VESDAnet Interface Card
Product Guide

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VESDA

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The following typographic conventions are used in this document.

Convention	Description
Bold	Used to denote: emphasis Used for names of menus, menu options, toolbar buttons
Italics	Used to denote: references to other parts of this document or other documents. Used for the result of an action.

The following icons are used in this document

Convention	Description
	Caution: This icon is used to indicate that there is a danger to equipment. The danger could be loss of data, physical damage, or permanent corruption of configuration details.
	Warning: This icon is used to indicate that there is a danger of electric shock. This may lead to death or permanent injury.
	Warning: This icon is used to indicate that there is a danger of inhaling dangerous substances. This may lead to death or permanent injury.

Contact Us

The Americas	+1 781 740 2223
Asia	+8 52 2297 2438
Australia and New Zealand	+61 3 9936 7000
Continental Europe	+41 55 285 99 99
UK and the Middle East	+44 1442 242 330
www.xtralis.com	

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Table of Contents

1 Scope

This guide describes the features of the VESDAnet Interface Card. It covers the VESDAnet Interface Card's functions and specifications, the installation, commissioning and operating procedures. Also included in this guide are overviews of how the VESDAnet Interface Card operates through VESDAnet and with configuration tools such as the LCD Programmer and VSC.

Troubleshooting and maintenance of the VESDAnet Interface Card is also covered.

2 Introduction to the VESDAnet Card

The VESDAnet Interface Card (also referred to as the VN Card) can be installed into detectors, such as the Xtralis VESDA VLF, allowing communication on the VESDAnet protocol. This will allow the detector to be monitored for alarms and faults remotely. It will also allow configuration, status monitoring and event log extraction via software tools on VESDAnet.

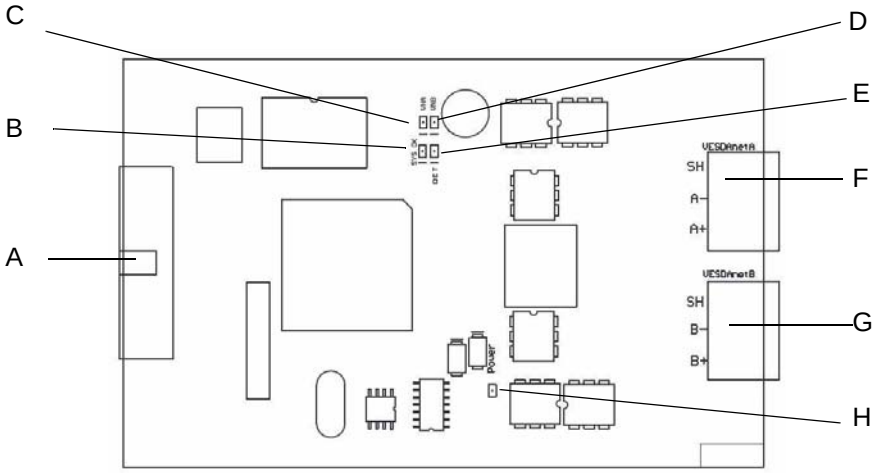
By interfacing a detector onto VESDAnet the features and options of the remote display modules and referencing are supported.

The VESDAnet Interface Card has connectors that are similar to the ones used on other Xtralis VESDA devices so it can easily be wired into VESDAnet. It is not difficult to install and for most sites the only configuration required is to set the VESDAnet address (zone) number and network time.

3 Part Description and Installation

- 1 Mounting Screw
- 1 Interface Cable
- 1 VESDAnet Interface Card PCB
- 2 connectors for VESDAnet connection

The VN Card is a printed circuit board with connectors on either end. It is designed to be installed inside a smoke detector such as the VLF.



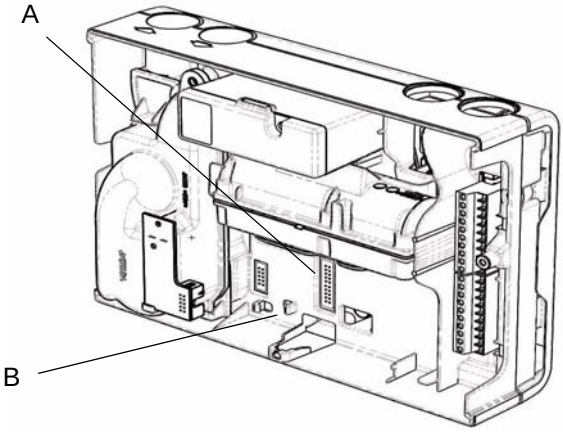
Legend		Label on PCB
A	Detector Interface Cable socket	-
B	System OK LED	SYS OK
C	VESDAnet Port A LED	VN A
D	VESDAnet Port B LED	VN B
E	Detector (Comms) LED	DET
F	VESDAnet Port A Socket	VESDAnet A
G	VESDAnet Port B Socket	VESDAnet B
H	Power Indicator LED	Power

Figure 1 - VN Card Diagram showing major features

Installing the VESDAnet Card into VLF

Caution: The detector must be powered down before installing or swapping an interface card otherwise damage may occur.

The VN Card is shipped with one screw, one interface cable and two VESDAnet connectors. The screw is used to mount the card and the interface cable connects the VESDAnet Interface Card to the main PCB inside the VLF. The connectors are used to wire the detector/card into VESDAnet



Legend	
A	VLF Interface Cable socket
B	Mounting space for VESDAnet Interface Card

Figure 2 - VLF with case off, no VESDAnet Interface Card installed

1. Ensure the detector is powered off.
2. Open the VLF. See the VLF product guide for details.
3. Plug the interface cable from the VESDAnet Interface Card into the socket marked (A).
4. Place the card in the space provided, ensuring that the mount for the screw matches up with the hole on the card. The interface cable should fold under the card.
5. Once the card is seated firmly, use the screw provided to secure the card. The mounting screw must be installed as it also grounds the card.
6. Power up the detector. See *"Testing the Installed VESDAnet Interface Card"* on page 8. to check that the card is functioning properly.

The card is successfully installed.

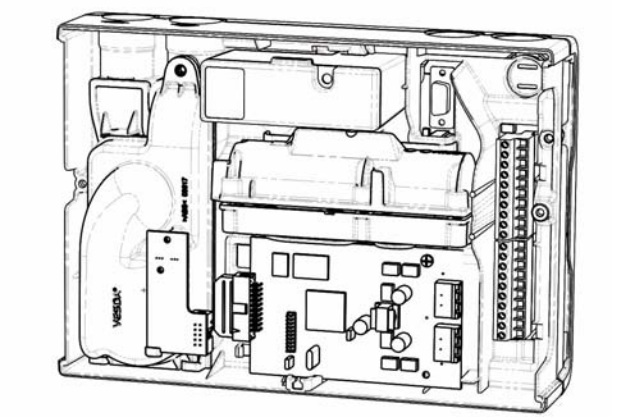


Figure 3 - VLF with case off, VESDAnet Interface Card Installed

Wiring to VESDA*net*

VESDAnet is a fault tolerant data communication network between VESDA devices. VESDAnet cables are terminated at the VESDAnet A and B Terminals on the VESDAnet Interface Card. Communications from another VESDA device is brought into the VESDAnet Interface Card at one terminal and looped out to another device on VESDAnet from the other terminal. It is recommended that (Belden 9841 - 120 Ohm) twisted pair cables, or similar cables be used.

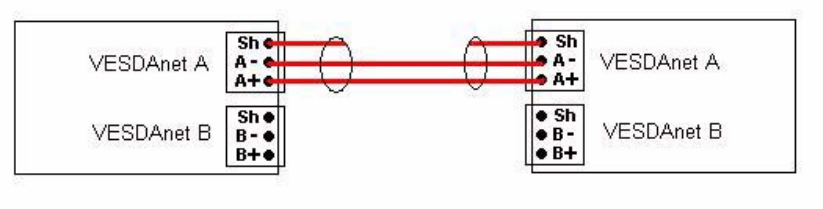


Figure 4 - VESDAnet wiring with Shielded Twisted Pair- maintain polarity

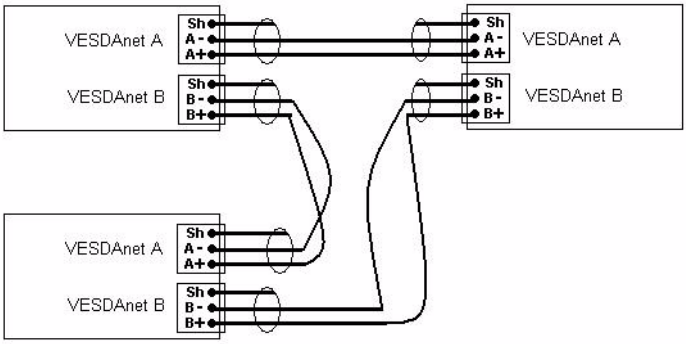


Figure 5 - VESDAnet closed loop wiring diagram with Shielded Twisted Pair

Note: VESDAnet cabling can be wired A+ to A+, B+ to B+, or A+ to B+. Also, A- to A-, B- to B-, or A- to B-. Shielded wire must be terminated to the shielded connector.

Note: In the VESDAnet diagrams, the input wiring with circle to the VESDAnet device communication ports, indicates shielded twisted pair cable. This also highlights that the shield is connected, at each cable end, to the “Sh” contact of the VESDAnet communication port.

Testing the Installed VESDAnet Interface Card

The VESDAnet Interface Card uses LEDs to signify certain conditions.

LED	Color	Status
Power	Green	Is lit when power is supplied to the card
SYS OK	Amber	Is flashing when the card's processor is running
VN A	Amber	Is lit when the card is communicating on VESDAnet Port A
VN B	Amber	Is lit when the card is communicating on VESDAnet Port B
DET	Amber	Is lit when the card is communicating with the detector.

Table 1 - VESDAnet Interface Card LED Indicator key

To test the card:

1. Apply power to the VLF.
2. View green Power LED and flashing SYS OK LED on the card.
3. View amber DET LED lit.
4. View amber LEDs lit corresponding to correct Port A and B connections to the next device.

Using a VESDAnet tool such as VSC, or LCD Programmer, you can now view and configure the VLF detector via VESDAnet.

4 Using a Detector with the VESDAnet Interface Card

Installing a VESDAnet Interface Card allows the Xtralis VESDA VLF to be connected to VESDAnet. This will allow the VLF to be monitored for alarms and faults remotely. It will also allow configuration, status monitoring and event log extraction via software tools on VESDAnet.

The following sections detail the configuration of the VLF with a VESDAnet Interface Card in various situations. It is highly recommended that VSC is used to configure the VLF with VN Card. The advantages of the VSC over the other software tools can be seen in the table below.

Issues	VSC	LCD Programmer
VLF idenitified in VESDA configuration tool	VLF	VLP
Can set Min Status Interval to 20 seconds	Yes	No
Can set AutoLearn button lockout	Yes	No
Relay config screens match VLF relays	Yes	No
GPI config screens match VLF GPI	Yes	No
Prevents Config Error Message	Yes	No
Only Pipe 1 shown	Yes	No

Table 2 - VESDAnet Interface Card configuration tool comparison

Direct Serial connection to the VLF detector

You are able to directly connect to a VLF-VN by using a PC with VSC software, and an RS-232 serial cable.

When you are logged into the detector via the direct connection at Administrator level or above, configuration changes over VESDAnet will be rejected. If the VESDAnet card is logged in to the detector at Administrator level or above (due to configuration changes over VESDAnet) requests to log in from a directly connected VSC will be rejected.

If the direct serial interface is being used to change settings, these changes shall be shown and reported on the VESDAnet tools when the user logs out. The VESDAnet tool shall be unable to change anything until the serial interface has completed its configuration update.

Note: The installed card will influence the operation of the VLF. See *"VLF features disabled by VESDAnet Interface Card"* on page 11.

Guideline for using the VLF and VN Card with VESDA*net*

Usernames and PINs

Configuration access to the VLF with VESDAnet can only be performed by input of an username and password. In order for a user on the serial connection to have the same password as when connecting via VESDAnet, it is recommended to leave the default VESDAnet usernames (DST, USER & ADM) in place. The password can be changed as usual via VESDAnet, using VSC or the LCD Programmer.

The VESDAnet passwords for these usernames will then be copied to the VLF detector by the VESDAnet Interface Card and can be used when logging in using a serial connection to the VLF.

In a network of more than one detector, the lowest detector zone number shall write its Password Identification Table (user names and passwords) to all devices on the network. Ensure the lowest detector address number has known Usernames and passwords before installation into a network of devices.

Configuration Upon Installation:

Set the address number and time immediately upon installation or after Restore Factory Defaults command is performed.

Address Number

The factory default VESDAnet Address is zero (0). The detector address must be changed from 0 to the required address. The acceptable range is between 1 and 254.

Serial Number

The VESDAnet Interface Card has its own unique serial number. However, only the 'host' detector serial number is reported by configuration tools.

Network Time

Set the time of all the network devices during installation and after issue of the Restore Factory Defaults function.

In large networks of over 50 devices, the user may also need to change:

Preferred port

The VESDAnet transmission directions should be randomized. Either randomize the wiring or randomize the preferred port setting. The factory default preferred port on the VESDAnet Interface Card is Port A.

Minimum Interval between status events

The minimum interval between detector status messages being sent should be set to 20 seconds. To set the minimum interval higher than 10 seconds, VESDA System Configurator (VSC) software is required.

VLF features disabled by VESDAnet Interface Card

There are some features of the VLF detector that will not be available when the VLF-VN is connected to VESDAnet, as VESDAnet does not support those features. These are:

- Alert, Action, Fire 1 & Fire 2 verification delays for alarm set 2. These delays are always set equal to the alarm set 1 delays
- The GPI (General Purpose Input) cannot be configured to **alarm set 1**, or **none**
- Daylight saving functions are not available
- 'Fixed' selection of Day or Night smoke thresholds (time of day selection is always used)
- PINs setup using a direct serial connection to the VLF is disabled
- The Major Flow Averaging Period is fixed at 60s (the same as VESDA VLP detector products).

Configuring VLF and VESDA*net* Interface Card

VESDA System Configurator (VSC) is recommended for configuring all VESDA devices.

The VLF detector is identified as a VLF by VSC. It is displayed as a VLP (1 pipe) on original tools such as the LCD Programmer.

The VLF detector can either be configured using VSC via the direct serial connection or via VESDAnet using VSC or with the LCD Programmer. VSC Online help is available for more detailed information.

The following sections detail the difference between the configuration tools.

Sampling pipe functionality

The VLF has a single sampling pipe as opposed to four on the VLP. The LCD Programmer shall indicate the VLF pipe as the VLP Pipe 1.

This means that the only sampling pipe that can be enabled for use is **Pipe 1.**

Setting Aspirator Speed

The aspirator on the VLF-VN has a fixed speed and cannot be changed. The LCD Programer has a function that allows VLP aspirator speed to be changed. This command is visible with the VLF but no change can be made to its speed.

Normalizing Airflow

The VLF detector airflow normalisation process is instantaneous compared to the VLP, VLS and VLC detectors. The best way to check whether airflow normalization was successful is to check the current flow for the Pipe. It should read close to 100%.

Filter Replacement

When the filter in the VLF has been replaced the "Filter Old" fault needs to be cleared. This can be done from VSC by sending the "Filter Insertion" command with the option "New Filter" selected.

If using the LCD programmer, it will detect that the filter has been changed and ask if the inserted filter is new or the original. Select the appropriate option.

Configuring Relays

The VLF has three relays: Fault, Action and Fire 1. Using VSC the configuration is shown below.

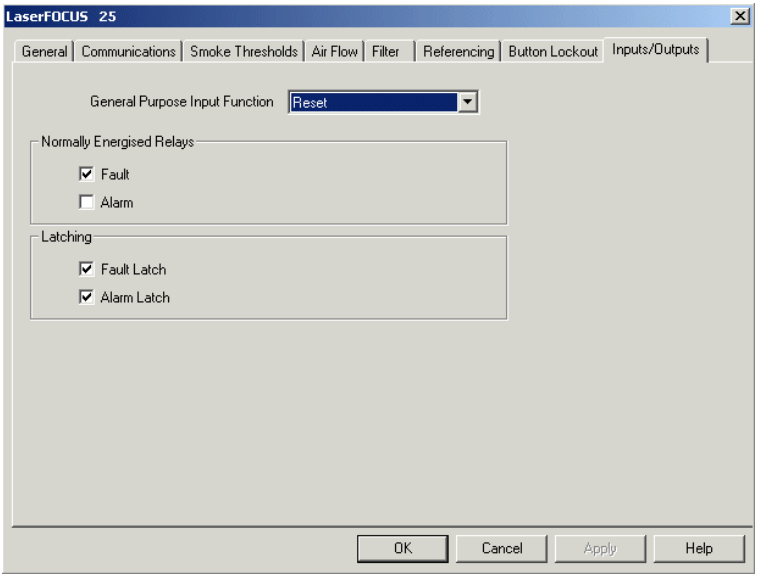


Figure 6 - VLF Relay config screen as viewed from VSC

Minimum Status Period

With the VLF detector, the minimum interval between detector status messages being sent across the network can be set up to 20 seconds. However the LCD Programmer software only supports a range of 2 to 10 seconds (the parameter is called ‘Detector Minimum Period’).

If the higher range is required then VSC must be used to configure.

If a higher range has been previously set with VSC and the user views the setting using the LCD Programmer, the software will not allow the higher setting unless the user exits the screen without applying any changes.

Flow Settings

When the LCD Programmer is used the VLF Minor Flow Averaging Period is set using the Airflow Delay. The number entered is the averaging period and not the delay to the airflow fault. The maximum value that can be entered is 60s compared to the 15 minutes of the standalone VLF (without interface card installed).

Smoke Thresholds

With the LCD Programmer, the settings for choosing threshold levels based on workdays and holiday periods cannot be used. Also, the cumulative alarms setting cannot be used. The LCD Programmer enforces VLP threshold ranges. VSC shall allow the VLF the full threshold range.

	VSC via Serial or VESDAnet	Programmer
FIRE 1 Without UL Flag	20%/m 6.25%/ft.	2%/m 0.625%/ft.
FIRE 1 with UL	2%/m 0.625%/ft.	2%/m 0.625%/ft.
FIRE 2 Without UL Flag	20%/m 6.25%/ft.	20%/m 6.25%/ft.
FIRE 2 with UL	20%/m 6.25%/ft.	12.8%/m 4%/ft.

Table 3 - VLF Smoke Threshold limits from Differing Tools

General Purpose Input

The General Purpose Input on the VLF detector is similar to the VLP, but does not have the **Inverted Reset** setting. When using the Programmer, you should not select an **Inverted Reset** for the GPI function.

If you select the **Mains OK** setting on the Programmer, the VLF detector's GPI will be set to **External** mode.

Button Lockout

There are two specific front-panel buttons on the VLF, **AutoLearn Smoke** and **AutoLearn Flow** which are not on the VLP. The lockout settings are not available via the Programmer and can only be changed using VSC.

The button lockout function on the VLF locks out the function and not the button. If a button has more than one function and only one function is locked out the other function still operates.

Clearing the Event Log

Users are unable to clear the VLF detector's event log.

Relay Test

The relay test function available in the Programmer can only be used for relays 3, 5 and 6.

Dust Count Limit

When using the LCD Programmer, the dust count limit displayed for the VLF will always show zero. The user can still view the dust count, expressed as a percentage, but not the count.

Referencing Delays

When using VSC via a direct serial connection, the period can be set in minutes and seconds (mm:ss). Using configuration and programming tools via VESDAnet, only minutes can be set (mm).

5 Maintenance

VESDAnet Interface Card Interchangeability

VESDAnet Interface Cards can be swapped using the Installation steps on page 4. If a VESDAnet Interface card is replaced, its settings such as the detector Address and other VESDAnet configuration values (e.g. Xtralis VESDA detector serial number) will be maintained.

6 Technical Specification

The VESDAnet Interface Cards is installed into a suitable Xtralis VESDA detector. It shall use the ‘host’ detector for power supply and no other voltage source is required to support operation.

Item	Description
Power Consumption	Consumes less than 1 W from the detector at 24 VDC & 42 mA.
Dimensions	Length x Width x Height Metric: 137 mm x 71 mm x 20 mm Imperial: 5¼" x 2 $^{13}/_{16}$" x $^{13}/_{16}$"
Weight	0.08 kg 0.176 lb
Operating Conditions	Detector Ambient 0 to 40°C (32 to 104°F) Humidity 5% to 95% (non-condensing)
Terminal Size	Terminals 0.2 - 2.5 mm^2 30-12 AWG

Table 4 - VESDAnet Interface Card Technical Data

7 Troubleshooting

Faults reported via VLF Instant Fault Finder

This section details troubleshooting VESDAnet Interface Card problems using the VLF Instant Fault Finder, which displays summary fault numbers on the front panel of the VLF. There are two faults which relate to the VESDAnet Interface Card. These faults, and actions to fix the fault, are explained below.

Fault summary 7 - Interface Card	
Explanation: • The detector is configured for a card to be installed but no card is installed or the card is faulty • The connection from card to detector is disconnected or the card, cable or detector is faulty • The firmware version on the VLF is incompatible with the card (e.g. the firmware is an older version which does not support the card)	**Action:** **To see VESDAnet Interface Card LED activity, the front cover must be removed.** 1. If there is no card is present and the detector is not supposed to have a card: Use VSC to configure the detector for **no installed card**. 2. If a card is installed: Check the 'Power', 'SYS OK', and 'DET' LEDs on the VESDAnet Interface Card. • If the 'Power' LED is not lit, check the connection from the VLF to the VN Card. If this connection is okay then the VN Card is faulty and should be replaced. • If the 'Power' LED is lit but the 'SYS OK' LED is not flashing then the VN Card is faulty and should be replaced. • If 'Power' LED is lit and 'SYS OK' LED is flashing but 'DET' LED is not lit, then check the connection to the VLF. If the connection is okay then the card, cable and/or the detector is faulty. Replace each in turn until the fault is resolved. • If 'SYS OK' LED is flashing and 'DET' LED is lit, then the VN Card is working and communicating with the VLF but the detector firmware version is incompatible. Use VSC connected directly to the VLF to check the fault number and follow the instructions in the VSC help for resolving this issue.

Fault Summary 8 - Field Wiring	
Explanation: • Communications fault on VESDAnet. i.e. The VLF-VN will report this fault if any device on VESDAnet has a wiring fault. • The Network connection has been set as Open Ended but a device is actually connected. The VLF-VN will report this fault if any device on VESDAnet has this problem. • Another device on VESDAnet has had fault 7, 10, 29, 65, 66 & 67.	**Action:** 1. Use VSC connected to VESDAnet to determine which device is causing this problem and the fault number. If the fault is intermittent then view the event log on any VLP, VLC or VLS detector on the network to determine which device has the problem. 2. Once you have determined the specific device and fault number, see VSC help for how to resolve the fault.

Errors reported on other tools

Configuration Error Message

You may see errors of this type when using the LCD Programmer. These errors occur when you select a setting that is not supported by the VLF with VN Card. This error will not occur if the configuration settings follow the guidelines in the previous sections *Configuring VLF and VESDAnet Interface Card* on page 11

When this error occurs for the LCD Programmer, you will see:

```
*** WARNING ***
Setup failed from
4350357: Relay
response
```

In the example shown, 4350357 is the serial number of the device that failed, and the message after that (relay response) is an example of the type of error message that could be shown.

No Acknowledgement Error

A ‘No Acknowledgement’ error will occur if the VLF with VN Card is not communicating correctly on VESDAnet (Fault 2 or 9 condition should be present). It will also occur if someone else is logged into the VLF using the RS232 Serial connection while configuration is being changed via VESDAnet, i.e. two people are logged into the VLF at the same time. This error occurs because the person logged in via the RS232 Serial connection gets priority.

For the LCD Programmer when this error occurs, you will see:

```
 *** WARNING ***
Setup message(s) not
acknowledged from
4350357 : Relay response
```

In the example shown, 4350357 is the serial number of the device that failed, and the message after that (relay response) is an example of the type of error message that could be shown.

Index

C

D

F

G

I

M

P

R

T

U

V