

Vision Fire & Security

VESDA[®]

Communications Guide

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Part: 30006



Vision Systems

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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
<i>Italics</i>	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

We strongly recommend that this document is read in conjunction with the appropriate local codes and standards for smoke detection systems and electrical connections. This document contains generic information and some sections may not comply fully with all local codes and standards. In these cases, the local codes and standards must take precedence.

FM 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" or "G6S-2-5V" or "EC2-5NU".

UL Warning

The fire alarm threshold (signal) that initiates an evacuation procedure via the Fire Alarm Panel must not be set higher than 0.625%/ft. The detector can send this signal either via the Fire Alarm Panel Output signal or the Pre-alarm output signal.

Safety Label

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. This laser emits invisible light and can be hazardous if viewed with the naked eye. Under no circumstances should the detector chamber be opened.

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1.1 Scope

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

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

1.2 Introduction to VESDA Communications

VESDA Communications are based on two systems.

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

All laser family products (with the exception of LaserCOMPACT (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.

1.3 The VESDA Communications System

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 a VESDA laser family product and looped out to another VESDA laser family product.

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 laser family of detectors have a VESDAnet socket. For details on the VESDAnet socket please refer to the *VESDA Remote Systems Product Guide*.

VESDAnet cables can be terminated as follows

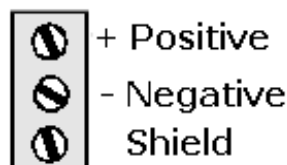


Figure 1 - VESDAnet terminal illustrating the wiring order

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. Modules can also be connected A to A or B to B. In larger installations we recommend that you mix A-A and A-B connections.

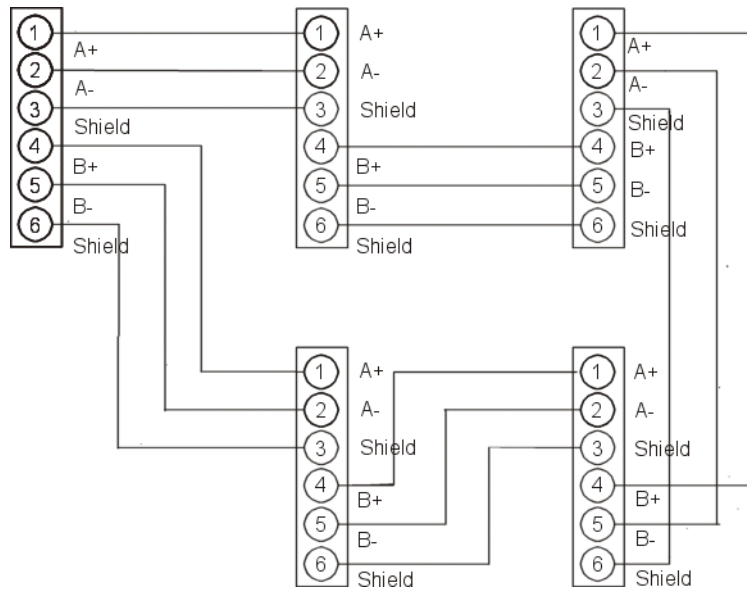


Figure 2 - Connecting VESDAnet modules

VESDAnet Loops

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 the diagram below or in Figure 3, "VESDAnet closed loop," on page 3 as an example of a close loop.

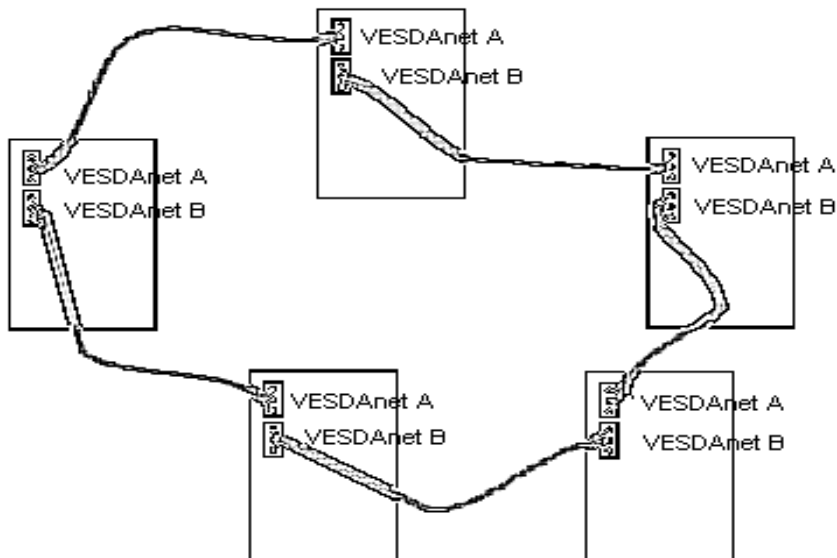


Figure 3 - VESDAnet closed loop

Open-ended Loop

We recommend 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.

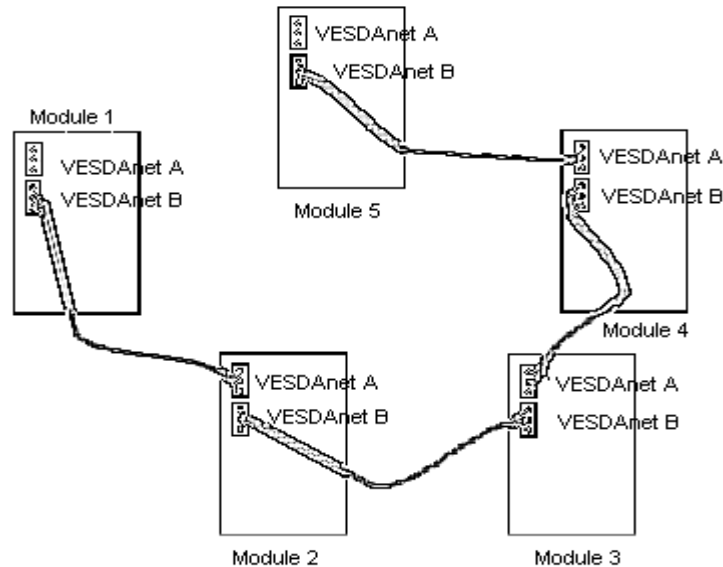


Figure 4 - VESDAnet open-ended loop

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.

Stand Alone Detector

When the detector is stand-alone, the VESDAnet terminal A and B are looped as shown below.

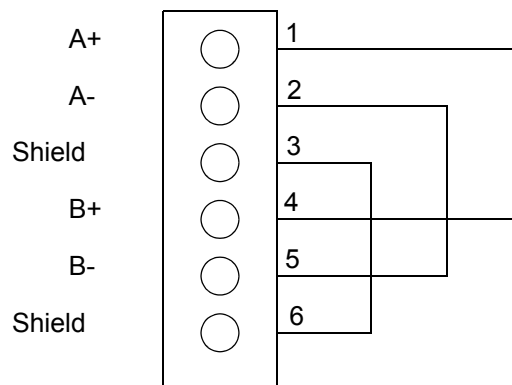


Figure 5 - Stand alone detector

VESDALink Protocol

VESDALink is a protocol allowing communication between a PC and a VESDA LaserCOMPACT (RO model) Detector. A RS232 data cable connects a PC directly to the 9 pin VESDALink programming socket.

1.4 Communication Devices

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

VESDA LCD Programmer

The VESDA LCD Programmer allows the configuration, commissioning and maintaining the 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 LaserPLUS or a LaserSCANNER detector, be a remote unit or hand-held. For details on the VESDA LCD Programmer refer to the *LCD Programmer Guide*.

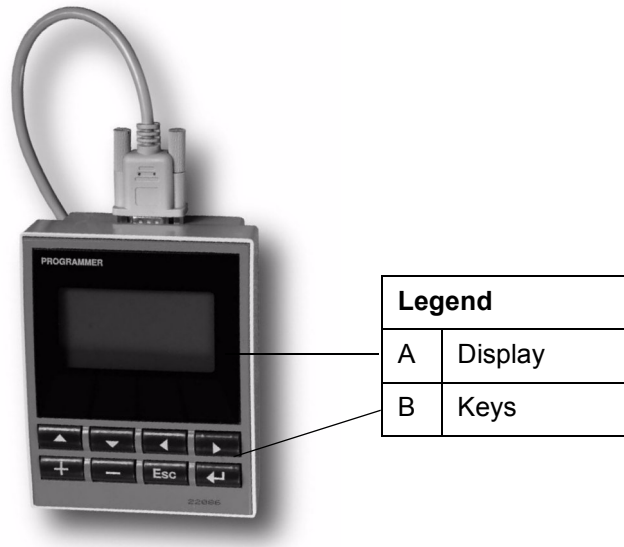


Figure 6 - LCD programmer

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 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.

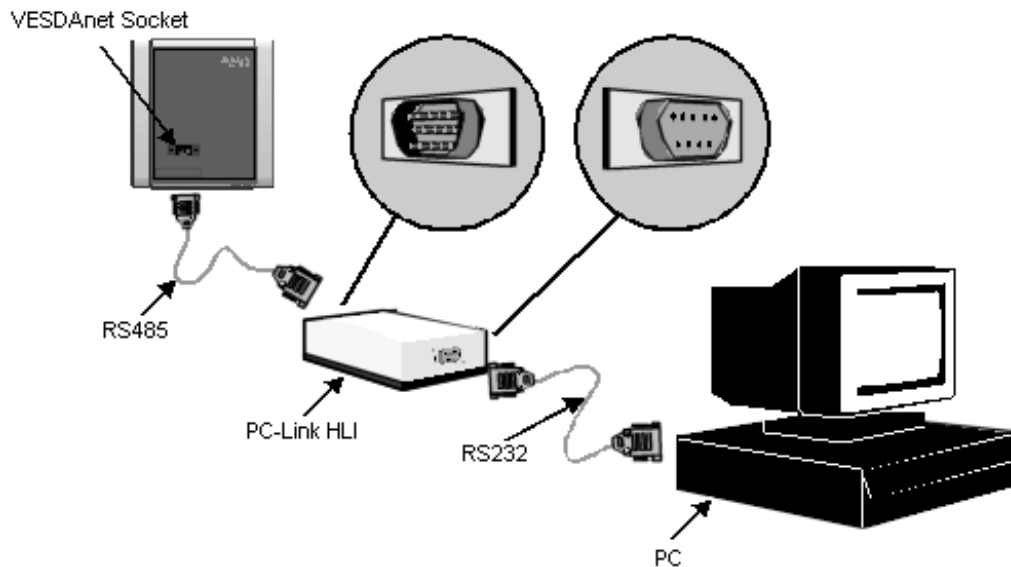


Figure 7 - PC-Link HLI connecting to VESDAnet Socket and PC

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)

PC-Link HLI - Sliding Windows

The PC-Link HLI - Sliding Windows communicates between devices on VESDAnet and PC software developed by VESDA (VConfig PRO and VSM3). The proprietary protocol used by the PC-Link HLI - Sliding Windows is designed to accommodate upgrades and new software.

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.

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 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:

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 LaserSCANNER 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.

Master/Slave Mode

The VHX-0310 PC-Link HLI operates in the master/slave mode. In 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 used by VESDA by providing the fault number.
Fault string	15	HLI → HOST	The fault string associated with a fault number.

Command Name	ID	From → To	Description
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.

Table 1 - Command ID Summary

