Xtralis VESDA Communications Guide

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Document Conventions

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.

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Codes and Standards Information for Air Sampling Smoke Detection

We strongly recommend that this document is read in conjunction with the appropriate local codes and standards for smoke detection and electrical connections. This document contains generic product information and some sections may not comply with all local codes and standards. In these cases, the local codes and standards must take precedence. The information below was correct at time of printing but may now be out of date, check with your local codes, standards and listings for the current restrictions.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures; re-orientate or relocate the receiving antenna, increase the separation between the equipment and receiver, connect the equipment to a power outlet which is on a different power circuit to the receiver or consult the dealer or an experienced radio/television technician for help.

FDA

This VESDA product incorporates a laser device and is classified as a Class 1 laser product that complies with FDA regulations 21 CFR 1040.10. The laser is housed in a sealed detector chamber and contains no serviceable parts. The laser emits invisible light and can be hazardous if viewed with the naked eye. Under no circumstances should the detector chamber be opened.

FM Hazardous Applications

3611 Hazardous Approval Warning: Exposure to some chemicals may degrade the sealing of relays used on the detector. Relays used on the detector are marked “TX2-5V”, “G6S-2-5V” or “EC2-5NU”.

VESDA detectors must not be connected or disconnected to a PC while the equipment is powered in an FM Division 2 hazardous (classified) location (defined by FM 3611).

FM Approved Applications

The product must be powered from VPS-100US-120, VPS-100US-220 or VPS-220 only.

ONORM F3014

ONORM F3014, transport times for all tubes (including capillaries) must not exceed 60 seconds from any hole. This means that the pre-designed pipe networks that include capillaries cannot be used.

AS1603.8

The performance of this product is dependent upon the configuration of the pipe network. Any extensions or modifications to the pipe network may cause the product to stop working correctly. You must check that ASPIRE2 approves alterations before making any changes. ASPIRE2 is available from your VESDA ASD distributor.

AS1851.1 2005

Maintenance Standards. Wherever this document and the AS1851.1 differ, AS1851.1 should be followed in preference to this document.

European Installations

The product must use a power supply conforming to EN54: Part 4.

Table of Contents

1 Scope

The Xtralis VESDA Communications Guide provides information about communication protocols and devices available for the Xtralis VESDA product range. The Guide first introduces the communication protocols, and then provides the reader with information on available communication devices.

The Xtralis VESDA Communications Product Guide is written for those people who are involved with the design specifications, maintenance and purchase of Xtralis VESDA system.

It is assumed that persons using this guide have knowledge of the local fire and electrical codes and standards. Installers should hold appropriate certification for electrical installations.

2 Introduction to VESDA Communications

VESDA Communications are based on two systems.

- VESDAnet is a proprietary network protocol allowing communications between the Xtralis VESDA Family of products.
- VESDAlink is a protocol allowing communication between a PC and an Xtralis VESDA VLC (RO model) detector.

All Xtralis VESDA devices (with the exception of VLC (RO model) detector) can communicate over VESDAnet. The devices used for communicating are:

- LCD Programmer - It is designed to report and interrogate devices through VESDAnet.
- PC-Link HLI - It connects a PC or an external device with VESDAnet.

3 The VESDA Communications System

3.1 VESDAnet

The VESDAnet daisy chain is wired by a shielded RS 485 (Belden 9841 - 120) twisted pair cable (compatible cabling can be used) at the two VESDAnet terminals on a termination card. The terminals enable VESDAnet communication wires to be brought to an Xtralis VESDA device and looped out to another Xtralis VESDA device.

Data communication between devices on VESDAnet is bidirectional. The polarity of the data wires must be maintained throughout the network. The hand held LCD Programmer and the PC-Link HLI connect to VESDAnet through the VESDAnet socket. All termination cards on the Xtralis VESDA detectors have a VESDAnet socket. For details on the VESDAnet socket please refer to the Xtralis VESDA Remote Systems Product Guide.

VESDAnet cables can be terminated as follows:

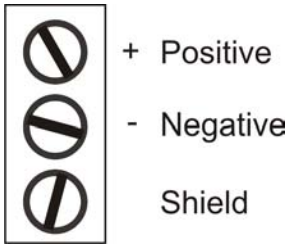

Figure 3-1: VESDAnet terminal illustrating the wiring order

The termination card has two VESDAnet terminals (Channel ‘A’ and ‘B’). One channel is used as an input channel and the other as an output channel.

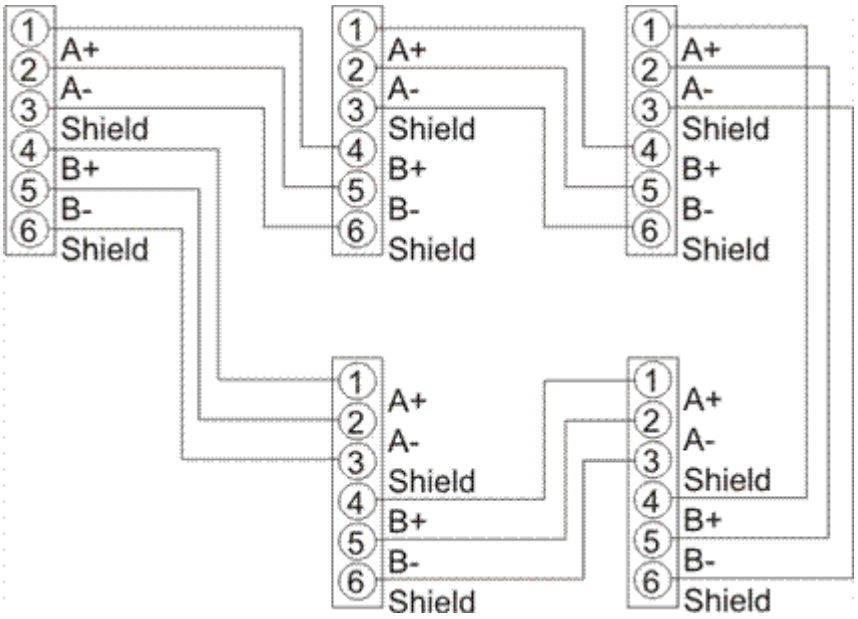

Figure 3-2: Connecting VESDAnet Modules

3.2 VESDAnet Loops

3.2.1 Closed Loop

We recommended you use a closed loop for VESDAnet. A closed loop is when every detector is connected to more than one other detector. Examples can be seen in Figure 3-2 or Figure 3-3.

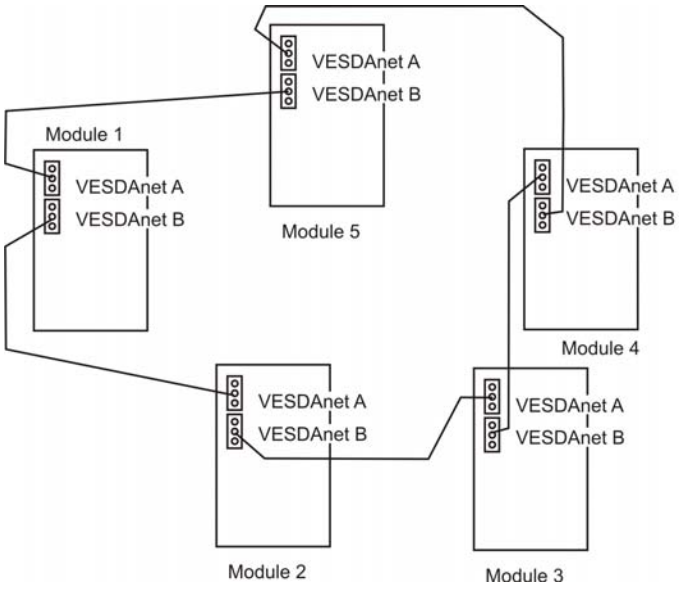

Figure 3-3: VESDAnet closed loop

3.2.2 Open-ended Loop

We recommended you use a closed loop for VESDAnet. Where local codes and standards do not require redundancy in the network it is possible to configure an open-ended VESDAnet loop. An open-ended VESDAnet loop has some devices not wired to both the terminals. An open-ended VESDAnet loop can have a maximum of 20 devices. The two devices on either end of VESDAnet connection must be specially configured as open-ended. (An open-ended VESDAnet Loop can be configured only at Distributor level).

An open-ended loop can be seen in the figure below, note that Module one and five are not connected.

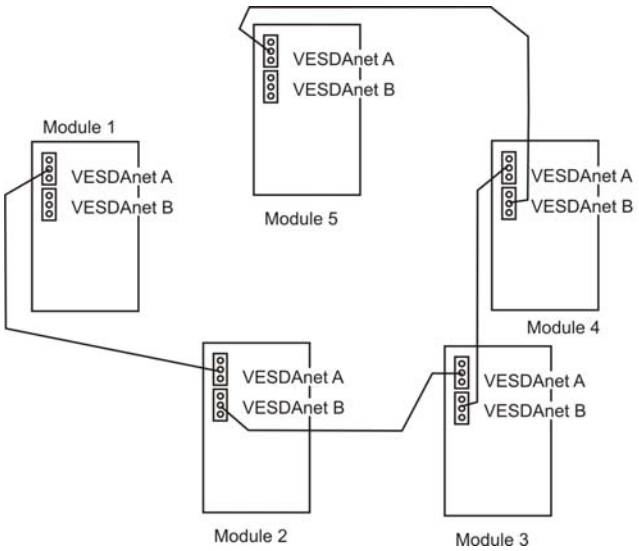

Figure 3-4: VESDAnet open-ended loop

Note: Open-ended loop reduces the performance of the system, removes the redundant capability of the network, and is illegal under many local codes and standards. You must check with your local codes and standards authority before using this configuration.

3.3 VESDAlink Protocol

VESDAlink is a protocol allowing communication between a PC and a VLC (RO model) detector. A RS232 data cable connects a PC directly to the 9 pin VESDAlink programming socket.

4 Communication Devices

A number of different devices can be used to communicate and configure VESDAnet. Options include a LCD Programmer, or a PC Link HLI.

4.1 LCD Programmer

The LCD Programmer allows the configuration, commissioning and maintaining the Xtralis VESDA system. It is used to program, maintain and manage the detector and VESDAnet. The LCD Programmer can be mounted onto the front cover of a VLP or a VLS detector, be a remote unit or hand-held. For details on the LCD Programmer refer to the LCD Programmer Guide.

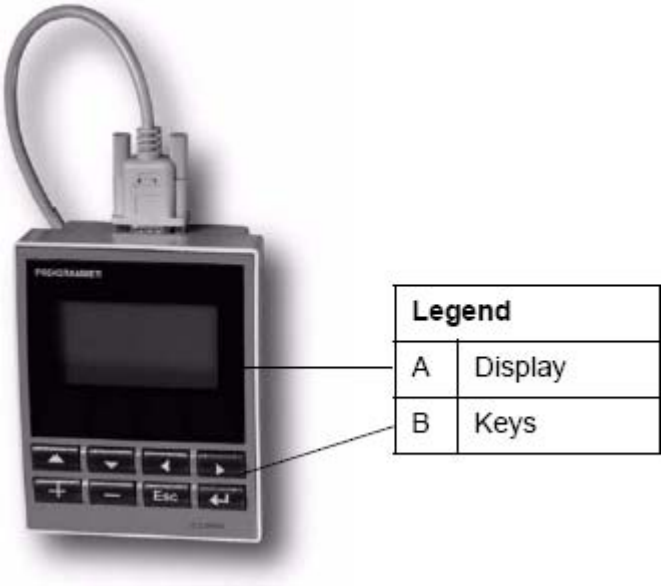

Figure 4-1: LCD Programmer

4.2 PC-Link HLI

The PC-Link HLI (High Level Interface) is a device that connects an external device to VESDAnet. It provides a window to the current state and condition of Xtralis VESDA devices connected to VESDAnet. A RS232 data cable connects the PC-Link HLI to a PC or an external device such as a fire control panel. A RS485 cable connects the PC-Link HLI to a VESDAnet Socket.

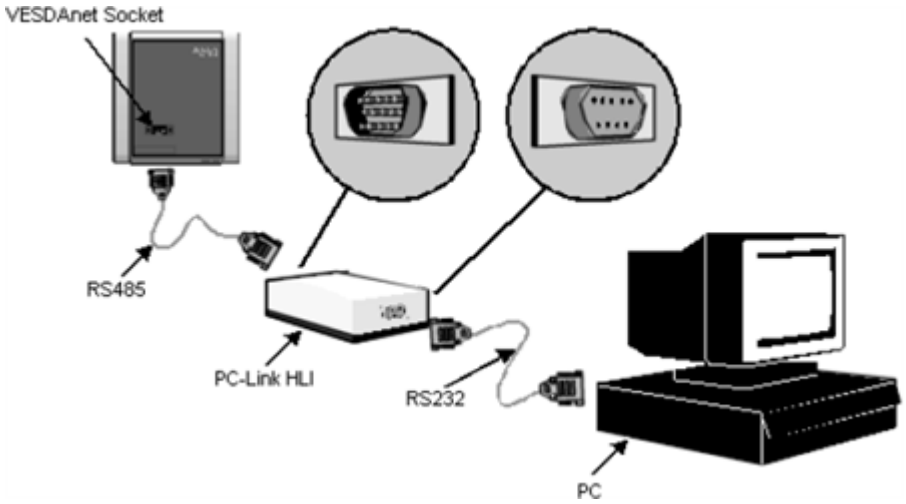

Figure 4-2: PC-Link HLI connecting to VESDAnet Socket and PC

Several models of the PC-Link HLI are available:

- PC-Link HLI - Sliding Windows (VHX-0200)
- Wall Mounted PC-Link HLI - Sliding Windows (VHX-1200)
- PC-Link HLI - Open Protocol Peer to Peer (VHX-0300)
- PC-Link HLI - Open Protocol Master/Slave (VHX-0310)

4.2.1 PC-Link HLI Sliding Windows

The PC-Link HLI - Sliding Windows communicates between devices on VESDAnet and PC software developed by Xtralis (VSC and VSM4). The proprietary protocol used by the PC-Link HLI - Sliding Windows is designed to accommodate upgrades and new software.

4.2.2 Wall Mounted PC-Link HLI - Sliding Windows

The wall mounted PC-Link HLI provides the same functions as the PC-Link HLI - Sliding Windows. In addition, it provides direct permanent connection to VESDAnet via a VESDAnet interface card. It can be mounted on a wall at a remote location away from a detector.

4.3 PC-Link HLI - Open Protocol

The PC-Link HLI - Open Protocol is designed to link VESDAnet to software developed by other vendors and by OEM manufacturers. It is used to interface VESDAnet with fire control panels or fire suppression systems. Contact your local Xtralis VESDA office for further information.

Local codes and standards must be complied with when using PC-Link HLI as a primary reporting device.

The PC-Link HLI - Open Protocol can operate in two modes:

4.3.1 Peer to Peer Mode

The VHX-0300 PC-Link HLI operates in the peer to peer mode. It reports the current VESDA Zone's status in this mode. The PC-Link HLI can be configured to report on current airflow status, fault status and display status messages. Both the host and the HLI can initiate communication. The open protocol is capable of operating with the VLS detector. It can report the first alarm sector and identify the sector in which this was raised. Large VESDAnet installations will generate excessive data transmission. To reduce the traffic to the minimum, unsolicited transmission of messages can be configured to allow only current address status messages.

4.3.2 Master / Slave Mode

The VHX-0310 PC-Link HLI operates in the master/slave mode. In the this mode the host requests for information and the HLI responds with the relevant data. No unsolicited data is transmitted by the PC-Link HLI. The host may be a PC, or a fire control panel.

Command Name	ID	From -> To	Description
Set operation	1	HOST -> HLI HLI -> HOST	Set the operating message set. This is recorded in volatile memory (If set to master/slave operation buffers shall be reset (cleared) to guarantee synchronization).
Get operation	2	HLI -> HOST	Get the operating message set.
Response	3	HOST -> HLI HLI -> HOST	Universal indicator of success/failure.
Address update	4	HOST -> HLI	Request for an update of an address's status.
Current address Status[1]	5	HLI -> HOST	An address's present status.
Remote operation	6	HOST -> HLI	Allows an address to be reset, isolated or silenced.
HLI refresh	7	HOST -> HLI	Clear the data stored locally on the high level interface.
Create display	8	HOST -> HLI	Request the information required to create a virtual display.
Display info	9	HLI -> HOST	The information required to create a virtual display.
Update display status	10	HOST -> HLI	Request for data required to update a virtual display.
Current display status[1]	11	HLI -> HOST	A display's status.
Update fault status	12	HOST -> HLI	Update the fault status of an address.
Current fault status[1]	13	HLI -> HOST	The current fault status of an address.
Get fault string	14	HOST -> HLI	Get the fault string by providing the fault number.
Fault string	15	HLI -> HOST	The fault string associated with a fault number.
Current airflow status[1]	17	HLI -> HOST	A address's airflow status.
HLI enquiry	20	HOST -> HLI	Request HLI information.
HLI sign on	21	HLI -> HOST	HLI data e.g. Version number.
Get device type	22	HOST -> HLI	Get a device type.
Current device type	23	HLI -> HOST	Current device type.

1. The HLI can be configured to send these messages as unsolicited messages to the HOST.

Figure 4-3: Command ID Summary

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