



# ASPECT

**Aspirating Smoke Detector,  
*NITRO* and *GRIZZLE*;  
Conventional, Addressable and Stand-alone**

## INSTALLATION MANUAL

IMA 201 006 R2D

ENGLISH

# TABLE OF CONTENTS

<b>TABLE OF CONTENTS .....</b>	<b>2</b>
<b>1. INTRODUCTION.....</b>	<b>4</b>
1.1. The ASPECT 2010 series .....	4
1.2. Applications .....	5
1.3. Environmental adaptation and sensitivity .....	6
1.4. Installation instructions .....	7
1.5. Aspect Tool.....	8
1.5.1. Installation .....	8
1.5.2. Get started .....	8
1.5.3. Connect to Aspect.....	9
1.5.4. Connecting to a new Aspect for the first time .....	10
1.5.6. Overview .....	11
<b>2. OPERATION .....</b>	<b>13</b>
2.1 Indications.....	13
2.2 Buttons.....	13
2.3 Status read-outs .....	14
2.3.1. Event logs .....	14
2.3.2. System and real-time information .....	15
2.3.2.2. ASPECT tab – generic device information.....	15
2.3.2.1. FLOW tab – air flow and calibrated thresholds .....	15
2.3.3. Program parameters .....	16
<b>3. PROCEDURES FOR ALARMS AND FAULTS.....</b>	<b>17</b>
3.1. Fire alarm.....	17
3.2. Service alert.....	17
<b>4. PIPELINE PARTS AND ACCESSORIES .....</b>	<b>18</b>
4.1. Sampling pipes .....	18
4.1.1. General .....	18
4.1.2. Parts overview .....	19
4.2. AU 002 air exhaust kit .....	20
4.2.1. Purpose of the exhaust kit .....	20
4.2.2. Installing or removing the exhaust kit .....	20
4.3. Sniffer * .....	21
4.3.1. Purpose of the sniffer.....	21
4.3.2. Installing a sniffer with sleeve .....	21
4.4. VULCAN dust- and condensation filter.....	21
4.4.1. Purpose of the filter.....	22
4.4.2. Installing the filter .....	22
<b>5. PLANNING.....</b>	<b>23</b>
5.1. Cable .....	23
5.2. Pipelines .....	23
5.2.1. Pipe length .....	23
5.2.2. ASPECT placement and pipe path .....	23
5.2.3. Sampling points .....	23
5.3. Special applications .....	24
5.3.1. Greenhouses .....	24
5.3.2. Poultry and pig farms .....	24
5.3.3. Churches.....	25
5.3.4. Deep freeze storage .....	25
<b>6. INSTALLATION .....</b>	<b>26</b>
6.1. Pipes.....	26
6.1.1. Preparations.....	26
6.1.2. Installation .....	26
6.1.3. Sampling points .....	27
6.1.4. Marking sampling points .....	27
6.1.5. Pipe entry into ASPECT.....	28
6.2. Aspect.....	29

6.2.1. Opening the ASPECT .....	29
6.2.2. Cable entry .....	30
6.2.3. Loop connection .....	30
6.2.4. Wireless systems .....	30
6.2.5. Mains connection .....	30
6.2.6. Battery connection .....	31
6.2.7 External power supply (optional) .....	31
<b>7. COMMISSIONING .....</b>	<b>32</b>
7.1. Calibration .....	32
7.2. Important check points .....	33
7.3. Verification and documentation .....	33
7.3.1. EloVac .....	33
7.3.2. System report in Aspect Tool .....	33
<b>8. PROGRAMMING .....</b>	<b>34</b>
8.1. Air flow and disablement .....	34
8.2. Power, signaling and sensitivity .....	34
8.3. Sensitivity, day/night modes .....	35
<b>9. MAINTENANCE .....</b>	<b>36</b>
9.1. Suggested service intervals .....	36
9.2. Annual inspection .....	36
9.3. Testing the Aspect .....	37
9.3.1 Test Mode (Stand-alone only) .....	37
9.4. Replacing the main filters .....	38
9.5. Inspection and replacement of DIAMANT .....	38
9.6. Cleaning the flow sensor .....	39
9.7. Replacing the sensor kit .....	39
<b>10. TECHNICAL SPECIFICATIONS .....</b>	<b>41</b>
10.1. General .....	41
10.1.1 Mechanical .....	41
10.1.2 Electrical .....	41
10.1.3 Environment .....	41
10.1.4 Indications .....	41
10.1.5 Buttons .....	41
10.2. EN54 .....	41
10.3. Outputs .....	41
10.3.1 Voltage outputs .....	41
10.3.2 Relay outputs .....	41
10.4. Power supply .....	42
10.4.1 Integrated .....	42
10.4.2 External (optional) .....	42
10.4.3 Battery capacity .....	42
<b>11. ADDITIONAL INFORMATION .....</b>	<b>43</b>
11.1. Approval / Certificate numbers .....	43
<b>Appendix A – ASPECT CPU board .....</b>	<b>44</b>
<b>Appendix B – Connections for conventional systems .....</b>	<b>45</b>
<b>Appendix C – Connections for addressable systems .....</b>	<b>46</b>
Notes for specific systems .....	46
<b>Appendix D – Connections for stand-alone unit .....</b>	<b>47</b>
<b>Appendix E – Program functions .....</b>	<b>48</b>
<b>Appendix F – Service codes .....</b>	<b>49</b>
<b>Appendix G – CE marking and declarations .....</b>	<b>50</b>

## 1. INTRODUCTION

### 1.1. THE ASPECT 2010 SERIES

The ASPECT 2010 series of Aspirating Smoke Detectors are highly sensitive for use in computer rooms and other clean rooms with high demands for early detection of smoke and fire gases. Recommended for use in churches and office spaces, using capillary sampling points (*sniffers*) for unobtrusive installation.

Additionally, ELOTEC ASPECT 2010 is built to handle rough conditions with dust, condensation, and ammonium gases, making it the natural choice for protecting industrial production areas as well as livestock rooms and greenhouses.

The ASPECT 2010 can be delivered in a number of variations – as a stand-alone system, or for connection to conventional or addressable fire alarm panels, wired as well as wireless. Several sensor options are also available.

Each version uses a specially adapted CPU board and firmware for optimal function.

The stand-alone ASPECT is approved as a control panel, and can be supplied with a number of integrated modules that provide extra functionality.

- GSM transmitter for alarm transmission with voice messages or text (SMS) \*
- Network module for remote control or connection to building management systems \*
- Control module for approved wireless smoke detectors/alarms and alarm device in the 868 MHz band. \*

The ASPECT is manufactured in an anodized aluminum alloy specially developed to maintain its good look even after extended use in all environments. The top and bottom parts are made of PC/ABS. The closed housing with overpressure ensures that dust and moisture do not reach the electronics.

The aspirating fan and housing are designed to balance effect and noise, which makes the ASPECT one of the most silent aspirating smoke detectors available.

- Human speech produces approximately 60 dB, an ASPECT with standard settings produces 55 dB.
- The noise level can be lowered further (5-10 dB) by installing the exhaust kit AU 002.
- Special soundproofing with the fan in “silent mode” can be delivered, lowering the emitted noise all the way down to 35 dB – the pipeline will naturally have to be shortened correspondingly (see separate pipe design for dwellings).

A PSU is integrated, but the ASPECT can also communicate with an external 12V or 24 V power supply in cases where extra capacity is required. (The internal battery must then be removed.)

The ASPECT is also prepared for accepting signals from external filters on the pipeline.

ASPECT has several levels of internal tests:

- Airflow is constantly monitored in order to reveal problems with filters or pipelines.
- Every month, an automatic verification of the flow sensor is performed to ensure that the constant filter monitor isn't degraded. By performing this test, the ASPECT achieves a complete test of its internal processes.
- Sensors run continuous self-diagnosis, and possess an intelligent test system that provides notification when the sensor needs to be cleaned (CleanMe).

Simple installation and service:

- External flanges ensure that the unit can be installed without touching its internal components, and helps maintain the integrity of the protective housing.
- The top lid has been designed to allow easy access to the connection terminals in the upper part of the unit, and can be opened using special tools concealed behind the bottom lid.
- ASPECT allows the door to be opened for inspection and filter replacement for 4.5 minutes with no need to operate the control panel.
- No manual calibration is required, neither for sensitivity nor filter monitoring. This means the sensitivity can never be adjusted outside the approved range.

“PipeDraw” planning software provides assurance that EN 54 is followed, and is very easy and efficient in use. Required components are listed and priced automatically, both for ordering from Elotec and for the offer to the customer.

\*) Not tested by VdS

## 1.2. APPLICATIONS



The ASPECT can be supplied with different types of sensors, and is very well suited for many different areas. Some examples are shown below.



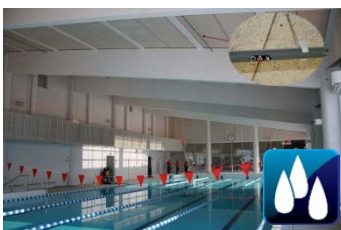
Churches



Computer / switch rooms and technical installations



Heavy industry and warehouses



Sports- and swimming halls



Office environments



Agriculture and greenhouses



### 1.3. ENVIRONMENTAL ADAPTATION AND SENSITIVITY

When planning an aspirating smoke detector installation, the desired sensitivity class (A/B/C) according to EN 54-20 must be determined. This could be specified by the customer, consultants, authorities, or through regulations. PipeDraw will indicate if the planned pipeline achieves the required class with the chosen sensor, or if a different variant must be used.

If smoke or gases are naturally occurring in the secured area, there are several possibilities for adaptation in order to avoid nuisance alarms.

1. Order Aspect with sensors fit for the environment – three different sensitivity levels per sensor type.
    - a. Sensor kit can be easily replaced on-site if the wrong choice was made, or the operating conditions change at a later time.
  2. Use the app ASPECT TOOL to set reduced sensitivity for the affected area.
- **Medium** is used where no special conditions indicate otherwise.
  - **High** may be used to maintain the desired class with long pipelines and many sampling points, primarily in clean environments where a regular smoke detector can survive.
  - **Normal** is used where other variants are expected to be too sensitive, typically in environments with extreme amounts of dust or air pollution, as well as certain special applications, like freeze storage.



Remember that by using the companion app, Aspect can be programmed, if the customer wants, to have higher sensitivity at night than during work hours. See 8.3. Sensitivity, day/night modes, page 35.

#### Ordering information:

Select one element from each column to find the ordering code for the desired version of Aspect or Sensor Kit. **NB!** If 'Sensitivity' is not specified, Aspect / Sensor Kit will be delivered with *Medium* sensitivity.


Base	Sensor	Sensitivity	-	System (AE2010 only)
<b>AE2010 SENSORKIT</b>	<b>N</b> = Nitro <b>G</b> = Grizzle	<b>N</b> = normal (none) = medium <b>H</b> = high	-	<b>V</b> = Voice <b>M</b> = Magnum <b>R</b> = Royal <b>S</b> = Stand-alone
Example:	AE2010NN-V SENSORKIT-G			(Aspect Nitro <i>Normal</i> for Voice) (Sensor kit Grizzle <i>Medium</i> )

## 1.4. INSTALLATION INSTRUCTIONS

Please read this manual carefully before beginning the installation.

Throughout the manual, there will be paragraphs marked . These are to be considered recommendations or advice to make the installation easier.

Other paragraphs are marked . These instructions **must be followed** to ensure that the system will function as intended.

The symbol  may be used to indicate other interesting facts.



In several places in this manual you will find so-called QR codes. These can be scanned with your smartphone to show items such as YouTube videos, web pages or apps. If you don't already have a barcode scanner installed on your phone, try "QR Droid" for Android devices, or "QR Reader for iPhone".



Study the plans made by the project planner, and follow them carefully. The authorized planner must approve any divergence from the plan. Use cable and pipe types as prescribed by Elotec. Pipes, bends and fixing sleeves must be delivered by ELOTEC for the system to be approved. ELOTEC can also supply a selection of signal cable for wired systems. Other installation materials should be provided by the electrical contractor.

The connection of mains voltage to the unit must be performed by an authorized electrical contractor, and in accordance with existing regulations.



Always remember that program settings like the flow window must be adapted to the building mass and application. See page 48. If unexplained flow faults occur repeatedly, this indicates that the normal air pressure fluctuates too much to maintain the chosen level of P1 (1-10) and/or time of P6 (1-3).



## 1.5. ASPECT TOOL



For simple commissioning, configuration and service, the app **Aspect Tool** is used. It is available for Android smartphones and tablets, and communicates with the built-in WiFi diagnostics module.



### 1.5.1. Installation

Search for Elotec in the Google Play store, or scan the QR code above. Select the Aspect Tool app, and press "Install". Accept the permissions requested by the app. Access to identity and contacts is only used to retrieve the e-mail address for your Google account, as this is used for licensing.



It is recommended to activate automatic updates to ensure that you always use the most recent version.



### 1.5.2. Get started

When you start Aspect Tool for the first time and touch one of the icons, you will be asked to fill in some user information.

**NB!** No operations are available until you have filled in your name, company and e-mail address.

The "Handshake" button is your starting point. White cuffs indicate that connection has not been established. The first time you touch this, you will be asked if you want to run in demo mode or buy an access key.



In order to connect to a physical Aspect device, you need a key. Press the button "Buy key" to unlock the app. A licence key can be ordered from Elotec. Remember to supply the **e-mail address shown in the field "Account ID" under user information**. The key is valid for one year from the date of purchase.

**NB!** Remember to retain your order confirmation or write down the code in case you switch phones during the lifetime of the key.



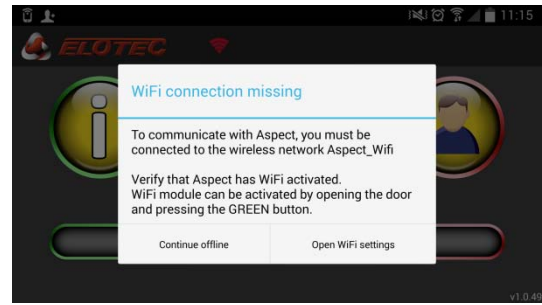
### 1.5.3. Connect to Aspect

Press the “handshake” button to connect to Aspect. If you are not connected to the correct network, you will see the message on the right.

Press “Open Wi-Fi settings” and connect to the wireless network “Aspect\_WiFi”. Then, press the back-button of your device to return to Aspect Tool.

If the network “Aspect\_WiFi” is not displayed, activate the Wi-Fi module in the Aspect by opening the door and pressing the green button in front. The blue LED should light up.

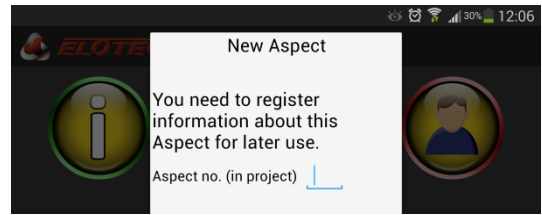
When connection with Aspect has been established, the cuffs on the “handshake” button will turn green. Additionally, the wireless symbol in the top bar will change from red to green – this symbol is visible in all screens.



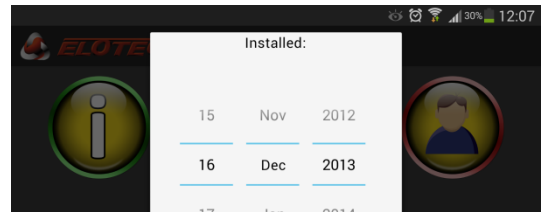
### 1.5.4. Connecting to a new Aspect for the first time

When the app connects to an Aspect device it doesn't already know about, you will be asked to register system data.

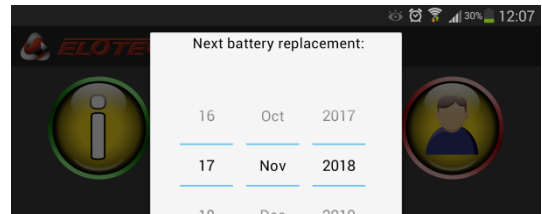
On later connections to the same Aspect, data for this device will be loaded automatically.



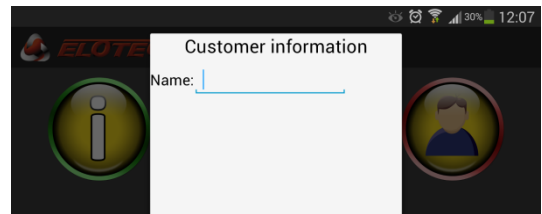
Register the date of installation. The current date is automatically suggested.



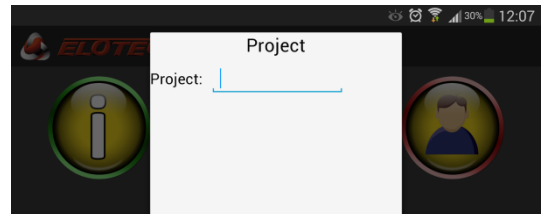
Set a date for the next battery replacement. Elotec recommends that standard lead-acid batteries are replaced every three years.



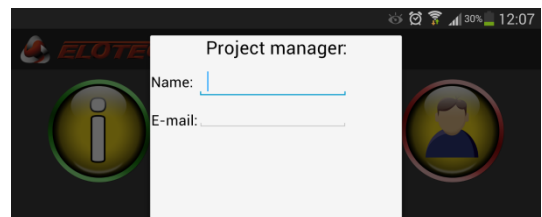
Register the name of the customer.



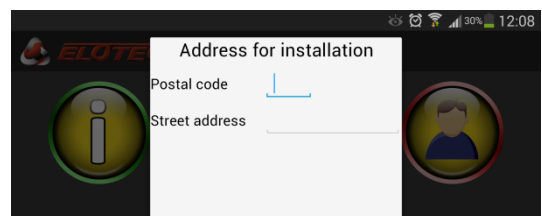
Type a name for the project or installation. Use a description that will allow you to recognize the installation later. If you input a known customer in the previous stage, existing projects registered on the same customer will be suggested.



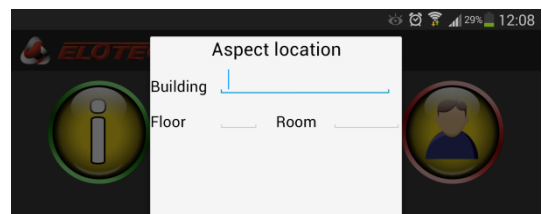
State who is responsible for the project. This could be your group leader, or an external consultant. Copy of system documentation will be sent to the e-mail address given here.



State where the system is installed. Postal code must be provided, street address is optional.

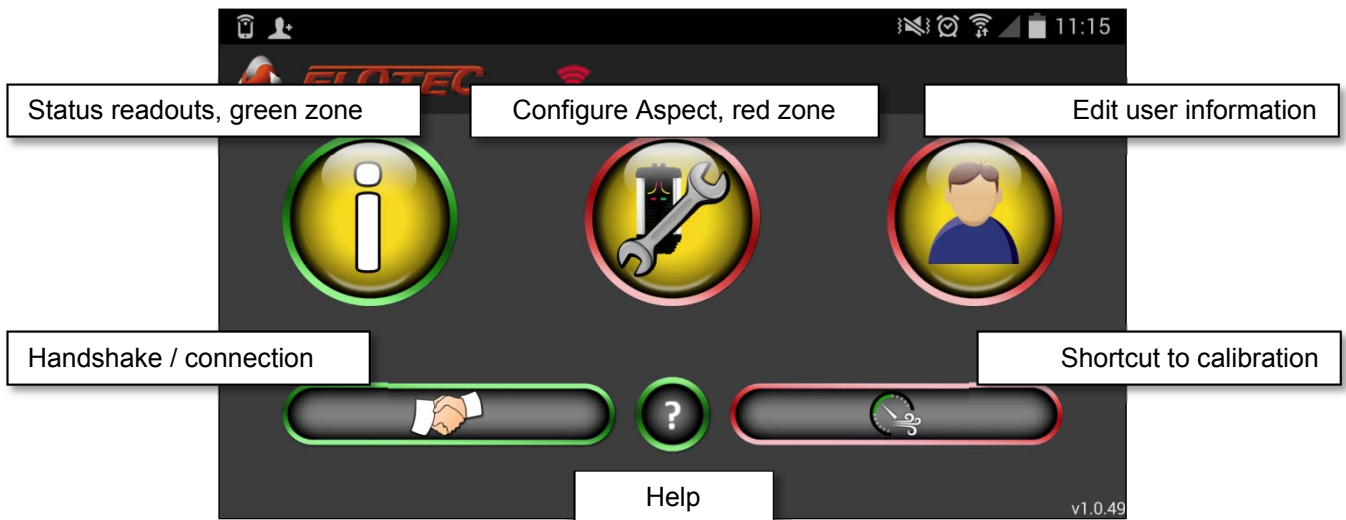


Describe the location of the Aspect within the installation, so that you can easily find it again later.



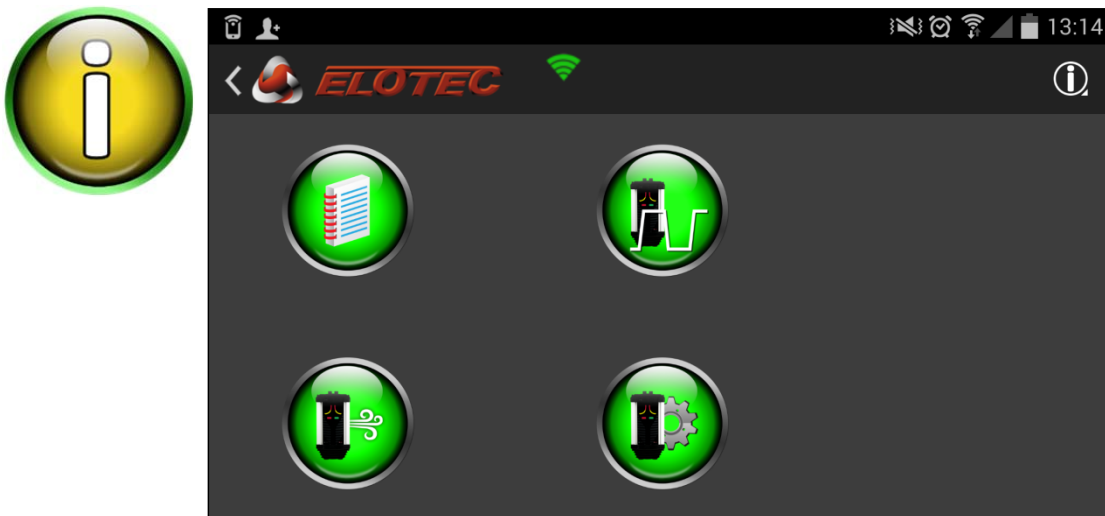
### 1.5.6. Overview

The following screen is displayed when you start the app. Here, you will find icons to access the different functions. The app has been divided into two zones – a “green zone” for safe readout of information, and a “red zone” for making changes to the Aspect. Also on the start screen, there is a separate button for initiating a connection with an Aspect, and a shortcut to the calibration screen for ease of access during commissioning.



#### Status readouts, green zone

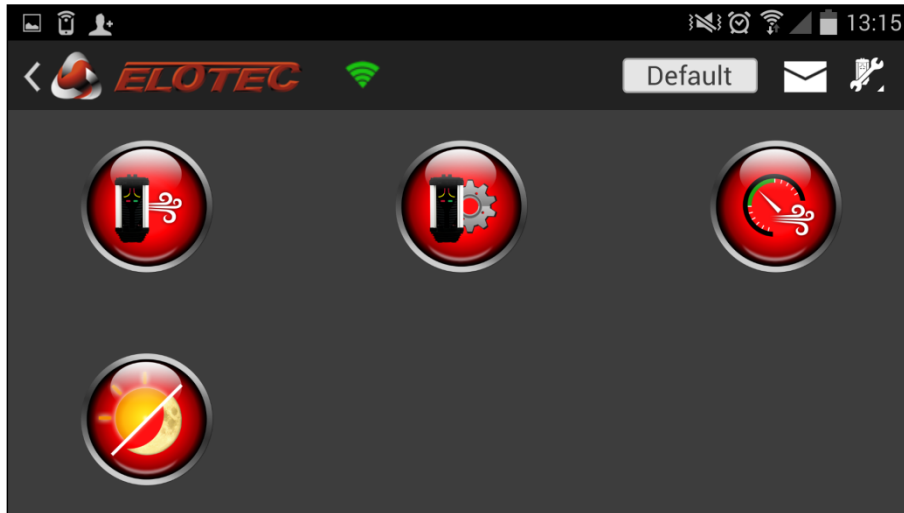
The *green zone* represents safe functions for readout. It is not possible to make changes to the configuration through these functions.



- Event logs
- Program parameters (air flow/disablement)
- Status information
- Program parameters (power/signaling)

### Configuration, red zone

The *red zone* represents functions that will affect the operation of the Aspect.



- Configuration (air flow/disabling)
- Configuration (power/signaling)
- Calibration
- Day/night mode

### User information

Under user information, you provide contact information that is used for filling in and sending system reports. The account ID is automatically retrieved from your phone (Android only), and is used for licensing. The fields *Name*, *Company*, and *My e-mail* must be filled in before you can start using the app. Touch the diskette symbol to save changes.



ELOTEC	
Account ID:	lucas.strohm@gmail.com
Name:	Lucas Strohm
Company:	Electrician Ltd.
My e-mail:	lstrom@electrician.com
Copy to:	projectmanager@electrician.com
Copy to:	

## 2. OPERATION



### 2.1 INDICATIONS

Green Power LEDs on:	Normal operation
Green Power LEDs off:	Mains power is missing
Green Power LEDs flashing:	Abnormal condition, battery or charger (specified in event log)
Service LED flashing:	Aspect not calibrated
Red area LED on:	Smoke detected in corresponding area
Yellow area LED flashing:	Area disabled
Yellow area LED on:	CleanMe
Service LED on:	Generic service message (specified in event log)
Sounder LED on:	Service required on sounder output – open circuit or missing EOL
Sounder LED flashing:	Test mode

### 2.2 BUTTONS

Two buttons – red and green – have different functions depending on product version.

*NB! Make sure the text inserts are installed correctly.*

#### **Stand-alone Aspect:**

Red button: Deactivate the integrated sounder output.

Green button: Reset the Aspect.

*NB! Silencing the attached sounders with the red button will activate the fault output. This is logged as proof of intentional user operation.*

#### **Addressable / conventional:**

Red button: Disable Aspect (both areas).

Green button: Re-enable Aspect (only for local disablement with powered loop).



Buttons may also be used to configure the Aspect directly at the device if you cannot connect using **Aspect Tool** on your smartphone or tablet. See Appendix E – Program functions, page 48.

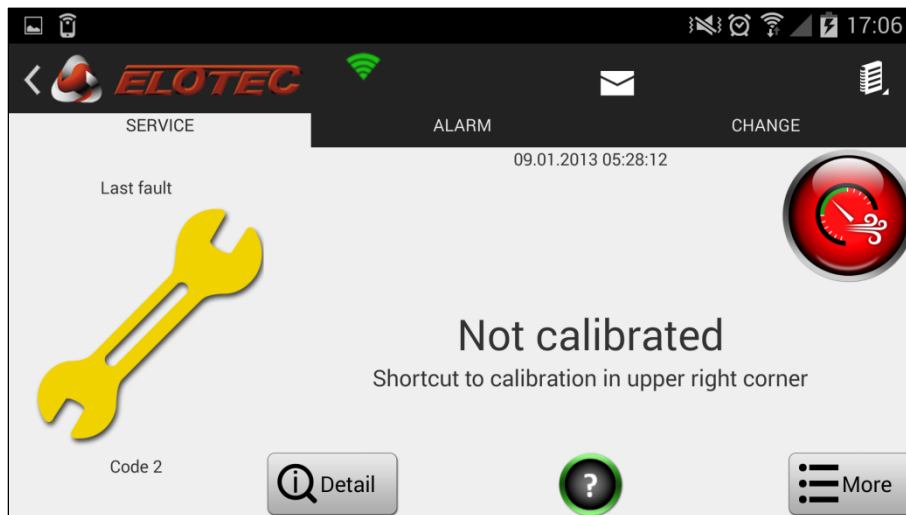
## 2.3 STATUS READ-OUTS

This section describes how to read information from the Aspect by using the Aspect Tool app for smartphones. These are safe operations that are carried out in the *green* zone of the app – no settings can be changed here.

The descriptions assume that you are already connected to the Aspect as described in section 1.5.3, page 9.

### 2.3.1. Event logs



In Aspect Tool:  →  Description of and recommended action for the last event is displayed.



This screen has three tabs, letting you switch between showing the latest service message, latest alarm and latest configuration change.

- The *Detail* button will display detailed information on system values at the time of the event.
- The *More* button leads to a combined list of all logged events.
- The envelope icon at the top lets you send the event log to a given e-mail address.
  - Please note that the e-mail will not be sent immediately – you have to disconnect from the Aspect and connect to a mobile or wireless network with an Internet connection first.

### 2.3.2. System and real-time information

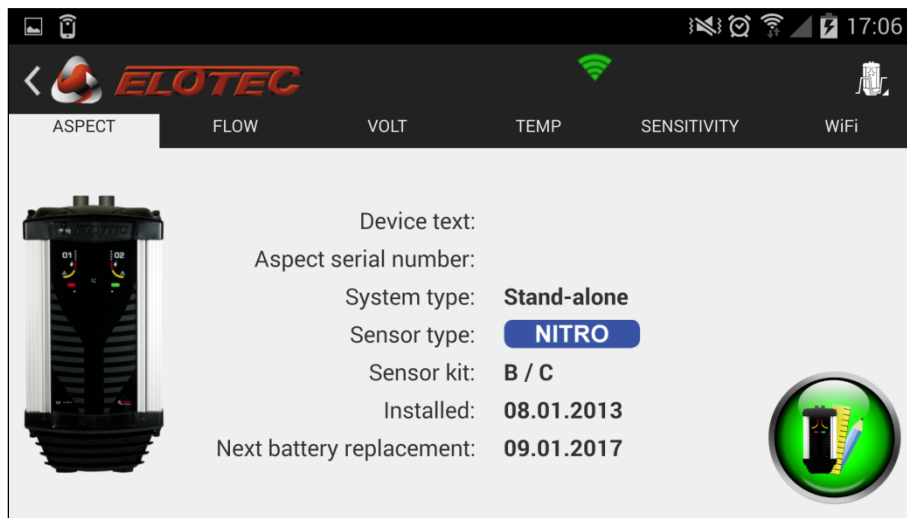
In Aspect Tool:  →  Status information divided onto several tabs.

#### 2.3.2.2. ASPECT tab – generic device information

This tab displays an overview of useful information such as serial number, product variant and key dates.

System type: Aspect employs customized firmware based on the type of system it is meant to connect to.

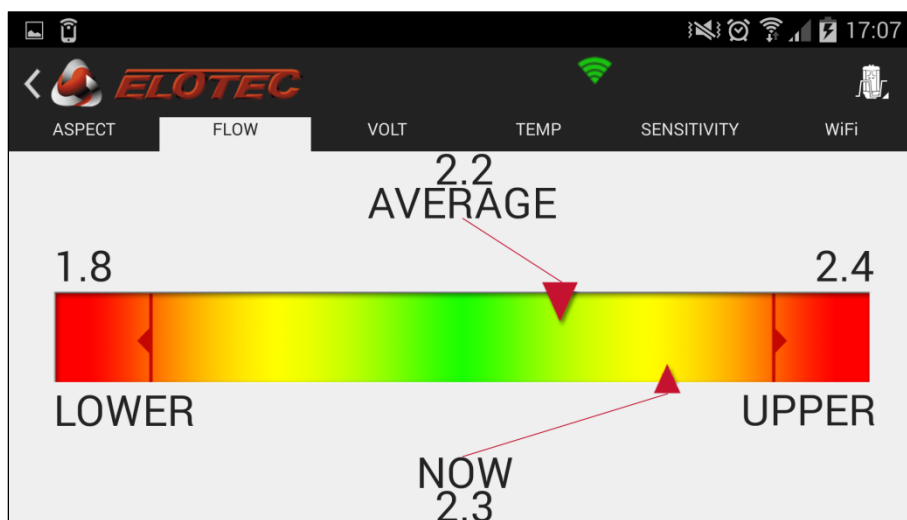
- Conventional
- Addressable
- Stand-alone



#### 2.3.2.1. FLOW tab – air flow and calibrated thresholds

It is recommended to write down these values. Check that the actual air flow is not too close to the thresholds for no reason.

The Aspect door shall be closed during readout of flow values.





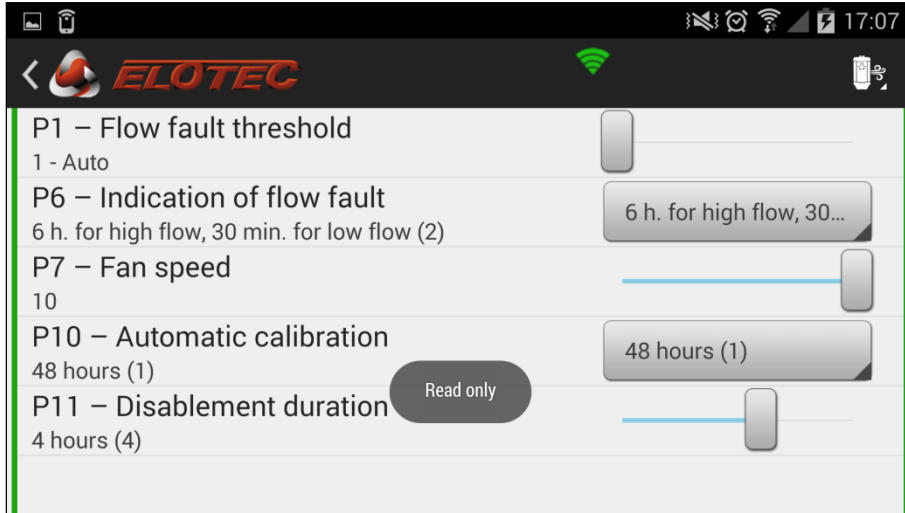
The value AVERAGE is the mean flow value over the last 3 hours, and this is the value you should relate to in order to determine if conditions are OK / Aspect is correctly calibrated



The value NOW is the real-time flow integrated over 10 seconds, and will let you see continuous variations.

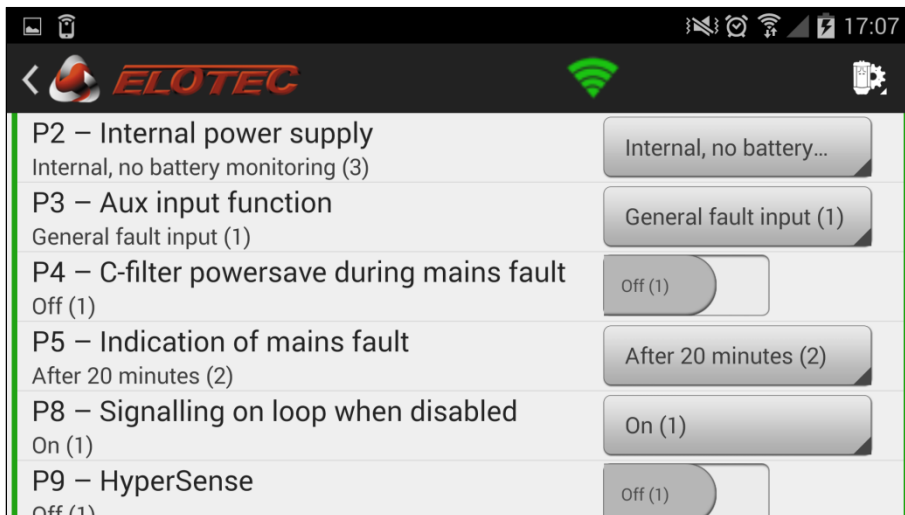
### 2.3.3. Program parameters

It is easy to verify the value of program parameters with no risk of changing anything. Parameters have been divided into two groups as shown below. For an overview of possible values, see Appendix E – Program functions, page 48.

In Aspect Tool:  →  Parameters related to air flow and disablements.



In Aspect Tool:  →  Parameters related to power, signaling and sensitivity.





## 3. PROCEDURES FOR ALARMS AND FAULTS

### 3.1. FIRE ALARM

The alarm location is specified through zone indication or device text on the connected fire alarm panel (if any). A red LED on the ASPECT front indicates the area where smoke has been detected.

Check all rooms that are covered by the indicated pipe area. If no visible smoke can be observed, it is necessary to inspect the area carefully.



A smoldering fire may not be visible until it bursts into flames at a much later time.

Operation varies, depending on whether the Aspect is connected to a fire alarm panel or not.

#### **Aspect connected to a fire alarm panel:**

Alarms are silenced and reset at the control panel – no operation is required at the Aspect

#### **Stand-alone Aspect:**

Red button: Deactivate the integrated sounder output.

Green button: Reset the Aspect.

*NB! Silencing the attached sounders with the red button will activate the fault output. This is logged as proof of intentional user operation.*


### 3.2. SERVICE ALERT

Conditions that require action by the end user or installer are indicated by the generic service LED on the ASPECT front. To determine the nature of the condition, check the event log.

The purpose of service messages is to make the user aware of internal or external conditions that may affect the functionality of the aspirating smoke detector system if the condition persists. It is important that the cause is identified, and any non-conformities are corrected. Please note that certain service messages are normal after events such as power outages, but may indicate a problem if the message persists after the situation has returned to normal.

Events are easily displayed in Aspect Tool, but could also be indicated by blinking patterns on the device.

In Aspect Tool:



Recommended action for the latest event is displayed.

Operation varies, depending on whether the Aspect is connected to a fire alarm panel or not.

#### **Aspect connected to a fire alarm panel:**

Service alerts are silenced and reset at the control panel – no operation is required at the Aspect.

Please note that if the cause of the alert has not been corrected at the device, the alert will return. If an Aspect loses all power and shuts down, a fault will be displayed at the control panel.

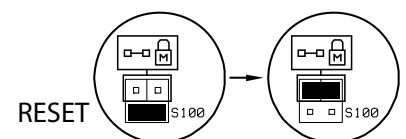
#### **Stand-alone Aspect:**

Red button: Deactivate the integrated buzzer.

Green button: Reset the Aspect.

Please note that the fault relay is fail-to-safe, and will trigger if Aspect loses all power.

The event log can be cleared by shorting S100 (Appendix A, item 14 – page 44) for a moment. This could be done after an annual inspection of the installation.



## 4. PIPELINE PARTS AND ACCESSORIES

### 4.1. SAMPLING PIPES

#### 4.1.1. General

Air samples are transported to the detection chamber in ASPECT through pipes. ASPECT systems use pipes with an outer diameter of 25 mm and an inner diameter of 22 mm.



Original pipes are marked with the Elotec logo to assure that approved pipes are used. Marks are also applied at one metre intervals to assist in correct placement of sampling holes, as well as a guide line along the length of the pipe to help avoid twisting the pipeline.



According to VdS/EN54-20, pipe parts must comply with EN61386-1, at least class 1131. Use only approved original Elotec pipes that fulfil additional demands to rigidity (prevents drooping) and surface finish. See "IMA 000 109, Pipe layout design and tables".

Elotec pipes are delivered in 4 m segments that may be cut to length where needed. To ensure clean cuts with no burrs, use the ELOCUT cutting tool.



Joins are made through special sleeve couplings or bends – no glue is needed, as the sleeves are conical and supplied with a sealing agent inside.

The entire pipe system is fixed to walls and ceilings using fastening brackets. The standard clamp CL 250 is open, and the pipes can be pushed straight in. The clamps are spacious enough to allow free movement of the pipes, which is important where large temperature variations are to be expected. Wire suspension is also an option.



CL 250



CL 255



CL 250 W



CL 251 W

Other parts may be used in certain applications.

## 4.1.2. Parts overview

The following are the parts that may make up a pipe system:

4 m lengths of 25 mm pipe:

- PL 252 P – grey plastic, standard package of 13 pipes (total 52 m)
- PL 252 – grey plastic, single pipe
- PL 253 P – red plastic, standard package of 13 pipes (total 52 m)
- PL 253 – red plastic, single pipe
- AL 250 – aluminium, single pipe

Sleeve couplings:

- SK 252 – grey plastic
- SK 253 – red plastic
- AL 250 S – aluminium

Bends:

- BE 252 – 90° grey plastic
- BE 252-45A – 45° grey plastic, f/f
- BE 252-45B – 45° grey plastic, m/f
- BE 253 – 90° red plastic
- BE 253-45A – 45° red plastic, f/f
- BE 253-45B – 45° red plastic, m/f
- AL 250 B – 90° aluminium

Fastening brackets:

- CL 250 – simple bracket, grey
- CL 250 W – simple bracket for wire suspension, grey
- CL 251 W – 'S-hook' bracket for wire suspension, black
- CL 255 – closed bracket, roomy, white

End plug:

- EP 250

Special purpose parts:

- THUB – mounting bracket / pipe splitter / condensation reservoir \*
- THUB-LK – extended condensation reservoir for use with THUB \*
- LK 501 – condensation reservoir for use on pipeline
- VF 250 com – heavy duty dust and condensation filter
- AU 002 – air exhauster kit
- GG 256 – 80 cm sampling branch \*
- GG 006 – 40 cm branch extension \*
- SN 250 – sampling point – clips directly onto tube \*
- SN 285 M – flexible sampling tube, plastic head, 75 cm \*
- SN 253 P – flexible sampling tube, plastic head, 300 cm \*
- SN 253 S – flexible sampling tube, steel head, 300 cm \*
- KG 250 – 4-way join, grey (special applications only) \*
- KG 253 – 4-way join, red (special applications only) \*
- TG 250 – 3-way join (special applications only) \*
- PLP 210 007 – 2-1 hub for combining areas into one pipeline \*



\*) Part has not been tested by VdS, and shall only be used as instructed by Elotec.

## 4.2. AU 002 AIR EXHAUST KIT

### 4.2.1. Purpose of the exhaust kit

ASPECT can be equipped with an optional air exhaust kit. The AU 002 has three main applications:

1. If ASPECT is mounted in a room with much airborne dust, it is advisable to install the AU 002 with 0,5m lengths of pipe to lead the exhaust away from the unit. Otherwise, dust may be dragged back into ASPECT because of turbulence around the exhaust port.
2. If there is a large difference in pressure between the area where air is sampled and the spot where ASPECT is mounted, the AU 002 must be employed to lead exhaust air back into the protected area in order to negate the pressure difference. Both areas must draw air from rooms with approximately the same pressure.
3. Sometimes, the ASPECT may be placed in an office, while sampling air from areas with smelly environments. In this case, the exhaust kit may be used to redirect air to avoid unpleasant smells.



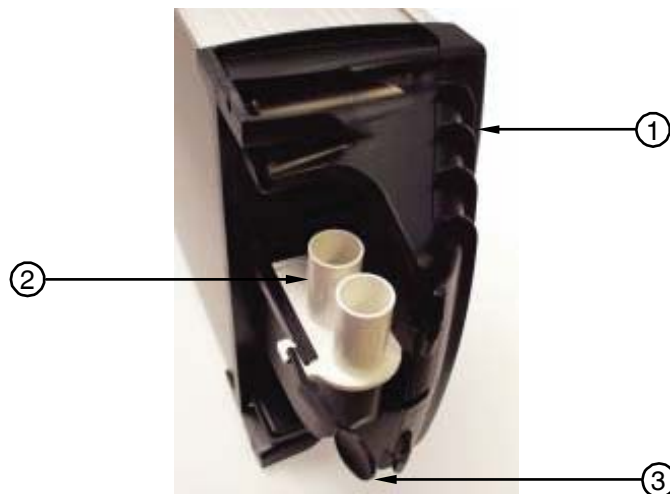
The length of the exhaust pipes must be calculated into the total pipe length. If very long exhaust pipes are required, it may be necessary to shorten the sampling pipes in order to keep the response time of ASPECT within the given limits. As a rule of thumb, exhaust pipes shall be no longer than 4m.



The AU 002 can also be fitted to reduce noise from the ASPECT where the sound of the fan is considered disturbing (like in churches and office environments).

### 4.2.2. Installing or removing the exhaust kit

The exhaust kit is easily installed without tools. Just set the kit into the slot in the exhaust port as shown in the picture, and push until it snaps into place.



ASPECT fitted with AU 002 exhaust kit

1. Bottom cover
2. AU 002 exhaust kit
3. "Key" used for release



The AU 002 accommodates two exhaust pipes, and both must be fitted.

If the kit needs to be removed, one of the "keys" located inside the ASPECT bottom cover may be used to release the snap as shown in the picture. The AU 002 is then easily pulled free.

### 4.3. SNIFFER \*

#### 4.3.1. Purpose of the sniffer

The Elotec Sniffer may be used where it is desirable to conceal the pipeline (for example in churches) and/or there is a need for protection against insects, such as in greenhouses. The sniffer can also be drawn into fuse boxes, server racks and such, to achieve optimal detection in critical spots.

**NB!** Unoriginal sniffers with filters in the head must not be used, as this naturally impairs the function of the systems when the sniffers are installed in hard-to-reach places.

We have chosen to make the sniffer look like a detector in miniature, to avoid painters / craftsmen filling or clogging the sniffer. The sniffer head has a diameter of 3,5 cm, and fits tubes with an inner diameter of 5 mm.

Beyond the outer cover, the actual opening has been divided into four carefully dimensioned holes so that insects cannot become stuck and clog the tube or pipe.

The sniffer **SN 258 M** sports a flexible tube with a steel outer screen that protects against mice and other pests chewing holes in the tube in inaccessible spots. The sniffer is normally supplied with 75 cm of tube.



The sniffer **SN 250** snaps directly onto the pipe over a pre-drilled hole with a diameter of up to 7 mm.



The branch **GG 256** has an 80 cm rigid capillary pipe leading to the head, and is used in situations where the sniffer head can't be fastened to a ceiling.



See also "IMA 000 109, Pipe layout design and tables".

#### 4.3.2. Installing a sniffer with sleeve

- Drill a hole with a diameter of 13 mm in the ceiling.
- Fit the sniffer insert in the pipeline like a regular sleeve coupling. The tube should exit from the top half of the pipe.
- Remove the outer cover from the sniffer
- Pull the tube through the hole in the ceiling, and press it firmly onto the sniffer head.
- Guide the sniffer head into the through-hole.
- Fasten the head using 3 mm wood screws, and press the outer cover back in place.



\*) Sniffer has not been tested by VdS. Use only as instructed by Elotec.

## 4.4. VULCAN DUST- AND CONDENSATION FILTER

### 4.4.1. Purpose of the filter

The VULCAN is designed to remove harmful dust and condensation from the sampled air before it enters ASPECT. The filter is only needed in environments with extreme amounts of dust, as the ASPECT has integrated filters and specially constructed sensors that reduce the influence of dust.



Scan the QR code on the right with your phone to see a video on [www.youtube.com/elotecno](http://www.youtube.com/elotecno).

VULCAN combines an advanced dust filter with a condensation reservoir, so that the LK 501 condensation reservoir is not needed when the VULCAN is used.

The VULCAN has been carefully designed not to increase transport time by more than five seconds.



The dust and condensation reservoirs located in the bottom part of VULCAN are to be checked and emptied regularly.

### 4.4.2. Installing the filter

The VULCAN shall be installed immediately before pipe entry into ASPECT, as shown below. Use the THUB adapter on ASPECT to ensure compact and tidy installation.



*ASPECT with VULCAN*



*VULCANs installed back to back*



It is important to connect the VULCAN to earth to avoid static build-up that will affect the performance of the filter.

## 5. PLANNING

### 5.1. CABLE

- Cables must be selected according to the requirements of the system in which ASPECT will be used.
- The necessary dimensions of the cable will depend on the number of detectors connected to the loop, and the total length of the loop. Likewise, conductor dimensions may limit the permitted length of the loop, or the number of connectable devices.
- National or local regulations may specify minimum requirements for alarm system cable.



In harsh environments, all connections must be protected from corrosive agents. For this reason, use only approved Scotchlok (UY), Tel-Splice-AMP clamps or similar clamps that are greased in order to provide such protection.

### 5.2. PIPELINES

#### 5.2.1. Pipe length

Sampling pipe layout must be designed to sample air from all of the protected area, while keeping the transport time within the specified limits. VdS/EN54-20 sets this limit at 60 seconds. The number of pipelines that may be connected to the ASPECT 2010 depends on the required sensitivity class.



The Aspect must not be used without reduction on area 1 and 2, as this could affect the calibration of the flow sensor. At least 10 m of pipe must be connected to each of the two areas.

Refer to "IMA 000 109, Pipe layout design and tables" for details.



100 m of pipe enables the covering of large areas, but is not suited for detection in many small rooms. If a pipe is run through too many rooms, identifying the exact location of the fire will take too long.

#### 5.2.2. ASPECT placement and pipe path

Temperature, air pressure and humidity need to be taken into consideration when deciding the placement of ASPECT and the path of the sampling pipes.

ASPECT should not be placed in cold rooms, unless the sampled air also comes from cold rooms.

As warm air is sucked into a cold room, condensation will form. If the temperature of the room is below freezing, this condensed water could freeze inside the pipe and clog it. For this reason, pipes must always run from cold rooms to warm ones wherever possible. If not, VULCAN or condensation reservoirs must be installed to eliminate the condensation before it enters the ASPECT.

The pipe shall always be allowed to run 2 m inside the room where ASPECT is mounted before entering the detector.



Installation in environments with temperatures above the specified maximum could influence certain system components. The device and electronics can handle 60 °C, while lead-acid batteries must not be charged at above 50 °C. Consider temperature variations with regard to mounting height, and allow for self-heating and potential solar heating.

Make sure there is enough space on each side of ASPECT for installation of any required filters and condensation reservoirs.



Both areas must draw air from rooms with approximately the same pressure. If the secured area has significant negative pressure in relation to the room where the Aspect is mounted, an exhaust kit must be used to equalize the pressure.

#### 5.2.3. Sampling points

Placement of sampling points must satisfy demands to area coverage as described in local or national regulations. For this purpose, each sampling point can generally be considered a smoke detector.

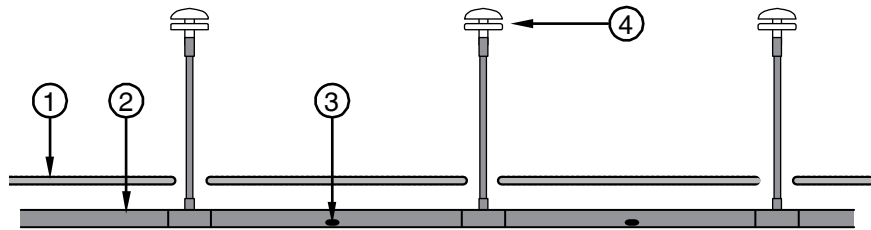
Sampling points must not be placed closer to ventilation fans than 100-150 cm.

The size of each sampling hole is determined by the desired sensitivity class.  
Refer to "IMA 000 109, Pipe layout design and tables" for details.

### 5.3. SPECIAL APPLICATIONS

#### 5.3.1. Greenhouses

In greenhouses where screen curtains are employed, it is necessary to make the system capable of detecting smoke both under and above the curtains as if they were separate rooms. Elotec provides solutions for this.



1. Screen curtain
2. Sampling pipe
3. Sampling point
4. Sniffer on extension branch

#### 5.3.2. Poultry and pig farms

Because of the dust and pressure conditions present in poultry houses and pig stables, certain special steps must be taken.

It is recommended to place ASPECT in a room immediately adjacent to the actual animal room. Because the ventilation systems commonly used in such rooms create a large negative pressure, an air exhauster kit (AU 002 standard or AU 003 in conjunction with VULCAN) must be fitted, and pipes run back into the animal room to negate this pressure difference that might otherwise affect the airflow.



If ASPECT must be placed inside the animal room itself, an air exhaust kit with short pipes (0.5 m) must be installed to avoid dust being whirled into the ASPECT through the exhaust port due to turbulence.

Both areas must draw air from rooms with approximately the same pressure.

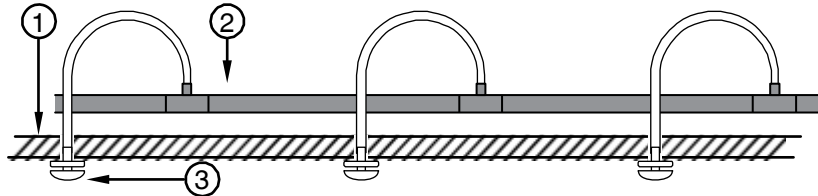
Because of the large amounts of dust usually associated with poultry and pigs, the VULCAN dust- and condensation filter must always be installed when using ASPECT in poultry houses or pig stables.



### 5.3.3. Churches

The ASPECT constitutes an early warning system that is most suited to churches, and with the use of flexible sampling tubes\* it can also be very discreet.

Pipes should be placed in the church attic, and 'SN 285 M' sampling tubes mounted to extend through the ceiling into the church room proper. Only the moulded head of the sniffer will be visible. The sniffer tube is fitted with a flexible steel screen to protect against mice or other pests chewing holes in inaccessible locations.



1. Ceiling
2. Sampling pipe

3. Sniffer \*

Sniffers may also be placed in the eaves of the church roof to provide outside detection.



When using extended sampling points (branches or sniffers) the end of the pipe must always be plugged.

3-way or 4-way joins may be used to make pipe branches in multiple directions for more effective coverage of the church room. All branches must have equal air pressure and sample air from the same room.

### 5.3.4. Deep freeze storage

Elotec ASPECT has features that make it well suited even in rooms with temperatures far below freezing.

In freezer units, Aspect Grizzle with class C sensors (AE2010GN) is recommended. Additionally, one needs to be aware of the following items:

#### Settings:

- Condensation filter must be active during power outages (P4=1). Standard setting.
- Fan must run when device is disabled (P8=3) and during freezing/defrosting. Standard setting.

#### Pipelines:

- Install pipes with 15-25 cm distance from the ceiling, using spacers or wire suspension.
- Use sampling holes with a minimum diameter of 3 mm.
- The Aspect should be installed in the same room as the pipeline, and an exhaust kit AU 002 with at least 30 cm of pipe is recommended.

#### Batteries:

- Please be aware that batteries have their internal resistance increased, and thereby their capacity reduced, in low temperatures.
- Contact Elotec if extra capacity or assistance with calculations is required.

\*) Sniffer has not been tested by VdS. Use only as instructed by Elotec.

## 6. INSTALLATION

### 6.1. PIPES

#### 6.1.1. Preparations

Survey the planned path of the pipe. Determine obstacles that may require special attention / routing (walls, beams, ventilation, etc.).



The pipes must be mounted according to project drawings made by an authorized planner.

#### 6.1.2. Installation

Drill holes through walls where required.



When threading pipes through walls, plug the end of the pipe using EP 250 end plugs to prevent insulation and other objects from entering the pipe.

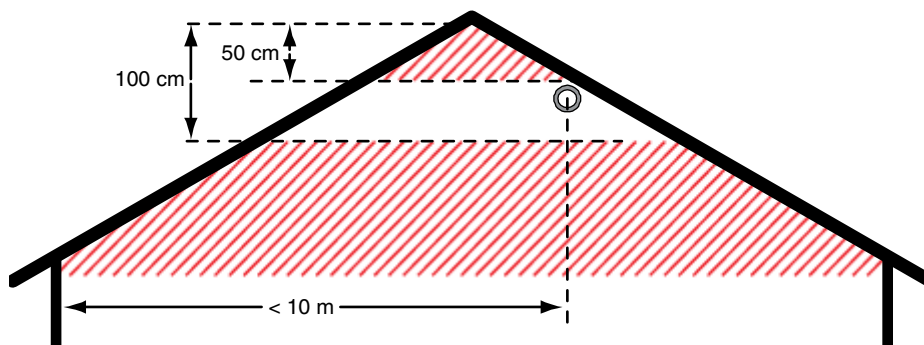
Fix brackets to walls and ceilings along the path of the pipe. Distance between fixing points should not exceed 1 m, and the pipe must be fixed so that the joints are stable. In environments with severe temperature fluctuations (for example near the outer roof in barns or warehouses, or in greenhouses), the pipes may shrink and expand. To avoid that this causes joints to slip, use fastening brackets that will allow the pipes to move. Original Elotec brackets have been designed with this in mind – make sure that ELOTTEC is embossed on the clip. (Older brackets without the ELOTTEC marking are tighter.)

Set the pipe segments firmly into the brackets, and connect them with sleeve couplings and bends. No glue is necessary – Elotec bends and sleeves contain a pre-applied sealing agent.

If wire suspension is employed, hang the wire first. *NB! Use only silk covered wire, which will not corrode and also provide less friction for the clamps.* Then, place clamps on the pipe, and slide these onto the wire from one end. Adjust each join to avoid twisting, so that the holes are correctly placed along the pipeline.



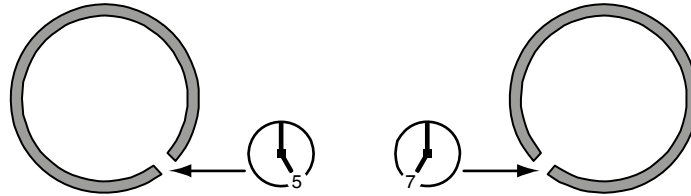
When connecting pipes, take extra care to make the joints tight. It is important to press the pipes into the sleeves tightly. Failure to do so may cause “false air” to be sucked in through the joints, which will adversely affect the performance of the system.



Installation of pipeline under gabled roofs. Correct distance to peak is important.

### 6.1.3. Sampling points

Drill sampling holes in the pipes as specified in the planning stage. The holes are to be drilled in the lower part of the pipe. It is recommended to place them a little off-center (5 or 7 o'clock), rather than directly underneath, to reduce the possibility of foreign objects in the pipe blocking the holes.



Make sure that the diameter of each hole is exactly as stated on the drawings. Clean the holes after drilling – ensure that no shavings remain in the pipe and that no burrs are formed on the inside that might cause dust to accumulate.



If the ceiling is very high or difficult to access, it may be a good idea to drill the holes *before* the pipes are mounted.

### 6.1.4. Marking sampling points

After drilling, each hole must be marked using special labels. These assist in locating the holes during subsequent testing or service, and must be placed so that they point in the direction of the ASPECT.



*Correct marking. ASPECT to the right.*

### 6.1.5. Pipe entry into ASPECT

The left-hand pipe entry is assigned Area 1; the right-hand pipe entry is assigned Area 2. Please note that area 1 and 2 refers to the indications on the front of ASPECT. The fire alarm panel may assign these areas to different zones.



Make sure that the pipes are fed into the correct entries as described by the authorized planner, to avoid confusion regarding the area of detection in an alarm situation.

When entering ASPECT, pipes shall not drop straight from the ceiling unless the environment is known to have low humidity (like office buildings and the like). Lead the pipes down slightly away from ASPECT, to yield room for condensation reservoirs and/or pre-filters just before entry.



In humid environments, at least one condensation reservoir shall be mounted on each pipe. LK 501 or VULCAN fulfils this requirement. The condensation reservoir must always be mounted immediately before pipe entry into ASPECT.



*ASPECT with VULCAN and condensation reservoir*



The THUB adapter – allows tidier and more flexible pipe routing, with pipe entries from above, below or from either side, and also enables compact installation of the VULCAN as shown above.

## 6.2. ASPECT

The location of the ASPECT should have been determined during the planning phase. Mount the ASPECT in this place while ensuring there is enough space around the unit. If VULCAN dust- and condensation filters are used, there needs to be enough room on each side of ASPECT to mount the filter.

The recommended mounting height puts the lower edge of ASPECT approximately 1.5 m above the floor. There must also be enough room above the ASPECT to accommodate proper entry for the pipes.



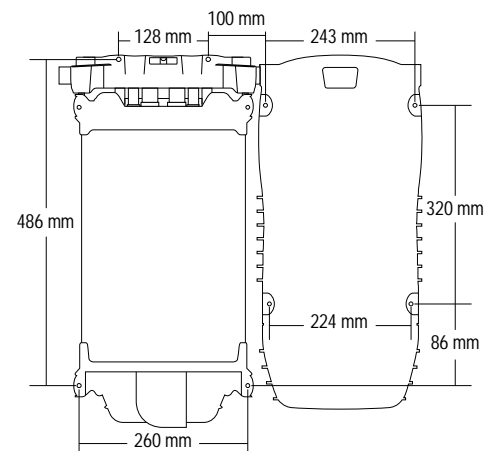
Pay attention to temperature differences with reference to mounting height in particularly hot surroundings. The device and electronics can stand 60 °C, while lead-acid batteries must not be charged at above 50 °C. Take into account self-heating and potential solar heating.

ASPECT is fastened to the wall with four screws through easily accessible outside flanges on the top and bottom parts. As the unit is relatively heavy (because of the lead battery), it is important to fasten it securely to the wall.

Install text inserts – sheets with dual-sided inserts in several languages accompany the device. Inserts are labeled 1 and 2 – numbers must match the slots in the front overlay visible when the top lid is opened). Use the side marked “Standard” for Aspect connected to a panel, and the side marked “Alarm panel” for stand-alone units.

THUB and pipelines can be installed before the ASPECT. In this case, the ASPECT clicks into place underneath the THUB, and you only need to use the two bottom mounting flanges.

Aspect with THUB and Vulcan as seen from behind, with distances between fastening screws.



### 6.2.1. Opening the ASPECT

To access the inside of the ASPECT, do as follows:



1. Open the bottom cover by grasping the recesses in its upper edge, pulling forward and down.
2. “Keys” for opening the top cover are kept inside the bottom cover.
3. Insert both “keys” as shown, and push them towards the housing to lever the top lid open.
4. Pull the top lid out and raise it; the door can now be opened for full access.

### 6.2.2. Cable entry

All necessary cables enter ASPECT through glands on top of the unit.



The mains cable should be fed through the cable entry on the far left, and loop cables (where applicable) on the right to get the easiest access to the terminals.



Remember to seal the cable entries properly when all cabling is complete and all connections have been made.

The ends of the cable inside ASPECT should be approximately 20 cm long.

### 6.2.3. Loop connection

For wired systems, the loop shall be connected first. Please refer to the appendices for details.

Appendix B – Connections for conventional systems, page 45

Appendix C – Connections for addressable systems, page 46



On wired systems where cable runs between buildings, the SURGE surge protection device (part no. SV 200 com) must be mounted on the loop 5-10 m before the ASPECT. SURGE must also be used on the alarm panel side of the loop.



Other surge protection devices than the Elotec SURGE may not be used, as these do not take earth faults into consideration, and will complicate fault finding through constant shorting when triggered.



*The ASPECT has been tested and approved for transients four times higher than described in EN54.*

Surge protection may also be described in national or local regulations.



Use SURGE as a junction box in the transition between the outdoor (underground) and indoor cables.

### 6.2.4. Wireless systems

Wireless systems are connected to the panel through radio communication. Please refer to the respective system manuals for details regarding setup of these devices. Certain auxiliary equipment may be connected by wire to a wireless system. For a simple overview of these connections, see the appendices.

Appendix C – Connections for addressable systems, page 46

### 6.2.5. Mains connection

Mains and earth are connected to the terminals marked '230V AC' on the ASPECT CPU board. (See Appendix A – ASPECT CPU board, page 44). This connection must be performed by a certified electrician.



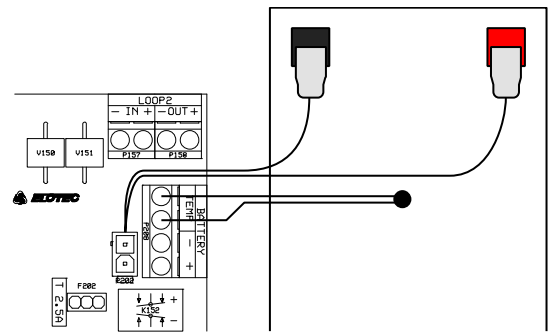
According to EN 60065 (European norms for low-voltage equipment), equipment with a permanent connection to mains shall have a two-pole cut-out switch with a distance between its contacts of at least 3 mm. This requirement is met by installing the ASPECT on a separate circuit with an automatic fuse.

### 6.2.6. Battery connection

As the final step, connect the battery by plugging the battery leads into the socket on the CPU board (see Appendix A – ASPECT CPU board, page 44).

Only sealed lead acid batteries approved by VdS shall be used. Aspect can physically accommodate standard batteries of 7 or 9 Ah. The internal charger is dimensioned for charging up to 24 Ah batteries according to demands in EN54-4, installed in separate enclosure *PowerHouse*.

To ensure proper temperature-compensated charging, a temperature sensor must be placed onto the surface of the battery as shown in the drawing on the right (see also Appendix A – ASPECT CPU board, page 44).



Take proper care of the battery. Lead batteries can be damaged by deep discharge, so if a long-lasting power outage drains the battery completely, it may have to be replaced. If the battery is disconnected for some reason, self-discharge will also permanently reduce its capacity if it is not recharged within 6-9 months. Standard batteries have an expected lifetime of no more than five years, and must be replaced every 3-5 years.



Beware of Electrostatic Discharge while working with the CPU board. To avoid damaging sensitive electronic components, an earthed wristband must always be worn when handling electronics.

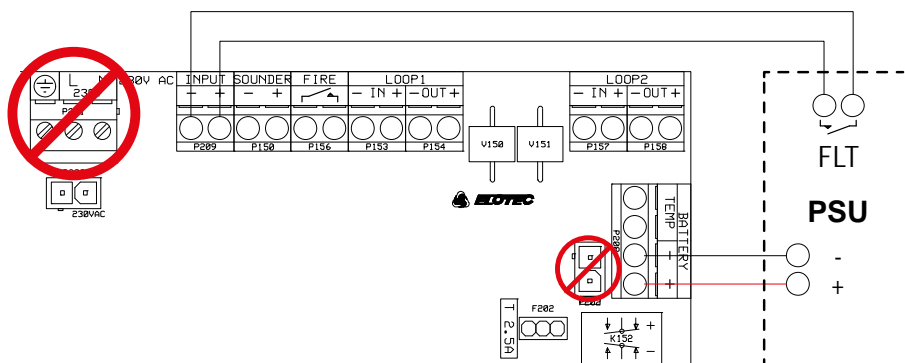
### 6.2.7 External power supply (optional)

The ASPECT may optionally be powered by an external 12 or 24 V PSU in installations where additional backup duration is desired or demanded. In this case, neither mains nor battery connections as described above may be used.



Program parameter P2 must be set to 2 for 12 V or 4 for 24V operation. Additionally, program parameter P3 shall be set to 1 (default) for monitoring of the external PSU. Activation of the Aux input will then be reported as a supply fault.

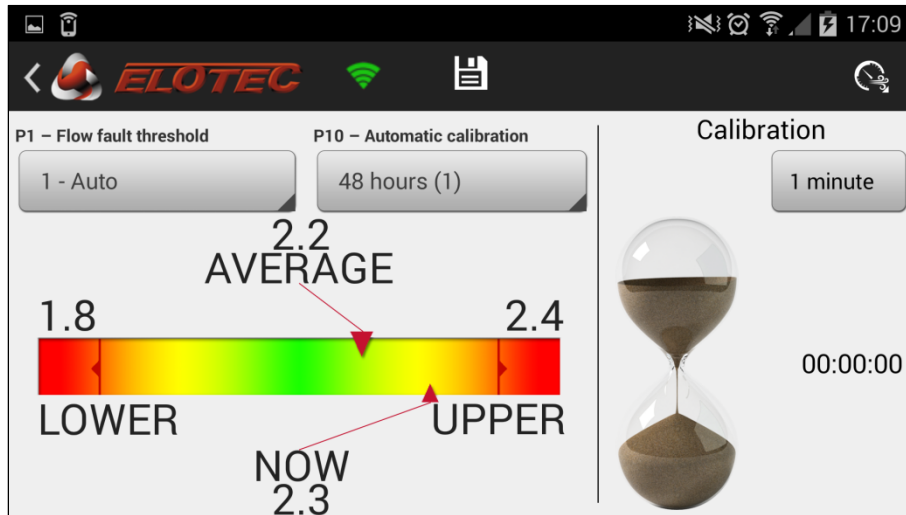
Connect the external PSU with its separate battery backup to the terminals labeled BATTERY +/- on the CPU board (item 9 in Appendix A – ASPECT CPU board, page 44). The fault relay output of the external PSU shall be connected to the Aux input (item 3) for monitoring.



## 7. COMMISSIONING


### 7.1. CALIBRATION

After all connections have been made, the ASPECT must be calibrated to the correct air flow. Tolerance to and warning of changes in the air flow must be adapted to the building mass and usage. See page 48.



Press the button below the *Calibration* header to start the process. The initial calibration will take about one minute, and the remaining calibration time is displayed to the right of the hourglass. After calibration, arrows should be in the green area.

Shortcuts for changing program parameters P1 and P10 are available – touch the diskette symbol to save changes.

 Please note that calibration must only be carried out while pipelines and filters are clean, so that the Aspect has normal operating conditions. Calibration during abnormal conditions will give the Aspect a faulty baseline for monitoring, and will lead to unnecessary service messages.



Write down the values after calibration, so that you can compare during later service visits.

If you don't have access to the Aspect Tool app, calibration may be started by using the buttons on the front overlay of the Aspect:

- NB! Remove memory lock (jumper w/ padlock symbol) on the CPU board. See Appendix. A, p. 44, pt. 13.
- Hold the green button and press the red button 3 times. The Power LED and yellow area LEDs will flash.
- Calibration will nominally take 1 hour. Press any button to expedite the process.
- When calibration is complete, ASPECT will sound a confirmation tone and return to normal operation.
- NB! Replace memory lock when calibration is complete.

See also Appendix E – Program functions, page 48 for further programming options.



## 7.2. IMPORTANT CHECK POINTS

During normal operation, observe the following:

- The mains lamp (green LED on the ASPECT front) is ON.
- The battery is connected.
- Check the status of the LEDs on the CPU board. Only the green LED should be ON when the fan runs.



Beware of Electrostatic Discharge while working with the CPU board. To avoid damaging sensitive electronic components, an earthed wristband must always be worn when handling electronics.

## 7.3. VERIFICATION AND DOCUMENTATION

### 7.3.1. EloVac

The manometer EloVac is an important aid for verifying that the pipeline has adequate suction.

Ensure that the instrument uses the measuring unit  $\text{cmH}_2\text{O}$ , so that values correspond to the ones read from the Aspect.

The instrument is used to measure the vacuum in the outermost hole in the pipeline. The results from the measurement can be fed into Aspect Tool to see if the performance of the pipeline is acceptable.



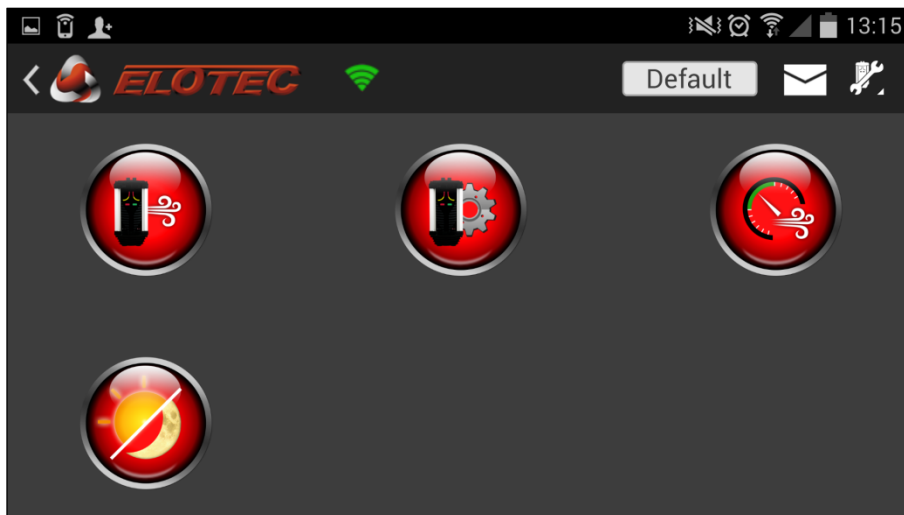
### 7.3.2. System report in Aspect Tool

Aspect Tool includes aids for documenting the aspirating smoke detector installation.

In Aspect Tool:



The following screen is displayed:



A complete report with documentation of the pipeline and an overview of program parameters can be sent by e-mail by touching the envelope icon in the action bar.

E-mail will be sent to your address registered under user information, with cc to recipients specified in the same location.

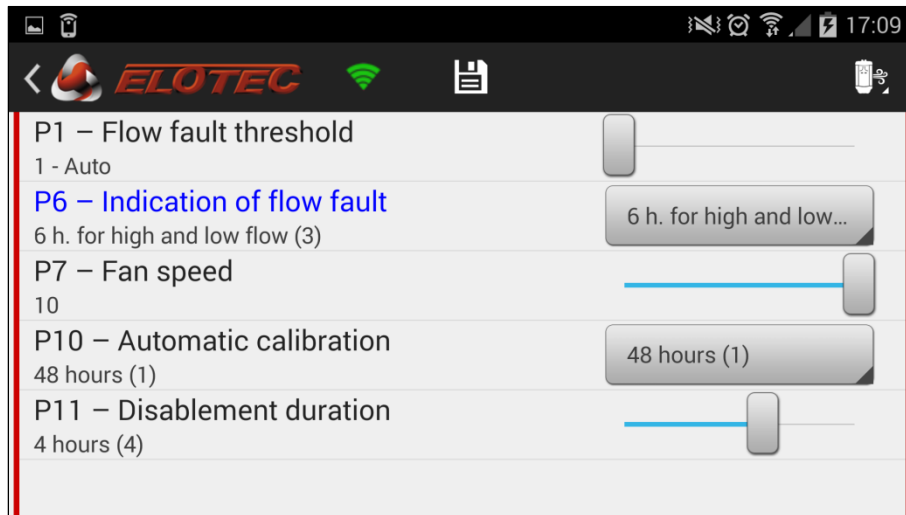
ELOTEC Systemrapport		Elotec Aspect 2010	
<b>Anlägg</b>		Systemtyp:	
Anläggsnummer	Date:	Serierang:	
Anläggsadress		Serierang:	
Idriftsättes/service utfört av:			
Namn		Bero - Adress nr.	
Firma			
<b>Generell information</b>			
System driftsatt (år/mnd/dag):			
Batteri driftsatt/bytt (år/mnd/dag):			
Källström:			
Tastar:			
Hörlåspår:			
<b>Rattförhållanden</b>			
Rat 1	Hull	1	2 3 4 5 6 7 8 9 10
	Diameter		
	Vakuum		
	Transporttid		
Rat 2	Hull	1	2 3 4 5 6 7 8 9 10
	Diameter		
	Vakuum		
	Transporttid		
<b>Luftströmning</b>			
Anord fäst:			
Undersökta gränser:			
Falskolnet			
Rat 1 öng / noll:			
Rat 2 öng / noll:			
Daglig drift:			
Natten startar:			
<b>Spänningssvar</b>			
Laddspänning:			
Batterispänning:			
Trådspänning:			
<b>Temperatur</b>			
Rat 1:			
Rat 2:			

## 8. PROGRAMMING

A number of parameters can be configured to achieve optimal function for the Aspect. See Appendix E – Program functions, page 48 for an overview of these functions.

### 8.1. AIR FLOW AND DISABLEMENT

In Aspect Tool: → Settings related to air flow and disablements

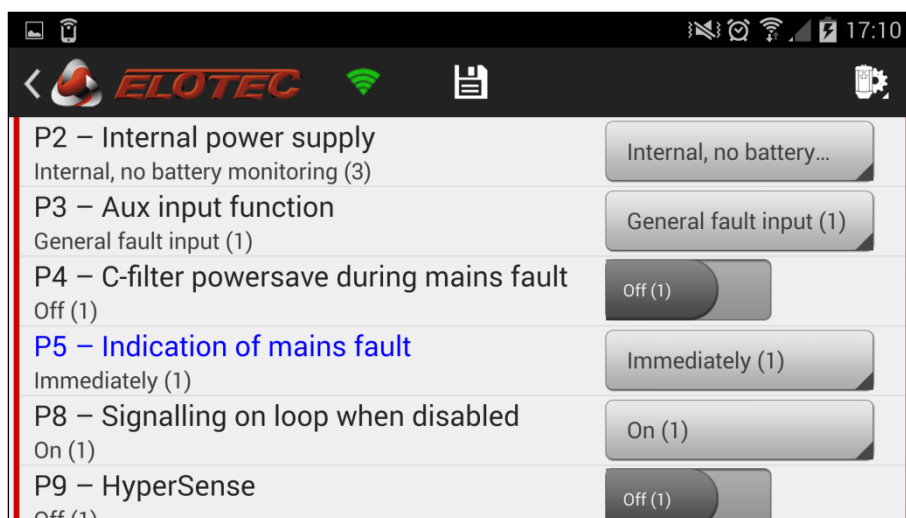


Parameters are changed using sliders and dropdowns. Parameters that have been changed, but not yet sent to the Aspect, are highlighted in blue. Touch the diskette icon to send the changes to Aspect.

**NB!** Fan speed changes immediately on the Aspect when you move the P7 slider. You still need to touch the save button to make the change permanent.

### 8.2. POWER, SIGNALING AND SENSITIVITY

In Aspect Tool: → Settings related to power, signaling and sensitivity.



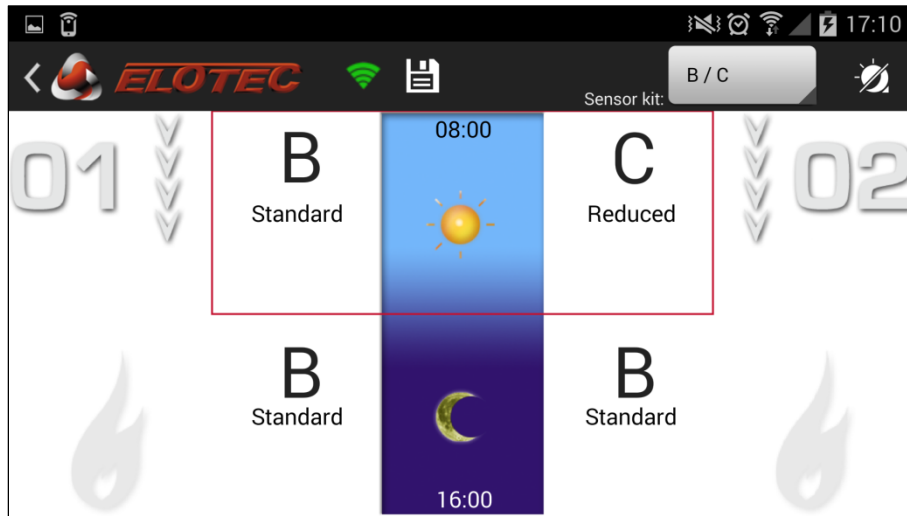
Parameters are changed using switches and dropdowns. Parameters that have been changed, but not yet sent to the Aspect, are highlighted in blue. Touch the diskette icon to send the changes to Aspect.

### 8.3. SENSITIVITY, DAY/NIGHT MODES

In Aspect Tool:

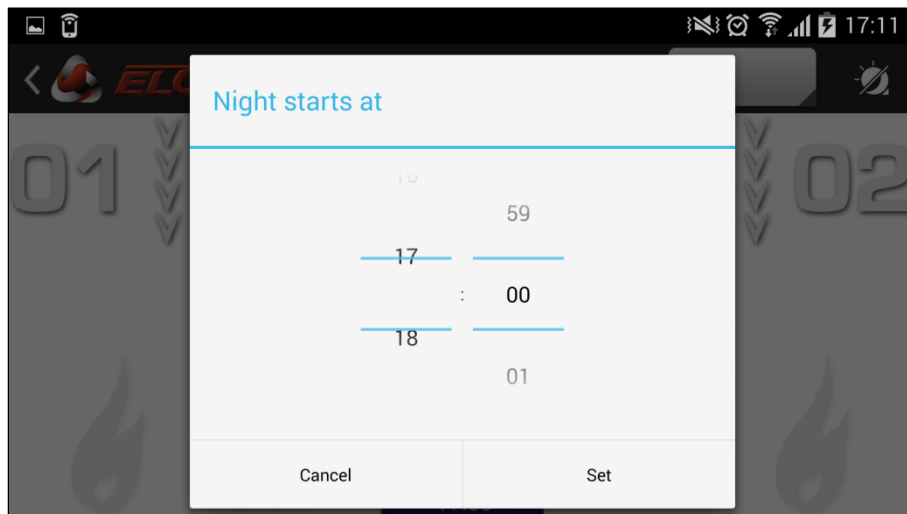


Settings related to sensitivity levels and day/night modes.

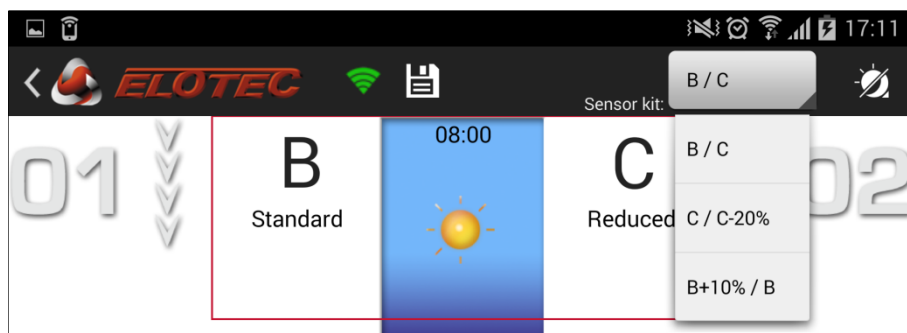


Sensitivity or pre-warning\* can be set per area, and it is possible to differentiate between night and day. Touch the sensitivity indication to cycle through available options.

Touch the sun or moon icons to change the starting time of day and night respectively.



Use the dropdown in the action bar to select which sensor kit is installed in the Aspect. Available sensitivity levels will reflect this selection.



\*) Depending on the version of the Wi-Fi interface

## 9. MAINTENANCE

The AE2010 is, in addition to being highly sensitive for use in computer rooms, built to handle rough conditions with dust, condensation and ammonium gases. It is still important that regular maintenance is carried out to ensure optimal function.

### 9.1. SUGGESTED SERVICE INTERVALS

Check the device six months after installation. If problems with air flow or other unwanted events have already occurred, consider changes in the programming, design of the pipeline, or installation of condensation reservoirs / additional filters. Carry out service including replacement of DIAMANT or main filters, optionally clean the flow sensor. Consider if improved ventilation / filtering is needed in the room in question.

An annual inspection of the system shall be carried out. This inspection must be performed by authorized service personnel, and separate routines for such revision shall be followed. The table below lists recommended service intervals for some typical service tasks.

Action	Interval	Scope / explanation
Verify / clean pipeline	Once a year	Check joins and clamps. Clean clogged sampling holes if needed. Aspect also warns with service code 5 when needed
Replace battery	Every three years, or after service alert.	Standard batteries have an expected lifetime of 3–5 years, after which the performance is reduced.
Replace main filter	Once a year	Aspect warns with service code 4 when needed.
Replace DIAMANT	Once a year	Aspect warns with service code 5 when needed.



We recommend that you read the exact flow value by using the ASPECT TOOL app on your phone and compare to the flow at commissioning.

### 9.2. ANNUAL INSPECTION

The following items shall be reviewed during the annual inspection of the Aspect system:

1. **Verify battery.**
  - Battery should be replaced every three years
  - ... or following an automated battery warning.
2. **Verify pipes.**
  - Check that pipelines are whole and not about to slip apart at the joins.
  - Check that pipelines and sampling holes are open and free of dust or other objects.
3. **Replace main filters and DIAMANT.**
  - Wait for the fan to stop before removing the filter cartridge.
    - Fan normally stops automatically when the door is opened.
  - Make sure the filter cartridge is fitted properly afterwards.
    - Test by running your finger over the cartridge front – see section 9.4.
4. **Verify the filter monitor.**
  - Hold the red button for **10 seconds** – until the Aspect sounds one long beep.
  - The fan stops for a maximum of 50 seconds.
  - If the fan starts again and no service alert is triggered, the filter monitor is OK
5. **Perform functional test.**
  - Use suitable test smoke (TA 010).
  - Apply test smoke to the farthest sampling hole.
6. **Verify that only green LEDs on the CPU board are lit during normal operation.**

### 9.3. TESTING THE ASPECT

A functional test shall be performed during the annual inspection, and it is important to use the correct test materials. Test smoke intended for point detectors is so volatile; it will evaporate before it reaches the sensor. For this reason, test smoke in the form of titanium tetrachloride (TA 010) shall be used.

Test smoke shall be applied to the outermost sampling hole on the pipeline. Apply smoke for approximately 5 seconds.



**IMPORTANT!** Use suitable test materials.

#### 9.3.1 Test Mode (Stand-alone only)

This function is only available on Aspects with the Stand-alone system type. If the Aspect is connected to a fire alarm panel, any test mode is controlled from that panel.

By pressing and holding the red button for **five seconds**, the sounder output will be temporarily configured to only activate in a short burst upon alarm, for more comfortable testing.

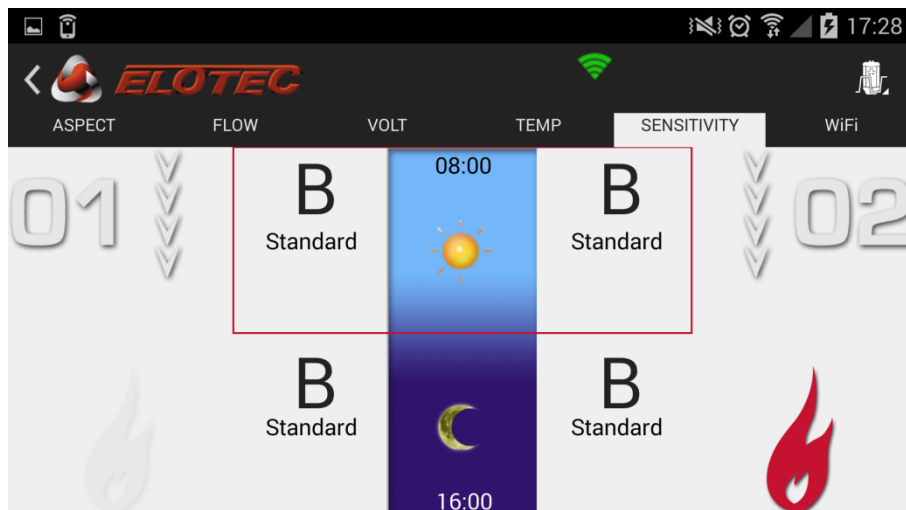
Please note that the fire relay will still activate, so any dialers must be physically disconnected if they are not supposed to activate during testing.



Test mode is indicated by flashing the sounder LED.

Alarms can be reset without exiting the test mode.

The test mode is ended automatically after 60 minutes, or by holding the green button for five seconds.



Use the sensitivity readout screen to see when the sensors detect smoke.

#### 9.4. REPLACING THE MAIN FILTERS

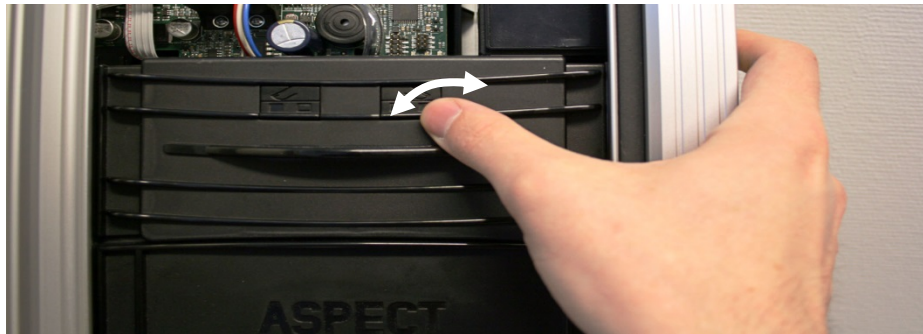
To change the filters, open the ASPECT and wait for the fan to stop. Once the fan has stopped, pull the filter cartridge straight out.

Any dust that is scraped off in the filter openings when removing the cartridge must be wiped or vacuumed off. Remember to clean the grooves around the openings – build-up of dust here may prevent a proper seal.

Filter elements are supplied as separate elements, or pre-installed in a complete cartridge. To replace separate elements, first remove old filters from the front piece by holding it as shown below. Bend the frame outwards, then pull towards your body. Next, push the new filters into place in the cartridge.



Finally, reinstall the cartridge, making sure that it is fitted tightly. Use your thumb to feel that the cartridge front is flush with the two raised areas of the filter housing.



#### 9.5. INSPECTION AND REPLACEMENT OF DIAMANT

The DIAMANT particle filter is cast in clear plastic, and is easy to inspect. The viewport in front appears when the main filter cartridge is removed.

Indications that the filter needs to be replaced:

- Pervasive discoloration of the internal filter pad.
- Accumulation of foreign objects or water.

The filter should be replaced during the annual inspection.

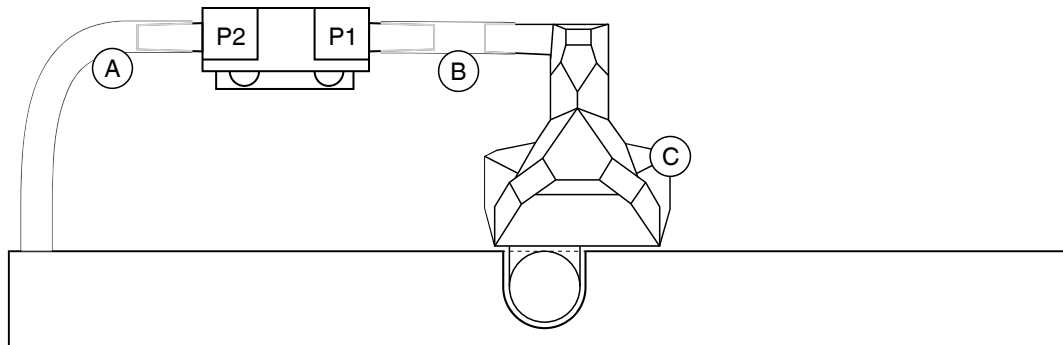
See separate instructions: "IMA 000 120, DIAMANT installation manual", or scan the QR code on the right to watch a video on [www.youtube.com/elotecno](http://www.youtube.com/elotecno).



## 9.6. CLEANING THE FLOW SENSOR

If DIAMANT is not installed (older models have only a long tube 'B'), the flow sensor may be clogged. Use the following procedure to clean the sensor and its connected tubes, then install DIAMANT. Please note that when retrofitting a DIAMANT on a system that previously only had a tube, the Aspect must be recalibrated.

- Disconnect tubes A and B from the flow sensor at P2 and P1.
- Suck any impurities out of each tube.
- Connect a short piece of tube to P1 and suck clean air through the flow sensor.
- Move the tube to P2 and suck clean air through the flow sensor in the opposite direction.
- Reconnect tubes A and B to the flow sensor.



Flow sensor with tubes (A / B) and Diamant (C)



Do not blow into the flow sensor. Wet breath will damage the sensitive components!



It is recommended to use a large syringe with a tip that fits the tubes to suck or blow air through the system. A syringe with an extra length of tube, "SS 001", may be ordered from Elotec.

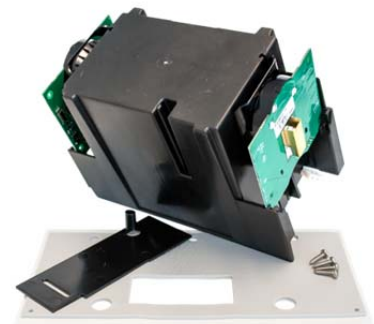
## 9.7. REPLACING THE SENSOR KIT

The ASPECT 2010 has been prepared for simple replacement of the fan- and sensor module on-site.

Replacement is applicable in the following situations:

- Contamination or damage of sensor elements (service code 7 / 8).
- Damage or contamination of the fan, affecting the fan speed (service code 18).
- Changes to construction or use of the building that suggest that the detector should have a different sensitivity.

Sensor kits for ASPECT 2010 are supplied as complete fan housings, containing two sensors, a new bottom seal and screws as shown. The kit is available in three different sensitivity levels for each sensor type. See section 1.3, page 6 for ordering information.



**NB!** Nitro and Grizzle sensor kits are not interchangeable. Installation of the wrong kit will cause a service alert for the sounder output.

Scan the QR code on the right to watch an instructional video on [www.youtube.com/elotecno](http://www.youtube.com/elotecno).



By using the included SENSORKIT-TOOL, replacement can easily be carried out while the Aspect is still mounted on the wall.

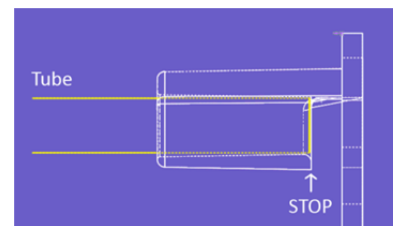
### Remove the old kit

- Power down the Aspect completely.
- Remove the hinged bottom lid
- Remove the main filter cartridge
- Remove the two lower mounting screws so that the bottom part is loose from the wall.
- Attach the SENSORKIT-TOOL – the main part secures the open door, and the two triangular parts fit onto the rearmost ridge on the side of Aspect to push the enclosure slightly away from the wall.
- Remove the fixed plastic bottom (fastened by four screws)
- Pull out the divider and plastic tube. The tube can be held in place by the outside slot in SENSORKIT-TOOL  
*Some older models may have tubes fastened in a different way – use the included divider when installing the new kit.*
- Lower the old sensor kit onto the support on the tool, and disconnect cables for the fan and sensors.  
*If the sensors do not come out with the kit, this is OK – you can disconnect the cables and remove the sensors afterwards.*



### Insert the new kit

- Push the new sensor kit part-way in and rest it on the tool.
- Connect the sensors – make sure the red conductor in the ribbon cable sits towards the middle of the sensor – incorrect orientation will typically make the fire alarm panel go into alarm condition, while Aspect indicates that it is disabled.
- Connect the fan cable.
- Push the sensor kit all the way into position.
- Push the plastic divider into the groove in the middle of the fan housing. Make sure that the tube from the flow sensor is positioned as shown on the drawing.
- Make sure that all cables are positioned correctly. The leads for the fan must sit safely in the recess.
- Replace the bottom seal and reattach the bottom and lid to the Aspect.
- Stick the accompanying label above the article label inside the Aspect's door.



### Finalizing and testing

- Remove tool, insert filter, power up the Aspect and close the door.
- If the new sensor kit has a different sensitivity than the original, connect to the Aspect with the Aspect Tool app and specify which kit has been installed.

In Aspect Tool:



Sensor kit dropdown up top. Touch diskette to save changes.

- Carry out a functional test of both areas.



## 10. TECHNICAL SPECIFICATIONS

### 10.1. GENERAL

#### 10.1.1 Mechanical

- Dimensions (W x H x D): 272 x 530 x 143 mm
- Enclosure: Extruded aluminium profile with PC/ABS top and bottom
- Enclosure rating: IP44
- Noise level: 55 dB @ 1 m (nom.) / 45-50 dB @ 1 m (w/ AU 002)  
35 dB @ 1m (special silencer kit / reduced fan speed)

#### 10.1.2 Electrical

- Supply voltage: 195,5–253 VAC, 50 Hz
- Current consumption: 500 mA max. @ 230V / 1300 mA avg. @ 12V (battery)

See 10.4. Power supply for further details.

#### 10.1.3 Environment

- Operating temperature: -40 to +60 °C (battery must not be charged above 50 °C)
- Relative humidity: Max. 98 % (Certified to 93 %)
- Pressure: Max. 75 Pa under pressure in rooms with sampling points

#### 10.1.4 Indications

- Zone fire: 4 x red LEDs, two for each area
- Zone fault: 8 x yellow LEDs, four for each area
- Generic fault: 1 x yellow LED
- Sounder fault: 1 x yellow LED
- Power: 2 x green LEDs

#### 10.1.5 Buttons

- Red:
  - Disable addressable or conventional Aspect.
  - Silence sounders on stand-alone Aspect (-S).
- Green:
  - Re-enable addressable or conventional Aspect. (Only for local disablement with powered loop.)
  - Reset stand-alone Aspect (-S).

### 10.2. EN54

The ASPECT 2010 meets all requirements of EN54-20 and EN54-4 as well as relevant clauses of EN54-2 for stand-alone operation.

**NB!** The ASPECT 2010 is often employed in environments where EN54-20 demands are not viable, and are therefore supplied with special factory settings. For these devices to be fully compliant, they must be manually configured so that P1=4, P5=2 and P6=1. Refer to Appendix E – Program functions, page 48 for details.

### 10.3. OUTPUTS

#### 10.3.1 Voltage outputs

Sounder / parallel indicator output: 7.7–12 V, max. 140 mA

#### 10.3.2 Relay outputs

Fire output: Normally Open, max. 2 A @ 30 V  
Fault output (stand-alone only): Normally Closed, max. 2 A @ 30 V

## 10.4. POWER SUPPLY

### 10.4.1 Integrated

The power supply equipment is fully integrated in the AE2010, with all electronics on the main CPU board, and a toroidal transformer behind it.

Charging current:	800 mA (nominal) 1300 mA (max.)
Maximum current drawn from battery:	
Condensation filter @ full effect (P4 = 1)	
Peak:	1650–1700 mA
Min:	520–530 mA
Average:	1300 mA
Condensation filter @ half effect (P4 = 3)	
Peak:	1650–1700 mA
Min:	520–530 mA
Average:	890 mA
Condensation filter OFF (P4 = 2)	
Max:	520–530 mA
$I_{\max.a}/I_{\max.b}$ equivalent load:	Both areas in alarm, sounder activated
$I_{\min}$ equivalent load:	Normal state, P7 = 1, P9 = 2 (low fan speed / disabled condensation filter)
Shut-off voltage ( $U_{B \min}$ ):	10.5 V
Max. internal resistance ( $R_{i \max}$ ):	1 $\Omega$
Fuse ratings:	500 mA (mains) 2.5 A (battery)
Suitable batteries:	Preferably: <i>pbq 7-12 VdS</i> (tested and certified by VdS)

### 10.4.2 External (optional)

The AE 2010 may optionally be powered by an external 12 or 24 V PSU in installations where additional backup duration is desired or demanded. Input voltage must be selected through programming of parameter P2.

Maximum current drawn from external PSU @ 24 V (P2 = 4):	
Condensation filter always @ full effect (P4 is irrelevant)	
Peak:	1440 mA
Min:	1220 mA
Average:	1330 mA

Maximum current drawn from external PSU @ 12 V (P2 = 2):	
Condensation filter always @ full effect (P4 is irrelevant)	
Peak:	1520 mA
Min:	1120 mA
Average:	1320 mA

### 10.4.3 Battery capacity

The following table indicates the actual battery capacity required to achieve various backup durations with different configurations of the AE2010 and its power supply.

PSU	Integrated			External	
	Full (P4 = 1)	Half (P4 = 3)	Off (P4 = 2)	24 V	12V
<b>Cond. filter</b>	Full (P4 = 1)	Half (P4 = 3)	Off (P4 = 2)	--	--
<b>6h backup</b>	7.8 Ah	5.4 Ah	3.2 Ah	8 Ah	8 Ah
<b>12h backup</b>	15.6 Ah	10.7 Ah	6.4 Ah	16 Ah	15.9 Ah
<b>24h backup</b>	--	21.4 Ah	12.8 Ah	32 Ah	31.7 Ah
<b>30h backup</b>	--	--	15.9 Ah	39.9 Ah	39.6 Ah
<b>72h backup</b>	--	--	--	95.8 Ah	95.1 Ah

**NB!** Use nearest available and suitable battery size above the calculated requirement. Please remember that the actual capacity of the battery may be lower than nominal, depending on temperature and drawn current.

The integrated charger will charge up to 24 Ah within the time limit required in EN 54.

## 11. ADDITIONAL INFORMATION

### 11.1. APPROVAL / CERTIFICATE NUMBERS

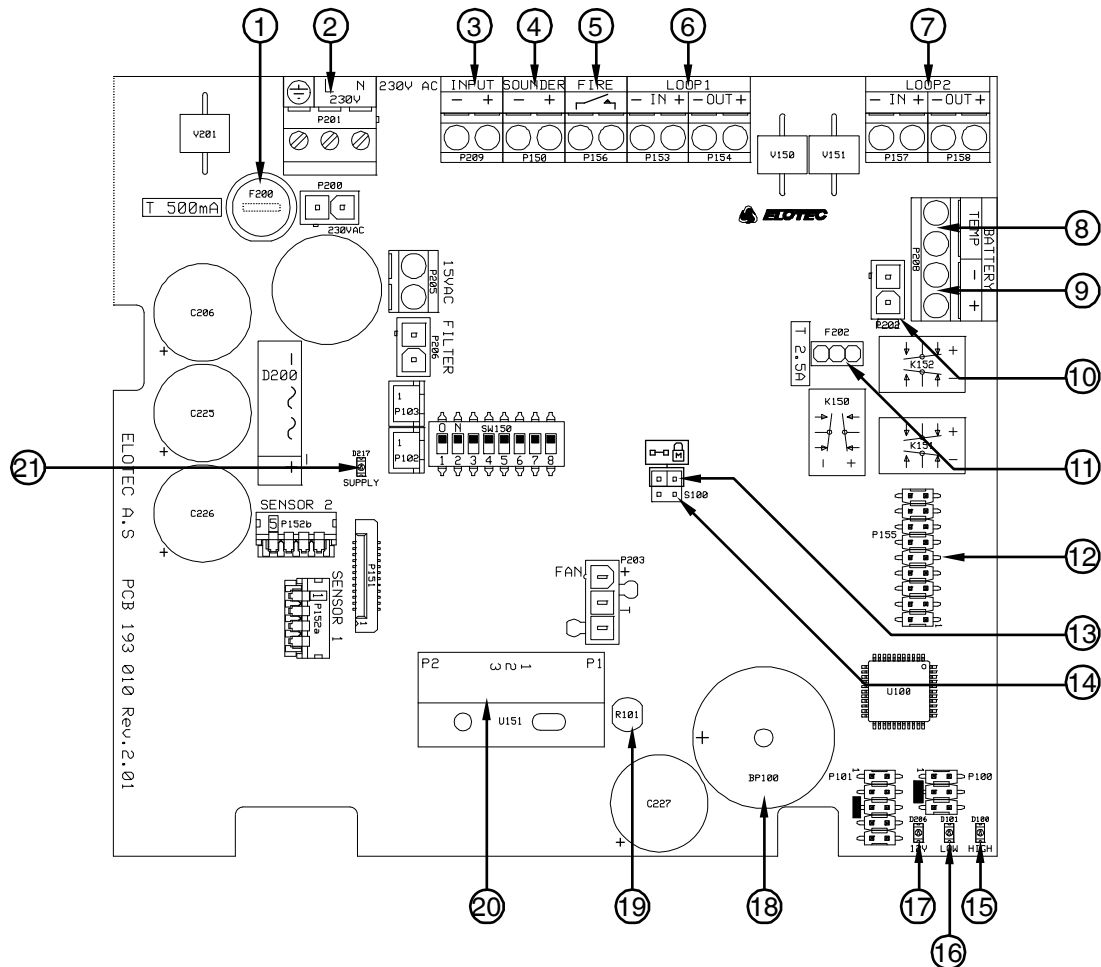
#### *Europe (CPD / EN 54)*

AE2010 series: 0786-CPR-21084

#### *Germany (VdS)*

AE2010 ADDRESSABLE E:	G211092
AE2010 ADDRESSABLE P:	G218067
AE2010 CONVENTIONAL:	G218068
AE2010 STAND-ALONE:	G218069

## Appendix A – ASPECT CPU board

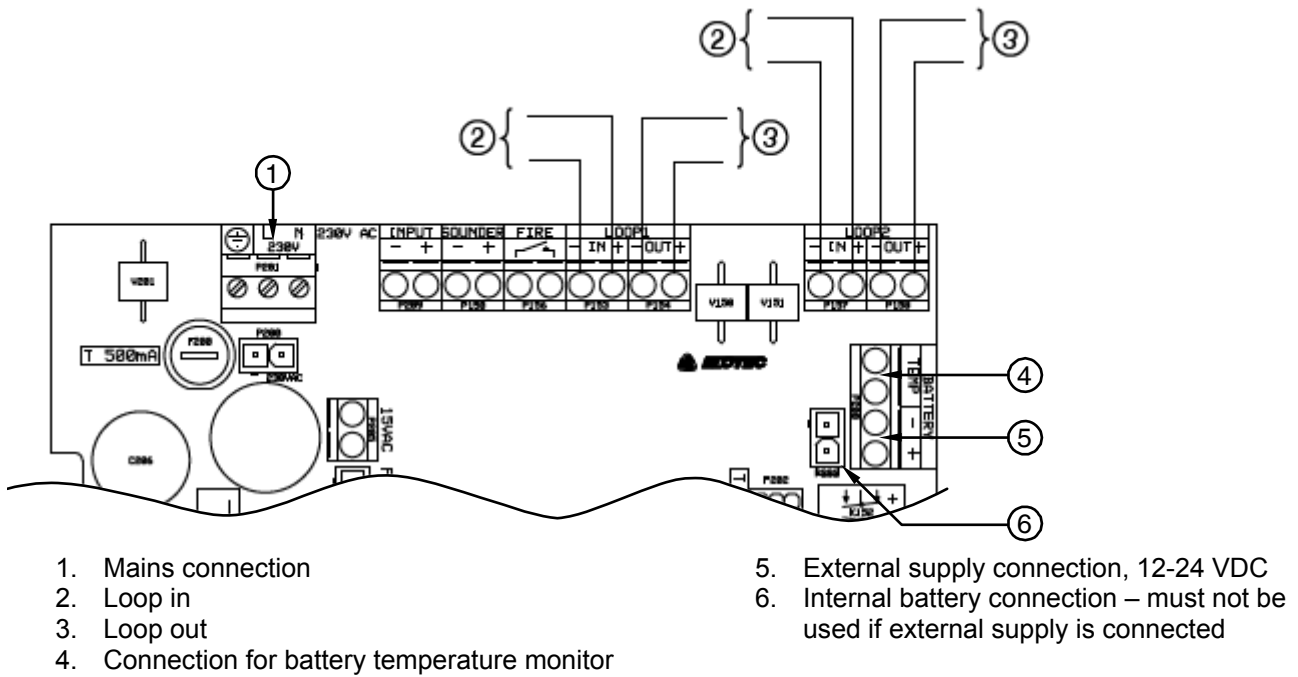


1. Mains fuse, 500 mA
2. Mains connection
3. Aux input, configurable as disablement or fault input
4. Sounder output (stand-alone configuration only) / parallel indicator output for strobe 1 K $\Omega$  EOL.
5. Relay output, NO
6. Loop connections area 1 (wired centralized systems only)
7. Loop connections area 2 (wired centralized systems only)
8. Battery temperature monitor connection
  - a. Connect NTC, art.no. *NTC 000 001* for monitoring.
  - b. Connect 10K $\Omega$  resistor if monitoring is not used.
9. External supply connection, 12-24 VDC
10. Internal battery connection – must not be used if external supply is connected
11. Battery fuse, 2.5 A, art.no. *FSE 110 001*
12. Expansion port for addressing interfaces
13. Memory lock for programming
14. S100, clear event log
15. Yellow LED, indicator for high air flow through flow sensor.
16. Red LED, indicator for low air flow through flow sensor.
17. Green LED, power indicator
18. Internal buzzer
19. Photo sensor
20. Flow sensor
21. Green LED, condensation filter

Wi-Fi diagnostics module is plugged into the expansion port at 12. Any address module will be fitted on top of this. The Wi-Fi card may, if desirable, be removed after commissioning – functionality is maintained with the exception of options for reduced sensitivity on conventional or stand-alone devices.

## Appendix B – Connections for conventional systems

Elotec advanced conventional loops can be connected directly to the terminals on the CPU board.

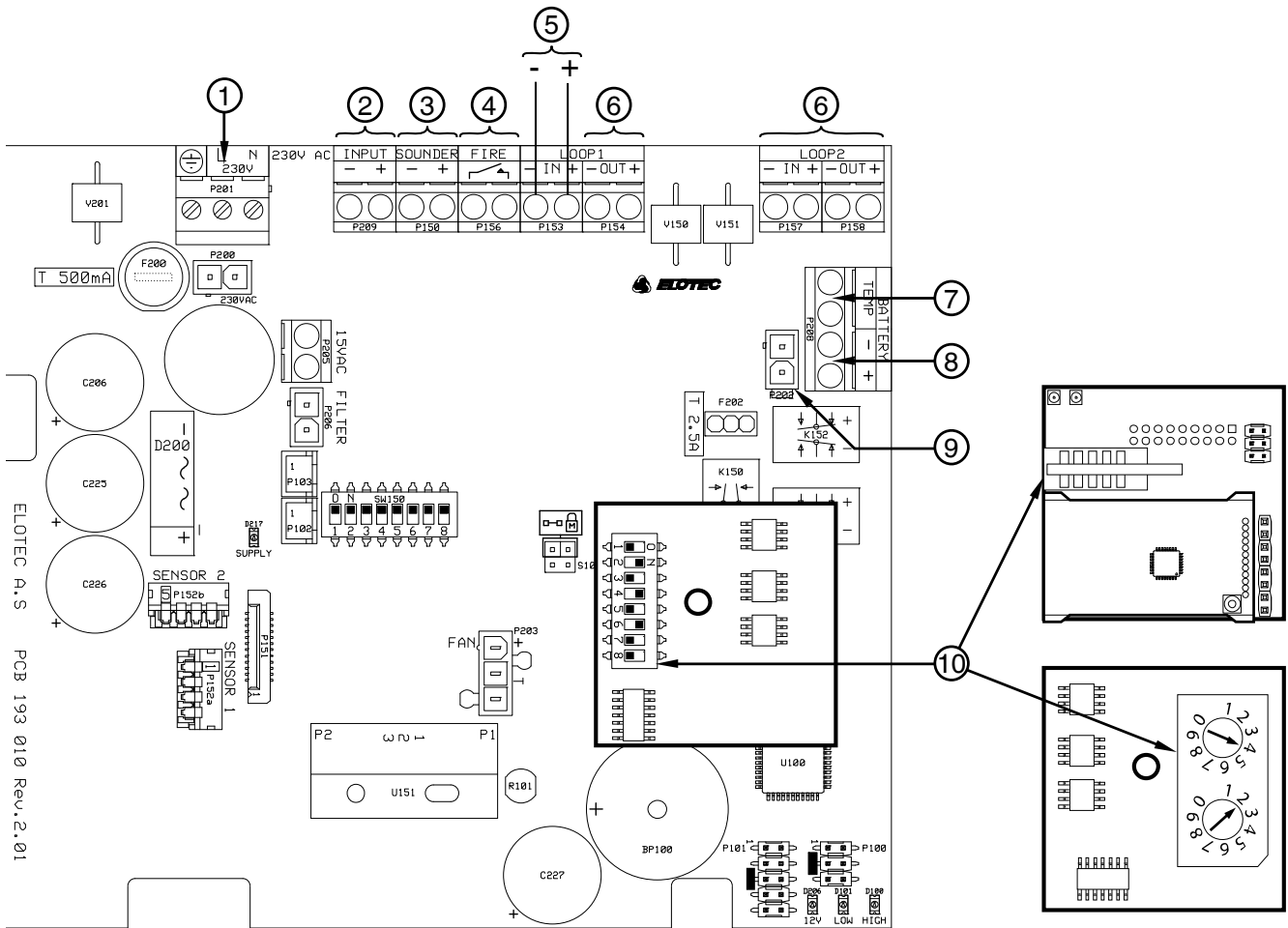


Conventional loop connections are polarity insensitive.

## Appendix C – Connections for addressable systems

Only the LOOP 1 IN terminals are used to connect the ASPECT to an analogue fire alarm panel. Remaining loop connection terminals must not be used.

This description also applies to wireless addressable systems with plug-in address modules. In such cases, no loop connections are to be used.




- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Mains connection</li> <li>2. Disable button connection</li> <li>3. Parallel indicator output for strobe</li> <li>4. Fire relay output, NO</li> <li>5. Addressable loop in / out</li> <li>6. <i>Not in use</i></li> </ol> | <ol style="list-style-type: none"> <li>7. Connection for battery temperature monitor. Install NTC here if P2=1.</li> <li>8. External supply connection, 12-24 VDC</li> <li>9. Internal battery connection – must not be used if external supply is connected</li> <li>10. Example of address setting</li> </ol> |
|--|---|

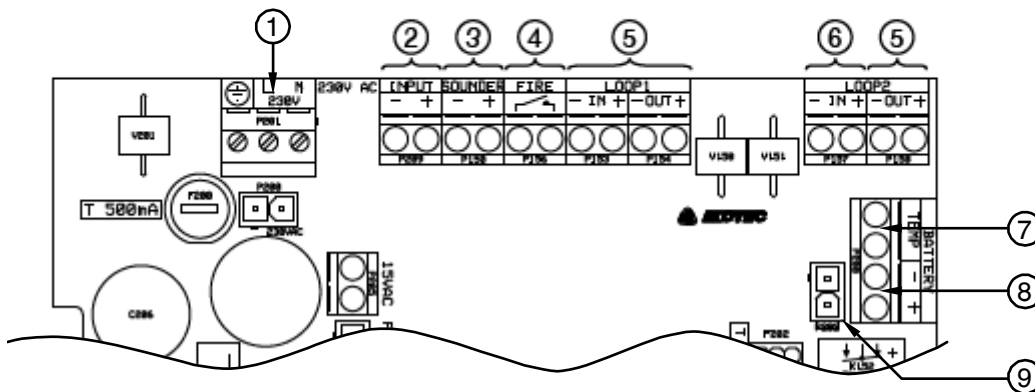
Each device on an addressable system must have a unique address. How this address is set varies from system to system. See documentation regarding the control panel in question.

### NOTES FOR SPECIFIC SYSTEMS

- Royal Z+:** «SIMM-card» is used for configuration. Use dedicated menu options on the panel, and follow the on-screen instructions.
- Magnum 10/25:** DIP 1–6 sets the address, DIP 7–8 always OFF. *The device also occupies the next address.* NB! Aspect can only be assigned addresses in the range 1–63.
- Elotec PX:** Software addressing by means of dedicated hand-held programmer.

## Appendix D – Connections for stand-alone unit






 The stand-alone Aspect has differing functionality from panel-bound devices on terminals for loop connection and sounder/strobe.



- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Mains connection</li> <li>2. Connection for disable button</li> <li>3. <i>Sounder output, 12V, max. 140mA / 10 snd.</i></li> <li>4. Fire relay output, NO</li> <li>5. <i>Not in use</i></li> <li>6. <i>Fault relay output, NC</i></li> </ol> | <ol style="list-style-type: none"> <li>7. Connection for battery temperature monitor. Install NTC here if P2=1.</li> <li>8. External supply connection, 12-24 VDC</li> <li>9. Internal battery connection – must not be used if external supply is connected</li> </ol> |
|--|---|

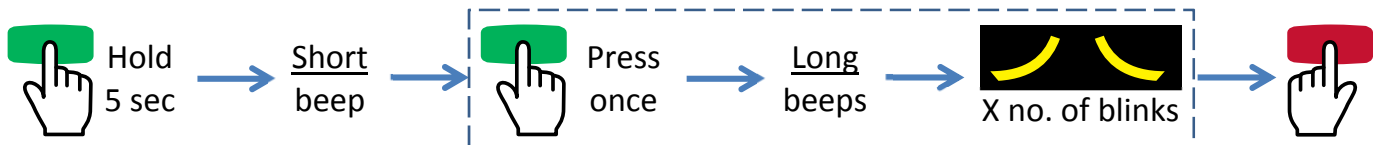
A disable button may be connected to the AUX input of the CPU board. When properly configured, this button will disable both areas of the ASPECT and stop the aspirating fan. The disable time is configurable through P11 (see Appendix E – Program functions, page 48).

## Appendix E – Program functions

Program	Value	Function
  Sounder	  	<ul style="list-style-type: none"> <li>Remove memory lock (A-13); <u>hold</u> both buttons until Aspect sounds two short beeps. The power LED blinks slowly.</li> <li>Hold green button and press red button the number of times to select P1-P11.</li> <li>Hold red button and press green button the desired number of times to set value.</li> <li>When pressing the green button to read the current value, P1-11 is indicated first, using blinks of the sounder LED, then the value, using yellow LEDs for both areas.</li> <li>Replace memory lock when programming is completed.</li> </ul>
<b>P1</b>		<b>Threshold for deviating flow</b>
	1	<i>Automatic (default)</i>
	2–10	2 = most sensitive → 10 = least sensitive (4 = EN54, 9 = agriculture)
<b>P2</b>		<b>Power supply</b>
	1	Internal, with temperature monitoring of battery
	2	External, 12 V
	3	<i>Internal, no temperature monitoring of battery (default)</i>
	4	External, 24 V
<b>P3</b>		<b>Aux input</b>
	1	Fault input When using internal supply (P2=1 or 3): generic fault input. When using external supply (P2=2 or 4): external supply fault
	2	<i>Disable button, pulse (default)</i>
<b>P4</b>		<b>Condensation filter</b>
	1	<i>Condensation filter on as needed (default)</i>
	2	Condensation filter on as needed, but turned off during mains fault if internal supply is configured (P2=1 or 3)
	3	Condensation filter on as needed, but reduced to half effect during mains fault if internal supply is configured (P2=1 or 3)
<b>P5</b>		<b>Indication of missing mains</b>
	1	Mains fault is indicated immediately (< 5 seconds)
	2	<i>Mains fault is indicated after 20 minutes – VdS/EN54</i>
	3	Mains fault is indicated after 2 hours ( <i>default</i> )
<b>P6</b>		<b>Indication of deviating flow</b>
	1	4,5 minutes by both high and low air flow – (VdS/EN54)
	2	6 hours by high air flow
	3	<i>30 minutes by low air flow (for agriculture) (default)</i>
	4	6 hours by both high and low air flow
	5	12 hours by both high and low air flow
	6	24 hours by both high and low air flow
	6	48 hours by both high and low air flow
<b>P7</b>		<b>Fan speed</b>
	1–10	1 = lowest → 10 = highest speed. ( <i>standard = 10</i> )
<b>P8</b>		<b>Function of disable- and enable buttons</b>
	1	Generate 2 and 4 Hz on loop, fan stops
	2	Local disablement, fan stops (not VdS/EN54)
	3	<i>Generate 2 and 4 Hz on loop, fan keeps running at low speed (default)</i>
	4	Local disablement, fan keeps running at low speed (not VdS/EN54)
<b>P9</b>		<b>HyperSense</b>
	1	<i>Off (default)</i>
	2	On – increased sensitivity
<b>P10</b>		<b>Automatic calibration</b>
	1	<i>48 hours (default)</i>
	2	7 days
	3	Greenhouses
<b>P11</b>		<b>Disablement duration (stand-alone only)</b>
	1	30 minutes
	2	1 hour
	3	2 hours
	4	<i>4 hours (default)</i>
	5	8 hours
	6	No disablements



## Appendix F – Service codes



Framed items can be repeated to read positions 2-10. End readout by pressing the red button.


The table describes the various service codes and suggested actions. Where components are pointed out, this is done by giving the letter of the appendix and the numbered item. For example: A-11 = Appendix A, item 11.



During deviating air flow, you can observe LEDs on the CPU board to identify the status. To keep the fan running even with the door open, cover up the photo sensor (A-19).

Service code	Description / action
1	Mains supply missing – first, verify external supply / fuse, then mains connection (A-2) and fuse F200 (A-1) in the Aspect.
2	Aspect has not been calibrated – perform calibration for air flow monitoring, see 7.1.
3	Invalid values after monthly filter monitor test. Inspect pipeline, considering possible pressure differences that could create a chimney effect (see 4.2.1 and 5.2.2).
4	Verify that main filters are properly installed, and replace dirty filters if required (see 9.4). Verify that all pipes are properly connected at the joins and undamaged. <i>Use app to observe that the NOW value moves into the green area / yellow LED (A-15) goes out.</i>
5	Verify that the fan is running. Verify that the pipeline isn't clogged – measure vacuum in the farthest hole with EloVac. Optionally, break the pipeline near the Aspect, f.ex. by unscrewing the condensation reservoir; if this makes the red LED (A-16) go out, pipelines must be cleaned. Otherwise, replace the DIAMANT or clean the flow sensor. <i>Use app to observe that the NOW value moves into the green area / red LED (A-16) goes out.</i>
6	Verify cable and EOL resistor (1KΩ) on sounder output / parallel indicator output (A-4)
7	Contaminated sensor, area 1 – replace sensor kit.
8	Contaminated sensor, area 2 – replace sensor kit.
9	Replace battery – high internal resistance. Contact Elotec for approved batteries.
10	Verify that temperature is below the accepted limit – take into account periodic solar warming etc. Verify battery and temperature sensor (A-8). <i>Battery must be replaced after exposure to excessive temperatures.</i>
11	Check the connection for the battery temperature sensor (A-8). NTC or resistor (10KΩ) must be fitted.
12	Inspect external equipment connected to the Aux input (A-3).
13	Low supply voltage – check mains voltage / external PSU.
14	Normal after extended power outages – check battery voltage in Aspect Tool app. Verify battery connection and fuse F202 (A-11). Replace battery if connections are OK and condition cannot be reset after 24 hours.
15	Probable surge damage on charging circuit – contact the tech department.
16	Verify battery connection and fuse F202 (A-11).
17	Replace battery – deep discharge. Contact Elotec for approved batteries.
18	Replace sensor kit, including fan – contamination or damage prevents the fan from maintaining the correct speed.
19	<i>Not in use.</i>
20	Stand-alone only – fire in area 1.
21	Stand-alone only – fire in area 2.
22	Stand-alone only – disabled.
23	Invalid value during calibration – provide improved air flow through pipeline. Replace DIAMANT / clean flow sensor.
24	Future use
25	Future use
26	Charger damaged by battery being connected with reverse polarity. Replace main PCB.

## Appendix G – CE marking and declarations

 0786
<b>Elotec AS</b> , Søndre Industrivegen 1 P.O. Box 43 N-7341 Oppdal, NORWAY  11 155-EDP-005
<b>Construction Products Regulation, 305/2011</b>  <b>EN 54-20:2006/AC:2008</b> Aspirating smoke detectors for fire detection and fire alarm systems for buildings. Class: A, B and C Device includes controls and indications according to EN54-2 for stand-alone operation  <b>EN 54-4:1997+A1:2002+A2:2006</b> Power supply equipment for fire detection and fire alarm systems for buildings.
<b>Low Voltage Directive, 2014/35/EU</b>  <b>EN 60065</b> Safety requirements
<b>EMC Directive, 2014/30/EU</b>  <b>EN 50130-4:2011/A1:2014</b> Alarm systems. Electromagnetic compatibility.  <b>EN 61000-4</b> Electromagnetic compatibility.
<b>RoHS Directive, 2015/863</b>

Elotec AS hereby declares that the product **AE2010 Aspirating Smoke Detector**, in accordance with the above directives and regulations, complies with relevant requirements in the listed standards.

Jan Kleven, CEO

# DECLARATION OF PERFORMANCE

155-EDP-005

1. Aspirating Smoke Detector  
**ASPECT 2010-series**
2. Type designation: NITRO / GRIZZLE / LAZEER followed by A/C/S for addressable/conventional/stand-alone.  
Article number : AE2010x-y, where x indicates sensor type and y indicates the system to which the device can be connected.  
A unique serial number is printed on each individual unit..
3. Fire detection and alarm systems for buildings.
4. Elotec AS, Søndre Industrivegen 1, NO-7340 Oppdal, Norway
5. Not applicable
6. System 1
7. *VdS Schadenverhütung GmbH*  
*Amsterdamer Str. 174, DE-50735 Köln*

performed type testing and initial inspection of the manufacturing plant and of the factory production control with continuous surveillance, assessment and approval of the FPC under system 1 and issued the certificate of constancy of performance:

**0786-CPR-21084**

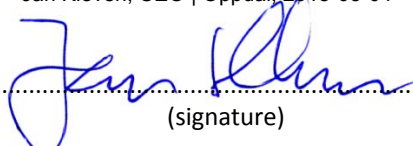
8. Not applicable.
9. Declared performance

Essential characteristics	Performance	Harmonised technical specification	
		EN54-20:2006 + AC:2008	EN54-4:1997 + A1:2002 + A2:2006
Operational reliability	Pass	X	X
Durability of operational reliability Temperature resistance	Pass	X	X
Durability of operational reliability Vibration resistance	Pass	X	X
Durability of operational reliability Electrical stability	Pass	X	X
Durability of operational reliability Humidity resistance	Pass	X	X
Durability of operational reliability Corrosion resistance	Pass	X	X
Performance under fire condition	Pass	X	
Activation conditions (sensitivity), response delay (response time to fire) LAZEER only	Class A @ 100 w/ 10 holes	X	
Activation conditions (sensitivity), response delay (response time to fire) NITRO / GRIZZLE / LAZEER	Class B @ 100 w/ 10 holes  Class C @ 2 x 100 w/ 20 holes	X	
Performance of the power supply	Pass		X

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9.  
This Declaration of Performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

Jan Kleven, CEO | Oppdal, 2018-03-04

  
 .....  
 (signature)

#### Warning / Liability

If the equipment is not used in accordance with the mounting/installation requirements, for other purposes than intended, connected to other equipment than prescribed in this manual, or connected to such equipment in any other way than prescribed, this could result in damage to the equipment or to other connected devices, as well as other damages such as overheating, fire, explosion, electromagnetic interference and so on.

In all above-mentioned cases, the manufacturer of the equipment can not be held responsible for any damage and loss, including damages and losses caused to the property of a third part.

In the cases described above, the buyers warranty is void

Elotec AS  
Industrivegen S. 1  
P.O. Box 43, N-7341 Oppdal  
NORWAY

Switchboard: +47 72 42 49 00  
Support: +47 72 42 49 60  
Telefax: +47 72 42 49 09

E-mail: [info@elotec.no](mailto:info@elotec.no)  
Web: [www.elotec.com](http://www.elotec.com)