VESDA-E VES-UL Installation Instructions

These installation instructions provide essential information for installing VESDA-E VES-UL Aspirating Smoke Detectors in accordance with the system design. Additional installation and product documentation is listed below in the Reference Documents section.

System Components

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 (fitted to terminal)
- 1 installation instruction sheet

Prerequisites

- Completed system design.
- 24V DC Power Supply, compliant with local codes and standards.
- Screws and inserts that are appropriate for the mounting surface.
- Type A to Type B USB Interface Lead 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 rating of the detector.
- Conduit, as specified in the system design.
- 0.2 mm^2 to 2.5 mm^2 (24 - 14 AWG) wiring for relays.
- A PC or laptop with Xtralis VSC installed for initial configuration.

Standards Compliance

UL

For Open Area installations, ASPIRE should be used to confirm the correct performance of the sampling network; all sampling point sensitivities must be less than 5.0%/m (1.5%/ft). All pipework designs must be modeled in ASPIRE to confirm that the rules for transport time and sensitivity are met for all sampling points in the system.

Note that the maximum pipe length is dependent on pipe layouts and fittings used. Ensure that the correct setting for UL7 mode in the Smoke Thresholds setting screen of Xtralis VSC is set correctly for the application, special application modes permit higher sensitivities and must only be used where cooking will not occur.

ULC

For open area, special applications, high velocity and DUCT protection the fire alarm threshold (setting) that initiates an evacuation signal must be set such that the sensitivity of each sampling hole is more sensitive than the values shown below as determined by the ASPIRE software.

Application	Hole Sensitivity (%/m)	Hole Sensitivity (%/ft)
Open Area/ Special Applications	8.00	2.509
Open Area/ Special Applications High Velocity	8.00	2.509
Duct	8.00	2.509

Specifications

	% obs/m		%obs/ft	
	Min	**Max**	**Min**	**Max**
Measurement Range	0.000	32.0	0.0000	11.090
Sensitivity Range	0.005	20.0	0.0015	6.575
Threshold Setting Range				
Alert	0.005	2.0	0.0015	0.614
Action	0.005	2.0	0.0015	0.614
Fire 1	0.010	2.0	0.0030	0.614
Fire 2	0.020	20.0	0.0061	6.575

Notes: For open area, open area high velocity and duct protection the fire alarm threshold (setting) that initiates an evacuation signal must be set such that the sensitivity of each sampling hole is more sensitive than 10% obs/m (3.2% obs/ft) as determined by Xtralis ASPIRE software.

For open area, the fire alarm threshold (setting) that initiates an evacuation signal must be set such that the sensitivity of each sampling hole is less sensitive than 5.0% obs/m (1.5% obs/ft) as determined by Xtralis ASPIRE software.

Power Consumption

Supply Voltage Range	**18 – 30VDC (Nominal 24VDC)**					
Maximum Power Consumption *	**Quiescent**			**Alarm**		
VES-A10-P-UL	0.89A			0.92A		
VES-A00-P-UL						
Nominal Power Consumption @ 24VDC	**Quiescent**			**Alarm**		
	Aspirator Setting					
	1	5	10	1	5	10
VES-A10-P-UL	0.33A	0.43A	0.68A	0.38A	0.47A	0.72A
VES-A00-P-UL	0.31A	0.41A	0.64A	0.35A	0.45A	0.66A

** Maximum current measured is from the supply voltage that generates the highest current.*

Environmental Requirements

- **Temperature**
  - **Ambient:** 32°F to 100°F (0°C to 38°C)
  - **Sampled Air:** -4°F to 140°F (-20°C to 60°C) *
- **Humidity:** 5% to 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 0.05% obs/m (0.015% obs/ft) under normal operating conditions.

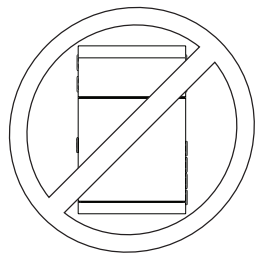
Reference Documents

Additional installation and product information is contained in the following documents, which are available for download from Xtralis website (www.xtralis.com).

- 35948 - VESDA-E VES-A00-P-UL Product Guide
- 35947 - VESDA-E VES-A10-P-UL Product Guide

Installation Instructions

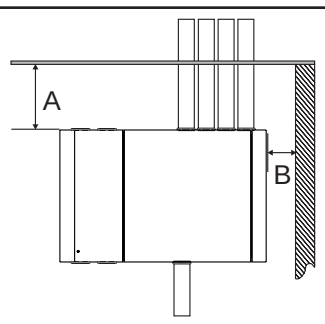
Notes



The VESDA-E detector can be mounted in an upright or inverted position. Do not mount the detector with a sideways orientation.

Ensure the mounting surface is flat as this allows an air tight seal to be achieved between the sampling pipe and the tapered air inlet pipes on the detector.

Refer to the detector Product Guide for information on inverted mounting.

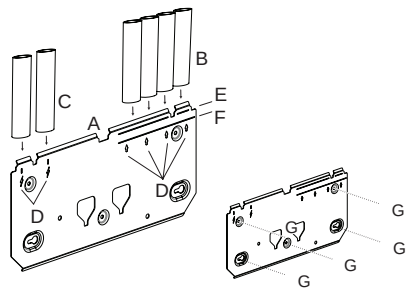


Ensure that there is sufficient clearance to mount the detector, noting the location of air sampling pipes and cable entry points. Due to the rigid nature of the plastic pipe, installation must provide for sufficient movement in all pipework (air inlet, air exhaust and cable pipes) to allow pipe ends to be easily fitted and removed.

- **A:** Minimum 50 mm (2 in.) below ceiling level.
- **B:** The detector can be mounted directly against a wall or obstruction.

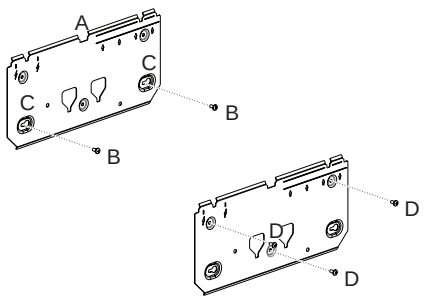
Attach the detector to the wall using the mounting bracket

Position the mounting bracket as specified by the system designer



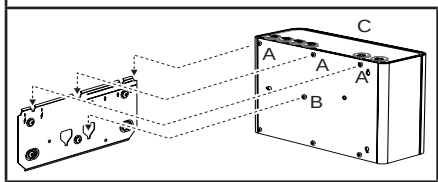
- Position the mounting bracket (A) to allow sampling pipes (B) and electrical conduit (C) to line up horizontally with the alignment marks (D) and vertically with the appropriate pipe depth line.
  - 3/4 inch IPS (1.05 inch OD) sampling pipe should vertically align with the top depth line (E).
  - 25 mm OD sampling pipe should vertically align with the bottom depth line (F).
- Hold the plate in position and mark positions for 5 screw holes (G) on the mounting surface. Remove the plate and drill holes. Insert plugs if required.

Secure the mounting bracket to the mounting surface



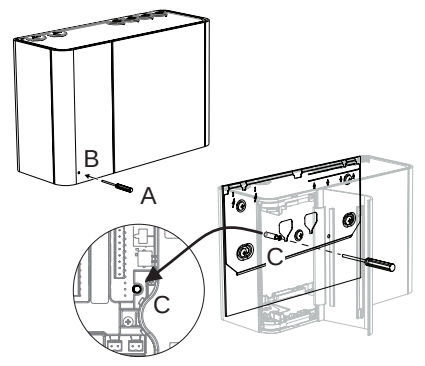
- Align the mounting plate with the holes. Ensure that the plate is level.
- Insert and tighten two screws (B) in the keyhole slots (C) followed by three screws (D) in the remaining slots.
  - Use screws and inserts that are appropriate for the mounting surface and the weight of the detector.

Position the detector on the mounting bracket



- Align the mounting studs (A) on the rear of the detector with the mounting stud slots on the mounting bracket. Ensure that the center stud (B) is in its slot.
- Slide the detector (C) 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 a thin screwdriver into hole (B) and pushing firmly.
- Remove the tape covering the partially inserted locking screw (C).
- Tighten the locking screw.

Attach the detector directly to the mounting surface

Use the provided mounting template. Refer to the Product Guide for further information.

Note: Do not remove the mounting studs from the rear of the detector as they are also used to hold internal components in place.

Inverted Mounting

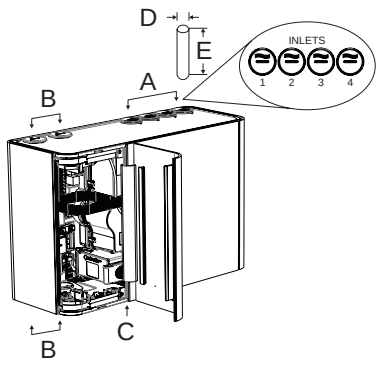
Some system designs require that the detector be inverted. Directions for correcting the orientation of the fascia for an inverted detector are available in the Product Guide.

VESDA-E VES-UL Installation Instructions

Prepare Detector: Wiring, Pipe Inlet and Exhaust Ports

Remove the appropriate plugs for electrical cable installation (B), air sampling pipe inlet ports (A), and exhaust port (C).

- For VES detectors, where the system design requires less than four air sampling pipe inlet ports, use ports 2 and 3 before using ports 1 and 4.
- Do not remove the plugs from inlet ports that will not be used.
- Ensure that pipes are clean and their ends are square and smooth.



A	Inlet Port, Qty 4
B	Cable Entry Port, Qty 4, 26 mm (1”)
C	Exhaust Port, OD 25 mm or 1.05” (3/4” IPS) via adaptor
D	Inlet Pipe Diameter: OD 25 mm or 1.05” (3/4” IPS)
E	Minimum Inlet Pipe Length: 500mm (19.6”)

Note: To remove the pipe inlet and 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.

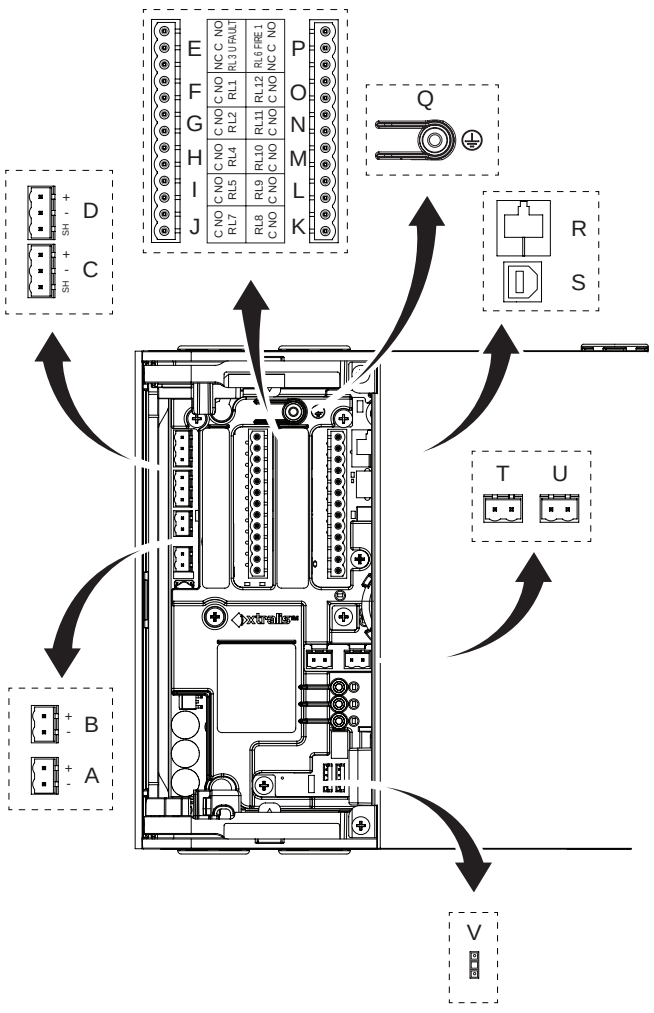
- Insert the inlet and exhaust pipes (if used) into the correct inlet ports (A) and exhaust port.
- Exhaust pipe should be as short as possible.
- Feed the electrical wiring connections through the cable entry ports.
- Use the correct cable gland size to fit into the 26 mm (1”) cable entry port. Use correctly rated cable glands to maintain the required IP rating.

Note: Do not glue the inlet and exhaust pipe into the detector ports. The product warranty will be void if the pipes are glued.

Wiring: Power, Relays, GPIs, VESDAnet

Warning: Always switch detector power OFF 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	Power Out
B	Power In
VESDAnet	
C	VESDAnet B
D	VESDAnet A
Relays	
E	3 - Urgent Fault
F	1 - Disable
G	2 - Minor Fault
H	4 - Alert
I	5 - Action
J	7 - Fire 2
K	8 - First Alarm Sector 1
L	9 - First Alarm Sector 2
M	10 - First Alarm Sector 3
N	11 - First Alarm Sector 4
O	12 - Scanning
P	6 - Fire 1
Communications	
R	Ethernet
S	USB
GPI	
T	Monitored GPI
U	Unmonitored GPI
Chassis Ground	
V	Jumper for ground fault monitoring
Q	Chassis Ground Terminal

Power and Relay Wiring

Power: There are two sets of power terminals on the main board. Connect a 24 VDC power supply to the PWR IN socket (B). If required, connect to another detector via the PWR OUT socket (A).

Relays: The relays interface to the Fire Alarm Control Panel (FACP) to communicate faults, alarms and disabled states. 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).

Warning: Ensure that all wiring complies with manufacturer’s instructions and local and national fire detection code requirements. Refer to the 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

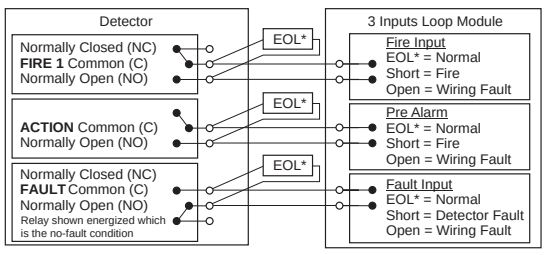
The Unmonitored GPI senses a voltage level and is configurable to initiate a number of different actions. “Reset” is the default setting.

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

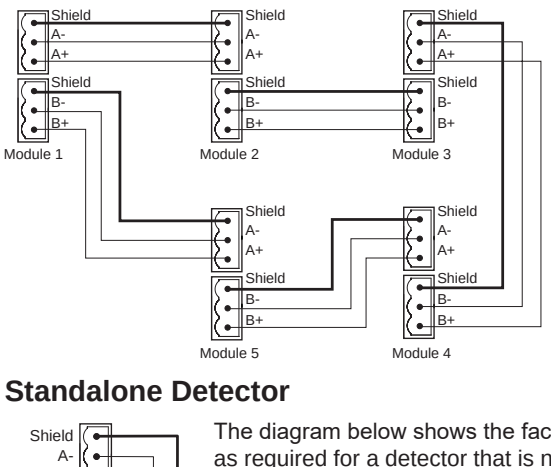


This wiring example is for wiring VESDA detectors to a typical third party Input Loop Module with three inputs.

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

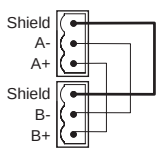
* EOL = End of Line Resistor

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 A and B links from the VESDAnet sockets (C and D) 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 (C and D) as required for a detector that is not connected to a VESDAnet.

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

Ground Fault Detection

In order for VESDAnet ground fault detection to be active, connect the Chassis Ground Terminal (Q) to the building ground and insert a jumper on the Ground Fault Monitoring Jumper terminals (V).

Communications

- **USB:** The USB port (S) is used for initial configuration and local maintenance or servicing of the detector using a PC or laptop with Xtralis VSC software. Install Xtralis VSC prior to connecting the detector to the computer. This ensures that the required USB drivers are present.
- **Ethernet:** The Ethernet port (R) is used for permanent network connection to the detector and provides a gateway to other devices on the VESDAnet network. Ethernet connection settings and detector access password must be configured using a USB connection prior to use.

Sampling Pipe Network

Complete the pipe network installation in accordance with the system design. Refer to the detector Product Guide and the VESDA Pipe Network Installation Guide for general information regarding pipe network installation.

- Ensure that the exhaust is open, the pipes are clear and all sampling holes have been drilled.

Power Up

Connect 24 VDC power to the Power In terminals (B). Close front door.

Configuration

For initial configuration, use a USB connection and the Xtralis VSC software.

- For networked detectors, set the IP address and subnet mask according to standard building instructions.
- Set the Pipes in Use value in the Airflow configuration options.
- Set the aspirator RPM to the value specified in the system design.
- Let the detector run for approximately 2 minutes and confirm that the pipe raw flow rates (L/min) match the ASPIRE predictions using Xtralis VSC.
- Normalize the airflow. This takes approximately 10 minutes, after which the pipe flow rates (%) should be close to 100%.
- Reset the detector. It should now be running without faults.

Legacy Installations

For installations that do not support VESDA-E functionality. Configure the VESDA-E for mimic mode. Refer to VESDA-E Mimic Mode Product Bulletin (Doc. No. 36673) for more information.

Using VSC:

- VES-A00-P-UL: Switch to VLS mode.
- VES-A10-P-UL: Switch to VLS mode.

Commissioning

- Carry out a smoke test. Refer to the product guide for further information.

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