING

1.7m

4 - Panel fixing points

Floor level
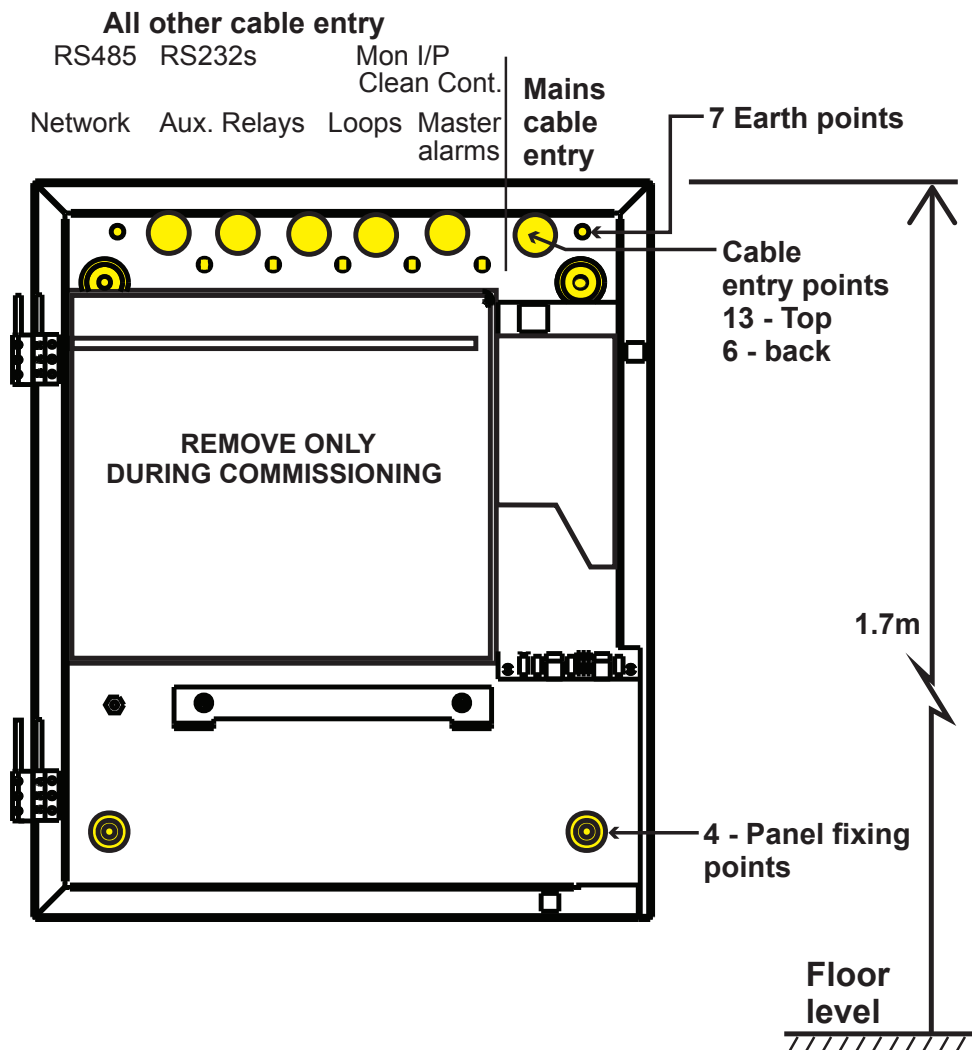
How to surface mount the panel

Using the four fixing points mount the backbox onto a flat wall using suitable fixings.

REMOVE ONLY
DURING COMMISSIONING

How to semi-flush mount the control panel

The control panel may be semi-flush mounted using a flush surround (COMPACT-FLUSH).

A stainless steel flush surround is available as an option (COMPACT-FLUSH-SS) and if fitted it requires a stainless steel door (VIG-RPT-DOOR-SS).

Aperture depth should not be less than: 93mm

Cross section of the wall to which the panel is to be flush mounted

Control Panel

Flush Surround

5mm diameter fixing holes

Aperture Height: 380mm

Aperture Width: 320mm
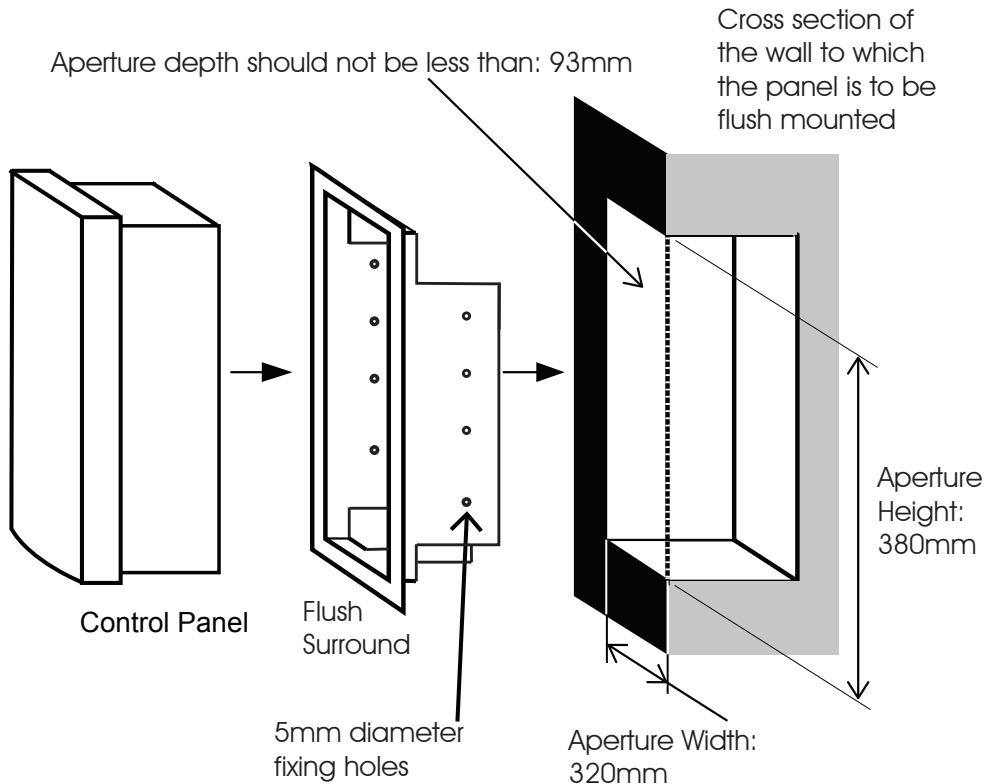
a. Cut out an aperture in the wall to allow the flush surround to be fitted, see diagram for dimension of the aperture.

b. Using the fixing holes on the flush surround, secure it into the aperture side walls.

c. Knock out the appropriate top or rear cable points on the panel enclosure.

d. Route the cables through the cable entry points into the panel and at the same time insert the panel into the flush surround.

e. Fit the panel back box to the flush surround using the 4-off 5mm screws supplied with the flush surround.

Fitting the inner door

Inner door ①

② Back box

REMOVAL OF COVER
EXPOSES HIGH VOLTAGE

Ribbon cable
and clamp

Inner door

Back box

REMOVE ONLY
DURING COMMISSIONING

N ⏚ L

⚠ Danger

WARNING

CAUTION
Ensure correct fuses
are fitted

Ferrite Core

③ Earth lead from
back box - inner door

④ Cable and clamp
are fitted during
commissioning

Cover to protect PCB
display and keyboard
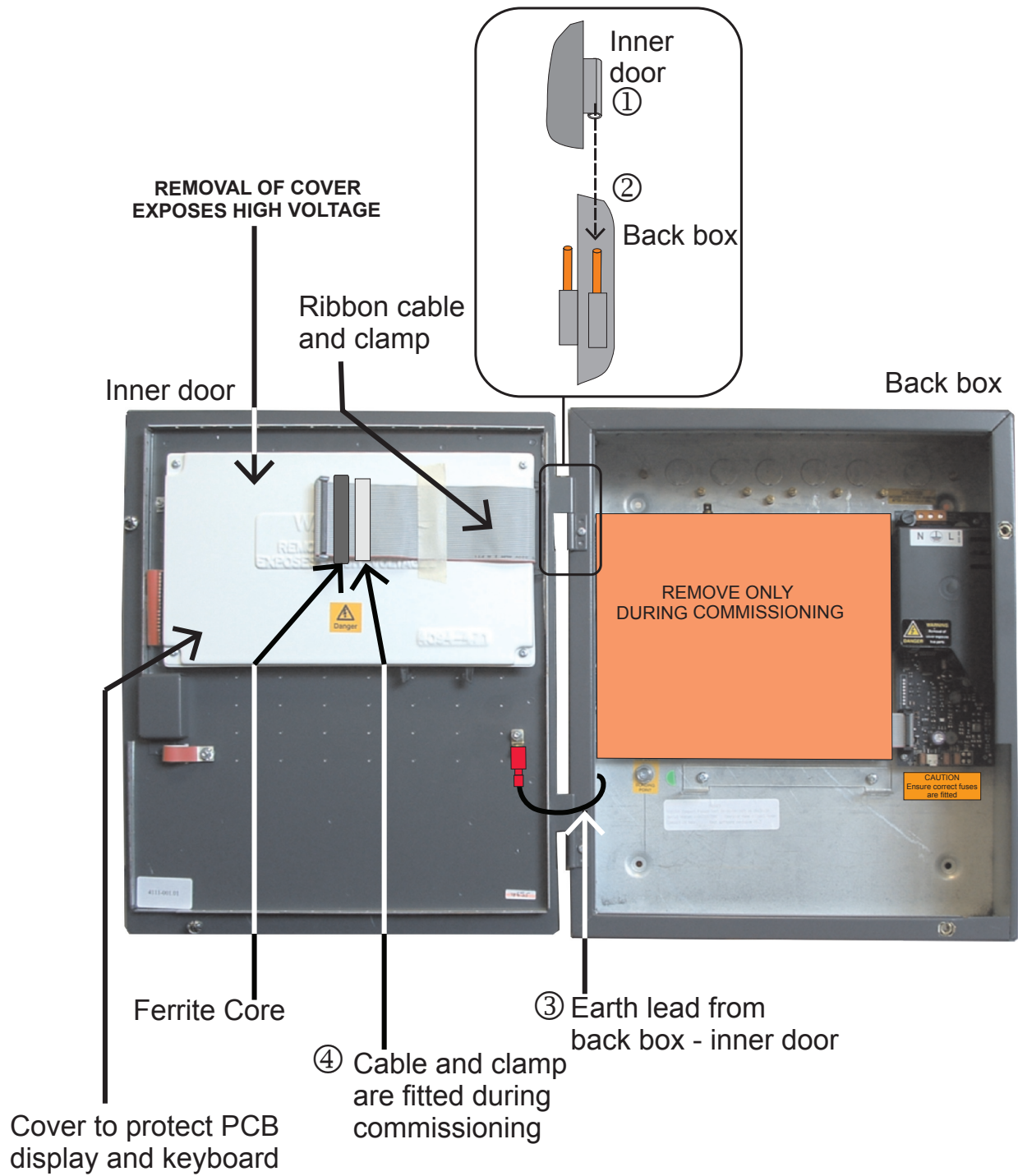
Cable termination on enclosure

MICC
CABLE TERMINATION

MICC CABLE

GLAND

ZINC PLATED
LOCK WASHER

BRASS
LOCKNUT

PANEL
enclosure

Earth
point

BOARD

TERMINALS

Softskin (Fire Tuf)
CABLE TERMINATION

EARTH
DRAIN
WIRE
Should not
be more than
50mm long
and must be
sleeved

Softskin Cable

GLAND

NET 1
END 1

LOOP 1
END 1

Master
alarms

MAINS
SUPPLY

REMOVE ONLY
DURING COMMISSIONING

NET 1
END 2

LOOP 1
END 2

Master
alarms 1

The wire length between the cable termination and point of connection must be as short as possible. Cable earth drain wire, where applicable, must be connected to the nearest earth point.

Terminate each cable at the dedicated entry point on the enclosure, using the cable manufacturers recommended techniques.

Where cables are not required to be connected leave **400mm** tail wire length (unless otherwise specified) and mark each **core** identifying its final point of connection. Where the cable is required to be connected, ensure it is secure to the respective terminal.
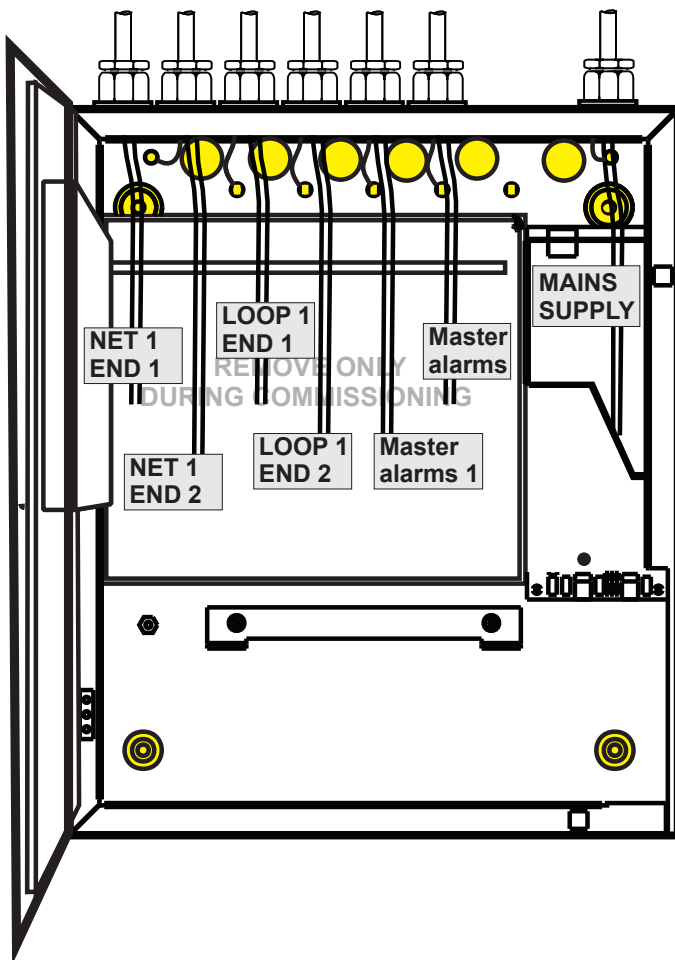
Wiring test

DO NOT undertake high voltage insulation tests WITH THE CABLES CONNECTED to the panel and system device terminals. Such a test may damage the electronics circuitry in loop devices and at the panel.

Mains supply

> ⚠️ **Ensure that the mains supply cable enters the panel through a dedicated cable entry, located adjacent to the mains terminal block and also ensure it is segregated from the loop wiring.**

> ℹ️ **These fire alarm system products are not designed to be powered from IT Power systems.**

All mains powered equipment must be earthed. The mains supply to the control panel must be via an unswitched 5A fused spur unit. A **disconnect device** must be provided to disconnect both poles and must have a minimum gap of 3mm. The disconnect device should be available as part of the building installation and must be easily accessible after the installation is complete.


```
              ┌─────────────────────────┐
              │ Dedicated mains supply  │
              │ from consumer unit      │
              └─────────────────────────┘
                     ↓   ↓   ↓
5A Unswitched fused    ┌──────────┐
      spur unit        └──────────┘

       ┌─────────────────────────────────┐
       │ PANEL                           │
       │   ┌──────────────────────────┐  │
       │   │        N   E   L   P2     │  │
       │   │       ⊘  ⊘  ⊘   ⚡       │  │
       │   │  ( )            DANGER    │  │
       │   │  FS3                      │  │
       │   │  3.15A(T)                 │  │
       │   │  mains fuse               │  │
       │   │           POWER SUPPLY    │  │
       │   └──────────────────────────┘  │
       └─────────────────────────────────┘
```
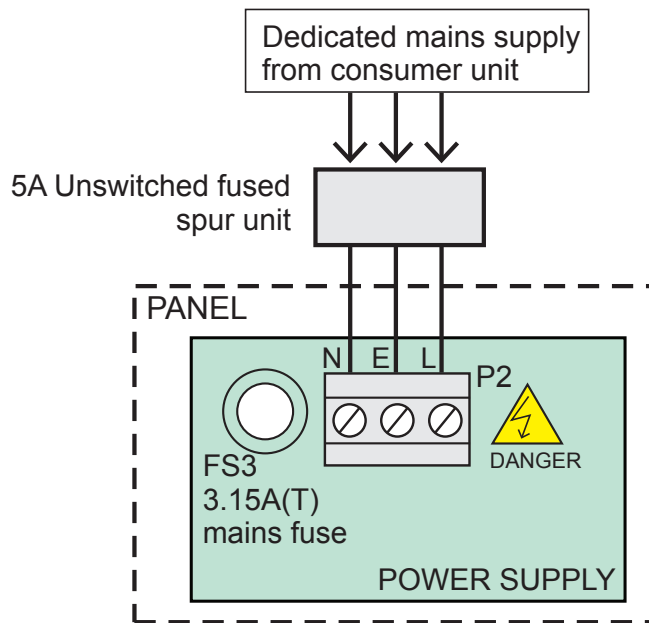
The fused spur isolator cover should be marked:

<div align="center">

**FIRE ALARM - DO NOT
SWITCH OFF**

</div>

The fire alarm equipment's fused spur unit must be fed from a dedicated switch or protective device at the local mains supply distribution board.

Mains and battery supply connections
The mains and battery supply cables must be installed to the stage to facilitate the power up for commissioning, which is carried out by the Servicing organisation.

> ⚠️ **Where mains cable is to remain disconnected, its tail ends must be insulated to prevent dangerous conditions arising in the event of accidental switching On of the mains supply.**

Removable terminal block

To ease installation the terminal blocks on the Master Control Board can be unplugged from the board.

removable
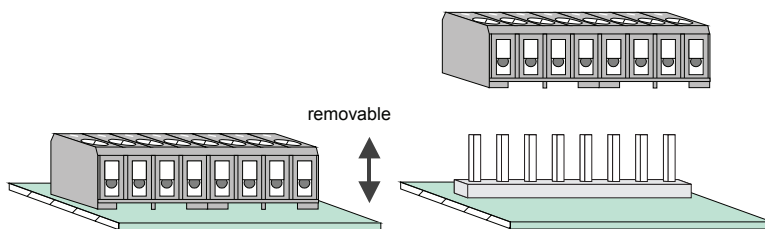
Terminals for external circuits on Master Control Board

The Master Control Board (MCB) holds all the terminals for the connection of fire alarm loop circuits, master alarms, auxiliary relays, clean contacts, repeat indicator panel and monitored input.

NC C NO NC C NO

PB10
AUXILIARY RELAY 1

NC C NO

PB11
AUXILIARY RELAY 2

L1 0V L2 0V

PB14
LOOP 2

L1 0V L2 0V

PB7
LOOP 1

TX1 RX1 0V TX2 RX2

PB6
RS-232

0V MIP NC C NO

PB9
MONITORED INPUT
and CLEAN CONTACTS

24V 0V B A

PB15
REPEAT
INDICATOR
RS-485

MA1+ MA1- MA2+ MA2-

PB8
MASTER ALARMS

KEYBOARD

24V
FS3 200mA

P1 CARD 2

P2 CARD 1

MA1 - FS1 250mA
MA2 - FS2 250mA

Loop Card

FIRMWARE BACKUP

IC3 IC16

P13

P16

SW1
RESET

BATT1

VER
PLY
P12

Master Control Board

Device loop circuits

The two device loop circuits can each accept connection of addressable devices / outstations, up to 200 maximum per circuit. To maintain earth continuity on a loop, the loop cable screen must be continued through each system device, whether the earth is connected to a device or not.

> **i** A loop circuit must not cover more than 10,000m² of floor area of a protected site.
>
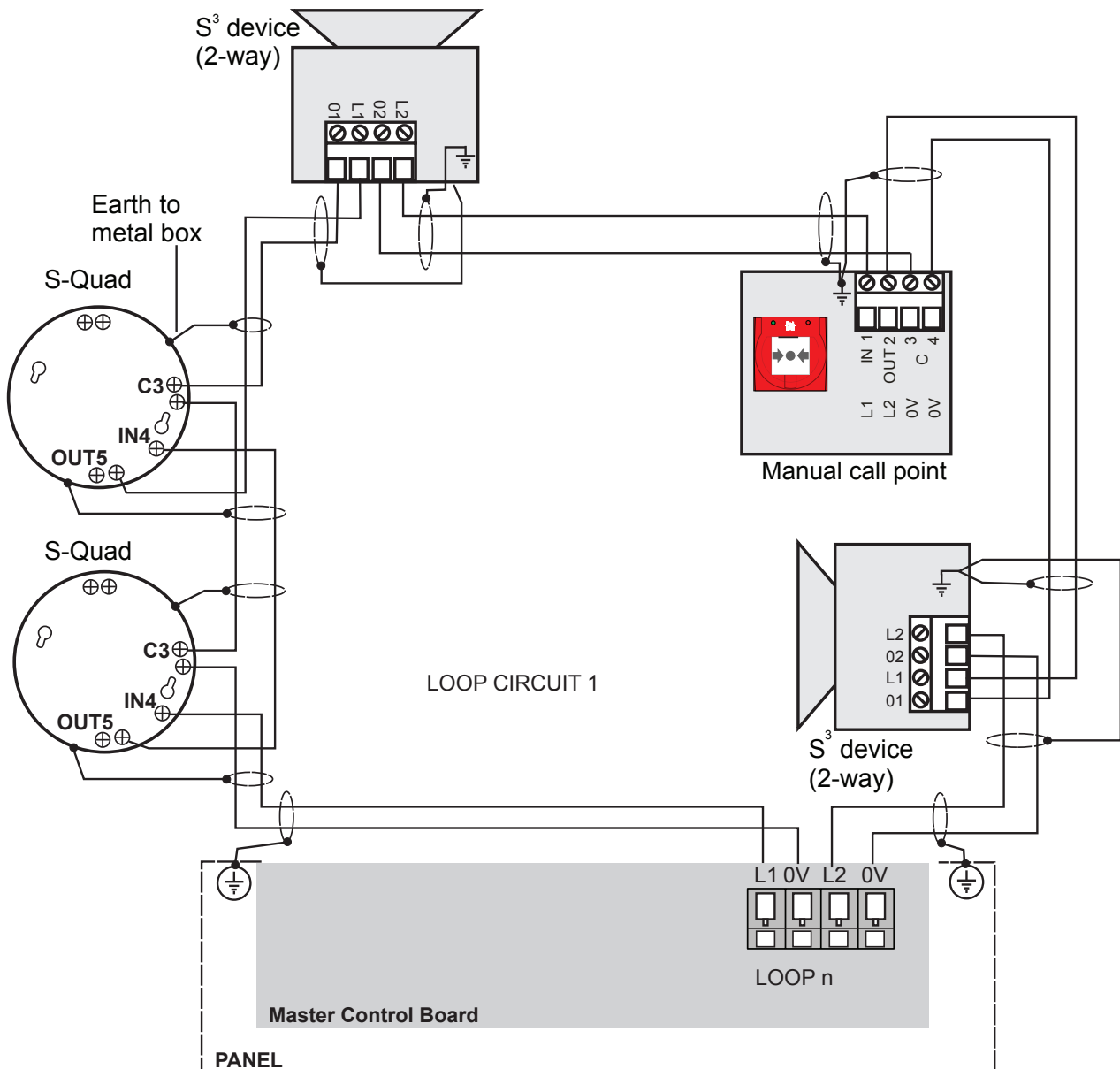> A spur circuit must always be taken from the 'line common' terminals of a 3 ways device.
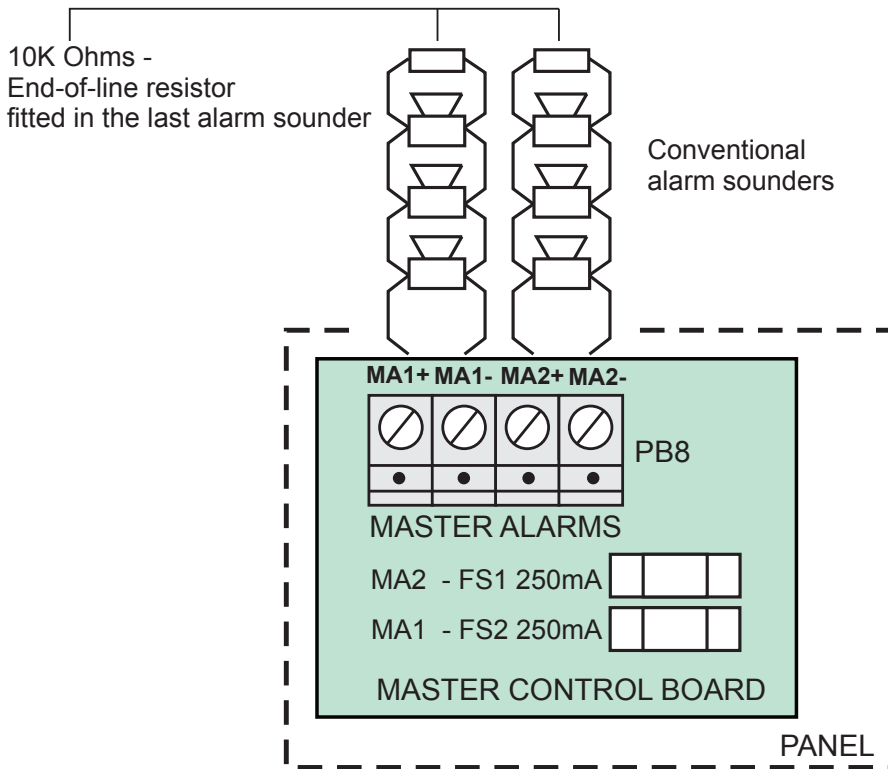>
> A spur must not cover more than the equivalent of one zone as defined in BS 5839 Part 1.
>
> As every device has a loop isolator, the application of more than 32 devices does not require any special consideration.

Master alarm circuits

The two master alarm circuits accept the connection of conventional alarm sounders, such as the conventional S-Cubed products.

10K Ohms -
End-of-line resistor
fitted in the last alarm sounder

Conventional
alarm sounders

MA1+ MA1- MA2+ MA2-

PB8

MASTER ALARMS

MA2 - FS1 250mA

MA1 - FS2 250mA

MASTER CONTROL BOARD

PANEL

Clean contacts

The control panel operates the clean contacts relay when a fire event is received from the system. The clean contacts can be used to switch plant equipment, such as lift control system. The contacts should be powered from an independent power supply, where required.

Change over contacts
rated 1A @ 24Vdc, to
control external equipment

The clean contact relay is
normally de-energised
and operates with a fire
event without delay.

NC   C   NO

PB9

MASTER
CONTROL BOARD

CLEAN
CONTACTS
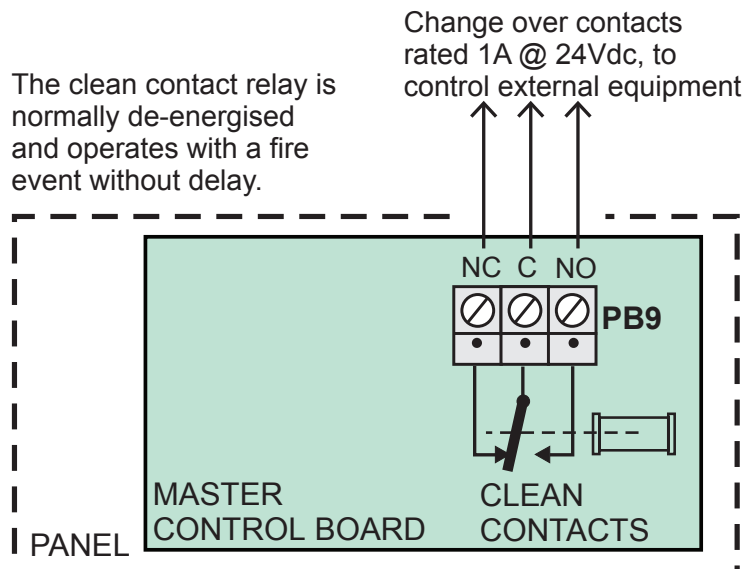
PANEL

Auxiliary relay circuits

The control panel operates the auxiliary contacts when the configured event is received from the system.

The auxiliary relays 1 and 2 contacts can be used to control external equipment, such as an automatic dialer that makes the call for fire fighting action. The relays can be individually re-configured to operate with either fire, fault or disablement event in the system.

The relay operation can also be delayed by up to 10 minutes and can be set up to operate in a normally energised or de-energised state. The contacts should be powered from an independent power supply, where required.
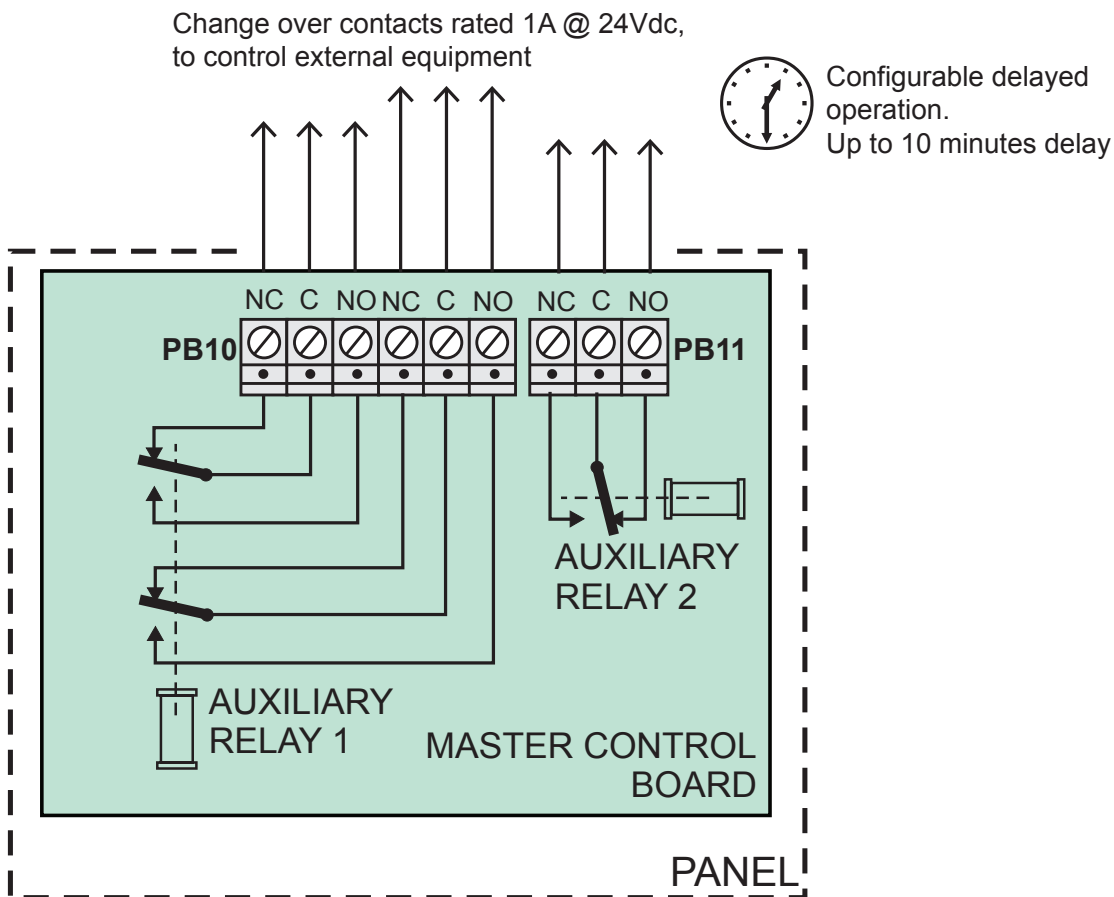
Factory default:
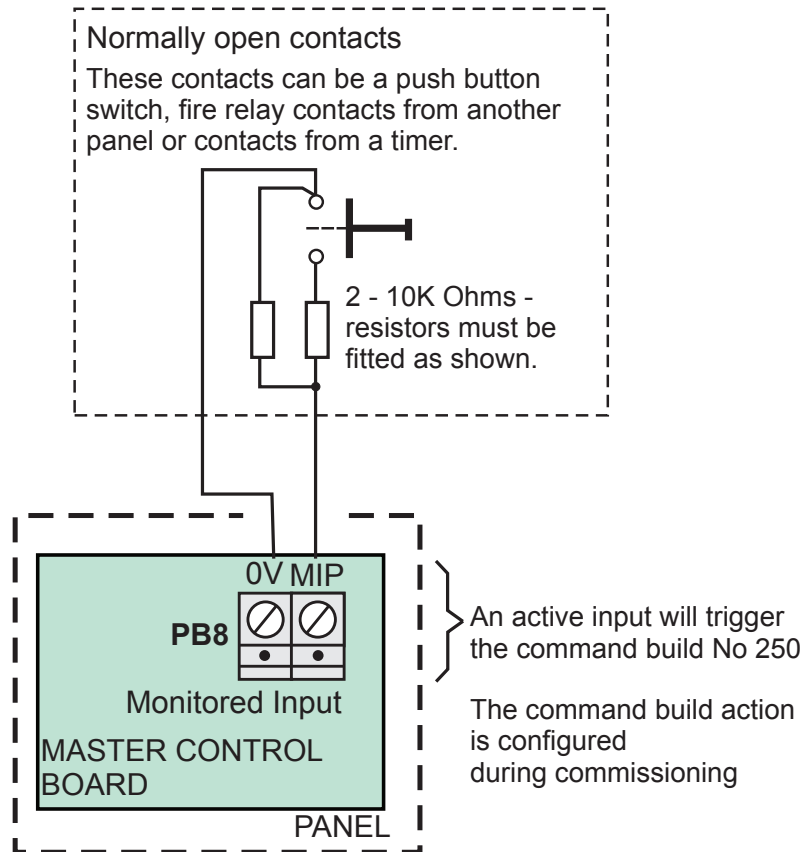Aux relay 1 is normally de-energised and operates with a fire event without delay.

Aux relay 2 is normally energised and operates with fault event without delay.
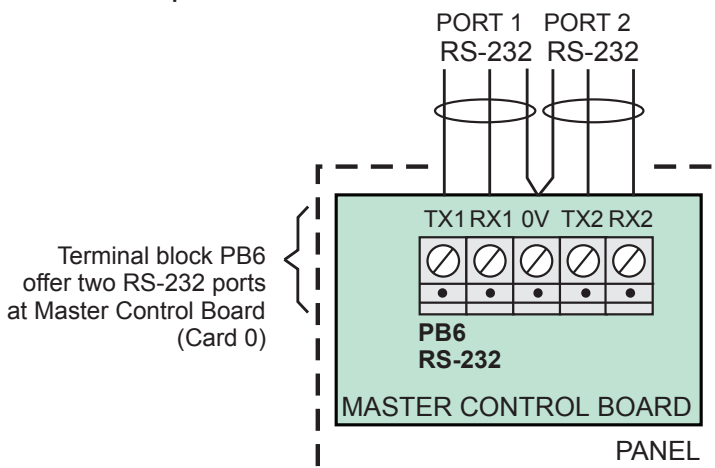
Monitored input circuit

This may be used for class change application in schools. The monitored input at the fire panel is activated by an external switch installed a maximum of up to 100m cable distance away from the panel.

The input is monitored for both short and open circuit fault. When the input is active it triggers a command build number 250 of the fire panel. The command build action is configured during the commissioning of the system. For example the action can be to sound the alarms of the system for the duration the push button is pressed.

Normally open contacts

These contacts can be a push button switch, fire relay contacts from another panel or contacts from a timer.

2 - 10K Ohms - resistors must be fitted as shown.

0V MIP

PB8

Monitored Input

MASTER CONTROL BOARD

PANEL

An active input will trigger the command build No 250

The command build action is configured during commissioning

RS232 Ports

The ports 1 and 2 of the fire panel offer RS232 communication, having configurable modes of operation and baud rate which are set during the commissioning of the system. The configurable modes include, standard (default), printer, universal or Ascom. The ports can be used to connect an external printer or commissioning tool.

PORT 1   PORT 2
RS-232   RS-232

Terminal block PB6 offer two RS-232 ports at Master Control Board (Card 0)

TX1 RX1 0V TX2 RX2

PB6
RS-232

MASTER CONTROL BOARD

PANEL

USB Port

The Port 3 is a USB port that is used to connect to the commissioning tool. This tool allows ease of configuring the system.

PORT 3 is the USB port that can be accessed through connector P16 of the Master Control Board (Card 0)

MASTER CONTROL BOARD

P16
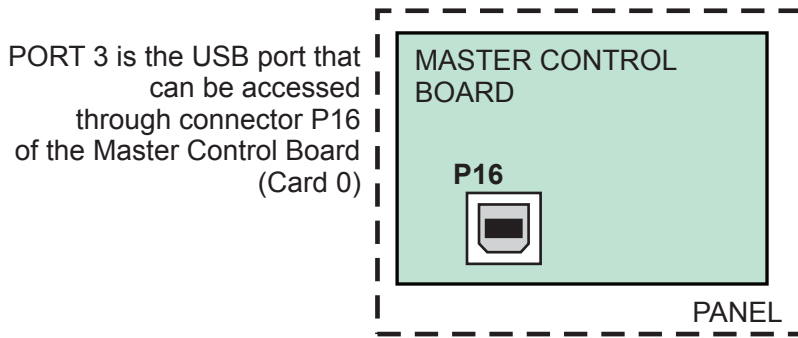
PANEL

Connecting a thermal printer

An external serial printer can be connected to the RS232 Port.

9-way D-type connector

Hand held printer

Rx   Tx   GND

Thermal printe

Tx   Rx   GND

PORT 1 of the Master Control Board (Card 0) is configured during commissioning to 'Printer mode' with an appropriate 'baud rate' setting

TX1 RX1 0V TX2 RX2

PB6
RS-232

MASTER CONTROL BOARD
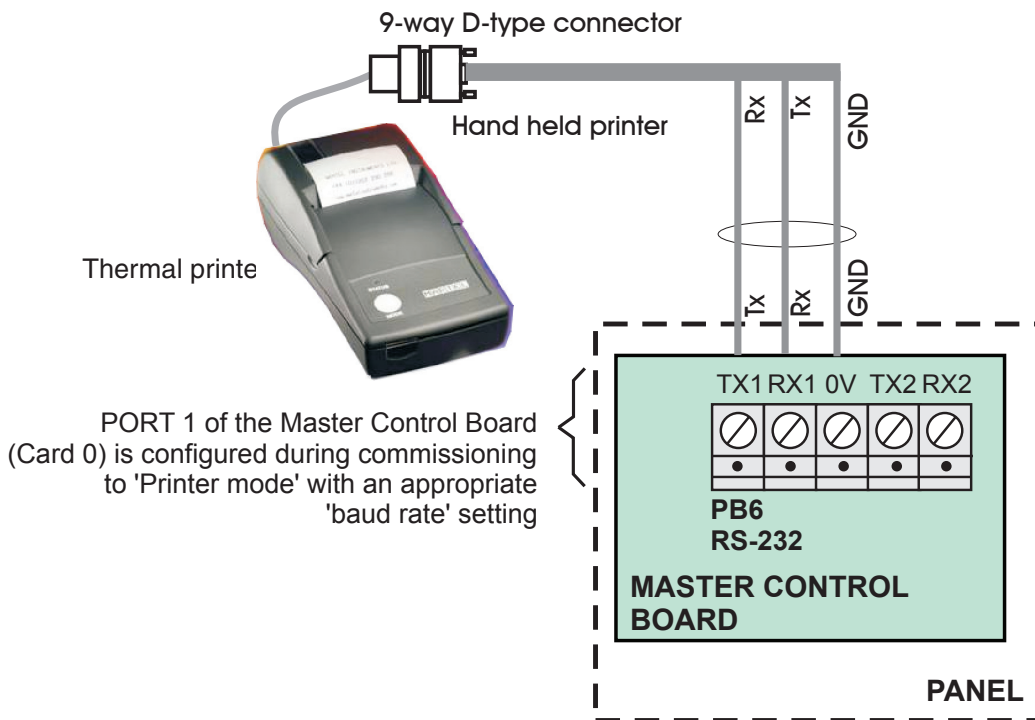
PANEL

Repeat indicator panel

Up to four repeat indicator panels can be connected directly to the fire panel at Port 0.
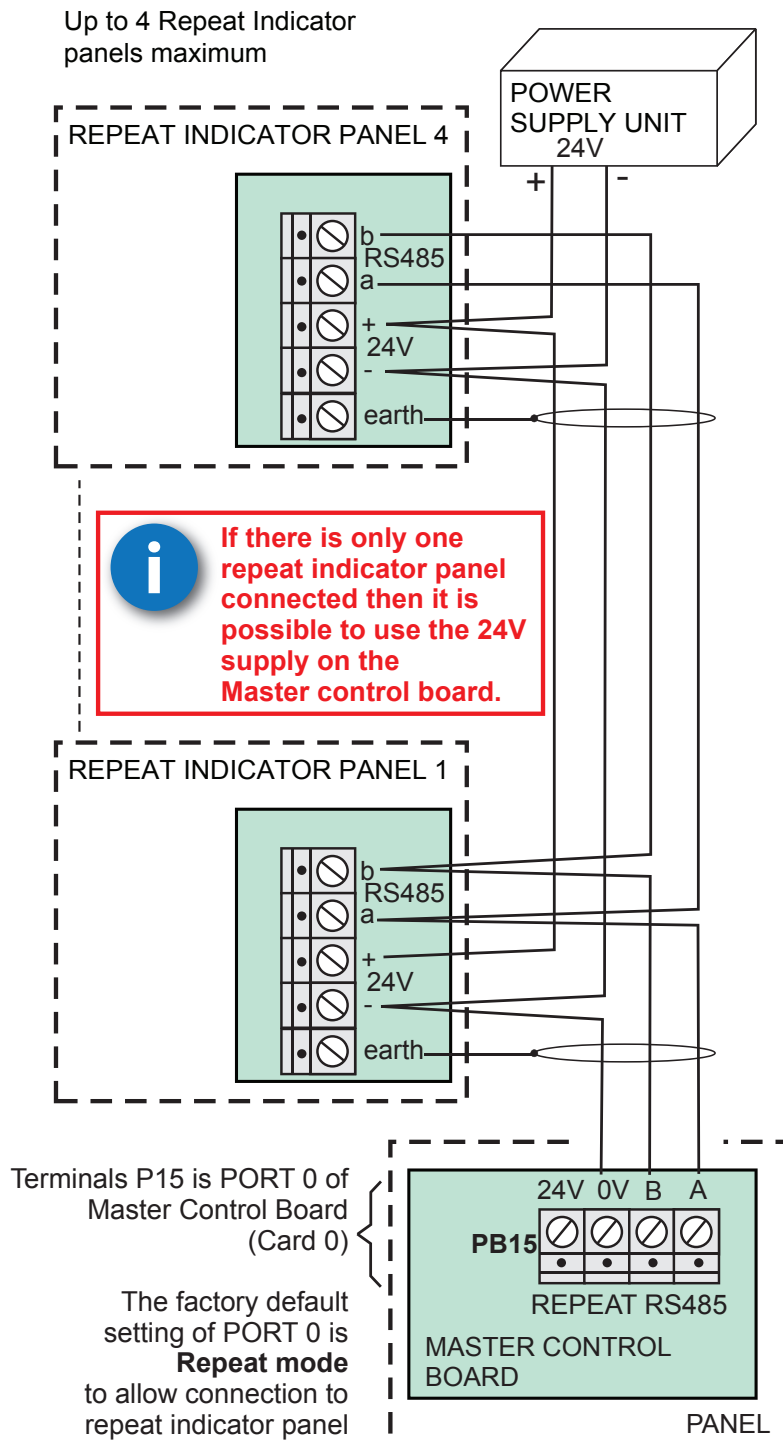
The furthest repeat indicator panel can be installed a maximum of 1Km cable distance away from the fire panel.

The Control panel's Port 0 is configured for Repeat mode and is set up for RS485 communication and the baud rate is selected during the commissioning stage.

Up to 4 Repeat Indicator panels maximum

POWER SUPPLY UNIT 24V

REPEAT INDICATOR PANEL 4

b
RS485
a

+
24V
-

earth

i **If there is only one repeat indicator panel connected then it is possible to use the 24V supply on the Master control board.**

REPEAT INDICATOR PANEL 1

b
RS485
a

+
24V
-

earth

Terminals P15 is PORT 0 of Master Control Board (Card 0)

The factory default setting of PORT 0 is **Repeat mode** to allow connection to repeat indicator panel

24V 0V B A

PB15

REPEAT RS485
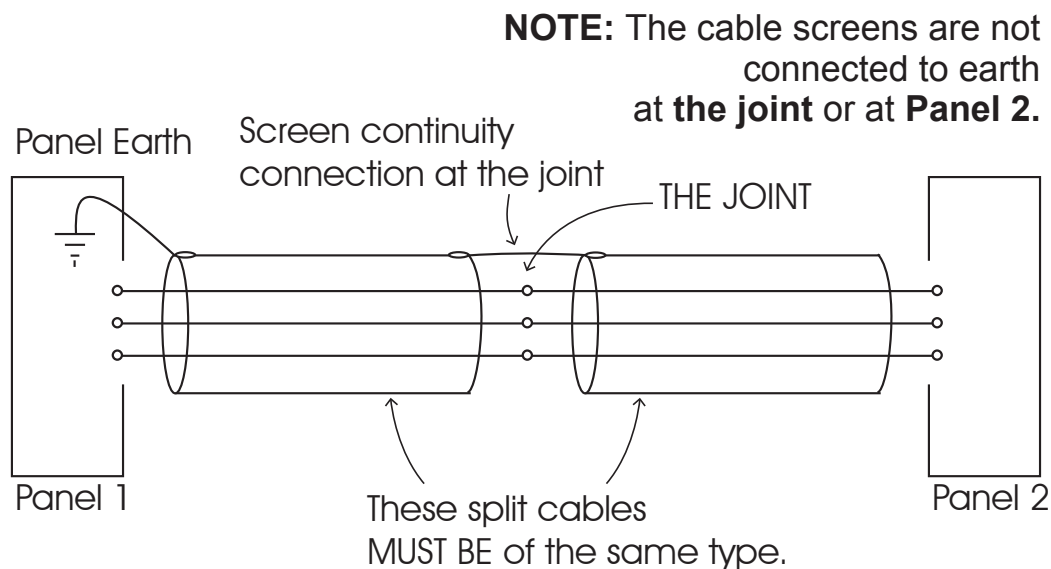
MASTER CONTROL BOARD

PANEL

Network wiring

> **i** **In countries where the European EMC directive is in force use only those cables that are EMC Compliant, see list under the heading Network cables.**

Network cable screen continuity

Ensure a good screen continuity joint exist where there is a split cable.

> ⚠ **DO NOT mix cables of different types on the same leg of a network as this will create impedance imbalance and disruption to data communication.**

NOTE: The cable screens are not connected to earth at **the joint** or at **Panel 2.**

Panel Earth

Screen continuity connection at the joint

THE JOINT

Panel 1

These split cables MUST BE of the same type.
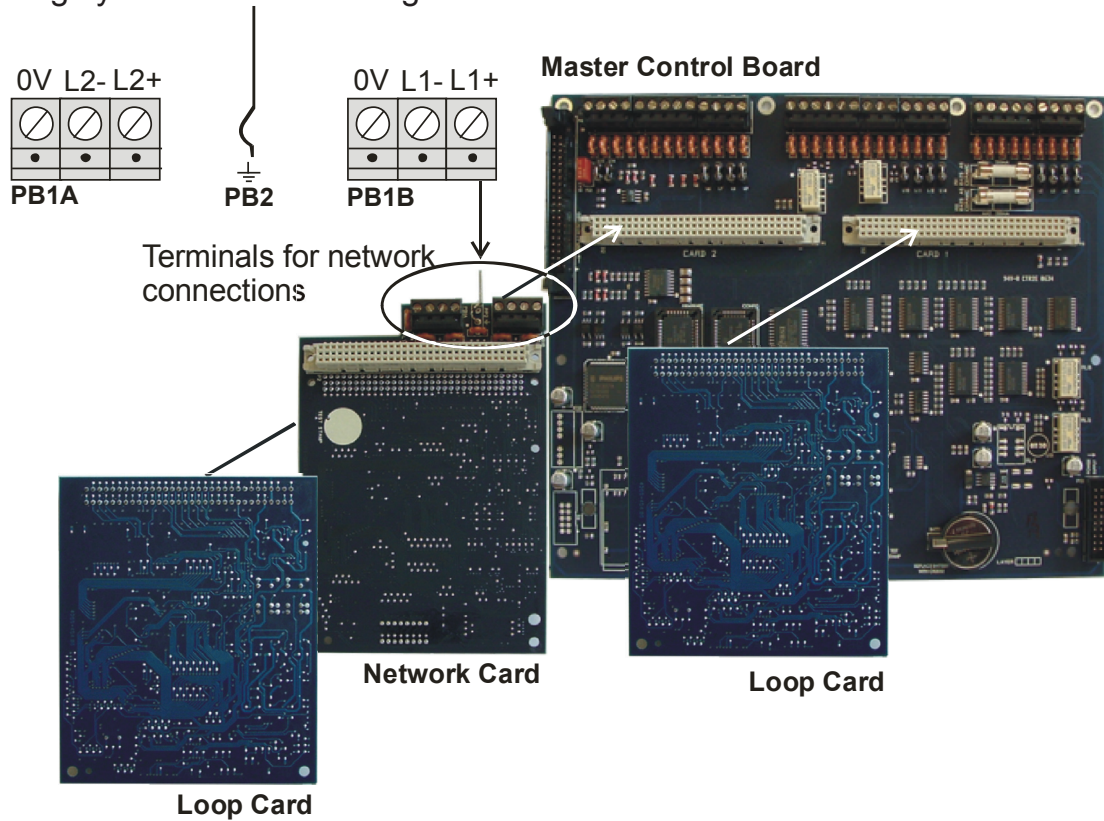
Panel 2

How to minimise cross talk

> ⚠ **When using standard MICC cable in a network, the different legs of the cable must not be closely placed together, as this will cause signal crosstalk which results in communication failure.**

There are three practical ways of overcoming the crosstalk problem:
- use a twisted-core MICC cable
- put a ferrous screen between the cables (ie in the two runs of steel conduit)
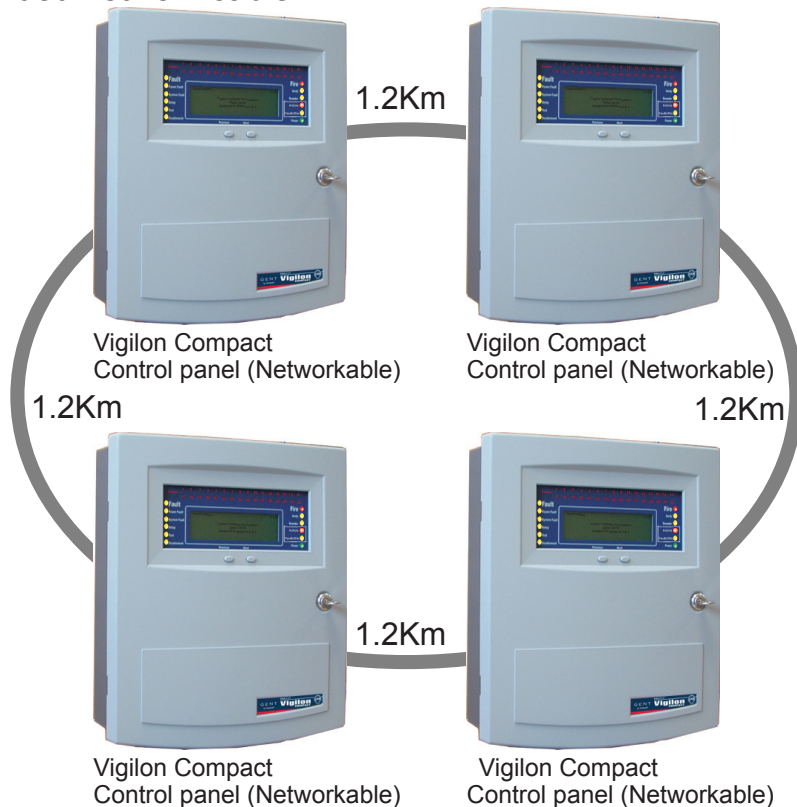- maintain a distance between the network cables of at least 50mm

Network card connections

The Network card has the terminals for network cable connection. The Network card is fitted during system commissioning.
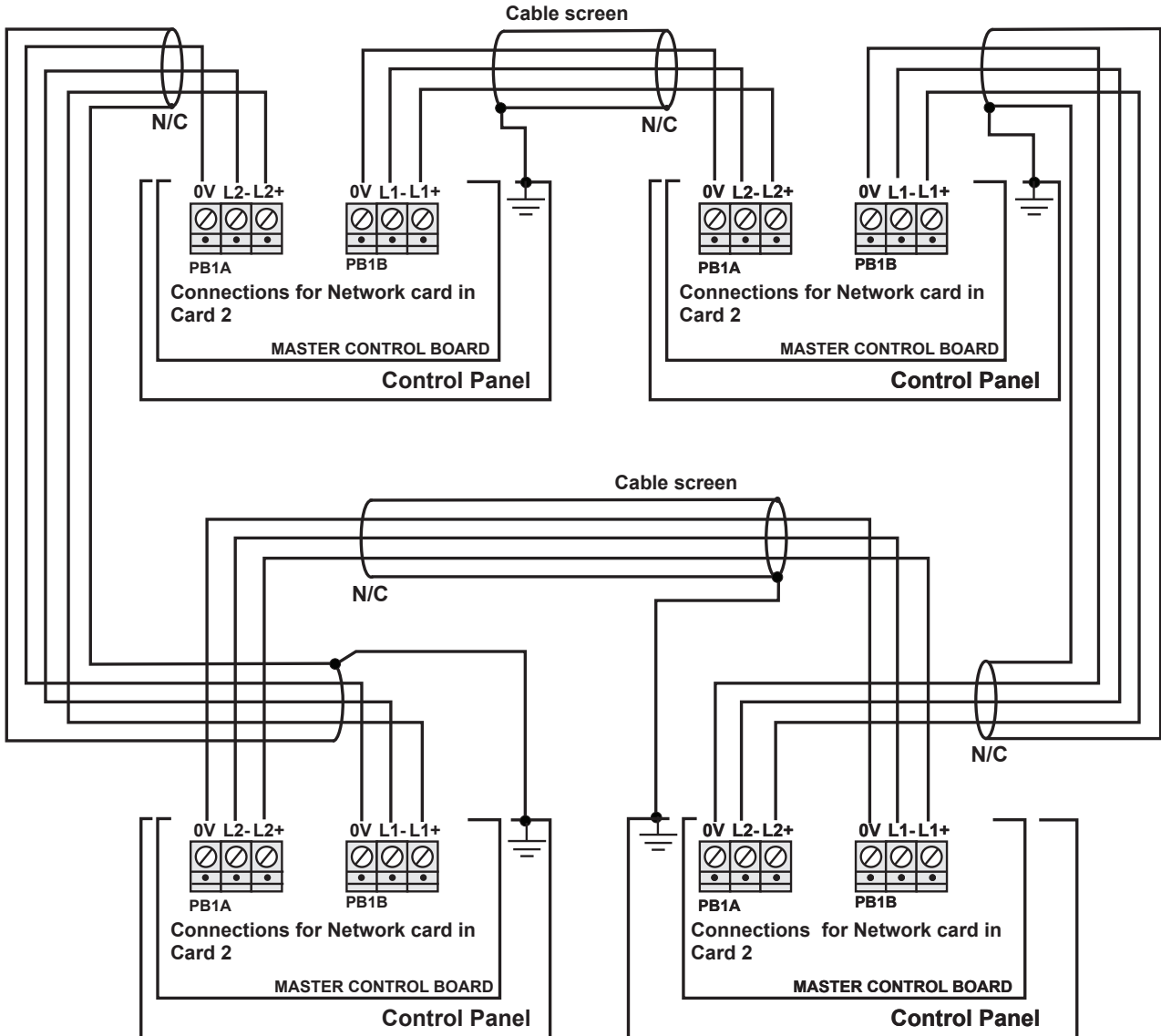

0V L2- L2+

PB1A

PB2

0V L1- L1+

PB1B

Master Control Board

Terminals for network connections

Network Card

Loop Card

Loop Card

Vigilon Compact Network

A secure network can have up to 31 control panels connected in a loop using any one of the recommended network cable.

1.2Km

1.2Km

1.2Km

1.2Km

Vigilon Compact
Control panel (Networkable)

Vigilon Compact
Control panel (Networkable)

Vigilon Compact
Control panel (Networkable)

Vigilon Compact
Control panel (Networkable)

Network wiring

N/C = No connection

> ℹ **The cable screen must be connected to an earth terminal in the backbox, as shown.**

Where a multicore cable is being used ensure the unused cores (cores without signal) are connected to 0V.

> ℹ **When using a cable having 2 pair with screen, use 1 pair for 0V and use the other pair for L - and L+ connections.**

On completion of panel installation

On completion of cable installation ensure the earth lead between the backbox and inner door is fitted. Also the inner and outer doors are closed.

a. Close the inner door using a screw driver.

b. Fit the outer door on to the main enclosure.

c. Close and lock the outer door.

S-Quad Sensors

This following is short information on the S-Quad product range. The S-Quad product integrates dual angle smoke, heat and carbon monoxide gas detection with electronic sounder, speech and visual alarm in one assembly.

Full information on S-Quad Devices can be downloaded from www.gentexpert.co.uk by registered users.

Base

The base has terminals for external cables, for the wiring of loop circuit and monitored input or output circuit. Any S-Quad device can be plugged into an S-Quad base.

IP21 Base

A IP21 Base Gasket prevent water damage from dripping water from the ceiling.
An optional label (Part No: 805576) can be fitted to the base. The label can be marked up with device location information.

Indicators

The S-Quad has a red LED that gives an indication in the event of a fire. The LED can be configured to flash periodically, as an 'in operation' confirmation, this indication is given system-wide at all S-Quads. The S-Quad with a CO sensor also has a blue LED to indicate when a fire signal senses the presence of CO.

Dust Cover

A dust cover is supplied with the S-Quad, to prevent dust from building work contaminating the sensor. The cover is removed prior to the commissioning of the fire alarm system.

Siting

A S-Quad device plugs into a dedicated Base that is installed in the protected premises. The Bases should be sited in locations as defined by the project plans and by BS 5839 : Part 1 : 2013.

Do's and Don't

> ⚠️
>
> **Follow recommendations detailed in section 22 that relate to automatic fire detectors and section 16 that relate to alarm sounders in BS 5839:Part 1 : 2013.**
>
> **DO Locate Visual Alarm Devices in accordance with Loss Prevention Council Code of Practice CoP 0001.**
> **http://www.redbooklive.com/lps.jsp**
>
> **DO Fit the recommended IP21 Base to a Visual Alarm Device, i.e an EN54-23 compliant device.**
>
> **DO NOT flush mount a VAD device using the flush mounting kit (S4-FLUSH).**
>
> **DO NOT locate smoke detectors where products of combustion may be present such as kitchens, garages, furnace rooms, welding shops etc.**
>
> **DO NOT locate heat detectors above boilers or heaters or where the temperature is normally very high or liable to sudden fluctuations.**
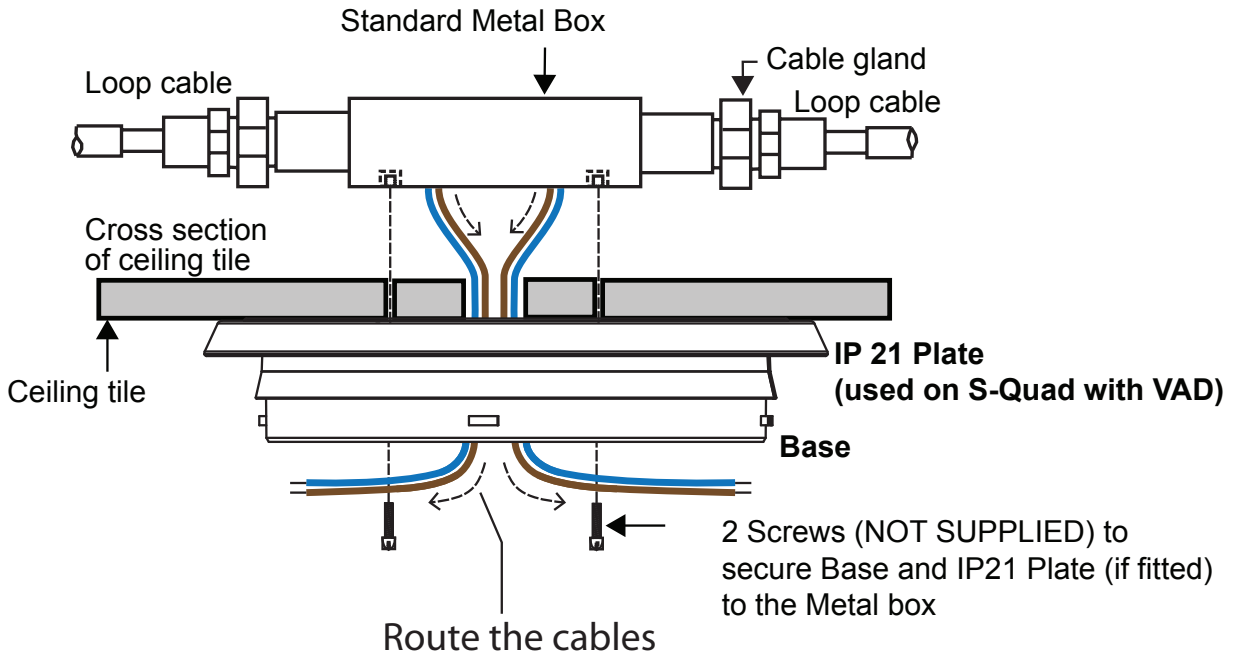>
> **DO NOT locate smoke or heat detectors: -**
> **• In dusty or dirty environment.**
> **• Near heating or air-conditioning grilles.**
> **• Outdoors in stables, sheds etc.**
> **• In excessively damp areas.**
> **• In dead air spaces at the junctions of ceilings and walls.**
> **• At ceiling locations where a 'thermal barrier' may exist.**
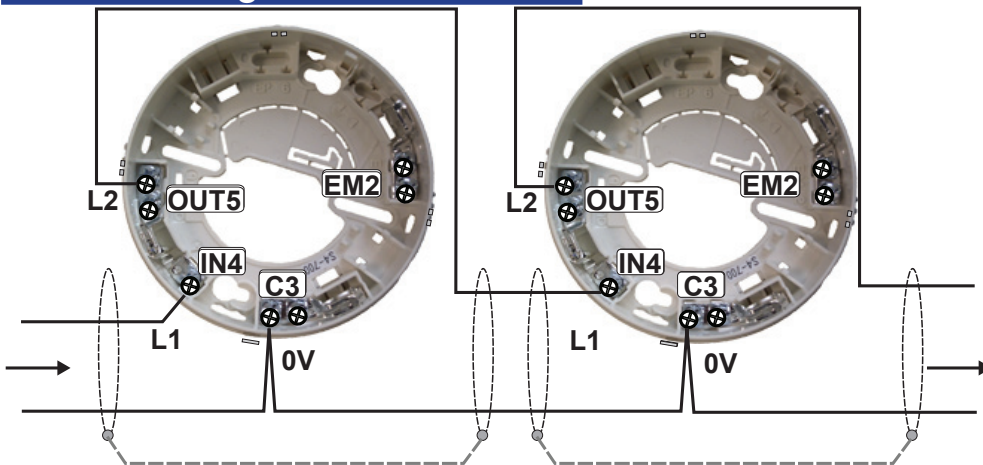>
> **DO NOT locate a CO detector: -**
> **• In buildings where farm animals are kept.**
> **• In excessive damp areas.**
> **• In battery room where non sealed battery are kept.**
> **• In a Car park where exhaust fumes will be present.**

Metal back box

A metal back box must be used for surface or semi-flush mounting. The earth continuity must be maintained throughout the whole loop. The earth must be securely connected to the back box.


Standard Metal Box

Loop cable

Cable gland

Loop cable

Cross section of ceiling tile

Ceiling tile

IP 21 Plate (used on S-Quad with VAD)

Base

2 Screws (NOT SUPPLIED) to secure Base and IP21 Plate (if fitted) to the Metal box

Route the cables

In - Out wiring to S-Quad bases

L2 OUT5 EM2 IN4 C3 L1 0V

L2 OUT5 EM2 IN4 C3 L1 0V

Programmable input/output

All S-Quad devices can be configured as either monitored input or unmonitored output. The factory setting of the programmable input / output is set as an unmonitored output, to drive an external repeat LED without a series resistor. There is a maximum cable length limit of 15 metres from the S-Quad base to the external I/O Unit.

Unmonitored LED output

**Remote LED unit
13449-01**

Beam Transmitter base
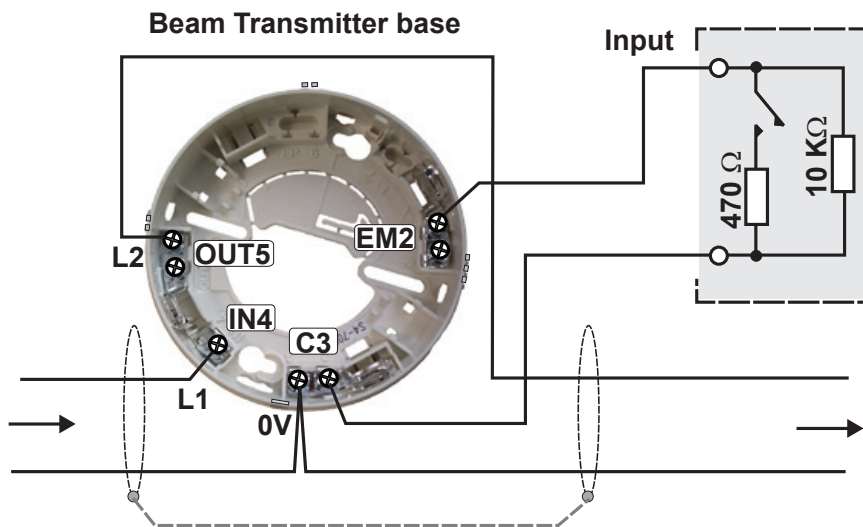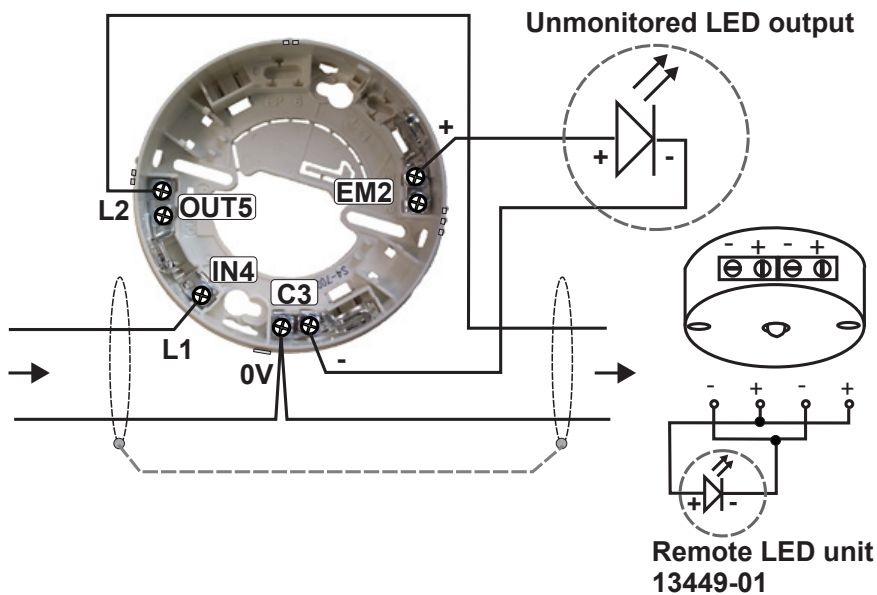
Input

The input can accept signals such as fire, non fire or fault, these are configured during commissioning. As a fire input it is possible to connect a conventional Manual Call Point (non UK application only) with a series resistor of value 470 Ohms coupled with an end-of-line 10Kohms resistor. In this case the fire input is fully monitored for open or short circuit faults.

The input can be setup as a non-fire or fault input using a similar arrangement with series and parallel resistors as shown. It is possible for such an input to trigger a command that is configured to action an output elsewhere in the system to control plant equipment such as ventilation system in a building.

Tools for S-Quad

An extractor tool allows removal and fitting of the S-Quad device head into the base. By fitting a screw-on adaptor, the tool can be used to remove the sensor dust cover.

To remove an S-Quad

Fit the tool onto the S-Quad. Turn S-Quad anticlockwise until it stops and remove the S-Quad from the base.

S-Quad

tool

To fit an S-Quad

Fit the S-Quad on to the tool. Offer S-Quad to base and rotate clockwise until it moves upwards in to the base and rotate it again until it clicks and goes no further, the lines on the base and S-Quad will align.

Base

S-Quad

Tool

To fit a dust cover

Place the dust cover onto the tool inside the cradle. Offer the cover to the S-Quad, locate and push to fit it onto the assembly. Withdraw the tool when the dust cover is in place.

Dust cover

Tool

To remove a dust cover

A dust cover remover tool must be fitted to the main tool to extract the dust cover. Press the pad of the dust cover remover tool onto the dust cover, this creates an air tight grip, to allow the cover to be pulled off from the S-Quad.

Dust cover

Dust cover remover tool

Tool

Vigilon compact parts

This section lists parts associated with the Vigilon compact panel. For further information on the availability of the parts contact your supplier.

Control Panels

COMPACT-24-N   Vigilon Compact control panel (networkable)
c/w 1 - Loop card
(2-12V 12Ah batteries for 24hr standby - supplied)

Accessories

COMPACT-NC   Network card for Vigilon compact panel (networkable)

COMPACT-FLUSH   Flush surround (for Vigilon Compact control panel)

COMPACT-FLUSH-SS   Flush surround stainless steel (for Vigilon Compact panel)

VIG-RPT-DOOR-SS   Stainless steel door (for Vigilon Compact panel)

VCS-ODOOR   Compact 24hr outer door assembly

VCS-IDOOR   Compact 24hr inner door assembly

4015-514-Y   12V 12Ahr Battery

COMPACT-LPC-EN   Loop Card (EN54) up to 2Km)

VCS-PSU-N   PSU (for COMPACT-24 and COMPACT-24-N)

VCS-MCB-N   Master Control Board networkable

Printer

PRINTER-HAND   Handheld serial thermal printer

PRINTER-H-PAPER   Thermal paper for handheld printer

Manuals

4188-1026   Vigilon Compact panel - Installation instructions

4188-1027   Vigilon Compact panel - Operating instructions

4188-749   Log book

S-Quad - Sensors

The latest S-Quad publications lists the product range. These publications can be downloaded from www.gentexpert.co.uk by registered users.

Notes

Notes

Gent by Honeywell reserves the right to revise this publication from time to time and make changes to the content hereof without obligation to notify any person of such revisions of changes.

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