

Data and Installation

Network Node

(VIG-NODE-24)



The Vigilon Network Node (also referred to as Terminal node) can accommodate additional cards in place of loop cards, such as network cards to connect two networks together and IO cards to connect remote printer and Central system. The node houses its own power supply with batteries that provide standby power in the event of mains supply failure. A lockable front door prevents unauthorised access to fire alarm controls, but allows all of the indicators to be seen. Two push button controls are located on the front door below the display that enable Fire messages to be scrolled in the event of multiple fires. The node is designed for surface or semi flush mounting, with rear and top cable entry points.

Features

- Two master alarm circuits
- RS485 to connect to a Repeat Indicator panel
- RS232 to connect to another control panel (domain bridge) external printer or commissioning tool
- Two sets of auxiliary relay change over contacts configurable to operate with fire, fault or disablement
- One set of clean voltage-free change over contacts that operates with fire events
- Standby supply to power the system in the event of mains failure
- LCD alphanumeric type display with back light to show event information
- LED lights for event indication
- Local audible buzzer to announce events
- Push button for essential controls and menu driven commands
- Four programmable control buttons (U1 to U4)

Contents

Technical data - - - - -	2
Panel- - - - -	2
Power supply- - - - -	3
Notes on system installation - - - - -	3
Installation requirements - - - - -	3
Second fix installation - - - - -	3
Fixture and fittings - - - - -	3
As fitted drawings - - - - -	4
Cable type and routing - - - - -	4
Earth continuity - - - - -	4
Mains supply - - - - -	4
Installation - - - - -	4
Back box installation - - - - -	5
Semi-Flush fixing the Network Node - - - - -	6
Cable termination and markings - - - - -	6
Mains supply - - - - -	7
Mains and battery supply connections - - - - -	7
Mains and battery supply connections - - - - -	7
Terminals for external circuits - - - - -	8
Network connections - - - - -	9
Master alarm circuits - - - - -	9
Auxiliary relay circuits - - - - -	9
Clean contacts - - - - -	10
Remote printer - - - - -	10
RS232 / RS485 Communication - - - - -	10
Network of single systems - - - - -	11
Copper network connections - - - - -	11
Fibre network connections - - - - -	11
Network wiring- - - - -	12
Network cable screen continuity - - - - -	12
Installing with MICC Cable - - - - -	12
Cables - - - - -	13
Cable separation - - - - -	13
Requirements of cables - - - - -	13
Network cables - - - - -	13
Domain Bridge across Networks - - - - -	15
On completion of installation - - - - -	16

Technical data

Panel

Dimensions in mm	height 543 x width 406 x depth 172
Panel weight	10.2Kg approximately + 2 batteries, 12V 21Ah battery weighing 6Kg each
Storage temperature	-10 to +55°C
Operating temperature	-5 to +40°C
Relative Humidity (Non condensing)	up to 90% Temperature -5 to +40°C
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry Class B limits.
Immunity	BS EN50130-4: 1996: Part 4 Alarm systems: <i>Electromagnetic compatibility</i> Product family standard: <i>Immunity requirements for components of fire, intruder and social alarm systems.</i>
Ingress Protection	IP30
Colour	Door: Grey (Pantone 422) Back box: Graphite Grey (RAL 7024).
Network	The node is supplied with a network card for secure network connections: Copper (RS485) - 1.2Km (supplied) Fibre Optics - 2Km (optional)
RS232 and RS485 connections	The node is supplied with an IO card that facilitates RS232 for connecting to another panel (domain bridge) or Central computer system. The maximum cable length allowed for RS232 is 10m. The maximum cable length allowed for RS485 is 1.2Km.

Plug in Card slots	MCC / LCC -P1 Master Control card (node)-# IOC / N/W -P2 Input Output# / Network card Loop 1 - P3 Input Output card option Loop 2 - P4 Input Output card option Loop 3 - P5 Input Output card option Loop 4 - P6 Input Output card option N/W or I/O - P7 Input Output or Network card N/W or I/O -P8 Input Output or Network card# (# - supplied)
Auxiliary relays	Voltage-free contacts rated 1A @ 24Vdc
Aux relay 1	2 sets of change over contacts configured to operate immediately with any system Fire event. The relay is normally de-energised .
Aux relay 2	2 sets of change over contacts configured to operate immediately with any system Fault event. The relay is normally energised . The relays can be re-configured to operate with any Fire, Fault or Disablement event, with a delay of up to 10 minutes and can operate in a normally energised or de-energised state
Clean contacts	1 set of voltage free change over contacts rated 1A @ 24Vdc, active with any fire event .
Master alarm circuits	Operates with any system fire event 2 - (24 volts nominal) 400 mA max. per circuit MA1 - fuse 1A FS1 MA2 - fuse 1A FS2 Both fuses are 20mm x 5mm in size and are located on the Terminal card.
Indicators	Power (green) Power Fault (amber) Delay (amber) Test (amber) Verify (amber) CB253 CB254 (amber) Fault (amber) Disablement (amber) System fault (amber) Sounder (amber)
Display	Alpha-numeric display - 8 lines by 40 character per line, back-lit, (Black characters on green background, liquid crystal display).
Internal sounder	To announce Fire and Fault events, plus give a key press confirmation beep.

Menus	[Control], [Setup], [Information] and [Test Engineering] menus accessed via Menu On/Off, F1, F2, F3 and F4 buttons.
Controls (with door closed) Access level 1	Next and Previous buttons operable during Fire condition only.
Controls (with door open) Access level 2a	Sound Alarms, Silence Alarms, Reset, Cancel Buzzer, Verify, F1-F4 keys, Menu On/Off key, QWERTY key board, U1-U4 keys available if configured to perform site specific actions by triggering CB251, CB252, CB253 and CB254.
User having door key	
Access level 2b User having door key and <i>customer</i> password	As access level 2a plus access to complete level 2 menu commands.
Access level 3 Engineer having door key and <i>engineer</i> password	As access level 2b plus access to all menu commands.
Logs	Active system Logs: Fire, Fault and Disablement Historic system log: All events Event system logs: Fault, Disablement, Warning, Supervisory, Exceptions and Historic fires.
Printer	The integral printer operates when the outer door is open. The printer menu driven controls include: on, off, Line feed and Test print. An optional remote printer can be connected to the panel.



Always use the recommended replacement battery, as there is a risk of an explosion if incorrect battery is used.

Power supply

Mains operating voltage	230V -15% +10% 50/60Hz protected by a 3.15A (T) 250V Ceramic 20mm x 5mm, located on PSU. Input current - 1.4A
Nominal supply voltage for master alarm circuits	24V +1V, -4V

Battery circuit(s)	Terminals to connect to internally housed batteries, capable of reaching a charged state in 72Hr.
Battery	Batteries are installed in the panel 2 x Powersonic PG-12V21, 12V 21Ahr batteries (supplied)
Light indications	To show the status of PSU
PSU Fuses	
Mains	FS6 T3.15A Ceramic
Protects 44V supply	FS2 F3.15A Glass
Battery charge circuit	FS7 F5A Ceramic
	Above fuses are 20mm x 5mm size
Storage temperature	-10 to +55°C
Operating temperature	-5 to +40°C
Relative Humidity (Non condensing)	up to 90% Temperature -5 to +40°C

Notes on system installation

The power-up of the Network Node and commissioning of the system is done by the Servicing organisation.

Installation requirements

It is recommended that the installer follow the general requirements of *BS5839:Part 1*, which is the *code of practice relating to fire detection and alarm systems for buildings*. The installer must follow the relevant parts of *BS7671 Requirements for Electrical installations, IEE wiring regulations 16th edition* if installation is in the United Kingdom, UK.

Second fix installation

To prevent the possibility of damage or dirt degrading the performance or appearance of the products, the installed products must be suitably protected until all major building work in the area is complete.


The second fix parts of the panel like the inner door and control cards, these are supplied in separate cartons and are installed during the commissioning stage. An outer temporary door must be fitted to the backbox to protect the PSU and backplane board inside the backbox. The temporary door is removed during the commissioning stage.



The installation of all outstanding parts is usually carried out during commissioning of the system.

Fixture and fittings

It is the installer's 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.

 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 correct cable type is installed in accordance with as fitted drawings, site specific information and recommendations of *BS5839 Part 1*. The cables must be installed using cable manufacturers recommended fixings and accessories.

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.

 Do not rely on any part of building structure for earthing.

Some of the system products having metal enclosures have a **zinc coating** around the cable termination points, the coating provides a good electrical conductivity path for cable earth termination.

The zinc coating on the metal enclosures should not be damaged. Any damage will expose bare metal, which can corrode and make a poor earth connection.

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.












 All mains powered equipment must be earthed.

Installation

The Vigilon Network node is supplied with:

- Back box assembly having a PSU
- Inner door
- Moulded outer door
- Main Controller Card (node)
- Network Card
- Domain bridge IO card
- Spares pack
- 2x12V 21Ah batteries)

Parts supplied in spares packs

Part	Vigilon Node
 Cable tie	3
 Ferrite core	1
 22K 0.5W Resistor	2
 Battery lead	1
 Spade tag	2
 Link lead	1
 Instructions	1
 20 x 5mm Fuse 5A QB Ceramic	1
 20 x 5mm Fuse 3.15A AS Ceramic	1
 20x 5mm Fuse 3.15A QB glass	1
 Adhesive backed foam pad	1

Each battery pair of 2 x 12V 21Ah is supplied with:

-  4 x bolts
-  4 x washers
-  4 x spring washers

Back box installation

These instructions cover information on the backbox assembly only, all remaining packages are installed during the commissioning by the servicing organisation.



The network node can be surface or flush mounted.

- a. Identify the package NETWORK-NODE-24 and check that it contains all the parts.
- b. Remove the temporary cover from the *Back box*.
- c. Knock out/in the required cable entry points from the *Network node back box*.
- d. Use the fixing points provided mount the Back box to the wall using suitable fixings.

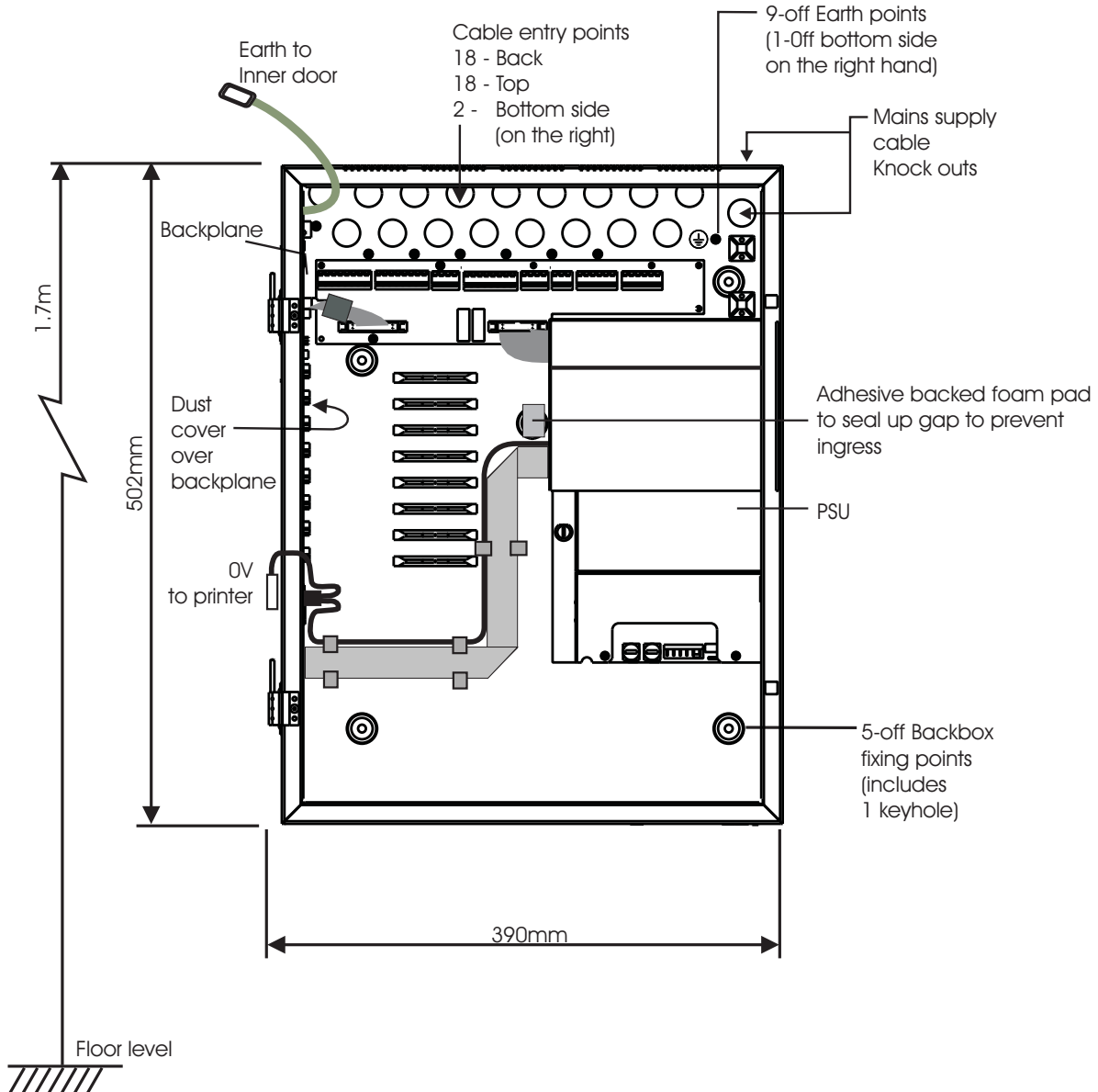


The fixings must support a fully assembled network node with batteries weighing 22.2Kg.

- e. Terminate each cable at the entry point leaving 400mm tail wire length and mark each core to identify its final connecting point.



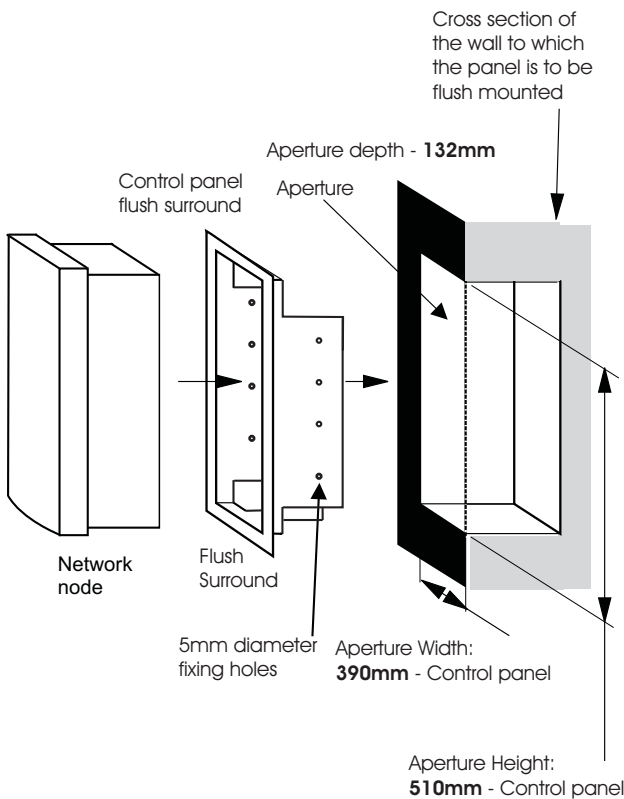
If the mains cable is not connected to the respective terminals then ensure the tail ends are insulated to guard against accidental switching On of the mains supply.



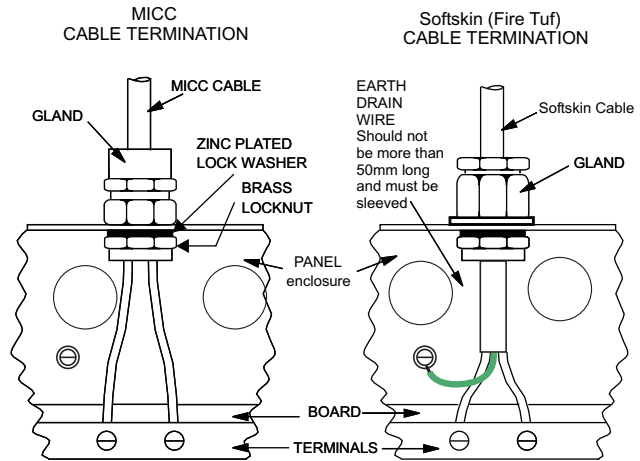
Semi-Flush fixing the Network Node

The Node may be flush mounted using a flush surround VIG-24-FLUSH. A stainless steel variant of the flush surround (VIG-FLUSH-SS) will require a stainless steel door VIG_DOOR_SS.

- a. Check the contents of the *flush surround* package.
- b. Cut out an aperture in the wall to allow the *flush surround* to be fitted, see diagram for dimensions of the aperture.
- c. Using the fixing holes on the *flush surround* secure it into the aperture side walls.
- d. Knock out the appropriate top or rear cable points on the back box.
- e. Route the cables through the cable entry points into the *back box* and at the same time insert the *back box* into the *semi-flush surround*.
- f. Fit the *back box* to the *semi-flush surround* using the 5 - 5mm screws supplied.



Cable termination and markings



The wires between the termination point and terminals should be as short and straight as possible.

Where a cable has an earth drain wire this should be fitted to the earth point nearest the cable entry point, with the length not exceeding 50mm.

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

Where the cable is not required to be connected, leave **400mm tail wire length** (unless otherwise instructed) **and mark each core** identifying its final point of connection.

Where the cable is required to be connected, ensure it is secured 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 point.**


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

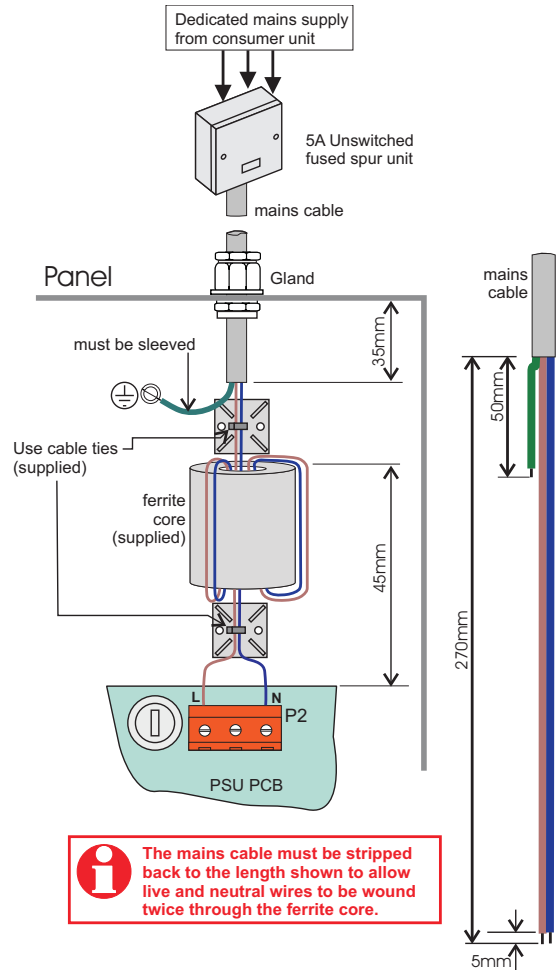
All mains powered equipment must be earthed.

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.

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.**



The fused spur isolator cover should be marked:
FIRE ALARM - DO NOT SWITCH OFF
 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.

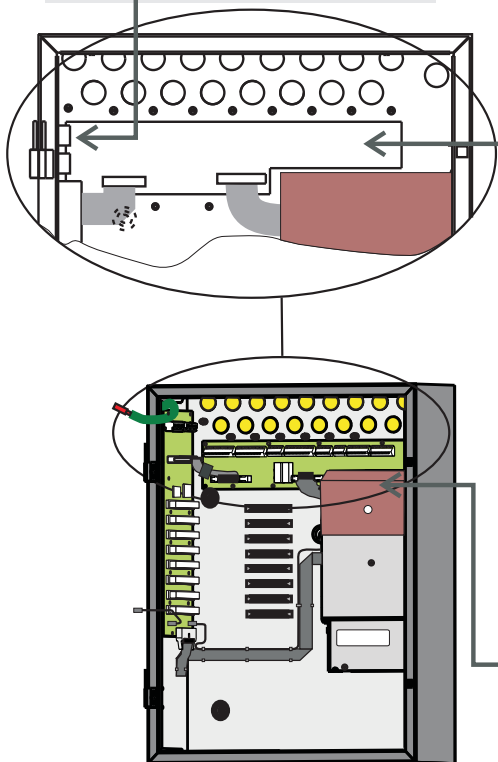
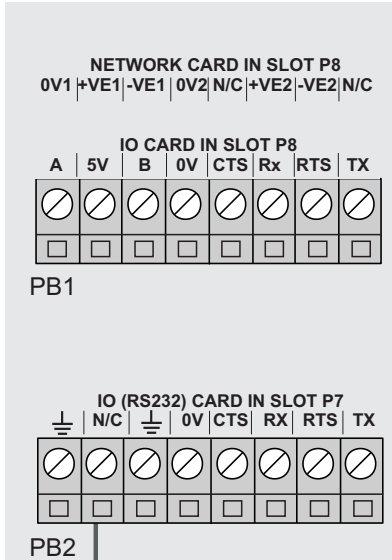
Where mains cable is to remain disconnected, its tail ends must be insulated to prevent dangerous conditions arising in the event of accidental switching On of the mains supply.

Terminals for external circuits

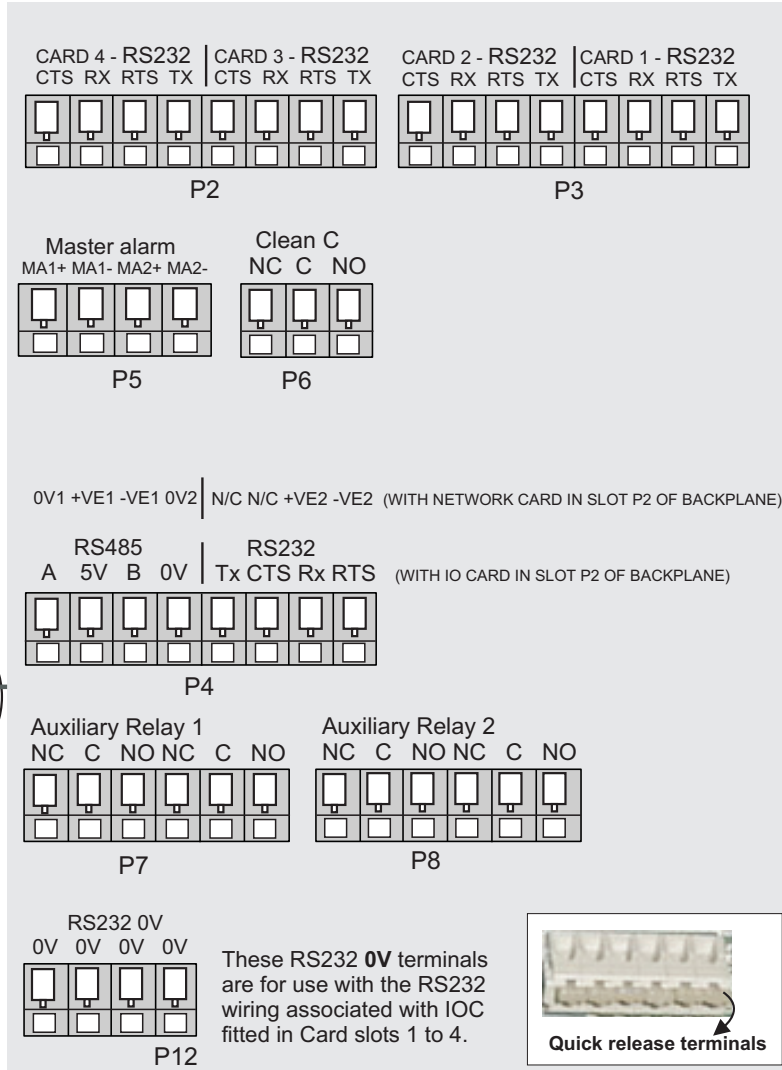
The Network node has a Terminal card that holds all the terminals for the connection of external circuits. The exception are:

- Terminals for CARDS in slots P7 and P8, these are located on the Backplane
- Mains supply terminals which are located on the mains terminal block on PSU
- Battery connections are located on the PSU.

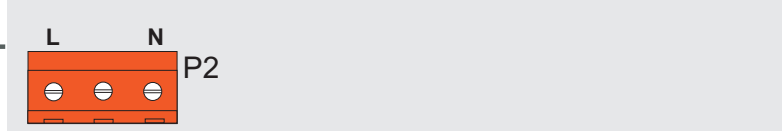
Backplane



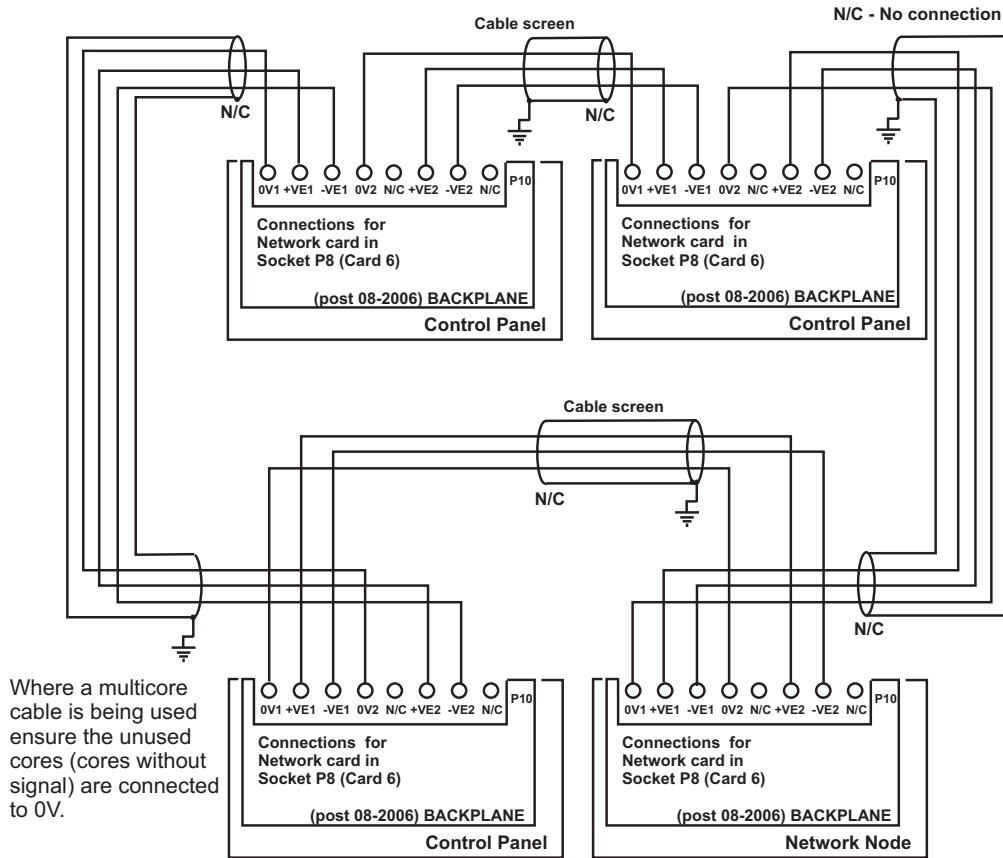
Terminal card



PSU board (located behind the cardboard cover)

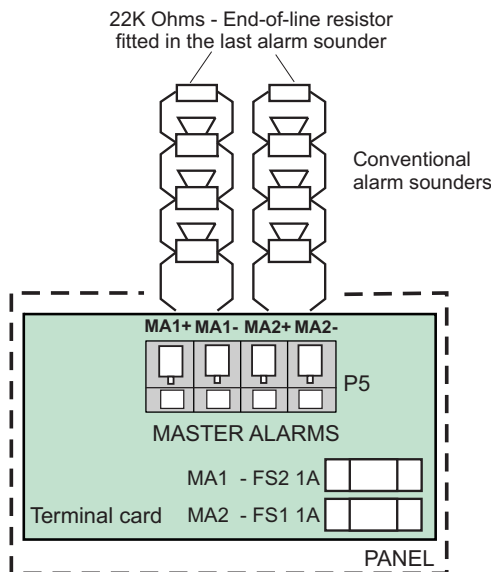


Network connections



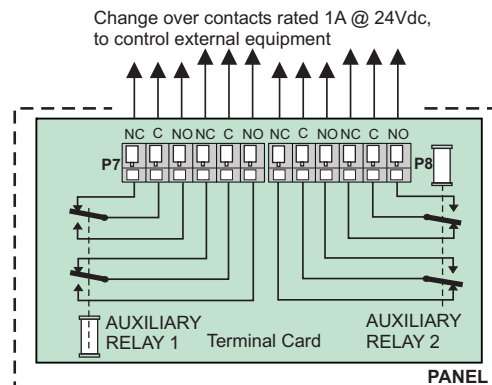
Master alarm circuits

The network node operates the master alarm circuits in the event of any fire in the network. The two master alarm circuits accept the connection of conventional alarm sounders including the conventional S-Cubed products.



Auxiliary relay circuits

The network node operates the auxiliary contacts when the configured event is received from anywhere in the network. The auxiliary relays 1 and 2 contacts are for use to control external equipment, such as automatic dialler 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.

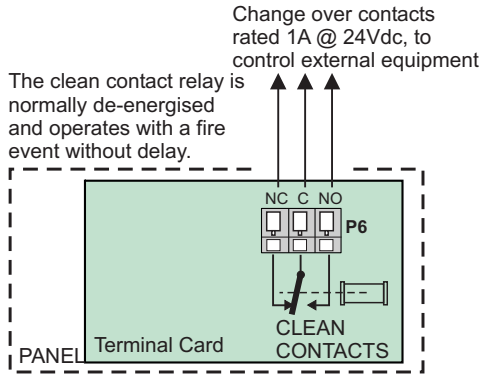


Factory default:
 Aux relay 1 is normally de-energised and operates with a fire event without delay.
 Aux relay 2 is normally energised and de-energises with a fault event without delay.

Note: Aux relay 2 has been shown in the above diagram in its de-energised state, which is the state when there is no power to the panel.

Clean contacts

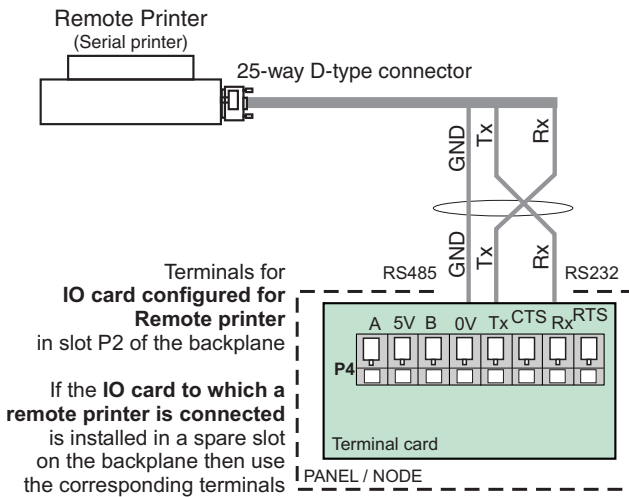
The network node operates the clean contacts when a fire event is received from anywhere in the network. The clean contacts can be used to signal plant equipment, such as lift control system. The relay will always operate in the event of a fire. The contacts should be powered from an independent power supply.



Remote printer

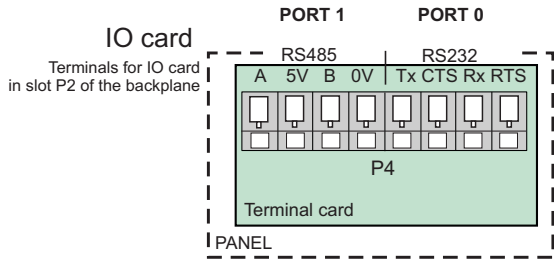
The remote printer connected to a Network Node will print network system events.

An IO card must be inserted in slot 2 of the backplane of the panel, which will facilitate remote printer functionality.

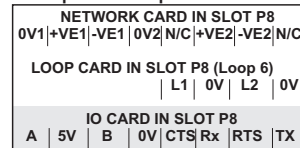


RS232 / RS485 Communication

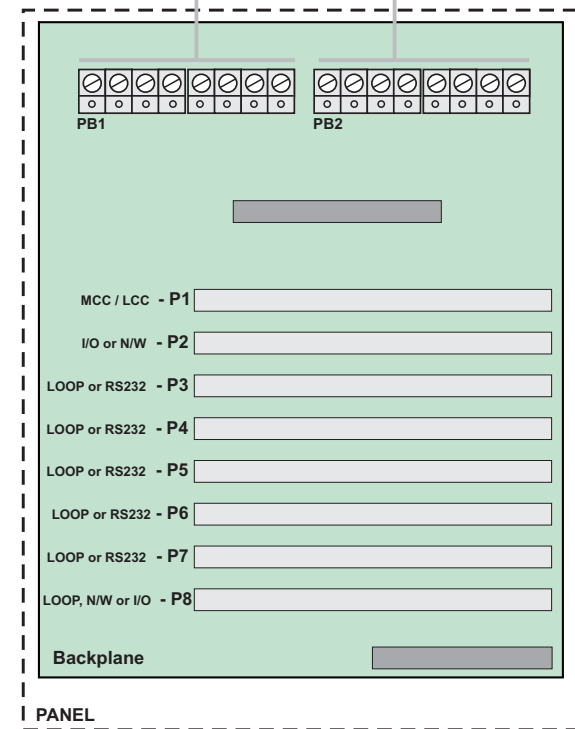
The network node offer RS232 and RS485 communication via the IO card. With a domain IO card in slot P2 of the backplane, it offers RS232 and RS485 communication via terminal block P4 on Terminal card. The communication baud and panel address are configured by setting the DIL switch located on the left edge of the Display Keyboard card.



IO, Network or Loop card option

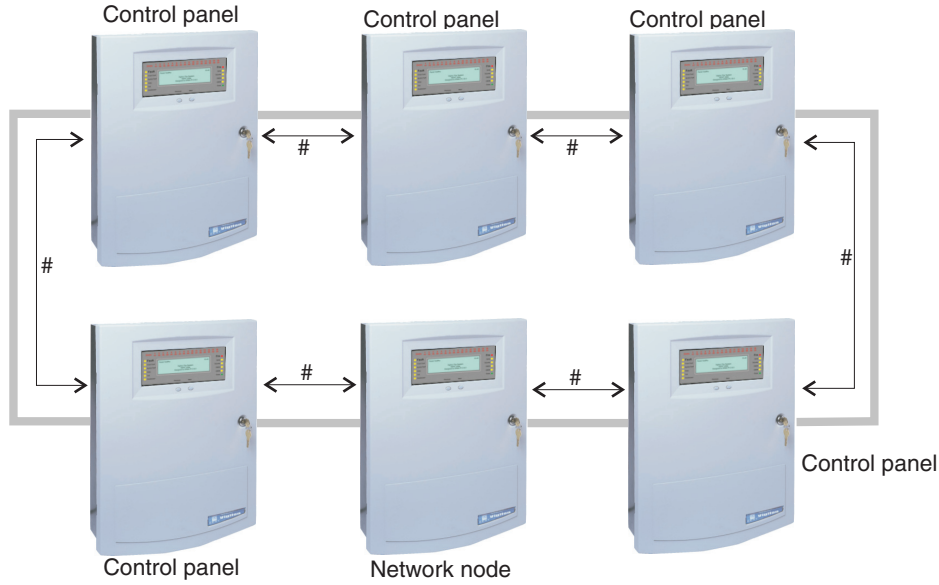


IO or Loop card option



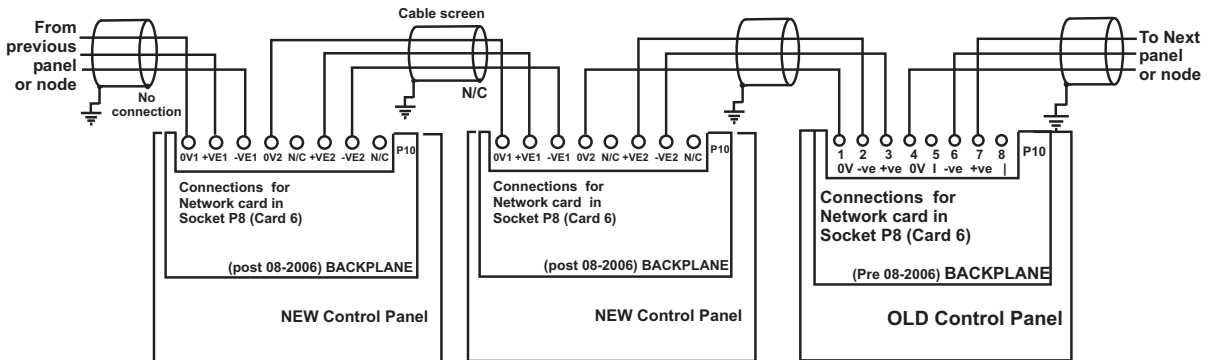
Network of single systems

It is possible to network together up to 31 standalone Vigilon EN54 fire alarm systems. Each standalone system has an EN54 Vigilon control panel that is fitted with a network card. The network card permits RS485 communication between control panels / network nodes. The cable distance between panels and nodes can be up to 1.2Km maximum. The network node is a central point of information and has no loop supporting capabilities.

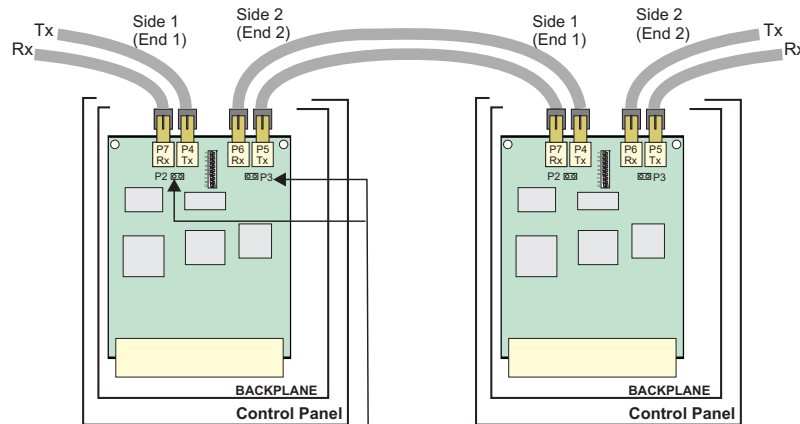


- 1.2Km Copper network cable distance
2Km Fibre network cable distance

Copper network connections



Fibre network connections



Links P2 and P3 are booster links. Normally the links are not fitted, however for distance exceeding 750m the links must be fitted.

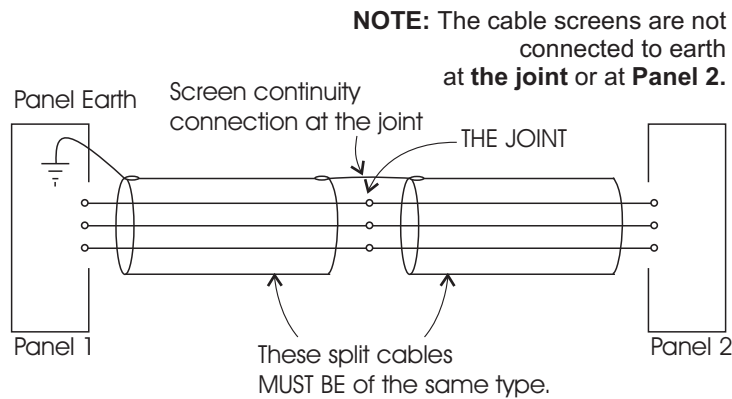
Network wiring



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

The recommended cables used to interconnect control panels and network nodes are listed in this section. The cables may also be used to connect Gent supervisor to a control panel or Network node.

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.

Installing with MICC Cable



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 way of overcoming the crosstalk problem:

- used 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

Cables



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

Cable separation

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. There should be separation from the mains supply cable.

Requirements of cables

The *British Standard BS5839 Part 1 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 and 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 830°C - 0+40°C 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 930°C - 0+40°C 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 for EMC compliance with the system products.

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 core having 1.5mm² cross section area
- Fireshield Enhanced FSN G2000**
1.2Km maximum Panel to Panel or Panel to Network node cable distance
 - 3 Core (1 pair + 1) and earth
 - each core having 1mm² 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 1.5mm² 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 1.5mm² cross section area

Standard Network cables

Approved cables for network wiring (EMC Compliant)

- Belden Armoured equivalent (EMC Compliant)**
This cable being a two pair cable to BS5308:Part 1 (type 2) 0.5mm² (16/0.2mm).
600m maximum Panel to Panel or Panel to Network node cable distance
- Belden No 9729 (UL Style 2493) (EMC Compliant)**
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 - 120 ohms
 - 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 200°C

- Datwyler PYROFIL 8750-U/R ***
1.2Km maximum Panel to Panel or Panel to Network node cable distance
 - 4 cores
 - each core having 1.5mm² 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 1.5mm² 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
 - 1.5mm² (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* (EMC Compliant)**
800m maximum Panel to Panel or Panel to Network node cable distance
 - 3 Cores
 - each core having 1.5mm² cross section area

- Prysmian (formally Pirelli) FP200 Gold* (EMC Compliant)**
1.2Km maximum Panel to Panel or Panel to Network node cable distance
 - 3 Cores
 - each core having 1.5mm² cross section area

- Prysmian (formally Pirelli) FP 400 Armoured (EMC Compliant)**
800m maximum Panel to Panel or Panel to Network node cable distance
 - 4 Cores
 - each core stranded 1.5mm² cross section area



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.

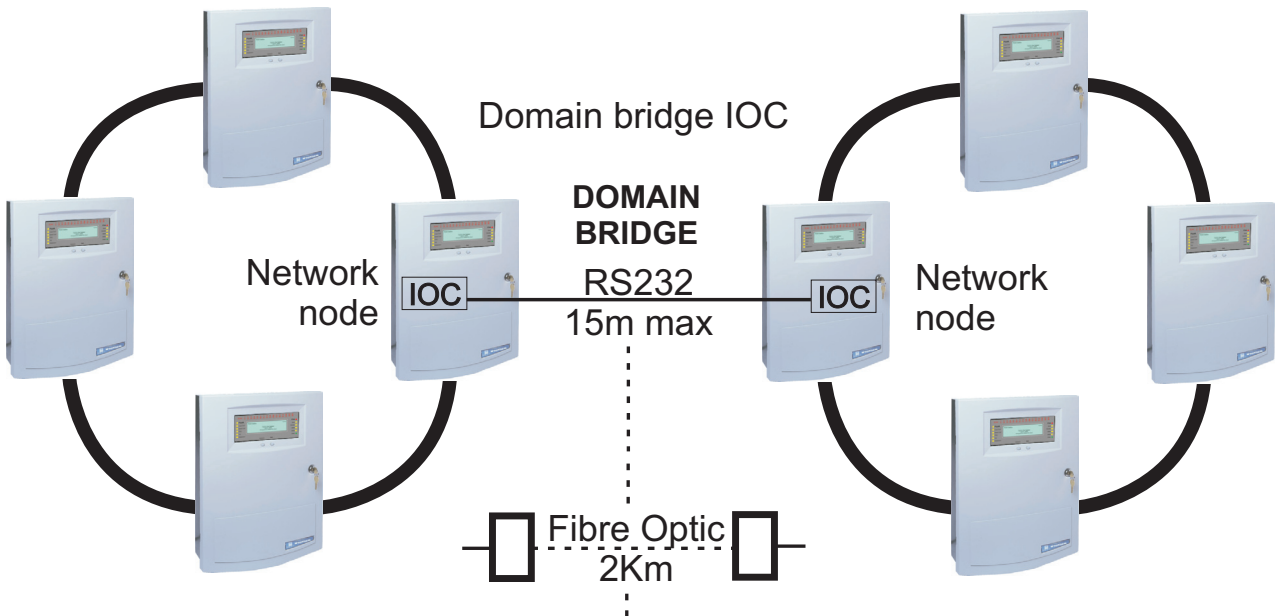
Domain Bridge across Networks

It is possible to connect two or more Vigilon networks together by means of domain bridge. To domain bridge two or more networks a Domain bridge IO card must be installed in the bridging node / panel. There are various methods of domain bridging depending on the distances between node / panel. Domain bridge can be made directly using RS232 ports of Domain bridge IO card or by using Domain bridge Fibre optic cards.

Methods of domain bridging

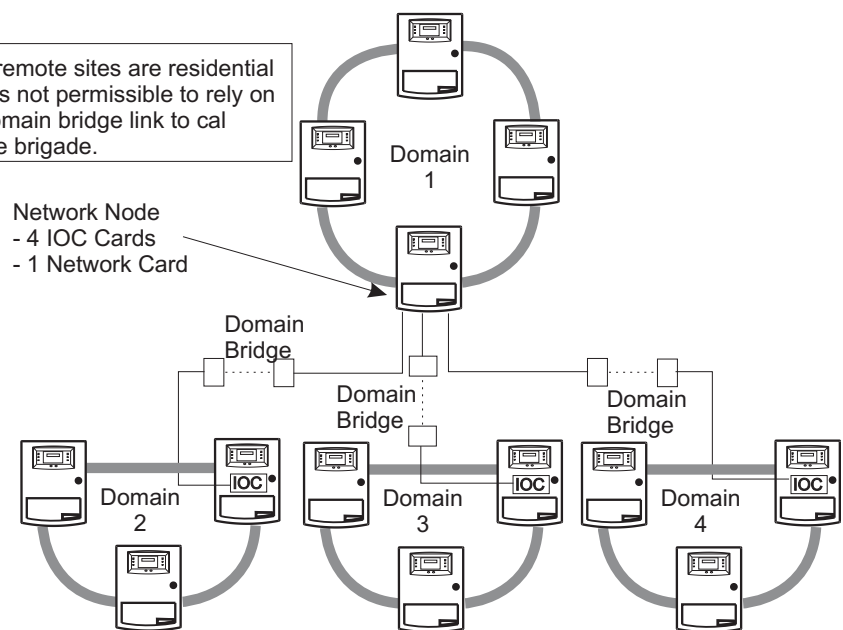


A domain bridge IO card is required to be installed in the bridging panel/node.

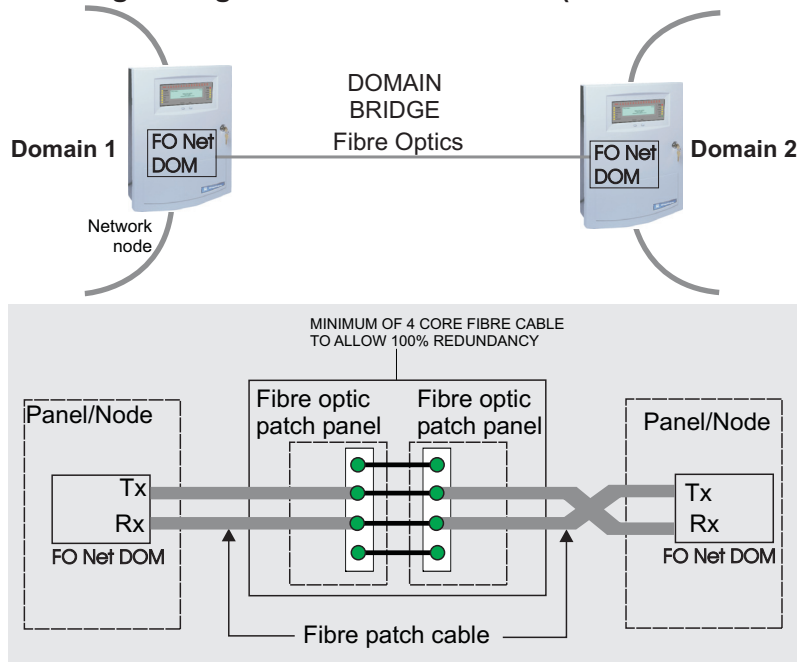


Star connection

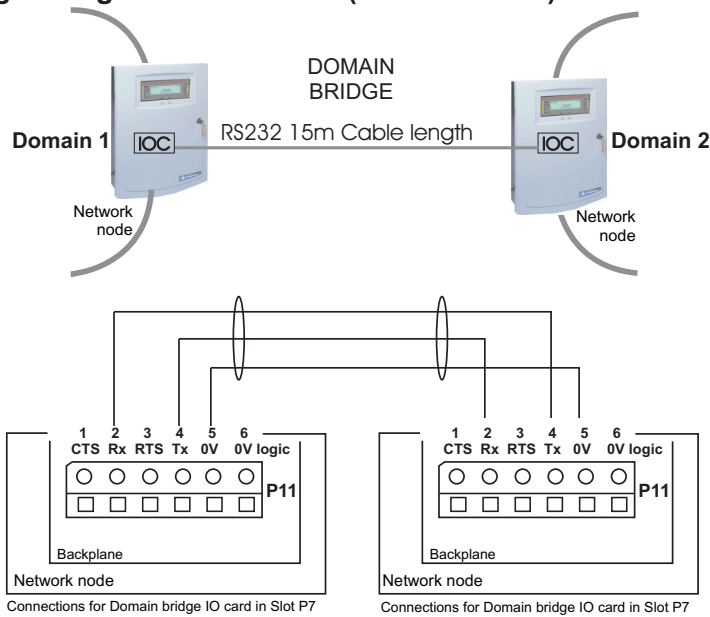
i If remote sites are residential it is not permissible to rely on domain bridge link to call fire brigade.



Fibre Optic Domain bridge using FO Network DOM card (VIG-NC-DOM-FO)



RS232 Domain bridge using Domain IO card (VIG-IOC-DOM)



On completion of installation

All outstanding commissioning work is done by the servicing organisation

WEEE Directive:
 At the end of their useful life, the packaging, product and batteries should be disposed of via a suitable recycling centre.
 Do not dispose of with your normal household waste.
 Do not burn.

At the end of their useful life, the packaging, product and batteries should be disposed of via a suitable recycling centre and in accordance with national or local legislation.

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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