

FIRE ALARM ASPIRATION SENSING TECHNOLOGY®
QUICK INSTALLATION GUIDE ADDRESSABLE FAAST LT
MODELS FL2011EI, FL2012EI FL2022EI

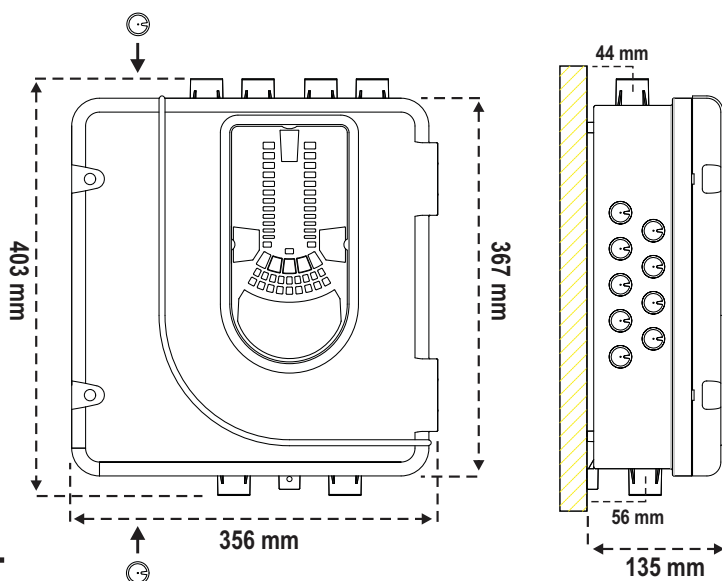


Figure 1: Dimensions and Knock-Outs

DESCRIPTION

The LT FL20 Series is part of the Fire Alarm Aspiration Sensing Technology® (FAAST) family. FAAST is an advanced fire detection system for use where early warning and very early warning are a requirement. The system continuously draws air from the controlled environment through a series of sampling holes to monitor the environment for smoke particulate.

The FL20 is the addressable version of the FAAST LT range, communicating with the CIE (Fire Panel) via a proprietary loop protocol. It is available in 3 different models:

FL2011EI - Has single channel capability with one laser smoke sensor.

FL2012EI - Has single channel capability with two laser smoke sensors in a common chamber for coincidence detection.

FL2022EI - Has two channel capability with two laser smoke sensors in separate chambers. (one sensor for each channel).

This guide provides information for mounting and basic installation using the unit's default factory settings. For more advanced info please see the FAAST LT Advanced Setup and Control Guide.

SPECIFICATIONS

Electrical Characteristics

Voltage Range:	18.5 - 31.5 VDC
Supply Current	200mA (avg); 500mA (max) @ 24 VDC (excluding sounders)
Communication Loop Supply Voltage:	15 – 29 VDC (Loop current ≤ 900mA)
Communication Loop Standby Current	@ 24V: 900 µA max. (poll once every 5s)
Power Reset:	0.5s
Configurable Input: Activation Time:	1s (min)
Relay Contact Ratings	2.0 A @ 30 VDC, 0.5A @ 30 VAC

Environmental Ratings

Temperature:	-10°C to 55°C
Relative Humidity:	10% to 93% (non-condensing)
IP Rating:	65

Mechanical

Exterior Dimensions:	See Figure 1
Wiring:	0.5 mm ² to 2 mm ² max
Maximum Single Pipe Length	100m (Classes A, B & C)
Maximum Number of Holes	18 (10 x 2.5mm, 8 x 3mm + 3mm end hole - Class C)
Pipe Spec (EN54-20 Compliance):	Red ABS to EN 61386 (Crush 1, Impact 1, Temp 31)
Outside Pipe Diameter:	25mm (nom) or 27mm (nom)
Shipping Weight:	6.5kg (inc sensors)

PARTS LIST

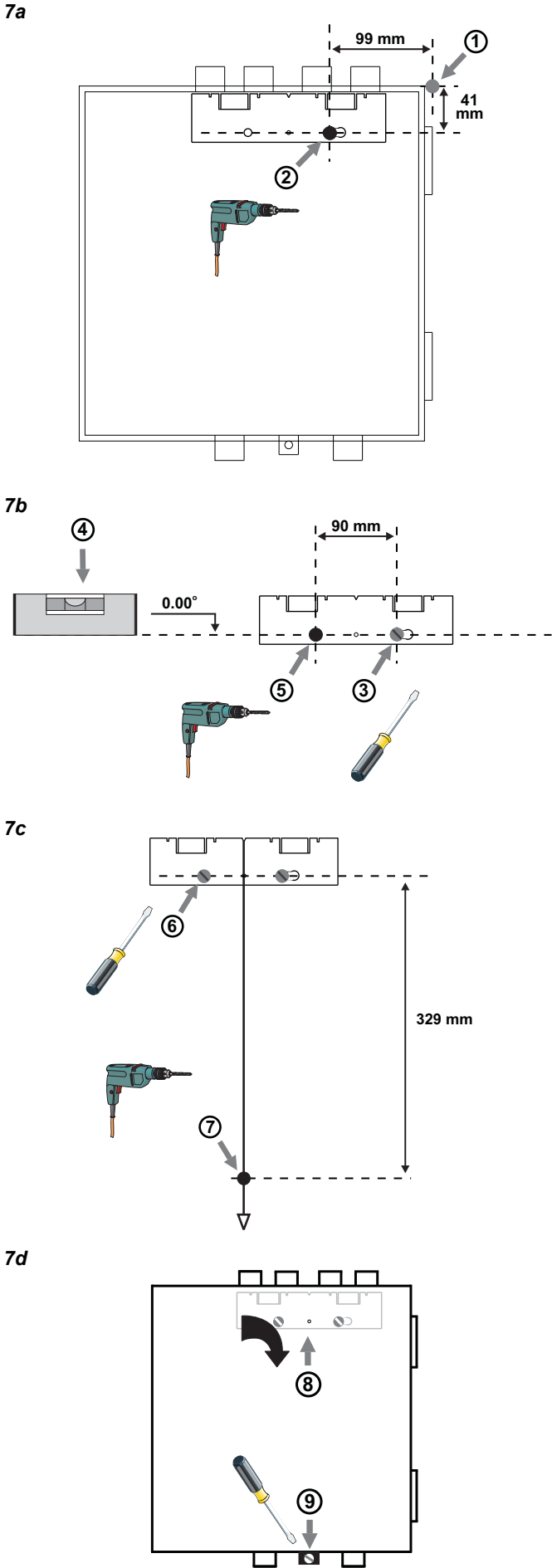
Description	Quantity
FAAST LT unit	1
Mounting bracket	1
3-pin Terminal block	6
4-pin Terminal block	1
2-pin Terminal block	3
47 k-ohm EOL Resistor	2
Front Panel Labelling Pack	1
Quick Installation Guide	1

FAAST LT Advanced Setup and Control Guide available via download from www.systemsensoreurope.com

Important Note

Aspirating Smoke Detectors supplied and installed within the EU must conform to the EU Construction Products Directive (89/106/EEC) and the related European Product Standard EN 54-20. FAAST LT has been tested and certified to ensure that it conforms to the necessary Standards, but strict adherence to this instruction guide is advised to ensure that the installation meets the requirements of the CPD Directive

Figure 7: Sequence (1 to 9) to Mount the Detector on the Bracket



Pipe Hole Configuration

Figure 8 below shows the pipe holes available on the unit. Each unit has 2 pipe holes per channel (so if installing a 1 channel unit, holes 3 and 4 do not function). Use Table 1 to locate the holes required for the installation:

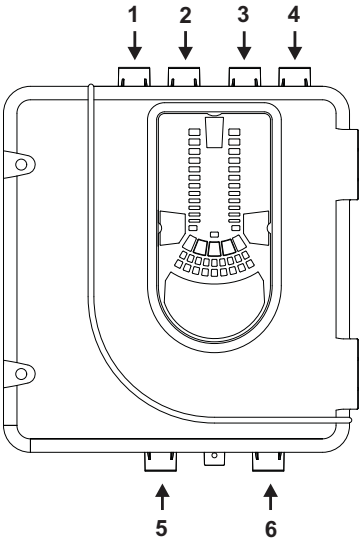


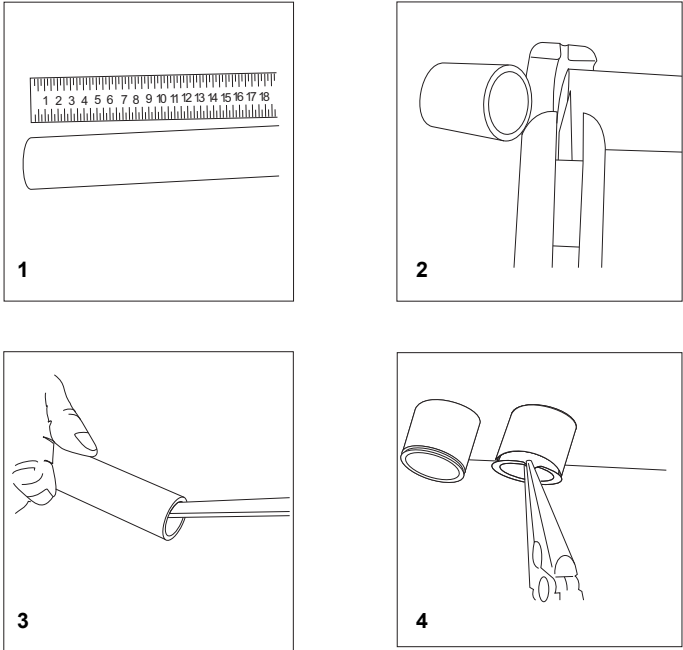
Figure 8: Pipe Holes

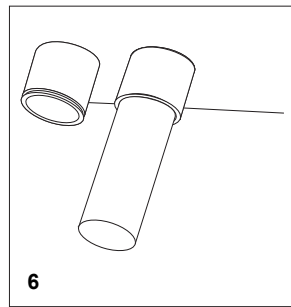
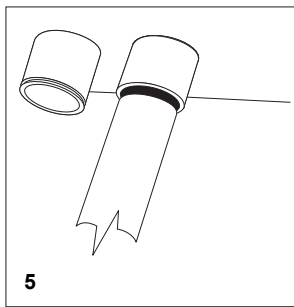
Table 1: Pipe Holes Used for Each FAAST LT Model

FAAST LT MODEL	INLET PIPE HOLE	OUTLET PIPE HOLE
FL2011EI	1 & 2, or 1 or 2	5
FL2012EI	1 & 2, or 1 or 2	6
FL2022EI	Channel 1 - 1 & 2, or 1 or 2	5
	Channel 2 - 3 & 4, or 3 or 4	6

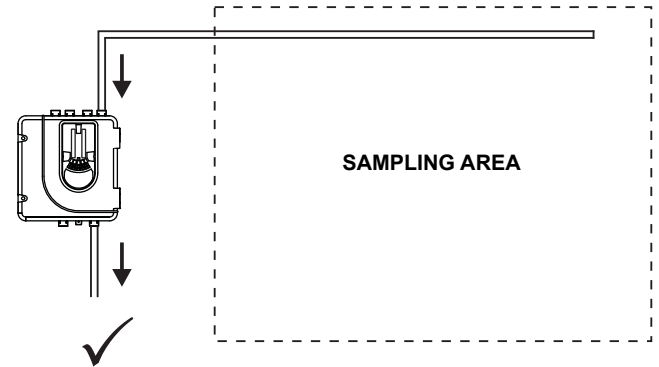
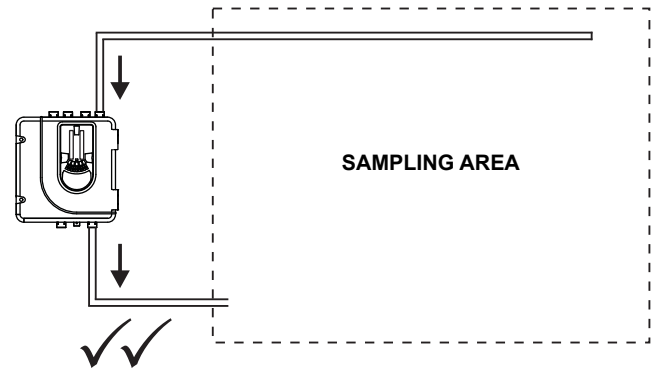
Note 1: Pipe holes not used should be kept sealed.
Note 2: Do **NOT** glue pipes into the pipe holes.

Pipe Installation





Exhaust Pipe



WIRING INSTALLATION

Power, Alarm and Control Connections

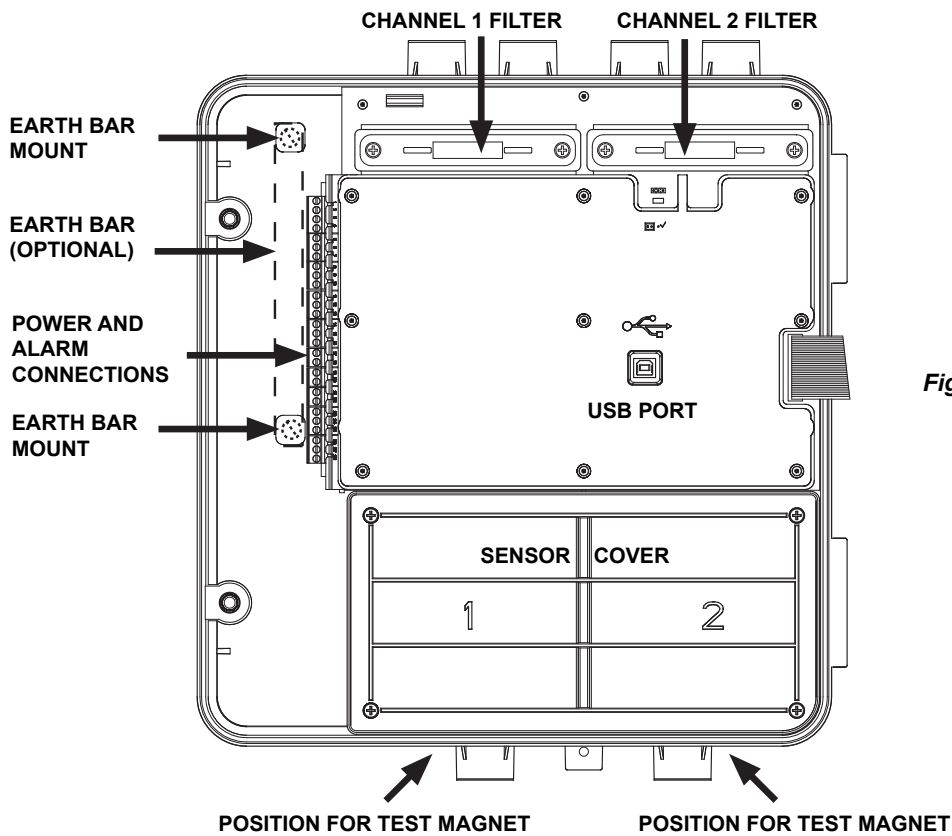


Figure 9: Inside the Detector

Table 2: Wiring Terminal Designations

(Note - Terminals marked CH2 will only be available on 2 channel models)

No.	Function		
1	Ext Power In +	Primary PSU	T1
2	Ext Power In -	Primary PSU	
3	Aux Power In +	Not used in default	
4	Aux Power In -	Not used in default	
5	NC Alarm Relay	CH1	T2
6	C Alarm Relay	CH1	
7	NO Alarm Relay	CH1	
8	NC Alarm Relay	CH2	T3
9	C Alarm Relay	CH2	
10	NO Alarm Relay	CH2	
11	NC Fault Relay	CH1	T4
12	C Fault Relay	CH1	
13	NO Fault Relay	CH1	
14	NC Fault Relay (AUX)	CH2	T5
15	C Fault Relay (AUX)	CH2	
16	NO Fault Relay (AUX)	CH2	
17	Sounder Output 1 -		T6
18	Sounder Output 1 +		
19	Sounder Output 2 -		T7
20	Sounder Output 2 +		
21	Configurable Input + (Reset)		T8
22	Configurable Input - (Reset)		
23	Not Used		T9
24	Loop out -		
25	Loop switched out +	To use isolator	
26	Loop in -		T10
27	Loop in +		
28	Loop not switched out +	Internally connected to 27	

Table 3: Relays

RELAY	ACTION:	NOTES
ALARM 1 or 2	Controlled by panel when it determines alarm condition has been met.	Set ON and OFF by panel; not latched
FAULT 1 or 2	When FAULT CONDITION on Ch1 or Ch2 or a GENERAL FAULT is occurs. Fault is also signalled when in Service Mode and when the device is unpowered.	Fault state is not latched.
SOUNDER 1 or 2	Set ON when a channel is in ALARM. Sounder 1 corresponds to Ch1 and Sounder 2 corresponds to Ch2	Default condition = set on in ALARM.

SETTING THE ADDRESSES

Each aspiration channel uses loop communications to report its status information to the CIE (Fire Panel). As a factory default, the unit will report smoke alarm and sensor information at an associated sensor address and general alerts and faults on a different module address.

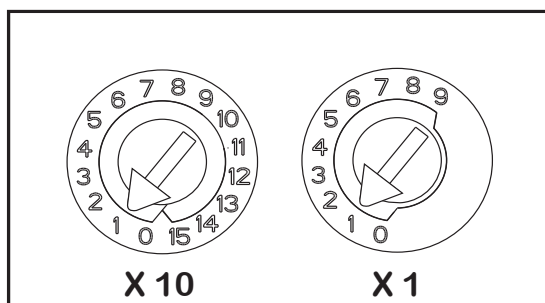


Figure 10: Address Switches

Sensor

The sensor address is set on rotary decade switches on the back of the smoke sensing devices. The smoke sensors are located under the sensor cover inside the unit (see Figure 9). The **Smoke Sensors** section of **Maintenance** - later in the manual - shows how to remove the sensors. As supplied, the default for channel 1 is Address 1; in 2 channel units (or when two sensors are fitted) the second device is set to Address 2.

Module

The module address is set by means of rotary decade address switches located behind the door of the unit. Use a screwdriver to rotate the wheels to the desired address. The selected address refers to channel 1; on 2 channel units the device assigns the next (+1) module address to channel 2 automatically. Hence, address 159 is not valid for channel 1. (Note: for control panels that use only 99 addresses, 99 is invalid for channel 1.)

POWERING UP

Using Default Settings

1. Connect a suitable 24VDC supply to pins 1 and 2 on terminal block T1 (See Table 2)
2. Check the voltage at the connector. Make sure it is within the required voltage range.
3. If the voltage is within the specified range, connect the power connector to the unit.

4. Close and secure the housing door; verify the fan starts up and air flows out of the exhaust port. The unit takes 1-3 minutes to initialise and stabilise in normal mode.

Configuring Other Options

To change any of the default options, it will be necessary to connect the detector to a PC/laptop with the PipelQLT software installed; see **USB connection** section later in this guide for more information on this (and the FAAST LT Advanced Setup and Control Guide - reference D200-100-00).

EXTERNAL RESET

The default setting for the configurable external input is Device Reset (terminal block T8). A short circuit connection between these terminals will cause the FAAST LT unit to perform a reset.

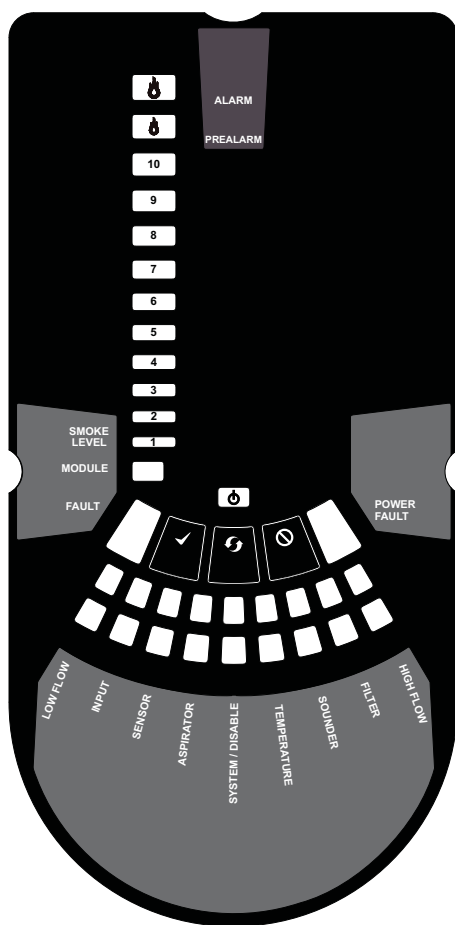
FRONT PANEL

The front panel will be different depending on which of the 3 FL20 models is being installed, and each is shown below.

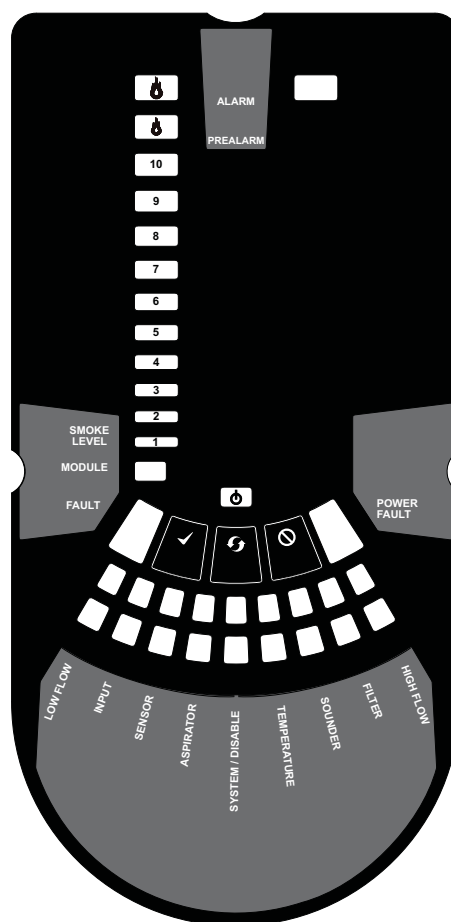
The following information is displayed:

- Detector Status: Normal, Alarm, Fault or Isolate
- Alarm Level; Alarm, Pre-Alarm (only available with panels using Advanced Protocol)
- Particulate Levels; 1-9 (only available with panels using Advanced Protocol)
- Fault Status
- Flow Level
- Test, Reset and Disable Buttons

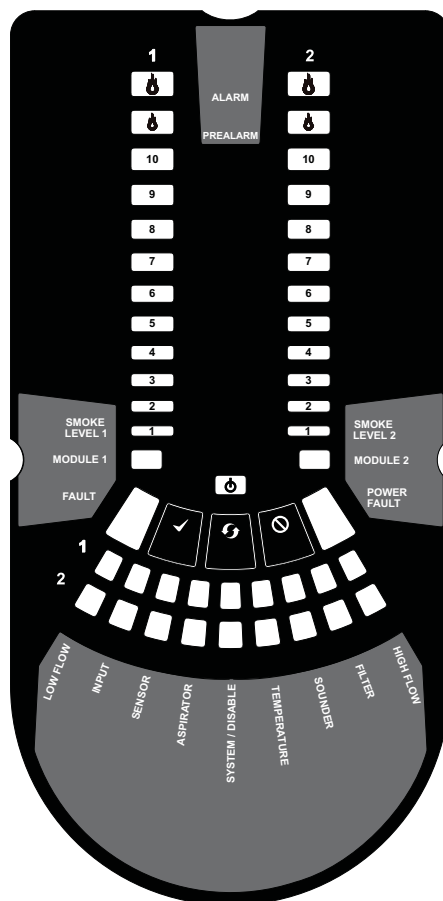
Figure 11: Front Panel Display



11a: FL2011EI 1 Channel Detector (1 Sensor)



11b: FL2012EI 1 Channel Detector (2 Sensors)



11c: FL2022EI 2 Channel Detector

Table 4: Front Panel Indicators and Fault Descriptions

INDICATOR	ACTION	WARNING OR TROUBLE	COMMENT / ACTION
CHANNEL 1/2 ALARM	ON Red (Set by panel)	Channel is in alarm (relay is set ON with no delay)	Sensor alarm mode is default setting
	1 BLINK Green (Polled by panel)	When sensor is polled	Not when in alarm
CHANNEL 1/2 PRE-ALARM	ON Yellow	Channel is in pre-alarm	(only with panels using Advanced Protocol)
SMOKE LEVEL 1/2	ON Yellow (Set by panel)	Led number indicates sensor alarm level reached	Only numbers 1 – 9 used (only with panels using Advanced Protocol).
CHANNEL 1/2 MODULE	ON	Module Ch1/Ch2 output on	
	BLINK	Module communication	
FAULT	ON Yellow	General or multiple faults	
POWER	ON Green	FAAST LT is powered	
POWER FAULT	ON Yellow	Low power alert / high power fault	Check the power supply voltage.
CHANNEL FLOW INDICATORS 1/2	ON Green	The LED indicates the air flow for a channel: - Centre = normal flow - Left = flow low; (-20% at extreme) - Right = flow high; (+20% at extreme)	On 2 channel unit: Upper row = Ch1 Lower row = Ch2
LOW FLOW	ON	Low flow fault	Check filter; check pipe network for blockages.
INPUT	1 BLINK	External input fault	Not used with default settings
SENSOR	2 BLINKS	Sensor communication fault	Check sensor addresses and installation; replace sensor.
ASPIRATOR	ON	Air flow sensor fault	Try to restart device.
	1 BLINK	Flow initialization fault	Check filter; check pipe network for blockages; try to restart device.
	2 BLINKS	Fan fault	Try to restart device.
DISABLE	1 BLINK	Alarms & alerts not reported	Returns to Maintenance then Normal operation after 60min (default)
SYSTEM	1 BLINK	Wrong configuration	Flashes all FAULT LEDs; try to restart device.
	2 BLINKS	EEPROM fault	Check power supply voltage. Try to restart device
	3 BLINKS	Real time clock fault	RTC is corrupted or time reading failed.
TEMPERATURE	1 BLINK	Low temperature alert	Check the air flow temperature
	2 BLINKS	High temperature alert	Check the air flow temperature
SOUNDER	1 BLINK	Sounder fault	Check the sounder circuit and the EOL
FILTER	1 BLINK	Filter alert at set date	No date set as default
HIGH FLOW	ON	High flow fault	Check pipe network for breaks or leaks.

In case of simultaneous alerts/faults on the same LED, priority order is: ON (Highest), 1 blink, 2 blinks, 3 blinks (Lowest)

Note: The channel alarm and smoke level LEDs are under the control of the CIE (Fire Panel).

Front Panel Buttons

The front panel has 3 user buttons: **TEST**, **RESET** and **DISABLE**. These buttons are used to enter the pass-code which then allows the user to carry out simple test functions.

Note: In *Remote Maintenance and Service Mode*, these buttons are always disabled.

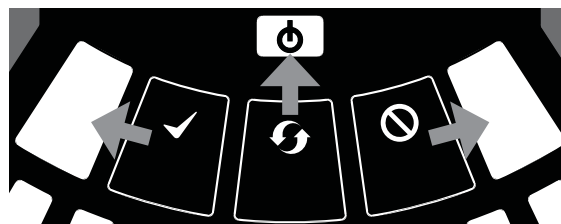
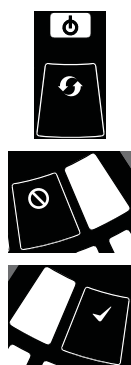


Figure 12: User Interface Buttons

Table 5: Front Panel Buttons



BUTTON	NORMAL Mode	MAINTENANCE Mode
RESET	When pressed for 2 s, starts PASSWORD PROCEDURE to enter Maintenance mode.	When pressed for 2 s latched alarms, faults and sounders (relays) are reset In DISABLE Mode, if pressed for 2 s unit will exit from DISABLE Mode
DISABLE	Used to increment Password digits in PASSWORD PROCEDURE	When pressed for 2 s, device enters DISABLE Mode for 60 minutes (default). (Alarms, alerts and faults not reported). (To exit DISABLE Mode see RESET)
TEST	Used to confirm password in PASSWORD PROCEDURE. Default Password = 3111	When pressed for 2 s and released, both sensor will simulate alarm When pressed for 4 s and released, sensor #1 will simulate alarm When pressed for 6 s and released, sensor #2 will simulate alarm
COMBINATIONS		
RESET + DISABLE	When pressed for 2 s, shows fan speed (on smoke level scales) for a preset time.	When pressed for 2 s, shows fan speed (on smoke level scales) for preset time.
RESET + TEST	No action	When pressed for 2 s, turns off sounders
RESET + TEST + DISABLE	No action	When pressed for 2 s, unit exits from MAINTENANCE Mode

Password Sequence to Enter Maintenance Mode

Press and hold **RESET**; Left flow indicator will turn yellow, then green.

Release **RESET** and **FAULT** indicator will switch on green. The left flow indicator will blink green indicating the device is ready for the first digit.

Press **DISABLE** to increment the LEDs 1...9; press **TEST** to select a digit.

The flashing airflow segment will turn solid green and the next segment will begin to flash indicating set the next digit. When the 4th digit is selected, all 4 airflow segments are turned off. If the password is accepted the **FAULT** indicator will remain green and the unit enters **Maintenance** mode. If the password is incorrect the **FAULT** indicator flashes yellow and the unit remains in **Normal** mode. The Default password is **3111**.

If no button is pressed for 10s during the password sequence, the unit returns to **Normal** mode. If there is no activity in **Maintenance** mode for 5 minutes (default), the **FAULT** indicator blinks green for 15s and then the unit returns to the **Normal** state.

TESTING

Note that the sensor LEDs, which are under the control of the CIE (Fire Panel), must be turned on to activate the front panel alarm indicators.

Magnet Test

The alarm signalling can be tested for functionality by placing a test magnet in the position shown in Figure 9 (displayed earlier in the guide). This method does not test the air flow in the pipe-work.

Smoke Testing

The system alarm response can be tested for functionality using smoke. The choice of smoke source is dependant on the installation but in all cases the smoke must be present for the duration of the test. Smoke pellets or matches can be used close to the sampling point to introduce smoke particulates into the system. It is recommended that smoke with a particulate life cycle of greater than 120s should be used – standard aerosol sprays for point detector testing do not work well on aspirated systems.

Fault Testing

Simulate a fault on the detector (for example, block the outlet pipe) and check that a fault is signalled on both the front panel of the unit and at the CIE (Fire Panel).

SERVICE

WARNING

Isolate the aspirating detector from the fire alarm system to prevent any unwanted alarms when opening the front door of the unit. Make sure all power is removed from the system before removing any covers.

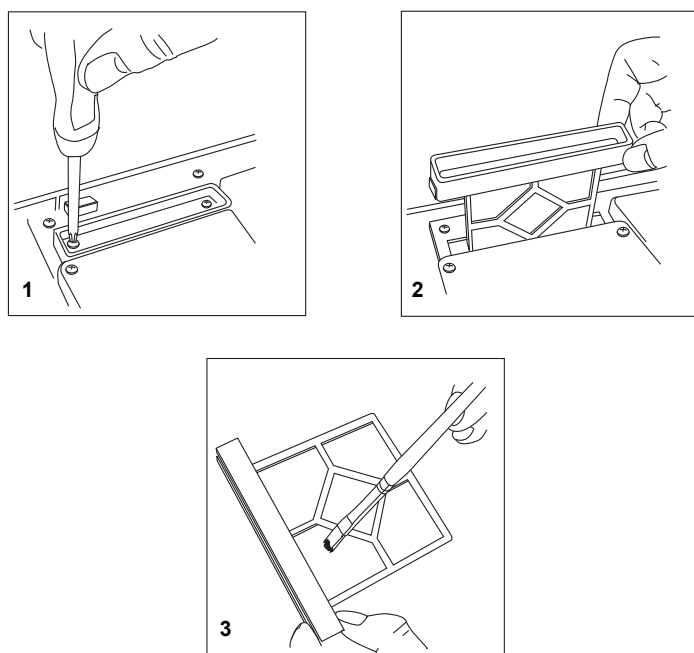
Service Mode

Opening the cabinet door during normal operation will cause the unit to enter **Service** Mode. The **FILTER** LEDs will blink, the unit will switch off power to the fans and stops communicating with the fire panel. When the cabinet door is closed, the unit restarts automatically.

Filters

Periodic cleaning or replacement of the filters will be required.

The filters are located inside the cabinet at the top of the unit (see Figure 9 displayed earlier in the guide) and are removed as shown in the sequence below:

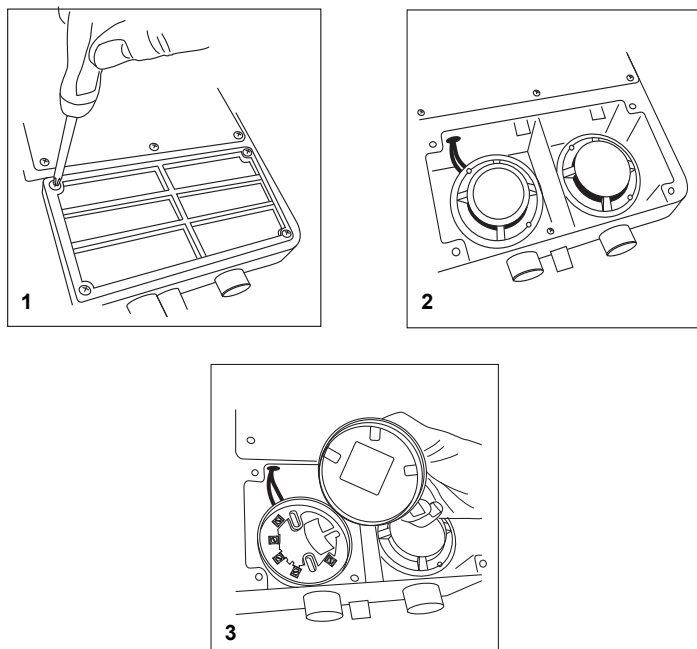


Either replace the filter assembly or carefully brush off the accumulated dust.

Refit the filter, close and secure the cabinet door. The unit will initialise and restart.

Smoke Sensors

The smoke sensors are located under the sensor cover (see Figure 8 displayed earlier in the guide). To access the sensors, follow the sequence below:



If replacing a sensor, ensure that the address set on the new sensor is the same as on the sensor being replaced.

LASER SAFETY INFORMATION

The detector contains a Class 1 laser product. Radiation emitted inside the smoke sensor is completely contained within its housings and protective covers during all phases of operation.

USB CONNECTION

PC connectivity is provided by an onboard USB **B** socket located centrally between the filter and the sensor (see Figure 9 displayed earlier in the guide). The USB interface allows access to a range of additional options, via the PipeIQLT application software, when connected to a PC. The USB connecting cable should be removed during normal operation.

PipeIQ™LT QUICK START INSTRUCTIONS

Overview of PipeIQLT

The PipeIQLT software program is a convenient and powerful Windows® based application that can be used to quickly and accurately design pipe networks, generate configuration parameters for correct set-up and operation, and facilitate commissioning and monitoring of the performance of FAAST LT Aspiration devices.

PipeIQLT provides a graphical interface on a PC to:

- Develop and verify the performance of pipe network solutions.
- Configure the design parameters to suit local fire codes and standards.
- Generate Pipe Layouts, BoMs, Configuration and Event Log Reports.
- Control, Test and Monitor FAAST LT devices.

There is a comprehensive **Help Menu** to guide the user through the different windows and options. The contents have a detailed index and a versatile search facility to locate relevant topics.

Minimum System Requirements

Microsoft Windows XP SP3 or Windows 7

1 GB of RAM.

Graphics hardware with 128 MB of memory and support for OpenGL 2.0 or later.

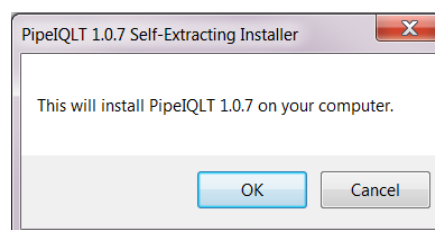
5 GB of free hard disc space

Installing PipeIQLT

PipeIQLT is supplied on a mass storage device with each FAAST LT unit, or it can be accessed as a download from www.systemsensoreurope.com.

To install from the mass storage device

Insert and view the removable storage device. Click on **PipeIQLT Setup**:



Click **OK** and follow the instructions (see: *PipeIQLT Setup and Installation Wizard* section below).

To install from the website

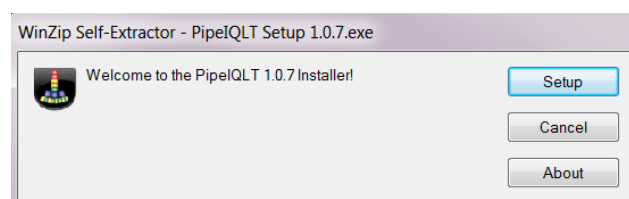
Click on the link to PipeIQLT at www.systemsensoreurope.com.

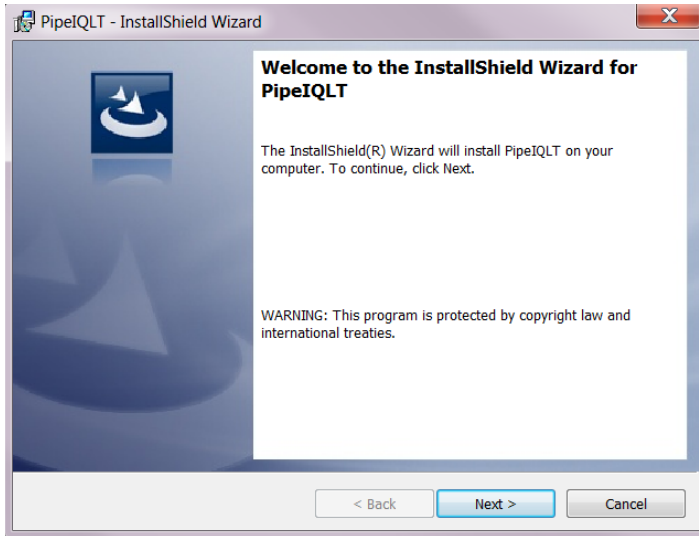
Click on **PipeIQLT download**. The download security warning will appear. Select **Save**, then click **OK**.

When the download completes, click **Run** to display the above dialog box. Click **OK** and follow the instructions (see: *PipeIQLT Setup and Installation Wizard* section below).

PipeIQLT Setup and Installation Wizard

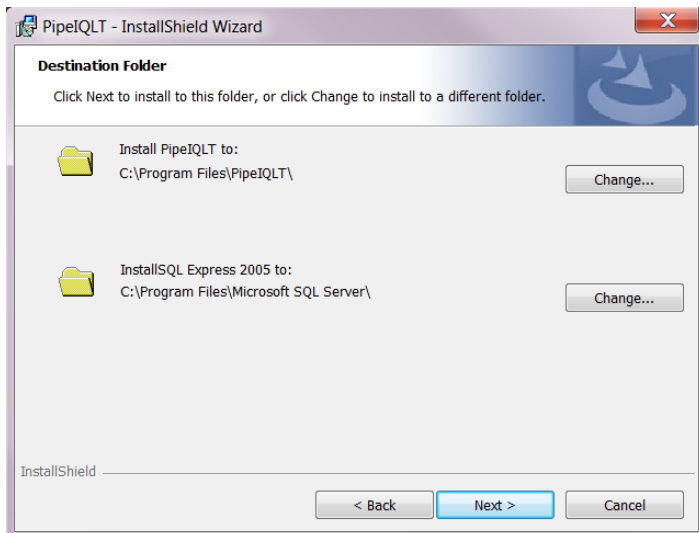
When the below dialog box appears, click **Setup** to start the wizard:





Click **Next** and follow the on-screen instructions.

Unless changed, the install wizard will create and store files at the following locations:



When installation is complete, the wizard will automatically create a shortcut icon on the PC desktop.

It will be necessary to re-boot the PC in order to run PipeIQLT.



Launching

To launch the PipeIQLT application, double click the **PipeIQLT** icon on the desktop.

Or

click **Start** (bottom left corner of the Windows screen) and then select **PipeIQLT** from the programs list.

When the application opens, it is possible to start a new project, or to monitor or modify an existing project. Use the **File** menu to select **New** or **Open**. Choose from the **Pipe Design**, **Configuration** or **Monitoring** tabs to enter the required mode.

To communicate with a FAAST LT detector, connect the USB port to a PC with an appropriate cable. Set the detector to **Maintenance** mode.


Quitting

Exiting the program closes the application completely.

To quit the PipeIQLT application, click **X** in the upper-right corner of the window.

Or click **Exit** from the **File** menu.

PipeIQLT can be uninstalled from the computer in the normal way for your operating system.

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FL2011EI: 0832-CPD-1993 12	
FL2012EI: 0832-CPD-1994 12	
FL2022EI: 0832-CPD-1995 12	
EN54-20 : 2006 Class A B & C Aspirating Smoke Detectors	
Pittway Tecnologica S.r.l. Via Caboto 19/3, 34147 Trieste, Italy	