

# XTRALIS IN-LINE FILTER APPLICATION NOTE

---

## **Preface**

This Application Note outlines the use of the Xtralis In-Line Filter. Xtralis recommends the use of this product when in-line filtering (pre-filtration) is required for dirty environments.

This Application Note is intended as a guide to improve the product life, safety and performance of an Xtralis system that has been selected for use in a dirty environment. Though the manufacturer's product warranty may be voided by the use of the detector in such environments, it is understood that this commercial risk may be deemed acceptable by the market in some applications. Following the recommendations of this Application Note MAY NOT avoid all risks of the product warranty being voided.

## **Related Products**

In-line filtering can be used with all VESDA detectors (except VEA) and FAAST FLEX.

# Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
<b>2</b>	<b>Xtralis In-Line Filter .....</b>	<b>2</b>
<b>3</b>	<b>Installation.....</b>	<b>3</b>
<b>4</b>	<b>Humid Environments .....</b>	<b>4</b>
<b>5</b>	<b>Maintenance.....</b>	<b>5</b>
<b>6</b>	<b>Ordering Information.....</b>	<b>6</b>
	<b>Disclaimer On The Provision Of General System Design Recommendations.....</b>	<b>7</b>

# 1 Introduction

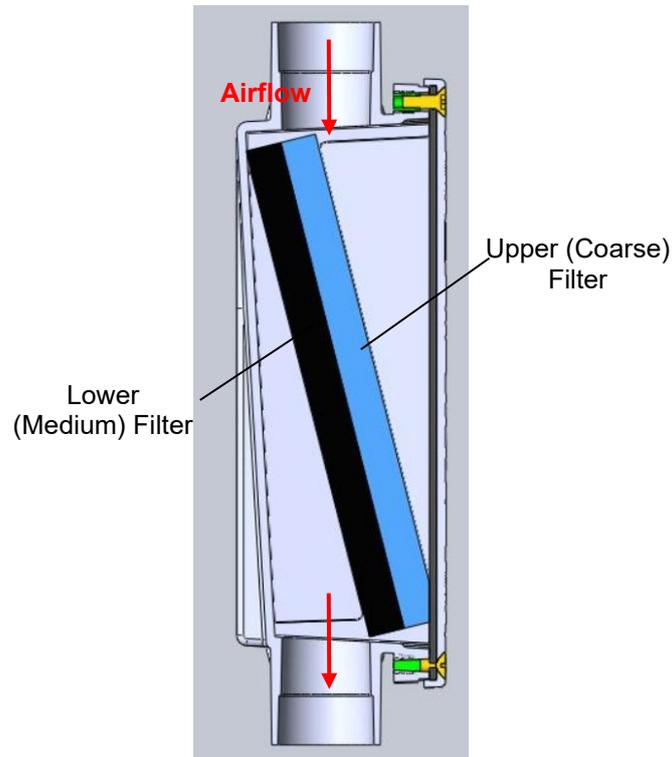
The Xtralis In-Line Filter provides Xtralis customers the ability to address a wide range of environments with high levels of airborne contaminants in a simple and cost-effective manner.

Unlike other in-line filtration solutions available on the market today, the Xtralis In-Line Filter provides superior performance in terms of improving detector longevity and reducing maintenance frequency.

By providing tapered inlet and outlet ports, the Xtralis In-Line Filter can be fitted in line with the sampling pipe without the need for any additional pipe fittings hence reducing the cost of installation. Once installed, filter elements can be replaced by simply removing the filter lid. The compact design ensures the maximum possible filter area within a small housing and the narrow width means that units can be fitted adjacent to one another in multi-pipe installations thereby saving space and maintaining the aesthetics of the pipework.

## 2 Xtralis In-Line Filter

The Xtralis In-Line Filter consists of two carefully selected foam elements placed at an angle inside the housing (Figure 1). The upper filter is a coarse medium while the lower is a finer medium.



*Figure 1: Xtralis In-Line Filter – Cross Section, Flow Arrangement*

As airflow enters the filter housing it passes through the filter elements, which are positioned at an angle within the filter housing (to maximize surface area). The smaller smoke particulates pass through the filter elements while the larger dust particulate either settle in the lower areas of the housing (depending on the orientation) or are trapped within the foam elements.

### 3 Installation

The Xtralis In-Line Filter can be installed in the vertical or horizontal orientation at an accessible location (normally close to the detector) for ease of maintenance. Where possible there are some advantages in installing the unit horizontally with the cover at the side such that larger dust particles settle on the wall of the filter housing thus providing the maximum service life of the filter. However, this is not critical for the filtering operation of the unit.

The arrows on the Xtralis In-Line Filter cover indicate the direction of the pipe airflow (Figure 2). The filter should never be subjected to reverse flows.



Figure 2: Xtralis In-Line Filter (Top View) – Horizontal Installation

The filter features tapered inlet ports to accommodate pipes with outside diameters in the range 25 mm (0.98 inch) to 26.5mm (1.04 inch).



#### Note!

- Each sampling pipe exposed to the dirty environment requires an individual In-Line Filter assembly.
- When the Xtralis In-Line Filter is installed close to the detector ensure at least a 0.5m (1.64 ft) straight pipe section to the detector inlet manifold.
- Direction of the pipe airflow must match the arrows on the In-Line Filter cover.
- While more than one filter may be used on any particular ASD detector with multiple pipe branches or multiple pipe inlets it is essential that filters are never installed in series such that flow from any one sample hole has to pass sequentially through more than one filter.

## 4 Humid Environments

In some applications there may be a risk of condensation occurring within the pipework. Generally, this risk is present where:

- The air in the protected zone is warm and humid and the ambient temperature of the sampling pipe or In-Line Filter is lower than that of the protected zone;
- Regular wash-down activities are performed within the protected zone where significant quantities of water vapour may enter the sampling pipes.

To prevent water condensate entering the In-Line Filter, a water trap or filter with moisture adsorbent media (i.e. silicon gel) should be installed upstream and in close proximity to the In-Line Filter. For further information refer to Removal of Water Condensate Application Note (Document No. 17405).

# 5 Maintenance

## Recommended Replacement Frequency

Table 1 shows the recommended replacement frequency of the foam elements within the Xtralis In-Line Filter according to application type and ambient background levels.

Table 1: Xtralis In-Line Filter - Filtering Foams Recommended Replacement Frequency

Typical Application	Detector Background (Ambient) Level	Recommended Maintenance Period
Light industrial sites, manufacturing and processing, prison cells, etc.	<0.015% obs/m {<0.005% obs/ft}	At least every 12 months
Warehouses, loading bays, underground platforms, workshops, etc.	<0.03% obs/m {<0.01% obs/ft}	At least every 6 months
Amusement parks, coal fire power stations, fertilizer factory, wastetreatment plants, tunnels, etc.	<0.03% obs/m {<0.01% obs/ft}	At least every 3 months

For more information on Table 1 refer to Xtralis VESDA Maintenance Guide.

### Replacement Procedure

1. The In-Line Filter elements can be replaced without removing the filter assembly from the detector, as follows:
  - Remove the cover of the filter housing.
  - Remove the Coarse & Medium filter elements. Ensure that no dust particles enter the sampling pipe by gently pulling the filter elements from the side close to the inlet section.
  - Wipe deposited dust particles on the internal walls of the housing with a cloth.
  - Insert new set of Medium & Coarse filter elements. Insert the Medium Finer filter element first followed by the Coarse filter element.
  - When fitting the filter elements care should be taken to avoid them folding and compressing. They must sit uniformly inside the housing and touch each wall.
  - Place the cover firmly back on the filter housing.
2. Used filter elements shall be disposed off and shall not be reused. Washing and re-use of filter elements is not recommended. This practice is strictly outside the warranted application and approved use of the product.
3. After the filter elements are replaced and the detector is installed, smoke tests must be conducted to validate pipe network integrity and system performance (e.g. smoke transport time).
4. Ensure the installation and replacement dates are written on the In-Line Filter. Maintain a maintenance log as per local code and standards requirements.



**Important Note!**

Monitoring the airflow or pressure drop across the In-Line Filter should not be used as an indication of the filter loading. As airflow decreases due to filter loading, smoke detection capability will have already been compromised.

## **6 Ordering Information**

VSP-850-G - Xtralis In-Line Filter (Grey)

VSP-850-R - Xtralis In-Line Filter (Red)

VSP-855-4 - Xtralis In-Line Filter Elements (4 sets)

VSP-855-20 – Xtralis In-Line Filter Elements (20 sets)

---

## Disclaimer On The Provision Of General System Design Recommendations

Any recommendation on system design provided by Xtralis is an indication only of what is considered to be the most suitable solution to meet the needs of the common application environments described.

In some cases the recommendations on system design provided may not suit the unique set of conditions experienced in a particular application environment. Xtralis has made no inquiry nor undertaken any due diligence that any of the recommendations supplied will meet any particular application. Xtralis makes no warranty as to the suitability or performance of any recommendation on system design. Xtralis has not assessed the recommendation on system design for compliance with any codes or standards that may apply nor have any tests been conducted to assess the appropriateness of any recommendations on system design to a particular application environment.

Any person or organization accessing or using a recommendation on system design should, at its own cost and expense, procure that the recommendation on system design complies in all respects with the provision of all legislation, acts of government, regulations, rules and by-laws for the time being in force and all orders or directions which may be made or given by any statutory or any other competent authority in respect of or affecting the recommendation on system design in any jurisdiction in which it may be implemented.

Xtralis products must only be installed, configured and used strictly in accordance with the General Terms and Conditions, User Manual and product documents available from Xtralis. Xtralis accepts no liability for the performance of the recommendation on system design or for any products utilized in the implementation of the recommendation on system design, aside from the General Terms and Conditions, User Manual and product documents.

No statement of fact, drawing or representation made by Xtralis either in this document or orally in relation to this recommendation on system design is to be construed as a representation, undertaking or warranty.

To the extent permitted by law, Xtralis excludes liability for all indirect and consequential damages however arising. For the purposes of this clause, 'consequential damage' shall include, but not be limited to, loss of profit or goodwill or similar financial loss or any payment made or due to any third party.

Recommendations on system design are provided exclusively to assist in design of systems using Xtralis products. Copyright and any associated intellectual property in any such recommendation on system design or documentation remains the property of Xtralis.