VESDA-E VEA-UL Installation Instructions

These installation instructions provide essential information for installing VESDA-E VEA-040-A00-UL or VEA-040-A10-UL Aspirating Smoke Detectors in accordance with the system design. Additional installation and product documentation is listed below in the Reference Documents section. For installation instructions for the StaX module VER-A40-40-STX see document 27772.

Package Contents

The detector is shipped with the following components:

- 1 aspirating smoke detector
- 1 mounting bracket
- 1 mounting template for directly mounting the detector to the mounting surface
- 1 End of Line Resistor for the monitored GPI
- 1 installation instruction sheet (this sheet)
- 1 tube cutter (taped inside the detector door)

Prerequisites

- 24V DC Power Supply and backup battery, compliant with local codes and standards.
- Screws and inserts that are appropriate for the installation location.
- Type A to Type B USB Interface Lead, required for initial configuration of the detector.
- Labels as specified in the system design, e.g. Sampling Point labels
- Cable glands that are compliant with the IP 40 rating of the detector.
- Conduit, as specified in the system design.
- 1.1 mm^2 (18 AWG) or larger wiring for power.
- 0.2 mm^2 to 2.5 mm^2 (24 - 14 AWG) wiring for relays.
- PC or laptop installed with Xtralis VSC for initial configuration.
- Standard connection instructions for where the detectors are to be added to a corporate network.

Standards Compliance

UL/ ULC

	Detector Setting		Tube Length (m)		Tube Length (ft)		Transport Time (s)		Tube Sensitivity Balance	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Open Area Velocity: 0 to 4000fpm	Standard	Standard	50	30	164	98	51	37	100	81
Special Application 50m (164 ft) Velocity: 0 to 4000fpm	High	Standard	50	30	164	98	51	37	N/A	
Special Application: 100m (328 ft) Velocity: 0 to 4000fpm	High	Enhanced	100	30	328	98	79	37		
DUCT Applications 50m (164 ft) Velocity: 0 to 4000fpm	High	Standard	50	50	164	164	51	51		
DUCT Applications 100m (328 ft) Velocity: 0 to 4000fpm	High	Enhanced	100	50	328	164	79	51		

Power Consumption

Supply Voltage	18 - 30 VDC	
	VEA-040-A00-UL	**VEA-040-A10-UL**
Max Current: Quiesent	2.10A	
Max Current: Alarm	2.35A	
Peak Current	3.5A	
Power Consumption @ 24VDC		
	Quiescent Current (A)	Alarm Current (A)
Tubes	40	40
VEA-040-A00-UL	1.0	1.6
VEA-040-A10-UL	1.0	1.6

Environmental Requirements

- **Temperature**
  - **Ambient:** 32°F to 100°F (0°C to 38°C)
  - **Sampled Air:** 32°F to 122°F (0°C to 50°C) *
- **Humidity:** 5-95% RH, non-condensing

** The sampled air temperature shall be within the Ambient temperature specification at entry into the Detector. Refer to Xtralis Design Guides and Application Notes for sampled air pre-conditioning.*

Note: Please consult your Xtralis representative for information on operation outside these parameters or where sampled air is continually above 0.015% obs/ft (0.05% obs/m) under normal operating conditions.

Transport Time

Transport time is determined by the length of the microbore tubes used on the detector. There is no provision for the user to adjust the transport time and there is no tube modelling tool required for VEA. The transport time is given in the table below for various tube lengths.

Maximum Tube Length	Longest Transport Time
98ft [30m]	Up to 40 seconds
131ft [40m]	Up to 46 seconds
164ft [50m]	Up to 52 seconds
197ft [60m]	Up to 60 seconds
230ft [70m]	Up to 65 seconds
262ft [80m]	Up to 70 seconds
295ft [90m]	Up to 75 seconds
328ft [100m]	Up to 80 seconds

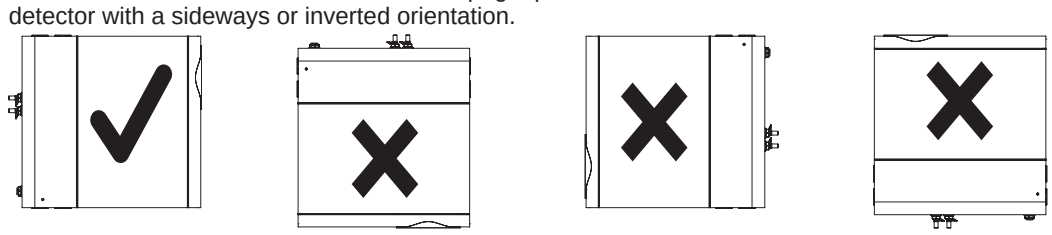
Reference Documents

Additional installation and product information is contained in the following documents, which are available for download in the Xtralis partner extranet at www.xtralis.com.

- 36402 - VESDA-E VEA-040-A00-UL Product Guide
- 36401 - VESDA-E VEA-040-A10-UL Product Guide
- 32407 - VESDA-E VEA Commissioning Guide

Installation Instructions

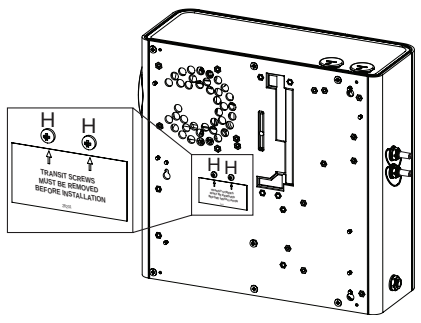
The VEA detector must be mounted in an upright position on a solid surface. Do not mount the detector with a sideways or inverted orientation.



Installation Instructions

Remove transit screws

Important: Remove transit screws.

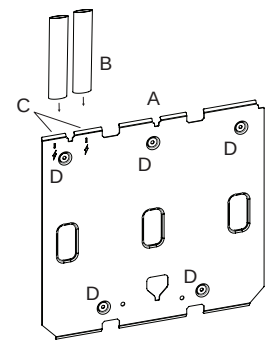


- Remove the two transit screws (H).

Note: The transit screws are used to hold the air pump during transit. If the screws are not removed excessive noise will be generated.

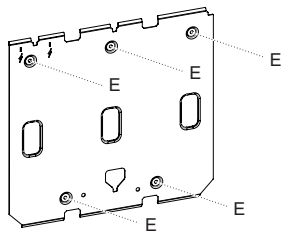
Mount the detector using the mounting bracket

Position electrical conduit, mark pilot holes



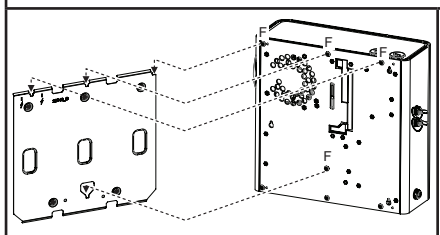
- Position the mounting bracket (A) to allow electrical conduit (B) to line up horizontally with the alignment marks (C).
- Mark positions for pilot holes on the mounting surface through five recessed screw holes (D).
- Remove the mouting plate and drill pilot holes.

Secure Mounting Bracket



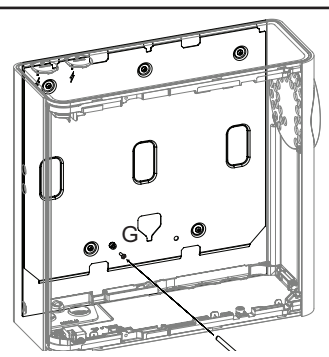
- Reposition the mounting bracket and secure to mounting surface by screwing the five screws (E) into their pilot holes.

Attach the detector to the mounting bracket



- Align the four mounting studs (F) on the rear of the detector with the mounting stud slots on the mounting bracket, and slide the detector down until the top of the detector is flush with the top of the mounting bracket.

Secure the detector to the mounting bracket



- Open the door by inserting an Allen key (preferred), Philips head screwdriver or flat blade screwdriver with the blade vertically oriented into the hole at bottom left and press firmly.
- Remove the tape covering the partially inserted locking screw (G).
- Insert and tighten the locking screw (G). This secures the detector to the mounting bracket.
- Insert the electrical conduit.

Mount the detector directly to the mounting surface

Use the provided mounting template. Refer to the product guide for further information.

Prepare Detector:

Test Port Plugs

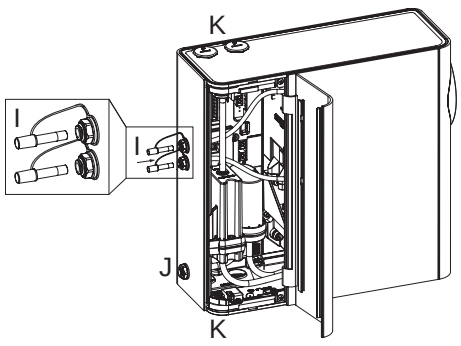
- Ensure that the two smoke test port plugs (I) are in place and fully inserted.

Exhaust Port

- Ensure that the exhaust port (J) at the bottom of the left side of the detector is open.

VESDA-E VEA-UL Installation Instructions

Wiring Inlets

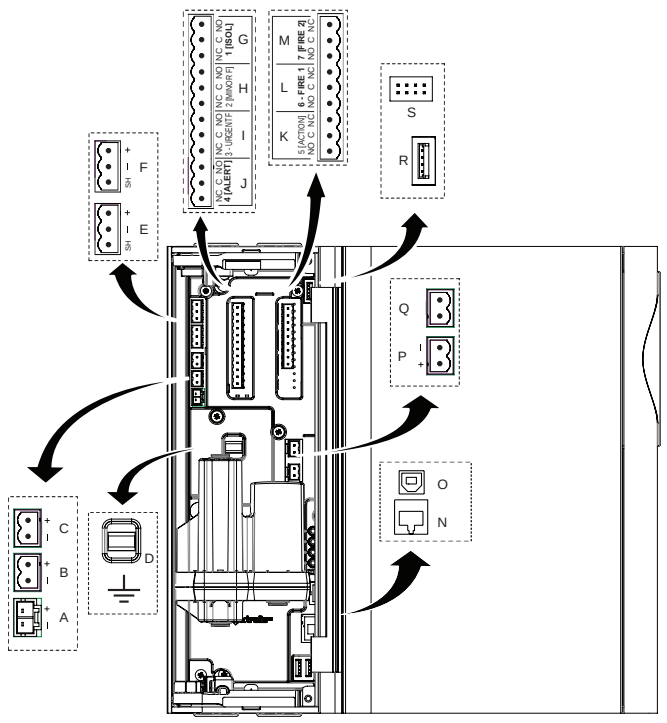


- Remove the appropriate plugs (K) for electrical cable installation.
- Do not remove the plugs from cable entry ports that will not be used.
  Note: To remove the cable entry port plugs, place a large screwdriver in the large slot and twist, or use a small screwdriver in the side slots to lever the plug out.
- Feed the electrical wiring connections through the cable entry ports.
- Use the correct cable gland size to fit into the 26 mm (1") cable entry port. Use correctly rated cable glands to maintain the required IP rating.

Wiring: Power, Relays, GPI, VESDAnet, Expansion StaX, Relay StaX

Warning: Always disconnect detector power before plugging/unplugging electrical, relay or network connections. Failure to do so may cause data corruption and/or component failure.

Avertissement : Eteignez toujours détecteur avant de brancher/débrancher les relais électriques, ou de connexions réseau. Au cas contraire vous pouver entraîner la défaillance corruption et/ou élément de données.



Power	
A	EXP (Expansion)
B	RV (Rotary Valve)
C	Power In
D	Ground Reference Terminal
VESDAnet	
E	VESDAnet B
F	VESDAnet A
Relays	
G	1 - Disable (Isolate)
H	2 - Minor Fault
I	3 - Urgent Fault
J	4 - Alert
K	5 - Action
L	6 - Fire 1
M	7 - Fire 2
Communications	
N	Ethernet
O	USB
GPI	
P	Unmonitored GPI
Q	Monitored GPI
Internal Components	
R	Smoke Sensor
Expansion	
S	Data

Power and Relay Wiring

Power: Connect a 24 VDC power supply which is compliant with local fire protection codes and standards to the PWR IN socket (C).

Relays: The relays interface to the Fire Alarm Control Panel (FACP) to communicate faults, alarms and disabled states. It is mandatory to connect Fire 1 relay wiring to the FACP for primary alarm reporting. Relay contacts are rated 2 A @ 30 VDC, resistive. Connect as required by the system design. Use electrical wire sizes from 0.2 mm² to 2.5 mm² (24 -14 AWG). Refer to the Addressable Loop Module example.

Warning: Ensure that all wiring complies with manufacturer's instructions and local and national fire detection code requirements. Refer to Codes and Standards Information for Air Sampling Smoke Detection section of the detector product guide for further information on wiring compliance.

Avertissement : Verifier que toute les cables ont passé au nombres d'instructions du fabricant et locaux et au feu national de securited'incendie sois exiger. Adresser aux codes informations sur les normes et reglementations de detection de fume par prelevement d'air par le notice descriptive du produit pour plus de renseignements au conformite du cablage.

Caution: DO NOT LOOP WIRE UNDER TERMINALS WHEN WIRING DETECTORS. BREAK WIRE RUNS TO PROVIDE SYSTEM SUPERVISION OF CONNECTIVITY.

Attention : NE PAS RALIER LES CABLES TERMINAUX PENDANT LES CABLAGES DES FILS. POUR TOUTES LES CONNECTIONS A RELAIS, INTERROMPRE LES FILS POUR PERMETTRE LA SUPERVISION DU CABLAGE.

Note: For information on wiring for other types of devices that may be required by the system design, refer to the detector Product Guide and documentation accompanying the device.

Unmonitored GPI

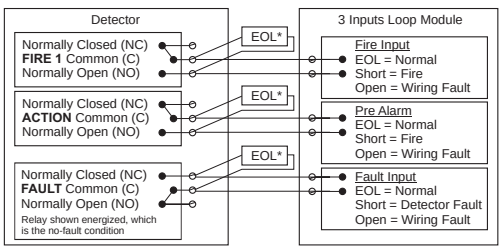
The Unmonitored GPI is a programmable input which can be configured to initiate a number of different actions, including, by default, a Remote Reset function.

Monitored GPI

The monitored GPI senses contact closure and is configurable to initiate the same actions as the unmonitored GPI. "Mains OK" is the default setting. A closed contact signals GPI ON and open contact signals GPI OFF.

A 10K end of line resistor is used to allow the detector to monitor for open circuit faults in the wiring from the detector to the contact.

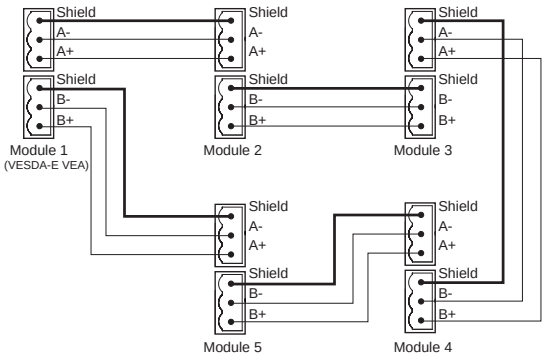
Connection to Addressable Loop Module for Reporting Alarms and Faults



This wiring example is for wiring VESDA detectors to a typical third party Input Loop Module with three inputs.

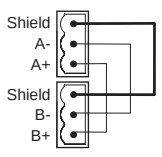
This is an example drawing. Refer to the appropriate product manual for the exact wiring details of the third party equipment.

Connection to VESDAnet



The diagram shows an example of the wiring for a closed VESDAnet loop, which is the recommended configuration. Remove the factory default links from the VESDAnet sockets (E and F) prior to connecting the detector to the VESDAnet. It is recommended that 120 Ohm twisted pair cables (e.g. Belden 9841) be used for including the devices in the network, with a maximum length between devices of 1.2 km The polarity of the data wires must be maintained throughout the network.

Standalone Detector



The diagram below shows the factory default wiring for VESDAnet sockets (E and F) as required for a detector that is not connected to a VESDAnet.

- Leave as is, or replace if it has been removed.

Communications

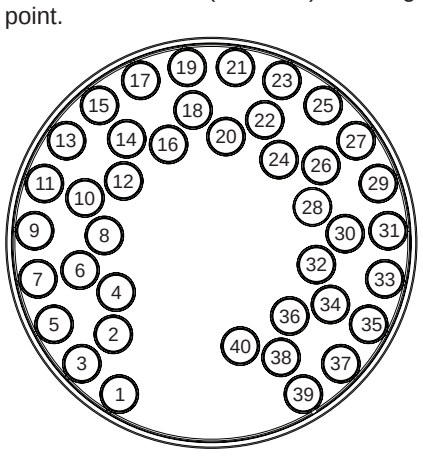
- **USB:** The USB port (O) is used for initial configuration and local maintenance or servicing of the detector using a PC installed with Xtralis VSC software. Install Xtralis VSC prior to connecting the detector to the computer to ensure that the required USB drivers are present.
- **Ethernet:** The Ethernet port (N) is used for permanent network connection to the detector, and provides a gateway to any other devices on the VESDAnet network. An Ethernet lead can be routed through the cable entry ports and plugged into the Ethernet port. Use a standard Ethernet lead when connecting the detector to a network switch, router or directly to a PC or laptop. Ethernet connection must be configured using a USB connection prior to use. Set the detector access password using Xtralis VSC.
- **WiFi:** The WiFi module allows connection of laptops installed with Xtralis VSC to the detector, and provides a gateway to any other devices on the VESDAnet network. WiFi must be enabled and configured using a USB connection prior to use. Set the detector access password using Xtralis VSC.

Sampling Tubes

All tubes must have equal flow. This is achieved by making all tubes with equal length.

Tube inlets are numbered on the detector (see left). Label each tube corresponding to its inlet. Unused inlets on the detector should be blocked using blanking plugs (P/N VSP-998).

It is recommended that excess tubing be coiled close to the sampling point end, and that an additional 2 to 3 m (6 to 10 ft) of tubing be coiled to allow for future repositioning of the sampling point.

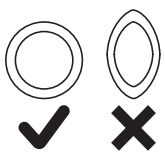


Ensure that Microbore tubes are never glued anywhere in the tube network, including at the inlets of the detector. Tubes can be joined using appropriate joiners.

Ensure that the tubes are fully inserted into the detector's tube inlets.

The provided tube cutter or a similar tool must be used to cut the tubes. Ensure that the tubes are cut so as to leave the end of the tube circular. Do not use tools such as side cutters which could squash the tube during cutting and leave the end of the tube oval shaped. If the end of the tube is oval shaped this could cause an air leak. This could then cause airflow normalisation and sample point testing to fail.

The diagram below shows correctly cut and badly cut tube ends.



Power Up

Connect 24 VDC power to the PWR IN terminal. Close front door.

On power up:

- The Power LED illuminates and the detector runs a series of self-diagnostic tests.
- If there is a fault, the Fault LED illuminates. It is likely that airflow faults will be present until the detector is fully commissioned.
- The pump starts up and air may be felt flowing out of the exhaust port.

Configuration and Commissioning

- Refer to the product guide for information on configuring the detector.
- Refer to the VESDA-E VEA Commissioning Guide (document 32407) for information about commissioning the detector.

www.xtralis.com

The contents of this document are provided on an "as is" basis. No representation or warranty (either express or implied) is made as to the completeness, accuracy or reliability of the contents of this document. The manufacturer reserves the right to change designs or specifications without obligation and without further notice. Except as otherwise provided, all warranties, express or implied, including without limitation any implied warranties of merchantability and fitness for a particular purpose are expressly excluded.

Xtralis, the Xtralis logo, The Sooner You Know, VESDA-E, VESDA, ICAM, ECO, OSID, and Sensepoint are trademarks and/or registered trademarks of Xtralis and/or its subsidiaries in the United States and/or other countries. Other brand names mentioned herein are for identification purposes only and may be trademarks of their respective holder(s). Your use of this document does not constitute or create a licence or any other right to use the name and/or trademark and/or label.

This document is subject to copyright owned by Xtralis. You agree not to copy, communicate to the public, adapt, distribute, transfer, sell, modify or publish any contents of this document without the express prior written consent of Xtralis.

Xtralis Doc. No.: 36400_A3, June 2024

Eng. Doc. No.: I56-8006_A
Part No.: I56-8006-000_A