Xtralis VESDA VLC-800MX

INSTALLATION, COMMISSIONING AND SERVICING INSTRUCTIONS

LIST OF CONTENTS

Fig. 1 Xtralis Vesda VLC-800MX

WARNING:

The Xtralis VESDA VLC incorporates a Laser device and is classified as a Class 1 Laser product which complies with FDA Regulations 21 CFR 1040.10 and 1040.11. 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 this chamber be opened. There is a safety label on the chamber as shown in Fig. 2.

Fig. 2 Laser Warning Label

1. TECHNICAL SPECIFICATION

Type Identification Value:	179
System Compatibility:	Use only with MX Fire Alarm Controllers
Environment:	Indoor Application only
IP Rating:	IP30
Operating Temperature:	
Detector Ambient:	-10°C to +39°C
Sampled Air:	-20°C to +60°C
Relative Humidity:	10-95% non-condensing
Dimensions:	
Height:	225mm
Width:	225mm
Depth:	85mm
Weight:	1.9kg
Sampling Network:	
Maximum Area Coverage:	800m^2
Maximum Pipe length:	80m with up to 15* holes, or 2 x 50m with up to 9* holes per pipe
Pipe Size:	ID15 - 21mm OD 25mm

'*' more holes may be used on networks designed using the VESDA ASPIRE II pipe modelling software.

Electrical Characteristics:

External 24V dc:

Supply Voltage:	18 to 30V dc
Current Consumption:	
Standby:	225mA
Alarm:	245mA

Battery Requirements Addressable Loop:

Standby:	300µA
Non operational (VLC off):	300µA
Alarm:	300µA
Alarm with external relay:	dependant on the relay
Alarm with external LED:	3.3mA

Fire relay: rated 2A @ 30V dc

Electromagnetic Compatibility:

The VLC-800MX complies with the following:

Product standard EN 54-20:2006, Fire detection and fire alarm systems Part 20: Aspirating Smoke Detectors. Product family standard EN50130-4/A1/A2:2003 in respect of EMC immunity

Generic standard EN 61000-6-3:2007 in respect of EMC emissions

2. INTRODUCTION

The VLC-800MX is a derivative of the standard Xtralis VESDA product family, with the primary difference being that it communicates directly on the MX loop.

VESDA VLC detectors provide Very Early Warning of potential fire conditions by drawing air samples through 25mm pipe up to 80m long. Smoke is sampled through holes in the pipe and transported to the detector by an integrated aspirator or fan. Holes are positioned according to the application and often follow the spacing of standard conventional point detectors. Where necessary, sampling points can be constructed using capillary extensions. See Section 4, Sampling Pipework for more information.

The MX version of the VESDA VLC acts as a smoke sensor on the Tyco MX loop and reports directly to the MX controller.

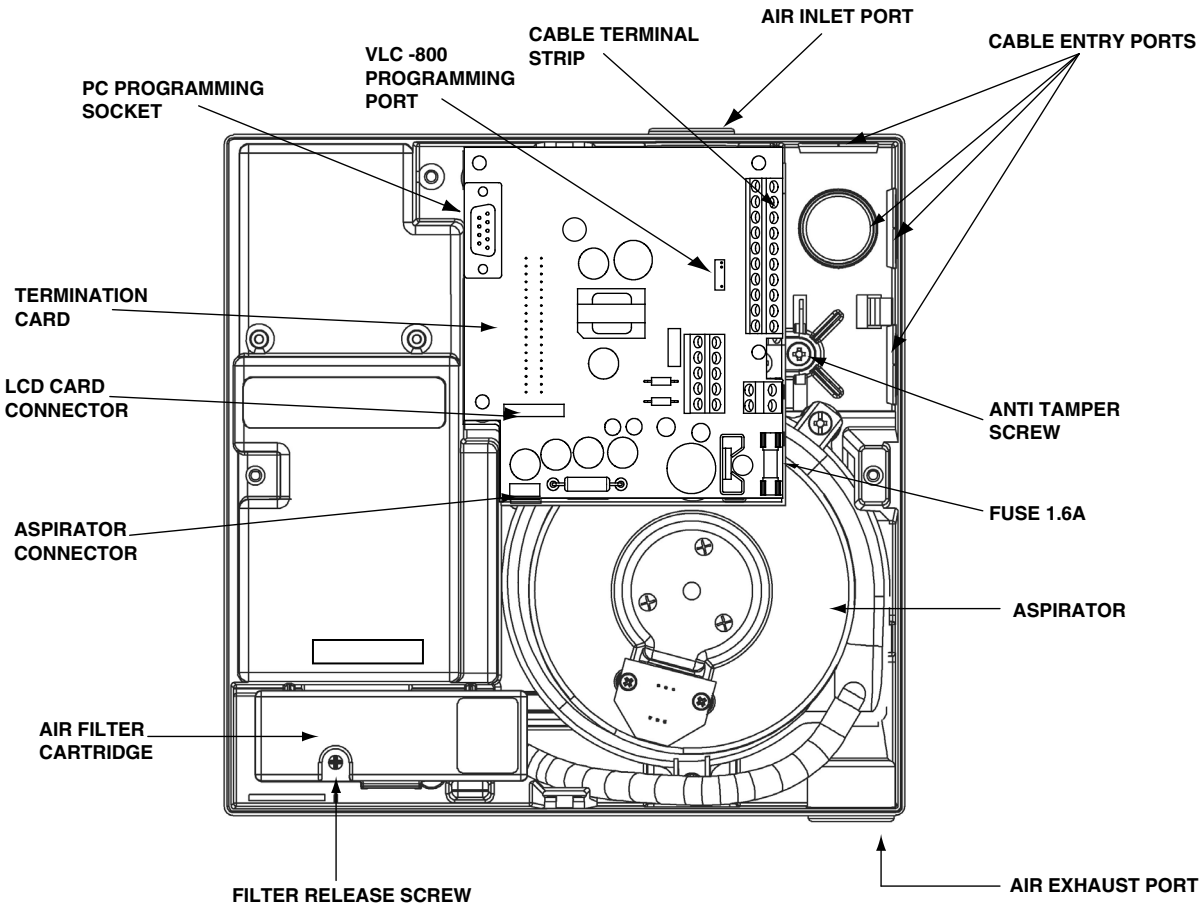

Fig. 3 VLC-800MX Component Location

2.1 SCOPE OF THIS DOCUMENT

This manual provides instructions on how to install, commission and operate the VESDA VLC-800MX. It outlines the standard pipe configurations permissible, power supply requirements, and some installation tips. It does not provide information on how to design and verify customised pipe work configurations using the VESDA ASPIRE II pipe modelling software and does not include detailed step-by-step installation instructions.

This document provides brief details on how VSC (VESDA System Configurator) is used to configure the detector. It does not describe how to use VESDA VSC PC based software to configure custom alarm thresholds, interrogate event logs and smoke trends stored in the detector, set the internal clock and generally access the extensive features of the LaserCOMPACT detector.

This document is intended for proficient installation engineers who are familiar with the commissioning of an MX Fire Detection System but have limited experience with the installation of VESDA Aspirating Smoke Detectors.

3. OPERATION

In normal operation, the VLC-800MX is polled every 5 seconds for the current smoke reading. This is scaled such that a zero reading is reported as 12 and a measurement equating the Fire threshold configured in the VLC is reported as 112. If the value exceeds 112 for three consecutive polls, the MX panel reports the condition as an alarm and commands the Fire LED on the VLC to illuminate. A value exceeding 82 may be reported as a Pre-alarm condition by the MX panel. In addition to the poll every 5 seconds, the MX panel also polls the VLC for its fault status every 20 seconds.

3.1 LED OPERATION

Fig. 4 refers.

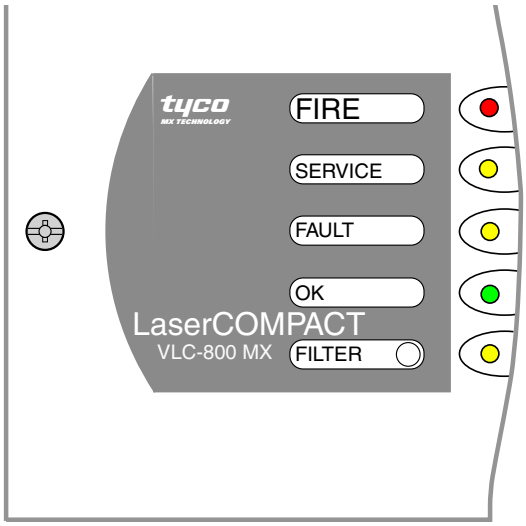

Fig. 4

Red **FIRE** LED: Indicates that a fire condition has been detected. Also, when configured to flash-when-polled[1], it will normally flash once every 5 seconds with a double flash every 20 seconds reflecting the polling for smoke and fault.

Yellow **SERVICE** LED: Indicates that *all* the fault conditions present are likely to be resolved by a technician with the aid of VSC. If this LED is *not* illuminated *when* the Fault LED is, then it is likely that the fault present will require a change of component and it is therefore recommended that the Technician responding to the call carries a spare detector with him. The intention of this LED is to eliminate the need for a double service visit.

Yellow **FAULT** LED: Indicates that there is a fault condition present which may impair the detector's ability to detect smoke. Urgent attention is required.

Note: Note that if the Service LED is also illuminated then all the faults present are likely to be resolved by a technician with the aid of VSC.

Green **OK** LED: Indicates that the operation is normal. However, when the unit is normalizing airflow this LED flashes twice and when running Autolearn this LED flashes three times.

Yellow **FILTER** LED: Indicates that there is a problem with the filter. It is recommended that technicians responding to such a fault carry a spare filter cartridge.

[1] Some approvals bodies - notably VdS and SSL do not allow the flash-when-polled option

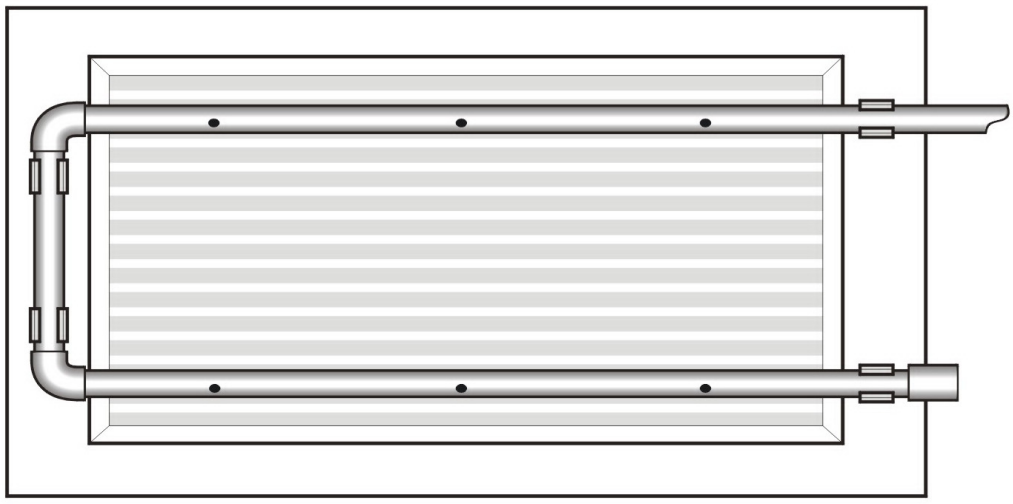

Fig. 5 Sampling an AHU

4. SAMPLING PIPEWORK

This document does not cover the design and installation of Aspirating pipework in detail. For complex or customised designs please contact a VESDA approved agent who can use the ASPIRE II pipework modelling programme to verify non-standard designs.

Note:

1) *The following standard designs are provided for ease of installation in the majority of applications. The limitations specified are conservative and the VLC is fully capable of being successfully applied beyond the limits stated when the design and installation of the pipework is directed by a VESDA approved agent.*

2) *The following standard designs are **Class B** under EN 54-20 when used with the default alarm threshold of 0.2% obscuration/m.*

4.1 PRIMARY SAMPLING (OF AIR HANDLING UNIT RETURN GRILLES)

VESDA VLC detectors are ideally suited to protecting large areas (up to 500m^2) with high airflows by arranging sampling pipe across the return grille of Air Handling Units.

Up to 2 identical Air Handling Units may be covered as long as they are not independently controlled or unusually large (eg, > 30kW or >10,000m^3/hr).

Pipework across the grille should be arranged to ensure that the flow into the grille is adequately sampled. Generally Xtralis suggests a maximum coverage of 0.2m^2 per sampling hole. For example, a grille measuring 1.5m x 0.8m would need 6 sampling holes (see Fig. 5). When sampling across a grille the sampling holes should generally face into the flow, as such slight rotations of the pipe during commissioning may improve performance. Consideration should be given to any maintenance requirements for the Air Handling Unit. For example, it may be necessary to allow for convenient removal of the VESDA pipework to allow easy access to filters in the AHU.

4.2 SECONDARY SAMPLING (ROOM OR VOID PROTECTION)

VESDA VLC detectors may be used to protect open areas up to 800m^2. This is generally achieved by positioning sampling holes according to the standards relating to conventional point detectors.

The following pre-engineered pipework solutions may be used without verifying their performance using the ASPIRE II pipe modelling software. These pre-engineered solutions are compliant with the European standard EN54-20 and achieve a transport time of less than 90 seconds. Each sampling hole has an individual sensitivity of better than 4.5% obscuration/m and so the systems are Class B systems under VESDA approvals to EN 54-20. and sensitivity performance is significantly better than the requirements of EN54-7 (or EN54-20:Class C) where the sensitivity of individual sampling points must be better than 10% obscuration/m. However, where specific performance requirements are specified (eg, a Class A system or transport times of <60 seconds) or where practical considerations fall outside the following pre-engineered designs, the performance of the sampling system shall be modelled on the ASPIRE II software by personnel with suitable training.

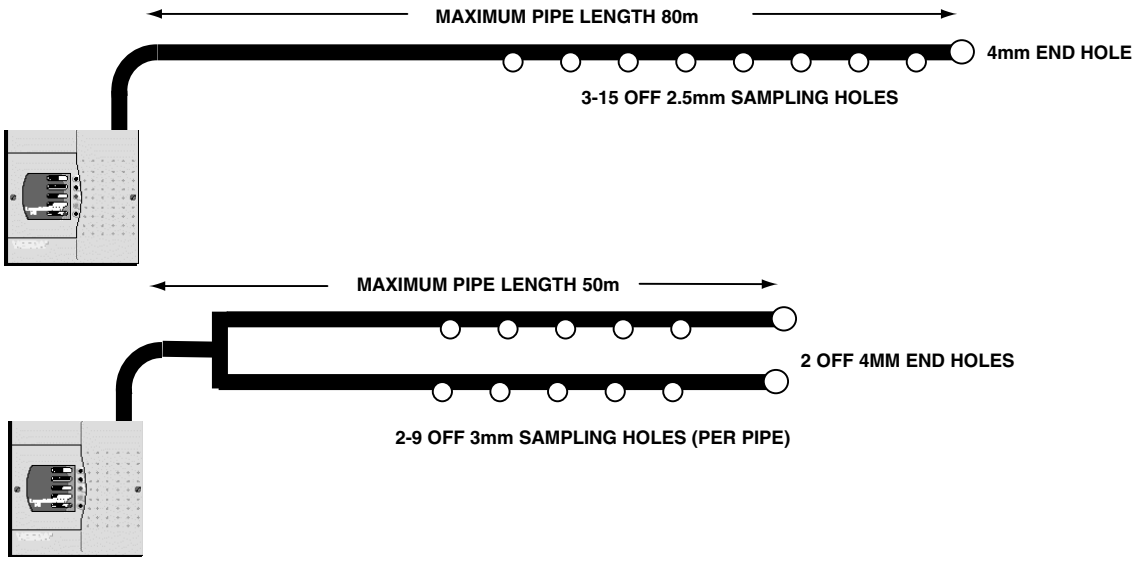

Fig. 6 Pre-engineered Pipework Configurations

4.3 PRE-ENGINEERED SOLUTIONS FOR SECONDARY SAMPLING

In single pipe system, pipe lengths of up to 80m may be used, between 3 and 15 sampling holes may be used; each having a diameter of 2.5mm with an end cap drilled with a 4mm hole:

In branched pipe systems with two branches (ie, 2 x 50m) within 4m of the detector, each branch is capable of having between 2 - 9 sampling holes of 3mm diameter plus an end cap of 4mm.

Sampling holes should be evenly spaced (within ±20%) but may be bunched towards the end cap end if required. Equal numbers of sampling holes should be used on each pipe unless supported by an ASPIRE II model.

Sharp elbows in the pipe should be avoided - use “slow bends”.

The drilled openings should be de-burred but NOT chamfered for proper functioning of the system.

These systems are EN 54-20 Class B systems when using the default Fire alarm threshold of 0.2%obscuration/m

Using ASPIRE II (V 2.01.00 or later) it is possible to determine the Class of many different configurations of holes and pipework. It is also possible to estimate the Class by considering the additional information relating to the configuration of the systems tested during the evaluation to EN54-20.

Where the VESDA detector is located remote from the protected area (for example in a corridor outside the room) then consideration must be given to returning the detector exhaust to the protected area to balance the pressure differences that may exist between the areas. In the majority of applications, this is not necessary as pressure differences are minimal. Where a small pressure difference is present but it is not practical to return the exhaust, the VLC-800MX may still be deployed but it may be necessary to remove the pipe while the aspirator is off during flow normalization (see section 9.8) to prevent residual flows corrupting the normalization process and to ensure that flow monitor operates correctly.

Where pressure differences may exceed 50Pa the pre-engineered solutions presented in this manual may not be reliable and it is recommended that the design is verified by a suitably qualified installer using ASPIRE II.

Note: When transport times of <60 seconds are specifically required, the maximum pipe length for the pre-engineered systems is 65m. Transport times of <60 seconds can be achieved with pipe lengths of up to 70m on custom systems designed using Aspire II.

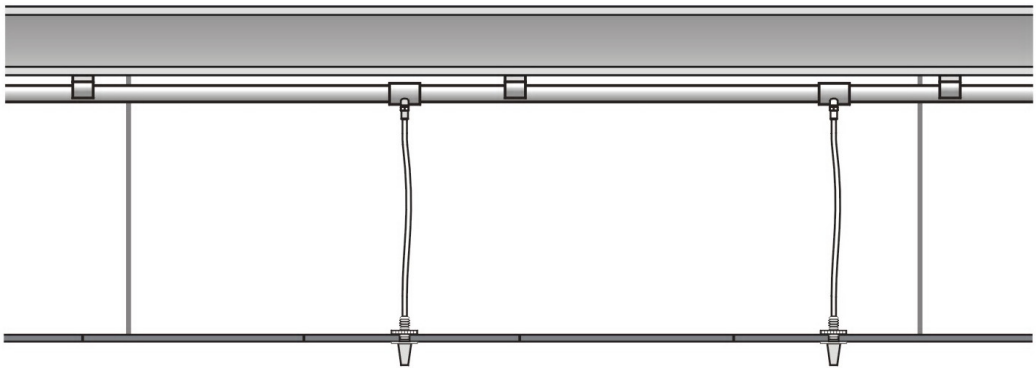

Fig. 7 Capillary Sampling

4.4 CAPILLARY SAMPLING

Capillary sampling consists of 8mm OD flexible tubes up to 2m long, running from the main pipework in place of standard sampling holes. Longer capillary tubes (up to 8m long) may be used but system performance must be verified using the ASPIRE II pipe modelling software.

Fig. 7 illustrates capillary sampling.

4.5 PIPEWORK INSTALLATION

The following points should be considered when installing the sampling pipe:

- Aspirating Pipe should only be installed by a competent contractor.
- Various pipe materials and colours may be used but the most common is 25mm PVC or ABS in red or white. Smooth bore tube is preferable.
- All pipe runs must be adequately supported with appropriate clips.
- Avoid the use of sharp elbows - use “slow” bends for 90 degrees.
- Where pipe must be removable for maintenance access (e.g. in front of an Air Return Grille), use appropriate socket unions.
- In environments with large temperature variations expansion and contraction of the pipe should be considered. The pipework layout and clips must be able to accommodate any likely movement. For example ABS pipe expands by 0.1% with every 10°C increase in temperature.
- All joints must be airtight - this is typically achieved on plastic pipe using suitable adapters and adhesives.

Note: DO NOT USE ADHESIVE ON THE PIPE JOINT ENTERING THE DETECTOR

- Allow sufficient movement in the pipe at the detector to facilitate removal for maintenance. A tapering of the air inlet port prevents the pipe from being inserted beyond 15mm ($^{5}/_{8}$in).
- All pipe should be clearly marked as ‘Aspirating Detector’ or equivalent.
- All sampling holes should be clearly marked. It is advisable to do this as each hole is drilled to avoid any misunderstandings.
- Ensure that swarf and installation debris is cleared from the pipework before connecting the pipe to the detector. This can be achieved by using an industrial vacuum cleaner prior to making the connection.
- On installations where the detector is in the inverted orientation there may be a risk of objects falling into the exhaust port. It may be prudent to install a short length of exhaust pipe to eliminate the risk.

WARNING:
THE PERFORMANCE OF THIS SYSTEM IS DEPENDENT UPON THE PIPE NETWORK. ANY EXTENSIONS OR MODIFICATIONS TO THE DESIGNED INSTALLATION MAY CAUSE IMPROPER OPERATION. OPERATIONAL EFFECTS OF SUCH CHANGES SHALL BE VERIFIED. A DESIGN TOOL IS AVAILABLE FROM THE MANUFACTURER.

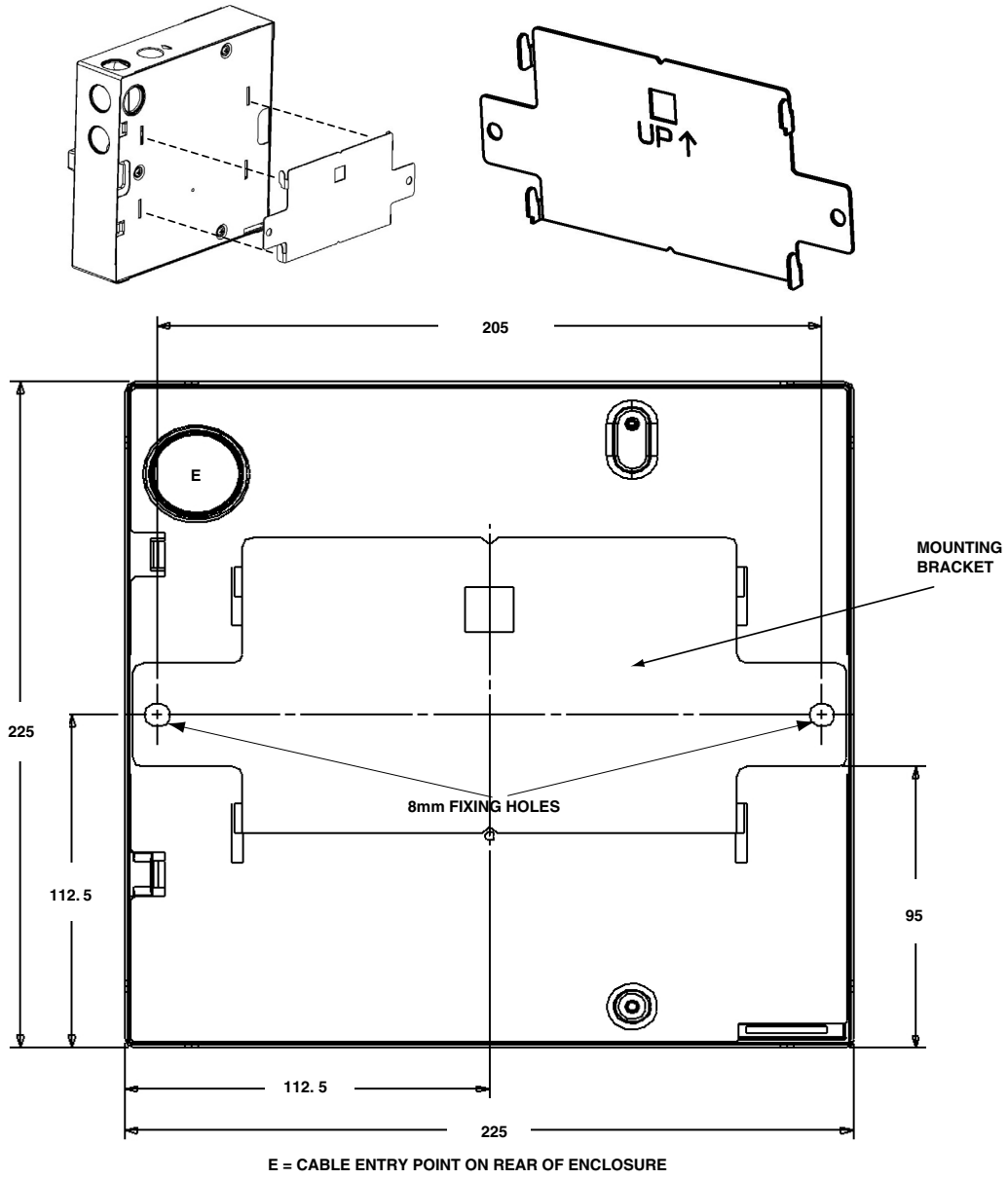

Fig. 8 VLC-800 Mounting Bracket

5. MOUNTING THE DETECTOR BRACKET

Refer to Fig. 8. Mount the detector bracket (supplied) in the specified location using suitable wall plugs and screws (fixing holes 8mm). Ensure that the hooks on the bracket point up.

Mount the detector to the bracket in the orientation specified in the system drawing (see Fig. 8).

When positioning the detector ensure that sufficient space is allowed for pipe and cable conduit connections. Xtralis suggests that there is at least 150mm of clear space around the air inlet pipe and cable entry points to allow for pipe and conduit entry.

The front cover is simply removed by unscrewing two Philips head screws. It is retained on the main enclosure with a plastic tie but can be removed completely by disconnecting the lead to the LED display card and twisting the plastic tie through 90 degrees. If the detector is to be installed in the inverted orientation then the cover must be removed, rotated through 180 degrees and replaced. See Fig. 9.

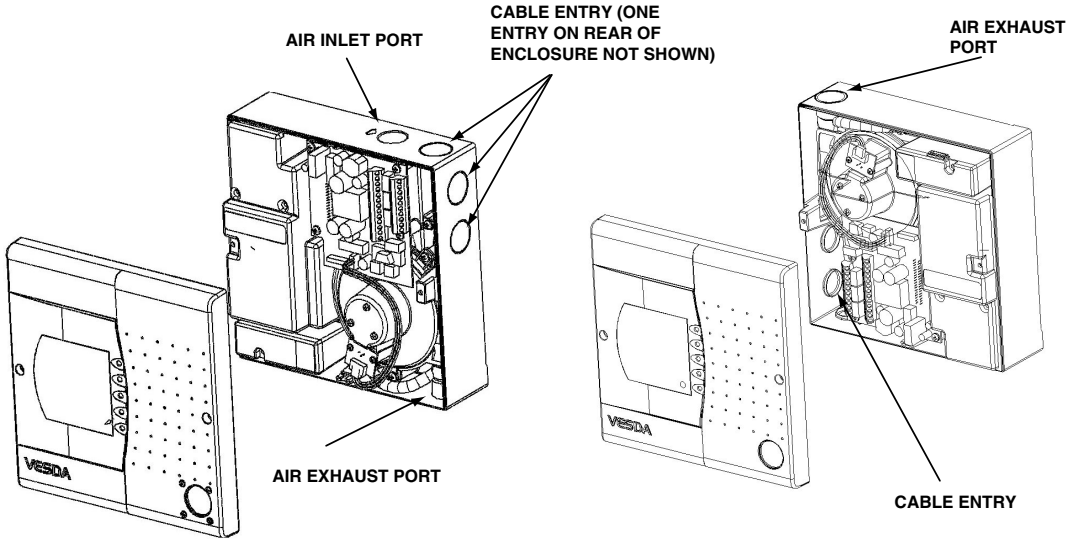

Fig. 9 Detector Orientation (the backbox shows the generic termination card)

In order to prevent the detector being removed from the bracket once installed, an anti- tamper screw is provided as shown in Fig. 3. This locks the detector to one of the hooks. Ensure that it is screwed out before sliding the detector onto the mounting brackets and screw it home once the detector is in place.

6. EXTERNAL POWER SUPPLY

The VESDA VLC-800MX requires a 24V dc power supply. This is generally provided by an EN54-4 compliant supply (eg, PSM800 with APM800) with back up batteries and fault indications. For 24hr backup with 0.5hr alarm the LaserCOMPACT requires 7Ah batteries or larger.

If a supply other than a PSM800 is used, the fault relay from the power supply should be connected to the Power Supply Monitor input (PSM) terminals on the VLC-800MX in order to inform the Tyco Panel of any faults. This input is monitored and requires a 47k End-of-Line resistor. The VLC-800MX records a PSU fault and reports a general fault to the MX panel when a short circuit or open circuit is detected on these terminals.

7. REMOTE LED AND RELAY OPTIONS

The VESDA VLC-800MX provides connection for a remote LED (terminals R+ and R-). This output has a 3K6 series resistor and is designed to power an LED directly (powered by the loop). For it to be illuminated on Fire, the appropriate configuration setting must be made in MX Consys.

The VLC-800MX also provides an onboard relay (NO, C and NC terminals) and an additional output to drive an external relay (REL+ and REL- terminals). The onboard relay is rated 2A @ 30Vdc and the additional output has a 27K resistor in series and is designed to power the external relay from the loop. For the relay(s) to operate, the appropriate configuration setting must be made in MX Consys which relates to both the onboard relay and the external relay output.

Note: MX Consys does not allow simultaneous configuration of both the remote LED and the onboard/external relay (only the relay can be configured).

8. WIRING NOTES (FIG. 10 REFERS)

a) All wiring must conform to the current edition of IEE Wiring Regulations and BS5839 Part 1.

b) All conductors must be free of earths.

c) Remove the required push out plugs for cable entry.

d) Run all cables and gland off as necessary.

e) If a power supply other than a PSM800 with APM800 is used, connect the power supply fault relay to the PSM+ and PSM- terminals with a 47k EOL.

f) If a remote LED is required, connect to the R+ and R- terminals.

g) If the onboard relay, is required connect to the NO, C and NC terminals.
If an external relay is required, connect to REL+ and REL- terminals.

h) Verify the correct polarity of wiring before connecting the VLC-800MX to the addressable loop and external power supply.

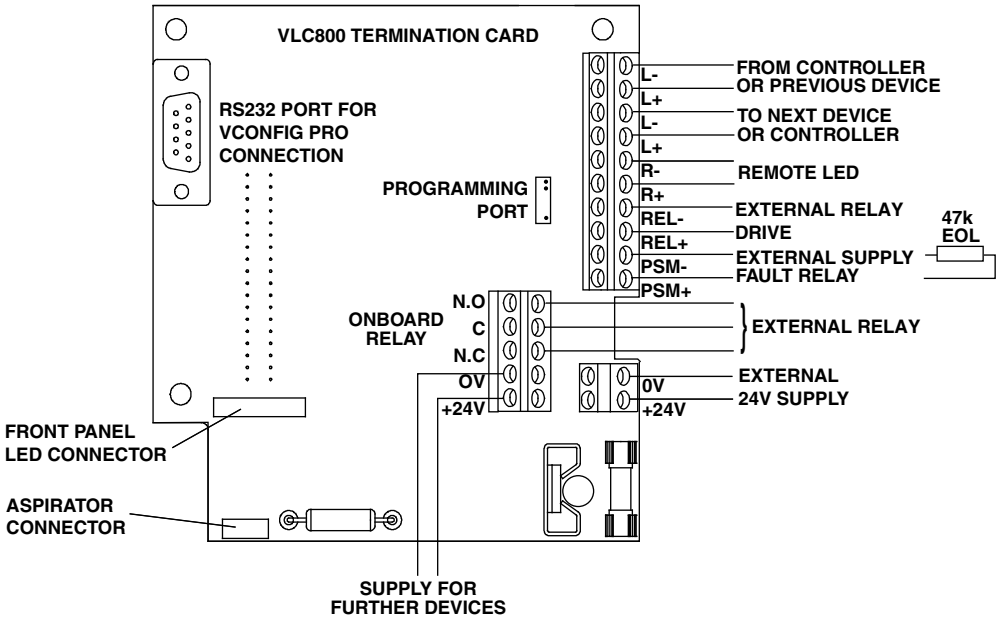

Fig. 10 Simplified Wiring Diagram

9. COMMISSIONING

9.1 OVERVIEW

Configuration of a VLC-800MX is a simple task for the majority of installations and may be performed easily with VSC software which is downloadable from www.vesda.com. However, in some circumstances, custom thresholds must be set by a VESDA approved agent.

Custom commissioning of the system is not covered in this manual. Please refer to VESDA literature for further information.

Commissioning requires the following essential steps:

1) Pipework checks and power up.
2) Configuration of the MX controller via MX Consys.
3) Setting the MX address using the MX programmer.
4) Commissioning of the Laser.COMPACT.
5) Performance tests.

9.2 PRECAUTIONS PRIOR TO POWER-UP

- Check that the supply is 24VDC and has the capacity to power the VESDA.
- Ensure that the polarity is correct.
- Check that Loop, PSU monitoring and external relay connections are correct.
- Ensure that the exhaust bung has been removed.
- Ensure that the pipework is properly installed and all joints are airtight.
- Ensure that sampling holes have been drilled in the specified positions.

9.3 SETTING THE MX ADDRESS

The MX address is programmed using the standard MX handheld programmer (801AP Service Tool) which is connected to the VLC-800MX using the standard cable that connects to all MX ancillary devices.

Note: The MX address may be programmed while the VLC-800MX is not powered (24V dc). It may also be programmed when the VLC-800MX is powered and wired into the MX loop.

9.4 CONFIGURING THE MX PANEL USING MX CONSYS

MX Consys Version 2.1 or later supports the VLC-800MX.

9.5 POWER-UP SEQUENCE

All LEDs should operate during the power on sequence – any failures should be investigated. The aspirator starts after several seconds and (assuming no previous commissioning) an airflow fault will be reported within two minutes because the flow has not been “normalised”.

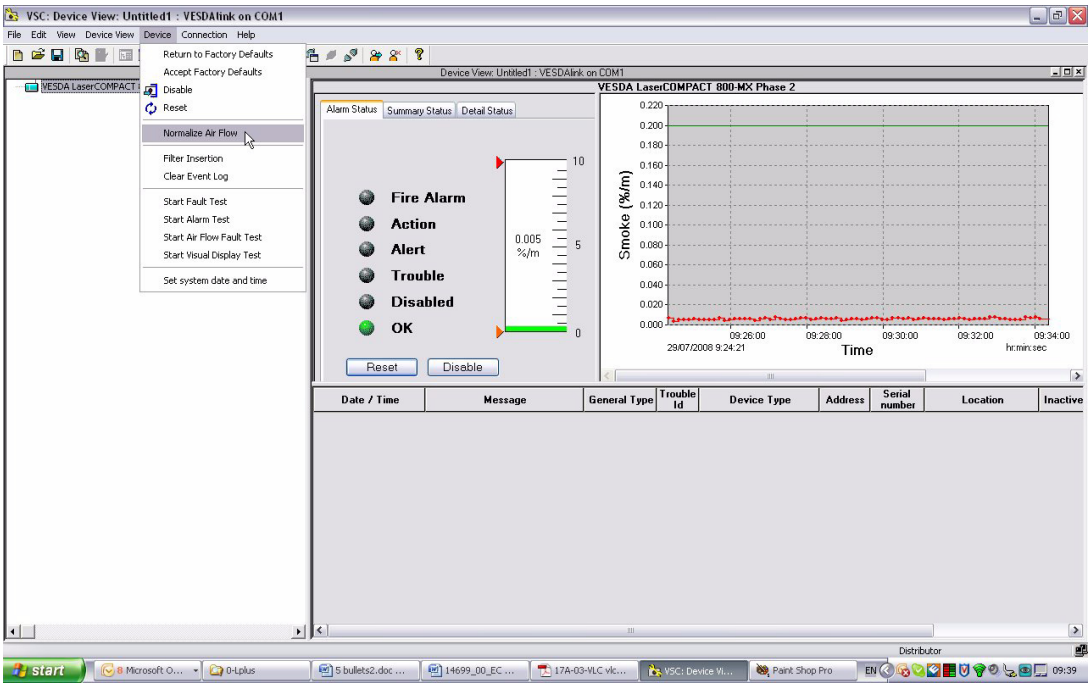

Fig. 11 Normalise Airflow

9.6 TESTING COMMUNICATION

When the MX controller has been configured and the VLC-800MX is powered, the MX controller should automatically detect the VLC-800MX if it does not then a 'NO RESPONSE' message is generated.

If this does not happen then wiring diagnostics is required.

Note: It is most likely that the VLC-800MX will also be reporting an urgent airflow fault at this stage.

9.7 CONNECTING A PC RUNNING VSC

To commission the VLC-800MX, it is necessary to connect it to a PC running VSC software (V2.05.02 or later) via a serial extension lead.

The following Sections (9.7 to 9.13) relate to the commissioning of the VLC-800MX using VSC.

The connection is made using a cable with a 9-way 'D' (male) to 9-way 'D' type (female) with straight through connections, ie, 1-1, 2-2, 9-9 etc.

When logged on, check that the detector clock (reported as "Device time" on the Summary Status Tab - behind the bargraph - see Figure 11) is correct. If it is not, then select Set System Date and time from the Device menu to synchronise the detector clock with the time and date of the PC (which is assumed to be correct).

9.8 NORMALISING THE FLOW

The VLC-800MX will need to normalise the amount of air which flows through the detector. This may be achieved through VSC by running "Normalize Air Flow" from the Device menu (see Fig. 11). Normalisation takes approximately 11 minutes. For approximately the first 5 minutes the detector measures the normal flow to allow for future monitoring of flow variations from this norm. For approximately the last 5 minutes the aspirator is turned off and the residual flow, due to any pressure differences, is measured. If this is too large or if the normal flow is too small a "normalisation failed" fault (fault 75) is reported.

Note: The VLC-800MX should respond by continually blinking the OK LED with two flashes while it is normalising.

9.9 SELECTING SMOKE THRESHOLDS

Smoke thresholds can be set in one of three ways.

1) The default Fire threshold of 0.2% obscuration/m may be used for all standard design configurations as each hole has a sensitivity better than 4.5% obscuration/m (and provide EN54-20:Class B sensitivity). However, this may not achieve the optimum levels of protection possible.

2) The system can be set in AutoLearn to achieve optimum levels of protection. This learning algorithm runs for a maximum of 14 days and monitors the background levels, setting the alarm threshold at an appropriate level above the normal background. See Section 9.11.

3) Customised thresholds can be set using a PC running VLC.

Customised thresholds may be appropriate in particular circumstances but should be used with caution. For example, the default alarm threshold of 0.2% may be inappropriate for a system protecting a small area (using fewer holes than the maximum allowed) with a background level around 0.15% obscuration/m. In this situation a Fire threshold > 0.2% obscuration/m may be appropriate.

However, as a general rule, the maximum Alarm threshold needed to ensure a given EN54-20 sensitivity Class is given by the following expression:

Class C threshold < 6/ N % obscuration/m

Class B threshold < 3 / N % obscuration/m

Class A threshold < 1 / N % obscuration/m

(where N = total number of holes; sampling holes + endcap)

Note: These rule of thumb expressions are *only relevant to the Pre-engineered designs presented in this manual. They are not relevant to pipe configurations designed by an approved VESDA agent and verified using the Aspire pipe modelling software.*

9.10 PRE-ALRM AND ALARM DELAYS

The VLC-800MX supports Pre-alarm processing such that if the analogue reading exceeds 82 for two consecutive polls, the MX panel will report a pre-alarm condition. If the analogue reading exceeds 112 for three consecutive polls, then an alarm condition is reported. Any additional delays to signalling or acting on the alarm condition may be configured in MX Consys. There are no configurable delays specific to the VLC-800MX.

9.11 USING AutoLearn

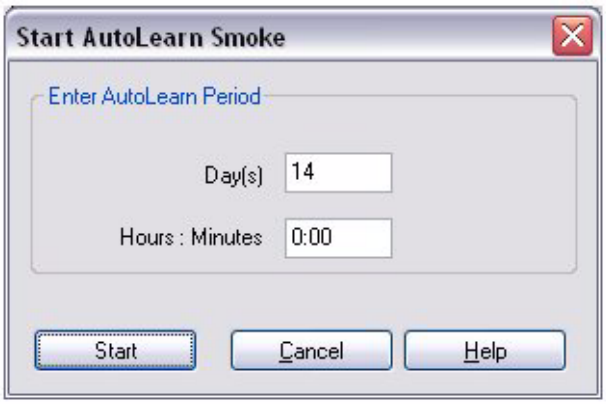

Fig. 12 AutoLearn

See Fig. 12. When using AutoLearn it is essential that the protected area is operating in normal conditions. For example, all building work should be complete and air conditioning operational (if present). AutoLearn can be started via VSC by selecting the "Start AutoLearn Smoke" tab from the device menu. From this form you can set the duration of AutoLearn (to a maximum of 14 days). Click OK to accept and the VLC-800MX should respond by continually blinking the OK LED with three flashes.

During Autolearn, the detector is fully active and uses the alarm thresholds in place when Autolearn was started. At the end of the Autolearn period the "learnt" thresholds are automatically applied and become active. If an alarm condition is detected during the Autolearn period then autolearn is aborted.

Notes:

1) The VLC-800MX should respond by continually blinking the OK LED with three flashes while it is in Autolearn mode.

2) Early releases of VSC (version3.01.00 and earlier) do not support Autolearn on the VLC-800MX - please upgrade to the latest version of VSC which is available on www.vesda.com

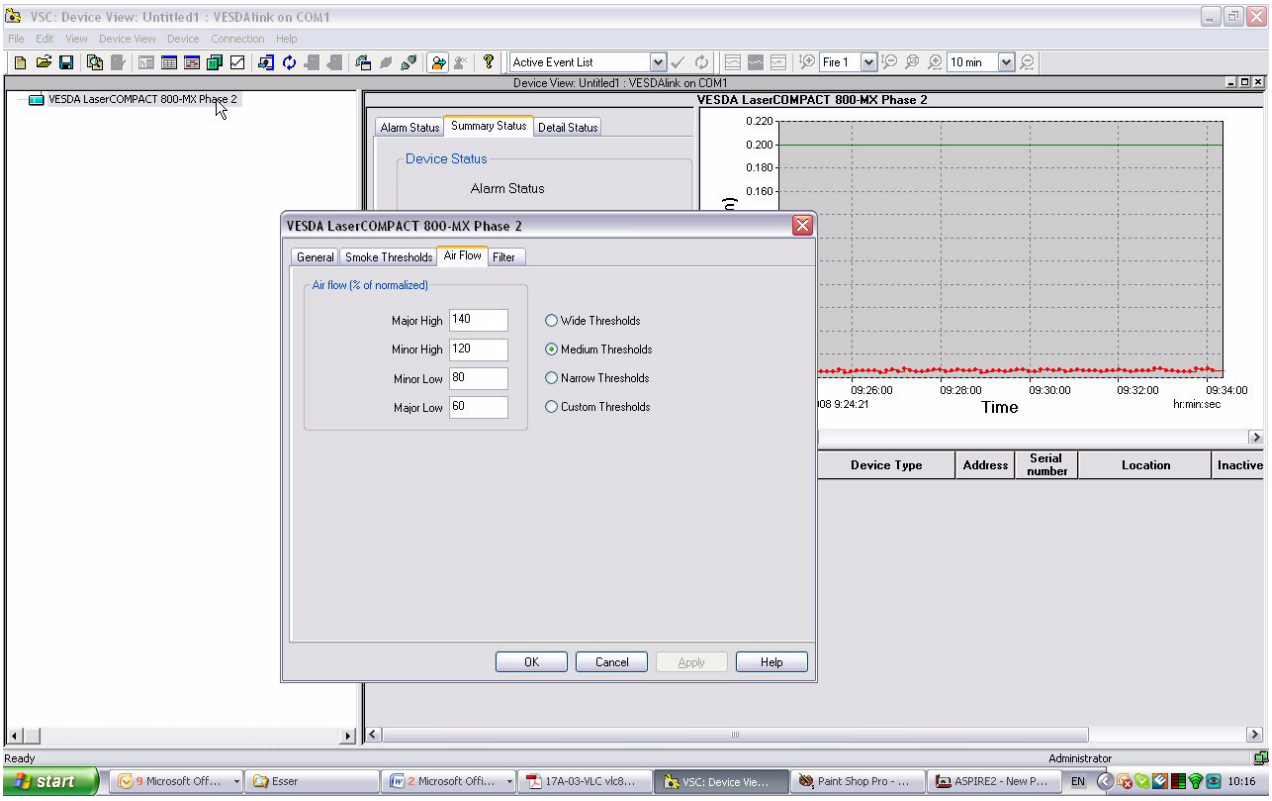

Fig. 13 Flow Threshold Setting

9.12 SETTING FLOW THRESHOLDS

See Fig. 13. This can be selected from the configuration tabs which are accessed by double clicking on the device Device/View Configuration menu and selecting the Flow Threshold Tab. The default is Medium thresholds. Only Medium and Narrow thresholds comply with EN54-20 which requires detection of +/-20% change in flow. When setting custom thresholds the low urgent and high urgent thresholds should tighter than 80% and 120% respectively for compliance with EN54-20.

9.13 COMMISSIONING TESTS

There are two alternative approaches to commissioning tests. The first is simply a check to ensure that the system responds to smoke and is appropriate on systems designed for compliance with local codes and standards. The second approach is a performance based test which is often used to demonstrate the superior performance capabilities of the VESDA technology.

It is beyond the scope of this manual to discuss the details of performance based testing as details of the tests are particular to each application. However, guidance may be found in VdS rules or British Standards (eg, BS6266) which provides good information on some standard commissioning tests. The FIA (UK Fire Industry Association) Code of Practise for Aspirating Smoke Detections is also a good source of information on performance based testing. (available from www.FIA.uk.com).

Performance to appropriate standards and codes (such as the EN54 series) is assured if the detector has been installed in accordance with this manual. This is based on compliance testing of this product against the standard EN54 fire tests with only one sampling hole exposed to the test fire and the remaining holes drawing clean air. However, to ensure the integrity of the pipework the following tests must be performed:

1) From the controller set the VLC-800MX into walk test. (Faults will still be reported).
2) Introduce a sample of smoke into the end cap(s) – with a concentration equivalent to that used for routine testing of point detectors.
3) Check that an Alarm is reported within 90 seconds. Response times over 90 seconds indicate that the pipework may not be installed to specification and should be investigated.
4) Reset the Alarm from the controller.

Action	Frequency	Details
Check Power supplies	Every month	Test according to suppliers instructions. Note: Where the condition of the battery is regularly checked automatically, less frequent manual checks may be applicable.
Check the pipework	Every 6 months	Check that all pipe runs are intact, that pipe supports and joints are firm and that the sampling holes are free of dirt.
Check air flows	Every year	Check logs to verify that no airflow faults have occurred. Where possible use VConfig to read the airflow readings (including the raw airflow readings). Any sign of drift should be investigated.
Check Filter	Every year	Check that there are no filter faults (where possible use VConfig Pro to read the current filter counts).
Change Filter	Every 2 years	Fit a new filter cartridge regularly depending on the relative cleanliness of the protected environment. Eg, every 2 years in a normal environment, up to 5 years in a clean, air conditioned computer room or every year or less in an area exposed to a dusty or smokey atmosphere.
Smoke test	Every year	Set the detector into Walk Test mode and introduce smoke into the end cap (see commissioning). Compare response times with those previously recorded and investigate any discrepancies.
Flush sampling points	Every 2 years	Isolate the detector, remove pipe from the inlet port and connect a vacuum cleaner. Run the cleaner for several minutes.
Clean sampling points	As necessary	If flushing does not clear the sampling points then they must be physically cleared.

Table. 1 Maintenance Schedule

5) Carefully check each sampling hole (using field glasses if necessary). Introduce smoke into any that cannot be inspected and into at least 10% of the holes. Check that an Alarm is reported at the VLC-800MX in each case.

6) Record all results for future reference – particularly the response time from the end cap(s) and the raw flow reading.

10. MAINTENANCE

10.1 OVERVIEW

The VESDA VLC-800MX requires little regular maintenance as the majority of potential failures are monitored.

There are only two serviceable items; the filter cartridge and the aspirator.

On no account should the rear cover of the detector be removed as this may invalidate the warranty.

10.2 SCHEDULE

Table 1 details the maintenance schedule necessary to maintain the VESDA VLC-800MX in peak working order in the majority of applications.

10.3 CHANGING THE AIR FILTER CARTRIDGE

See Fig. 14. The filter cartridge is retained by a recessed Philips head filter screw. Ensure that the screw driver is properly located in the screw before applying any torque to avoid damage to the cartridge.

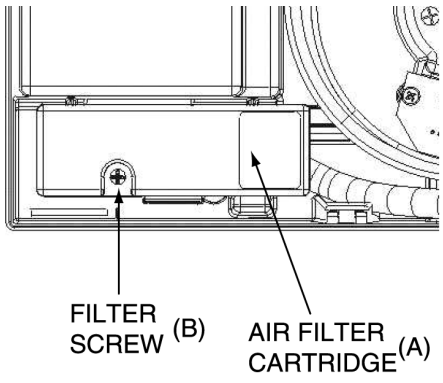

Fig. 14 Air Filter Change

A switch operates when the filter is removed and the fault “filter removed” is reported. It is necessary to acknowledge the filter as being replaced, and this is performed by the “Reset Filter Settings” function in VSC (see Fig. 15).

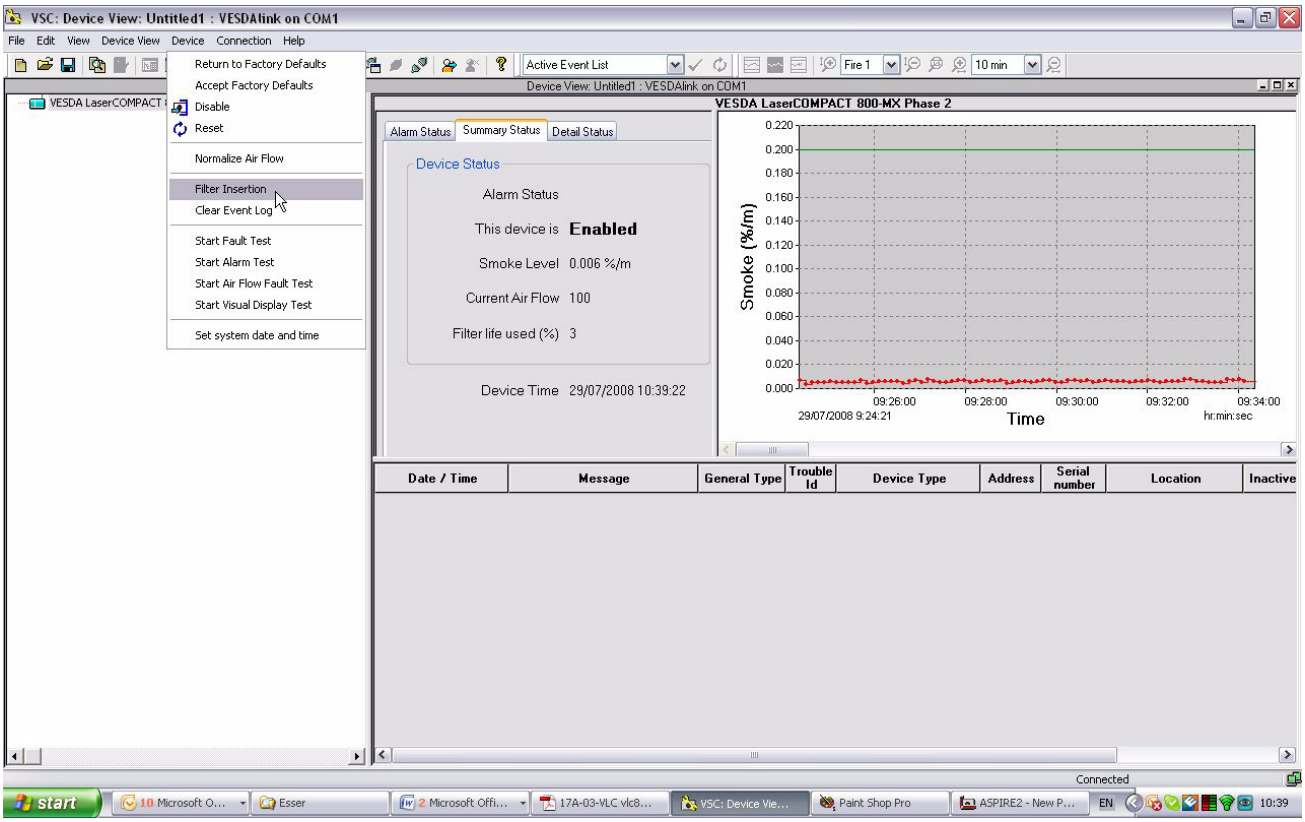

Fig. 15

10.4 REPLACING THE ASPIRATOR

10.4.1 REMOVING THE ASPIRATOR

1) Remove the four screws (A) securing the termination card.
2) Disconnect the aspirator cable loom from the connector on the aspirator.
3) Gently pull out termination card (B) from interface card (connected behind).
4) Be careful not to dislodge any wires connected to the termination card.
5) Leave the termination card suspended by its wires.
6) Pull off the air hose from aspirator pipe (D).
7) Undo three Philips head screws securing aspirator (E). Screws are captive and do not come off the aspirator.
8) Turn aspirator anti-clockwise (F) using the exhaust port as the pivot point.
9) Push aspirator upward (G) and remove.

10.4.2 ASSEMBLY

1) Check the new aspirator has a gasket on the inlet flange and three attached screws.
2) Wipe manifold outlet flange surface if dirty.
3) Do the reverse of disassembly.
4) Secure aspirator with three screws (E).
5) Connect removed air hose to pipe on aspirator. Ensure a tight fit over the pipe.
6) Insert Termination Card (B) into interface card (C).
7) Secure the termination card with four screws (A).
8) Connect aspirator cable connector to socket on aspirator. Connector is polarised and can only be inserted one way.
9) Check all wires are secured to its connectors or terminals.
10) Power ON the detector and check the aspirator is running.
11) Close up the detector.

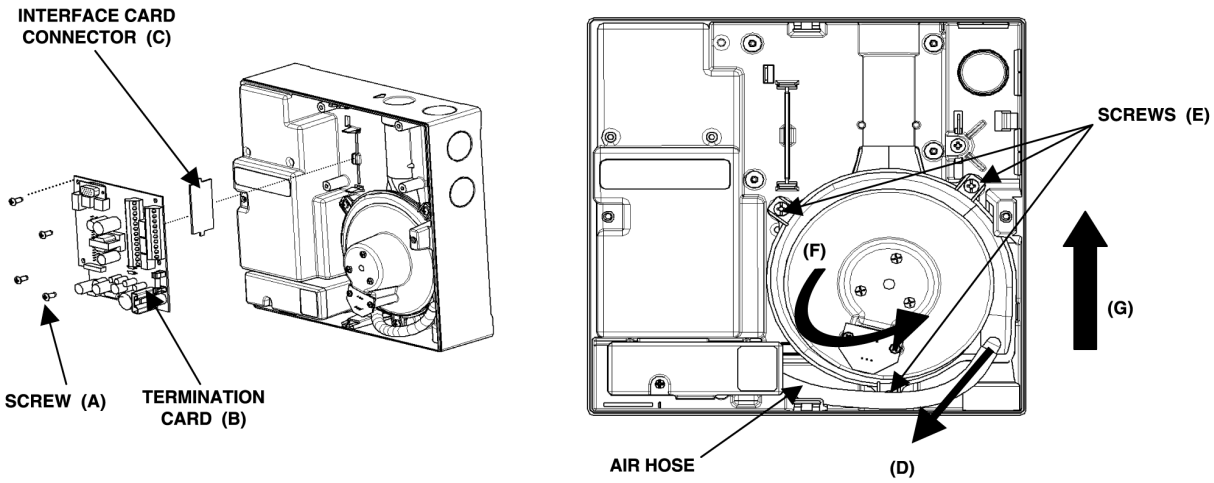

Fig. 16 Removal/Replacement of Aspirator Assembly

11. TROUBLE SHOOTING

11.1 INTERROGATING FAULT CONDITIONS

The VLC-800MX fault status is communicated via the MX loop and more implicitly on the LEDs on the front of the unit. See below for a description of LED behaviour:

Service LED: If this LED is lit fault(s) on the detector are serviceable by a field technician without the need to replace components. However, if the Fault LED is lit and this LED is not lit, then it is possible that the faults present will require component replacement.

Fault LED: If this LED is lit, the fault(s) present require urgent attention.

Filter LED: If this LED is lit, filter replacement will be necessary.

Fault No.	Description	Fault			Solution
		Service able	Urgent Fault	Filter	
0	Aspirator failed		YES		Check the cable. If okay, contact your supplier for a replacement aspirator.
2	Comms fault on Port A	YES			Check MX loop connections and that the panel is operational.
3	Detector PIC failure		YES		Contact your supplier for a replacement detector.
4	Filter removed	YES	YES		Replace the filter. If problem persists, check filter switch.
7	Software fault found		YES		Contact VESDA.
8	Aspirator speed control failure		YES		Contact VESDA.
11	Filter approaching capacity	YES		YES	Replace Filter.
12	Zone setup = factory defaults	YES			Use VConfig PRO to “accept the factory defaults” and recommission the detector.
14	Flow sensors = factory defaults		YES		Contact VESDA.
15	AC mains failure	YES	YES		Check the external Power Supply (monitored on the PSM monitoring input, see Fig. 10).
22	Flow sensor failure pipe 1		YES		Contact VESDA.
23	Laser signal too low		YES		Contact your supplier for a replacement detector.
27	AutoLearn aborted	YES			Inspect the Smoke Trends using VConfig PRO. Investigate and eliminate the causes and re-run AutoLearn (or set the alarm thresholds manually).
29	Manufacturer setup corrupted		YES		Contact your supplier for a replacement detector.
33	User list = factory defaults		YES		Use VConfig PRO to “accept the factory defaults” and recommission the detector.
34	Detector setup = factory defaults		YES		Contact your supplier for a replacement detector
36	Event Log Corrupt		YES		Under ‘DST’ access, “clear the event log”. Contact VESDA if fault persists.
37	Detector cal = factory defaults		YES		Contact VESDA.
38	Detector EEPROM failure		YES		Contact VESDA.
51	Urgent high airflow pipe 1	YES	YES		Inspect pipework for breakage’s or leaks and rectify. Re-normalise if necessary.
52	Minor high airflow pipe 1	YES			Investigate reasons for drift in flow reading.
53	Minor low airflow pipe 1	YES			Investigate reasons for drift in flow reading.
54	Urgent low airflow pipe 1	YES	YES		Inspect pipework for blockages and rectify. Re-normalise if necessary.
56	Clock failed		YES		Contact VESDA.
59	Fault test	YES			
65	Incompatible SW version detected	YES			Contact VESDA.
73	Filter clogging	YES	YES	YES	Replace filter urgently.
74	Raw flow too high	YES			Eliminate excessive positive pressure assisting the flow and/or reduce the number/size of sampling holes.
75	Normalisation has failed	YES			Investigate - are the sampling holes drilled?, has the exhaust plug been removed.
76	Filter replaced but not acknowledged	YES		YES	Use VConfig Pro to acknowledge that a new filter has been fitted (or old one removed).
77	Normalising	YES			
80	No factory flow calibration		YES		Contact VESDA.

12. ORDERING INFORMATION

VLC-800MX VESDA Laser COMPACT:	516.018.012		
Air Filter Cartridge:	516.018.504	Xtralis:	VSP-005
Aspirator Fan:	516.018.515	Xtralis:	VSP-015
VESDA 24V dc 2A Power Supply:	516.018.407	Xtralis:	VSP-220

13. APPROVALS

The VLC-800MX is CE marked to the Construction Products Directive (CPD) supported by an EC Certificate of Conformity (0832-CPD-0770 issued by BRE Global) to EN 54-20. The VLC-800MX is approved by LPCB and VdS to EN 54-20 under Xtralis AG certificate numbers 305b issue 8 and G203026 repectively.

JM/jm

3rd December 2008