GENT
by Honeywell

Data and Installation Instructions

Vigilon Compact Network Node
(VIG-NET-NODE) for networked Vigilon System

Contents

Preface

This is the first issue of the Data and Installation instructions for the Vigilon Compact Network Node. The booklet covers information on how to mount and wire the node.

These instructions must be read in conjunction with the recommendations in *BS5839:Part 1,* which is the *code of practice for Fire detection and alarm systems for buildings* and site specific Project requirement.

Associated Documents

☐ 4188-875
EN54 Vigilon Compact 4/6 loop Control panel

Conventions

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

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
ADC - Analogue to Digital Converter
AS - Anti surge
C - Common
CH - Channel
DEV - Device (Loop device)
DIL - Dual in line
DKC - Display keyboard card
DPCO - Double pole change over (relay contacts)
EOL - End of line
EP - Environmentally protected
ESD - Electrostatic discharge
GND - Ground
HF - High frequency
I/F - Interface
IO or I/O - Input Output
IP - Ingress protection
IR - Infra Red
LCD - Liquid crystal display
LED - Light emitting diode
LPCB - Loss prevention council certification board
LVD - Low voltage directive
MCB - Master control board (CARD 0)
MCP - Manual call point
N/C - Normally closed
N/O - Normally open
NVM - Non Volatile Memory (NVM on MCB CARD14)
OC or O/C - Open circuit
PCB - Printed circuit board
PIN - Personal identification number
(Usercode, password or access code)
PSU - Power supply unit
PVC - Polyvinyl chloride
QB - Quick blow (fuse)
RAM -Random access memory
SC or S/C - Short circuit
SPCO - Single pole change over (relay contacts)
T - Anti-surge (fuse)
TBA - To be advised

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 : 1992 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 product, the installed products must be suitably protected until all major building work in the area is complete.

The second fix parts of the Node consits of installing the Network card, which is supplied in separate carton and is installed during the commissioning stage.

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 : 2002*. 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 **Network loop cable** screen must be continued through each system node or panel 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.

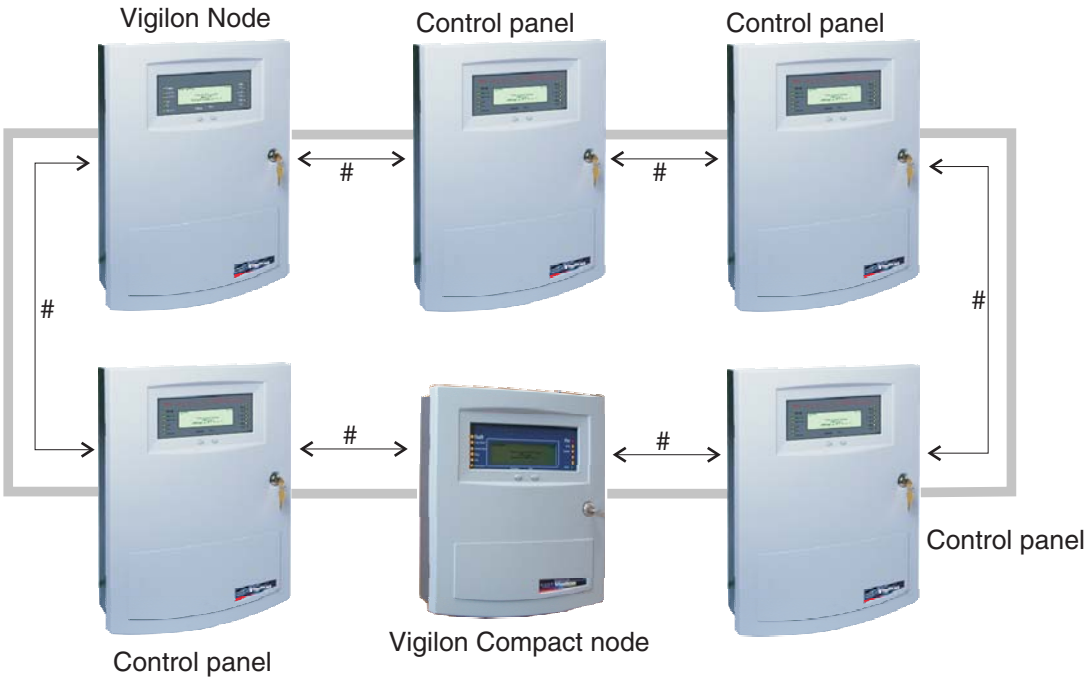
Mains supply

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.

Vigilon Networked 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 for information and has no loop supporting capabilities.



- 1.2Km Copper network cable distance

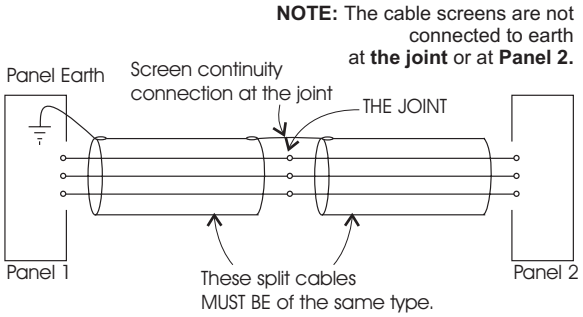
Network wiring

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.



Installing 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:

- ☐ 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

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.

The cables listed here are have been tested for EMC compliance with the system products.

Network cables

Enhanced Network cables

☐ **Mineral insulated copper cable (EMC Compliant)**
800m maximum Panel to Panel 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)

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

Standard Network cables

☐ Delta Crompton Firetuf FDZ1000*
1200m maximum Panel to Panel cable distance
- Three core

☐ Huber & Schner Radox series FR communication cable*
1200m maximum Panel to Panel cable distance
- Three core twisted triad screened
- 1.5mm2 (7/0.42 stranded) conductors
- Nominal impedance 200 ohms (1KHz)
- Capacitance between conductors 110pF/m (1KHz)
- Capacitance between screen to core 210pF/m (1KHz)
- Fire resistance tested to BS6387 category CWZ and IEC 331.

☐ Belden No 9729 (UL Style 2493) (EMC Compliant)
1200m maximum Panel to Panel cable distance
- Two 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 -30oC to +60oC .

☐ 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 Node cable distance.

☐ Teflon jacketed Belden TR No. 89729
1200m maximum Panel to Node cable distance
- Two 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

☐ Belden No. 9842 EIA RS485 Applications, O/A Beldfoil® Braid
1200m maximum Panel to Node cable distance
- Must have following characteristics:
- Two 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

☐ Pirelli FP200 Flex* (EMC Compliant)
800m maximum Panel to Node cable distance
- 3 Core
- each core having 1.5mm2 cross section area

☐ Pirelli FP200 Gold* (EMC Compliant)
1.2Km maximum Panel to Node cable distance
- 3 Core
- each core having 1.5mm2 cross section area

☐ Pirelli FP Plus* (EMC Compliant)
1.2Km maximum Panel to Node cable distance
- 3 Core
- each core having 1.5mm2 cross section area

☐ Draka FT Plus (EMC Compliant)
1.2Km maximum Panel to Node cable distance
- 3 Core
- each core having 1.5mm2 cross section area

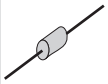
☐ Doncaster Cables Firesure Plus
1.2Km maximum Panel to Node cable distance
- 4 Core (2- pair plus earth)
- each core having 1.5mm2 cross section area

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*.

Node installation

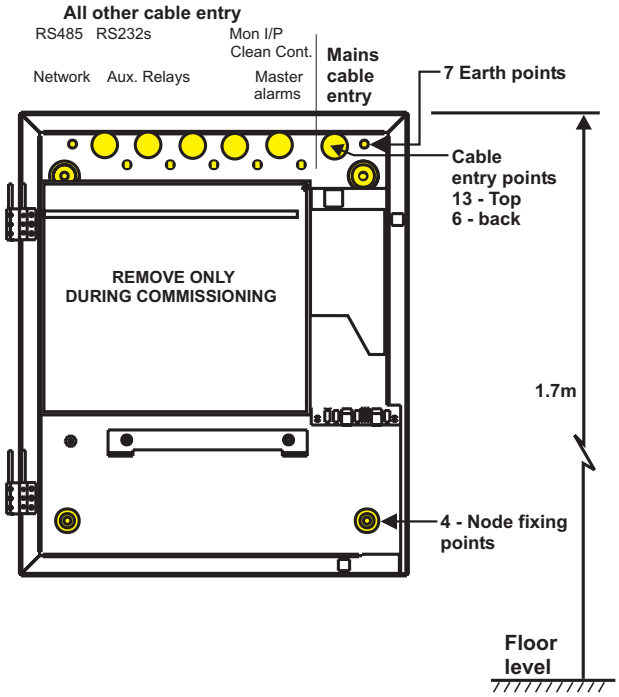
The Vigilon Compact Network Nodel is supplied in parts, it is important to check the contents of each package:

- ☐ Back box assembly
- ☐ Inner door assembly (fits on to back box assembly)
- ☐ Outer door assembly (fits on to back box assembly)
- ☐ 2 x 12V 12Ah Batteries

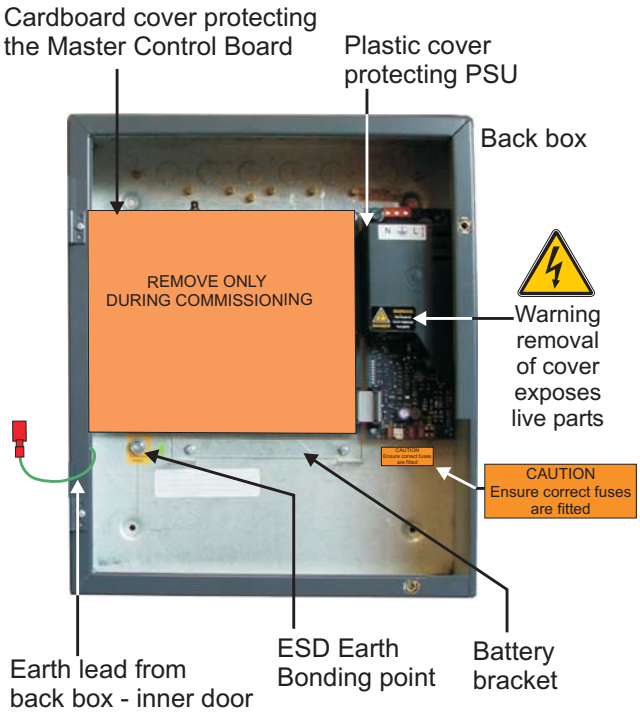
Parts in the Spares pack		Quantity
Fuse 3.15A 20mm x 5mm		1
Fuse 3.15A		2
Fuse 1A		2
Fuse 200mA		2
10K Ohms Resistor		4
Battery Link		1
Battery Lead		1

Mounting height and dedicated cable entry points

Unused knockouts that have been removed should not be left open.

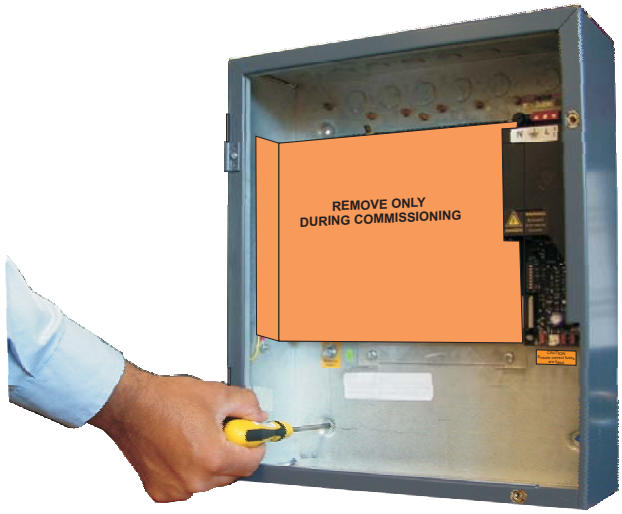


Backbox assembly



How to surface mount the Node

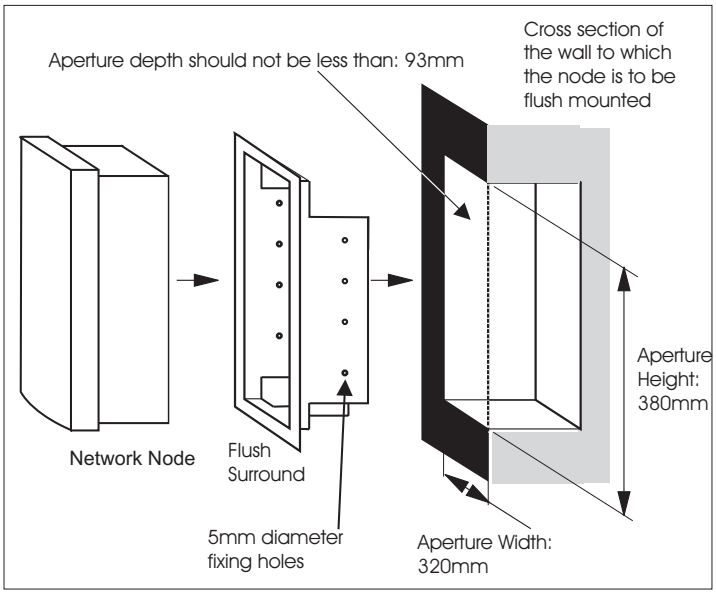
Using the four fixing points mount the backbox onto a flat wall using suitable fixings.



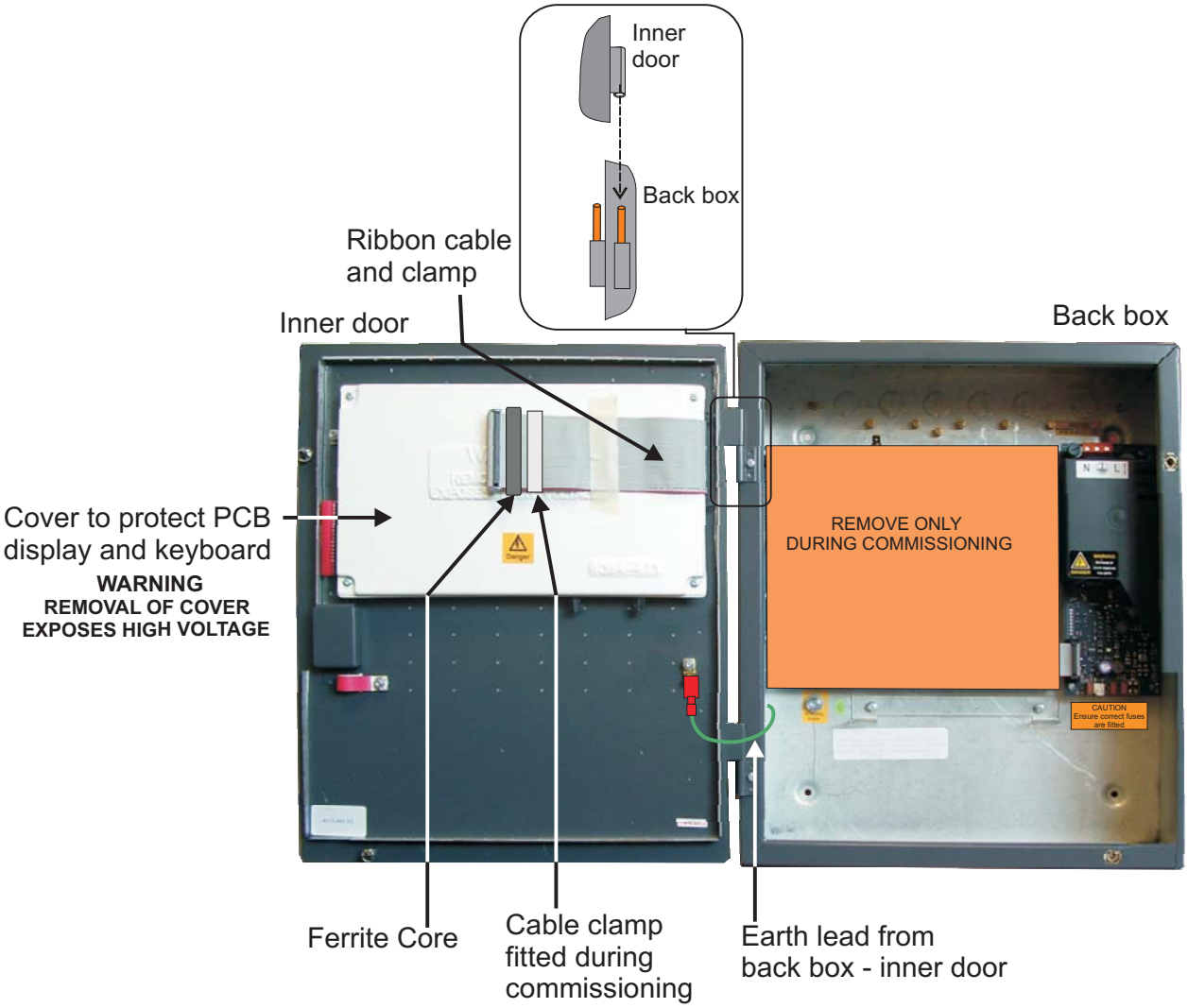
How to flush mount the Node

The Network Node may be flush mounted using a flush surround COMPACT-FLUSH. A stainless steel flush surround variant COMPACT-FLUSH-SS may be fitted, which will require a stainless steel door VIG-RPT-DOOR-SS.

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 node enclosure.
d. Route the cables through the cable entry points into the node and at the same time insert the node into the flush surround.
e. Fit the node back box to the flush surround using the 4-off 5mm screws supplied with the flush surround.

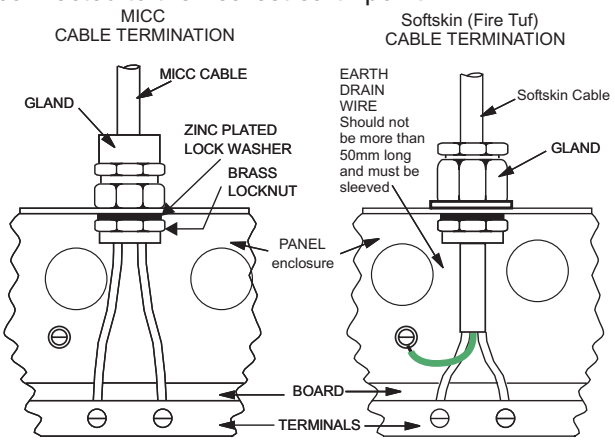


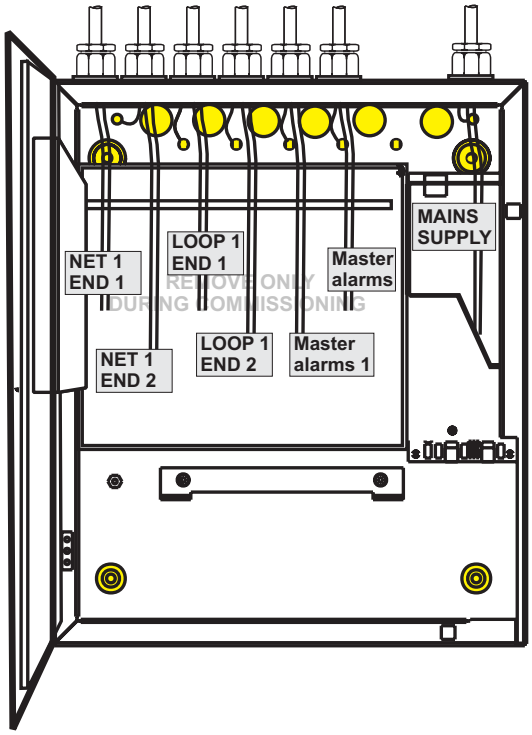
Fitting the inner door



Cable termination on enclosure

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 the cable are not required to be connected, leave **400mm** (unless otherwise specified) tail wire length 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

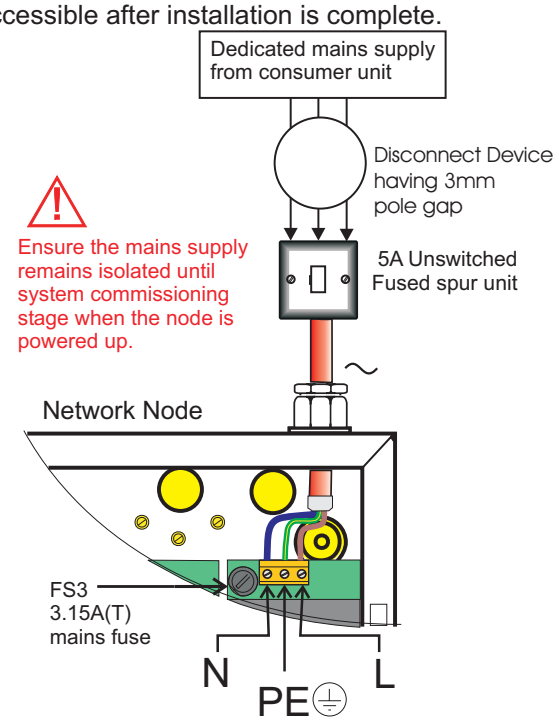
DO NOT undertake high voltage insulation tests WITH THE CABLES CONNECTED to the node. Such a test may damage the electronics circuitry in the node.

Mains supply

Ensure that the mains supply cable enters the Network node through a dedicated cable entry, located adjacent to the mains terminal block.

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.



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.

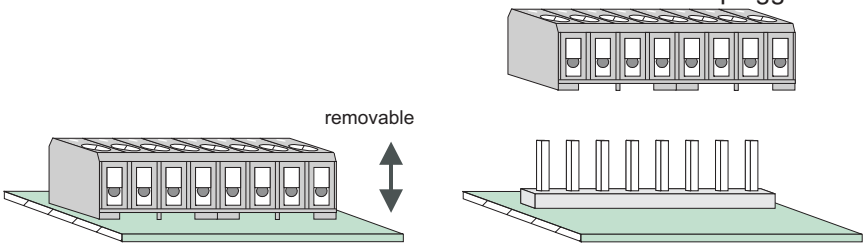
Mains and battery supply connections

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.

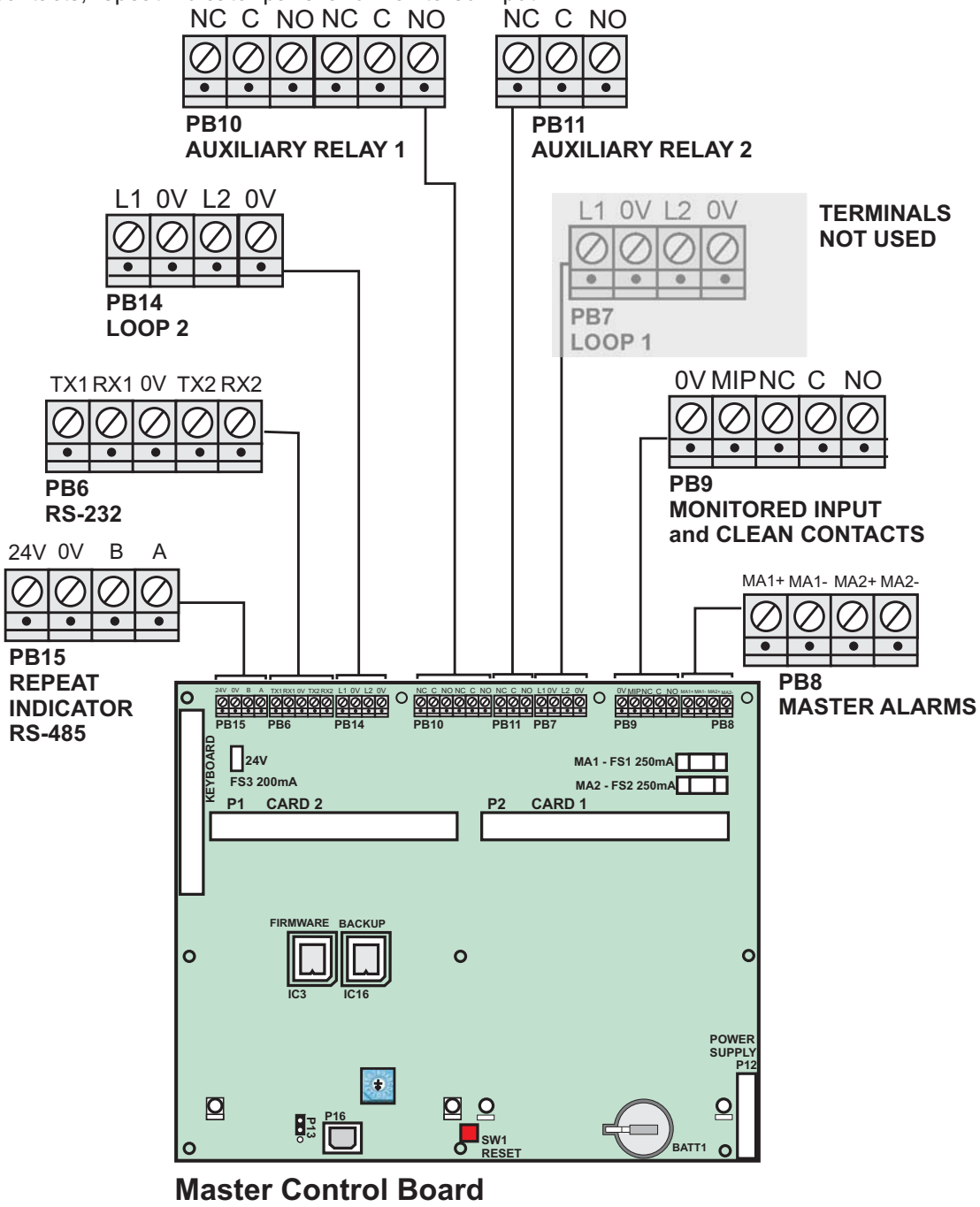
Removable terminal block

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



Terminals for external circuits on Master Control Board

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

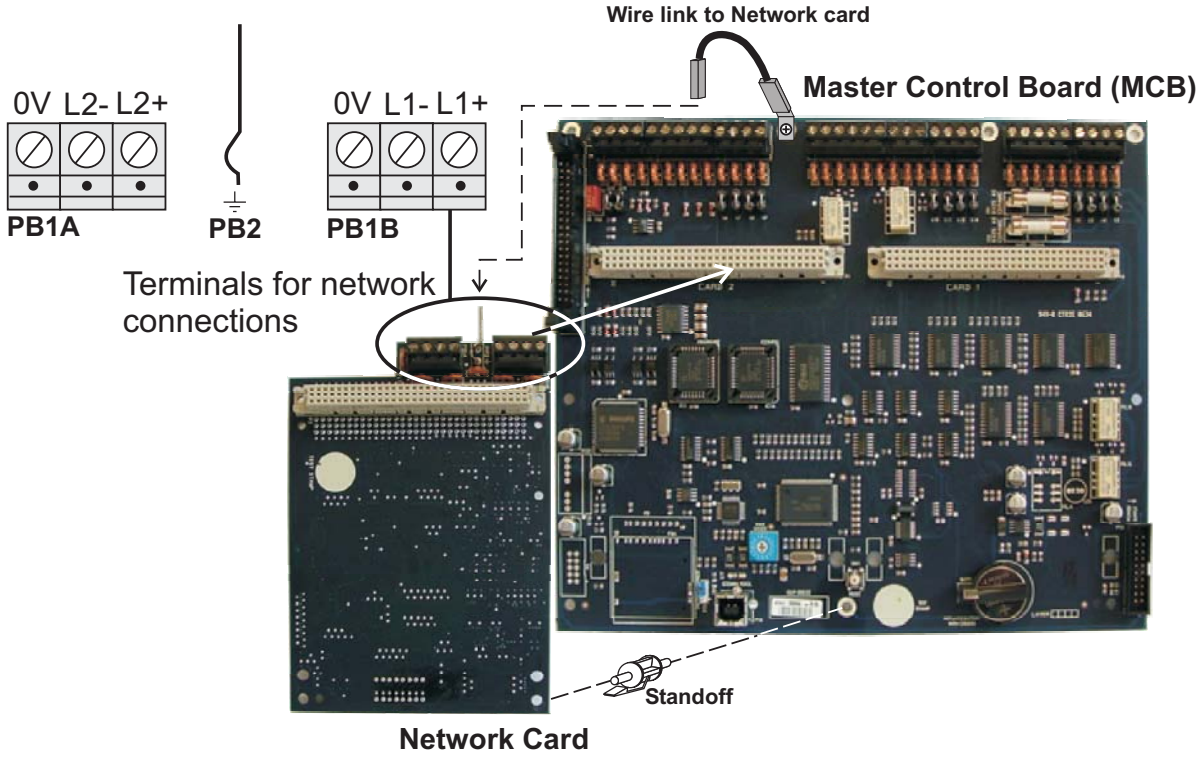


Master Control Board

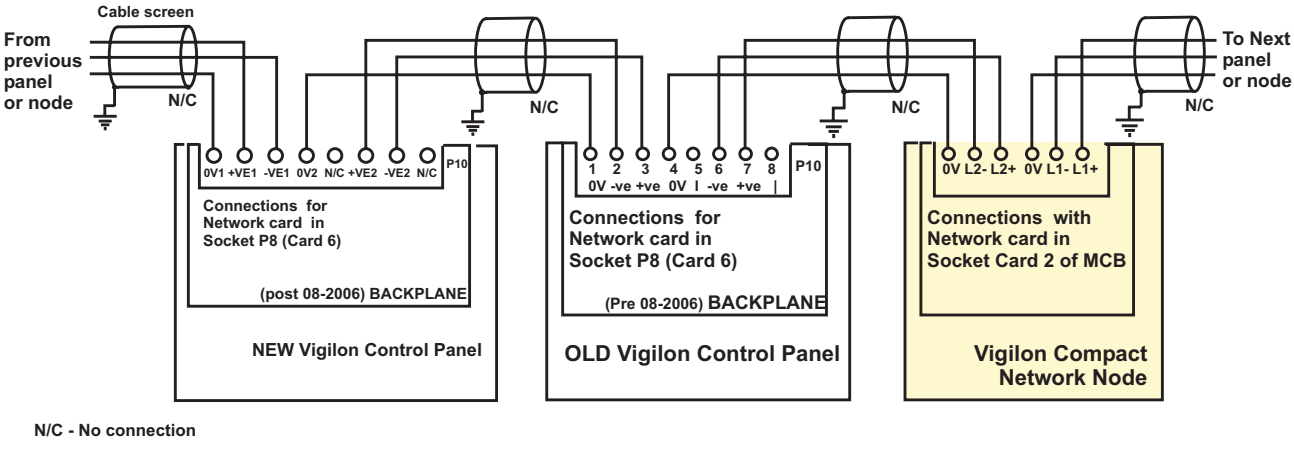
Terminals for network connections

The Network card must be plugged into CARD 2 slot of the Master Control Board.

Fit the wire link supplied with the Network card between the network card and MCB as illustrated below.

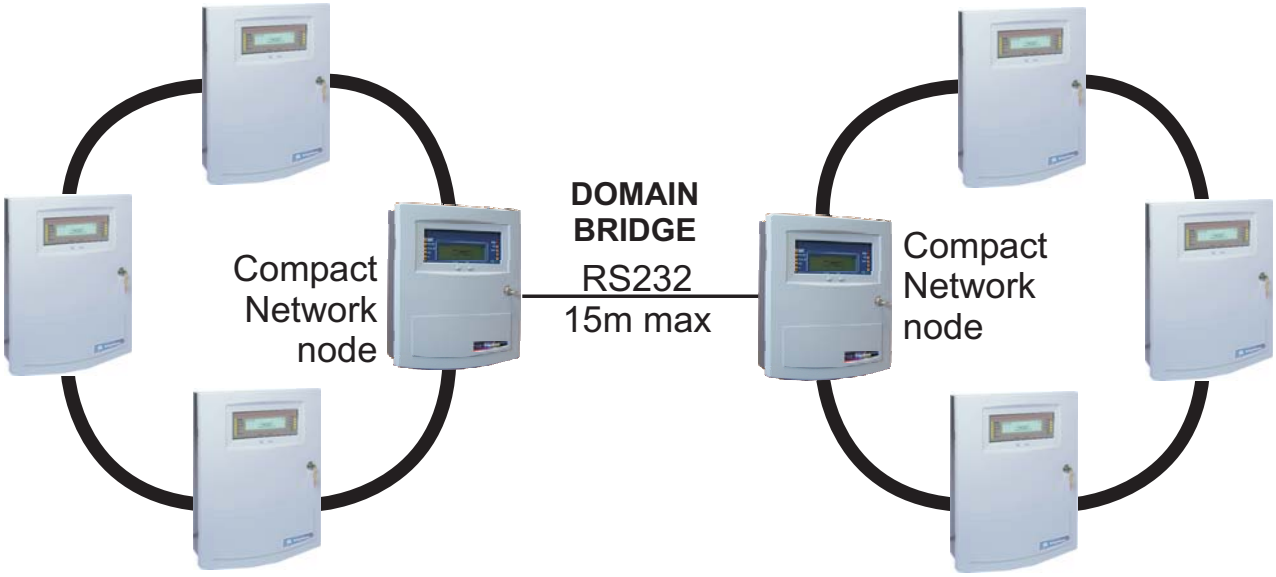


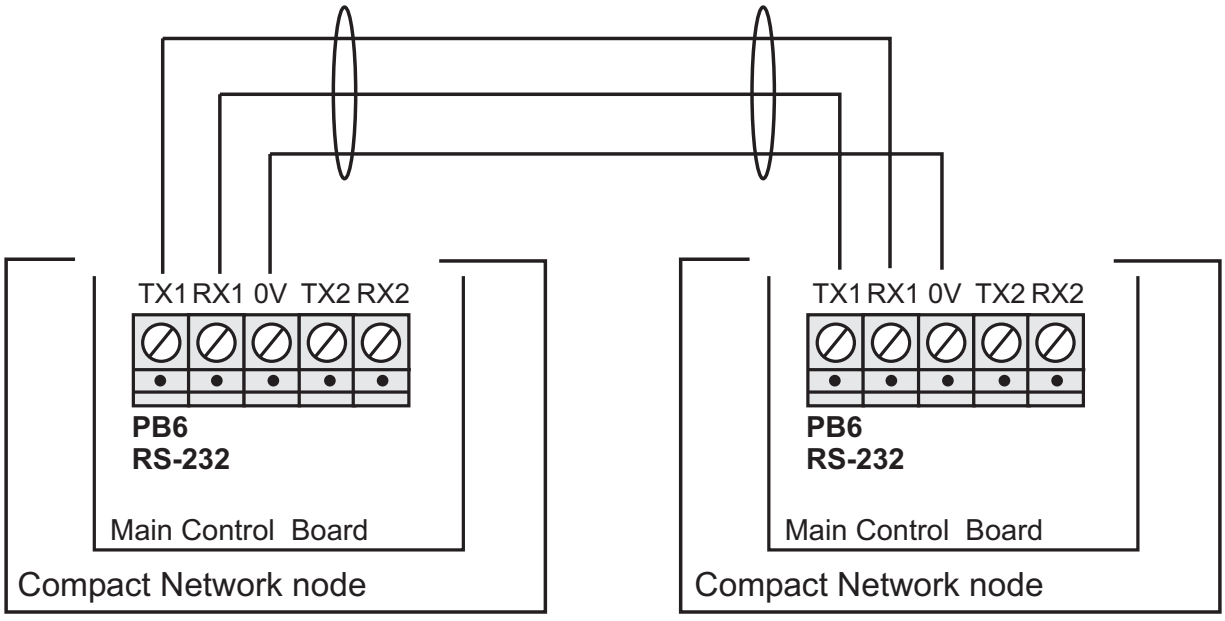
Copper network connections



Domain Bridge across Networks

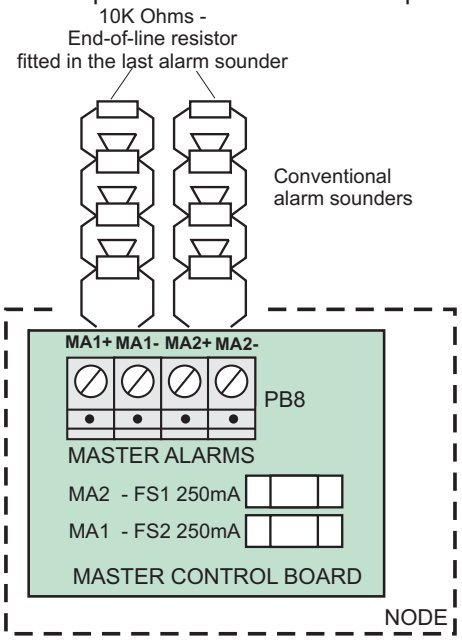
It is possible to connect two or more Vigilon networks together by means of domain bridge. To domain bridge two networks use the RS232 connections.





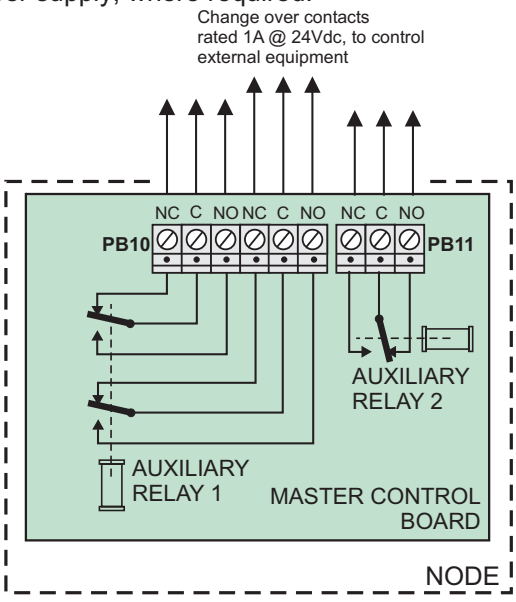
Master alarm circuits

The two master alarm circuits accept the connection of conventional alarm sounders including the conventional Speech-Sounder-Strobe S^3 products.



Auxiliary relay circuits

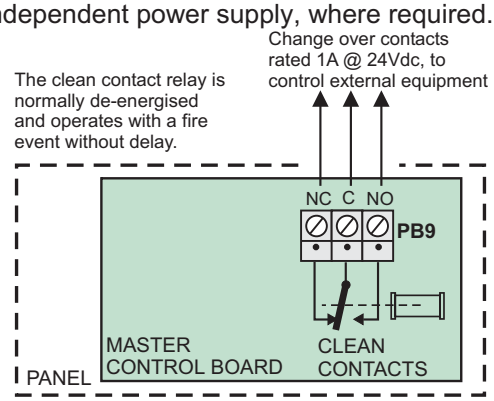
The network node operates the auxiliary contacts when the configured event is received from the system. The auxiliary relays 1 and 2 contacts can be used to control external equipment, such as an automatic dialler that makes the call for fire fighting action. The relays can be individually re-configured 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, 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.

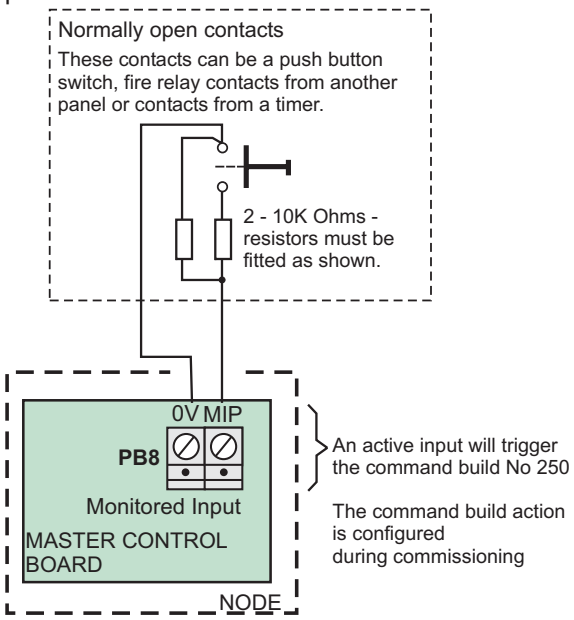
Clean contacts

The netowrk node operates the clean contacts 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 relay operates in the event of a fire. The contacts should be powered from an independent power supply, where required.



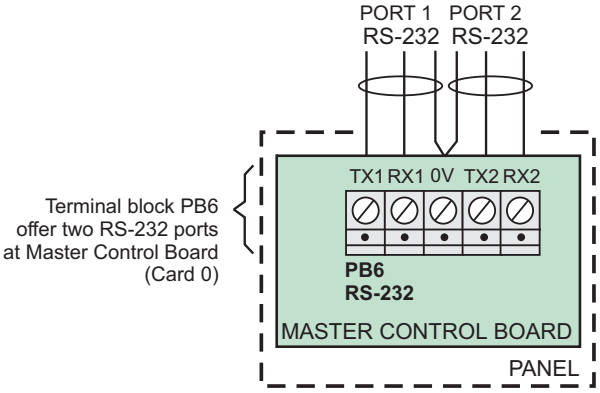
Monitored input circuit

The monitored input at the network node is activated by an external switch installed a maximum of up to 100m cable distance away from the node. 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 node. 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.



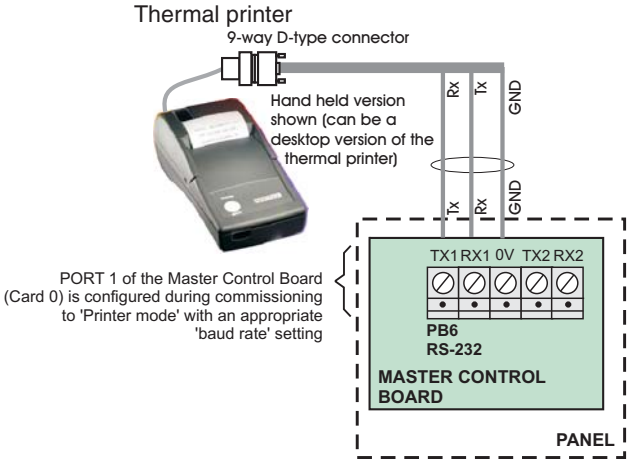
RS232 Ports

The ports 1 and 2 of the network node 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 Domain brigde networks.



Connecting a thermal printer

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



On Completion

Vigilon Compact Network Node

The Vigilon Compact Network Node (also referred to as Terminal node) is supplied with a network card to allow connection to a secure Vigilon network. The node has 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 network 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 or external printer
- ☐ 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 via batteries for up to 24 hours.
- ☐ LCD alphanumeric type display with back light to show event information
- ☐ LED lights for event indication
- ☐ Local audible buzzer to announce events
- ☐ Push buttons for essential controls and menu driven commands
- ☐ Monitored input that can be configured to action the command build 250.
- ☐ Two programmable LED indications CB253 and CB254.

Technical data

Dimensions in mm	height 403 x width 338 x depth 101
Node weight	approximately 8.6Kg without batteries 1 - 12V 12Ah battery (weighing 4Kg) 2 batteries are required
Storage temperature	-10 to 55ºC
Operating temperature	-5 to 45ºC
Relative Humidity (Non condensing)	up to 90% Temperature 5°C to 45°C
Emission	BS EN50081-1:1992 Part 1 Residential, Commercial & Light Industry **Class B limits.**
Immunity	BS EN50130-4: 1996: Part 4 Alarm systems: *Electromagnetic compatibility*
Ingress Protection	IP31
Colour	Door: Grey (Pantone 422) Back box: Graphite Grey (RAL 7024).
Plug in Card Card 1 slot Card 2 slot	 - Copper Network card (supplied)
Network card	To connect to a network of up to 31 combined Panels and Nodes on a secure network loop using RS485 (1.2Km between nodes)
Clean contacts	1 set of voltage free change over contacts rated 1A @ 24Vdc, active with **any fire event.**
Monitored input	A closed circuit on these contacts will triggers a command build number 250. The input is normally open circuit.
Master alarm circuits	Two - (24 volt nominal) 250 mA max per circuit MA1 - fuse 250mA HBC (T) FS1 MA2 - fuse 250mA HBC (T) FS2 Both fuses are 20mm x 5mm in size and are located on the master control board

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) is not used
	The factory set baud rate for Port 0 is **1200** and for Ports 1 & 2 it is **38400**. Baud rate can be reconfigured using the menus at the node.
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
Indicators	Fire (Red) Verify (amber) CB253 (amber) CB254 (amber) Power (green) Fault (amber) Disablement (amber) System fault (amber) Power fault (amber) Sounder (amber) Test (amber) Delay (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.
Controls (with door closed) Access level 1	Next and Previous buttons operable during Fire condition only.
Controls (with door open) Access level 2a User having door key	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 2b User having door key and *customer* password	As access level 2a plus access to complete level 2 menu commands.
Access level 3 Engineer having door key and *engineer* 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.
Remote Printer (Optional)	The printer menu driven controls include: on, off, Line feed and Test print.

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 50Hz +10% -6% protected by: FS3 Fuse - 3.15A (T) Ceramic 20mm x 5mm, located on PSU.
Nominal supply voltage for master alarm circuits	24V +1V, -4V
Lithium Battery	BAT1 on MCB. Type CR2032 3V cell. Replace only with the same or equivalent type battery. Dispose of used batteries according to the manufacturer's instructions.
Battery circuit BAT1 and fuse	FS1 Fuse 3.15A (T) TE5 on PSU
Battery	2- 12V 12Ah sealed lead acid batteries that will provide 24 hours standby and 30 minutes alarm
PSU voltages and fuses	
43V (quiescent) supply	FS6 Fuse 1.0A (T) TE5 on PSU board
24V supply	FS4 Fuse 1.0A TE5 on PSU board
Storage temperature	-10ºC to 55ºC
Operating temperature	0 to 45ºC
Relative Humidity (Non condensing)	up to 90% Temperature -5°C to 45°C
Indicators	**Left LED (yellow)**: 43V supply fault **Centre LED (yellow)**: Indication of battery circuit 1, 24V supply **Right LED (green)**: Indication of mains supply fault.

Hazardous voltages may still be present even if this indication is extinguished.

Notes

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
Hamilton Industrial Park, Waterside Road, Leicester LE5 1TN, UK
Website: www.gent.co.uk
Telephone: +44 (0) 116 246 2000
Fax (UK): +44 (0)116 246 2300