

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

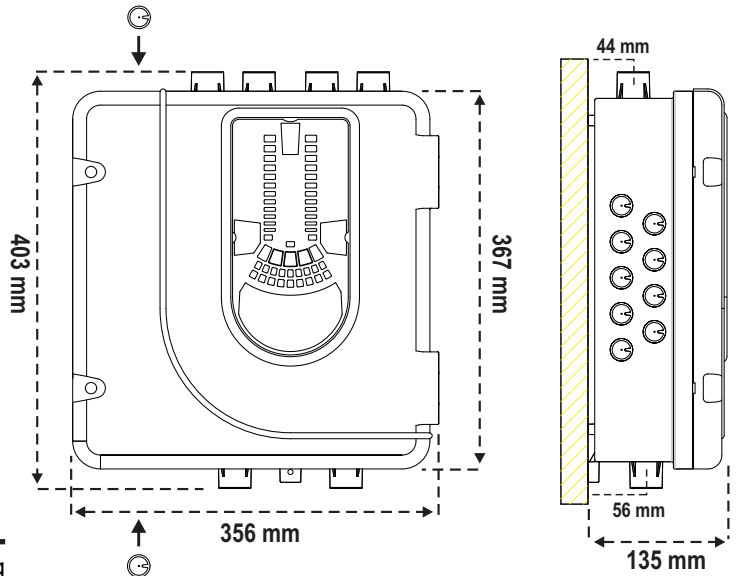


Figure 1: Dimensions and Knock-Outs

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 information please see the FAAST LT Advanced Setup and Control Guide - reference D200-100-00.

SPECIFICATIONS

Electrical Characteristics

| | |
|-------------------------------------|----------------------------------------------------------------------------|
| Voltage Range: | 18.5 - 31.5 VDC |
| Supply Current: | 1 Channel: 170mA (typical); 360mA (max) @ 24 VDC 25°C (excluding sounders) |
| | 2 Channel: 270mA (typical); 570mA (max) @ 24 VDC 25°C (excluding sounders) |
| Communication Loop Supply Voltage: | 15 – 29 VDC (Loop current ≤ 900mA) |
| Communication Loop Standby Current: | @ 24V: 900 µA max. (poll once every 5s) |

Module Isolator Characteristics

| | |
|-------------------------------------------------------------------------|------------------------|
| Maximum rated switching current (under short circuit, Is max): | 0.9A @ ≤ 29V |
| Maximum leakage current (IL max) with the switch open (isolated state): | 15mA |
| Maximum series impedance with the switch closed (Zc max): | 190 m ohm at 15Vdc; 1A |

| | |
|--------------------------------------|-------------------------------|
| Power Reset: | 0.5s |
| Configurable Input: Activation Time: | 2s (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: | See table 1A |
| Pipe Spec (EN54-20 Compliance): | 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 |
| USB Cable | 1 |
| Front Panel Labelling Pack | 1 |
| Installation Kit CD | 1 |
| Quick Installation Guide | 1 |

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.

This equipment and all associated pipe work must be installed in accordance with all relevant codes and regulations.

PHYSICAL INSTALLATION

Front Panel Labels

The LT FL20 is shipped without the front panel labels fixed in place. This allows the installer to choose the language required for the installation from the Front Panel Labelling Pack.

Figure 2 shows where the labels need to be placed:

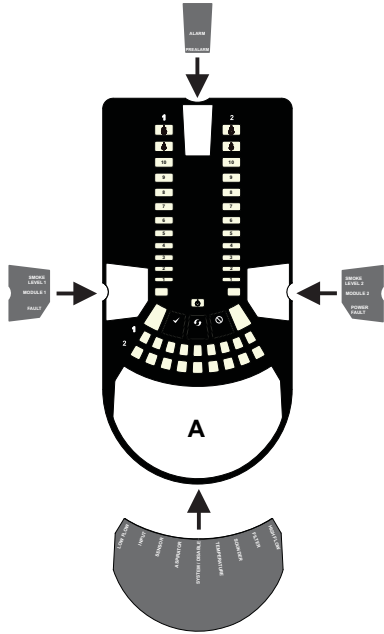


Figure 2: Placing the Front Panel Labels

When label A is in place, remove the protector from the bottom of the clear cover to stick the cover down, as shown in Figure 3:



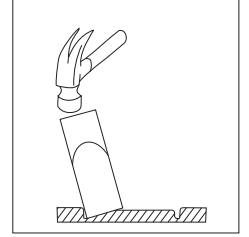
Figure 3: Remove Backing to Stick Cover Down

Cable Access

Knock out cable gland holes where required. The location of the cable gland holes is shown in Figure 1, represented by the icon:



Figure 4: How to Knock Out Cable Gland Holes



Mounting the LT FL20 to the Wall

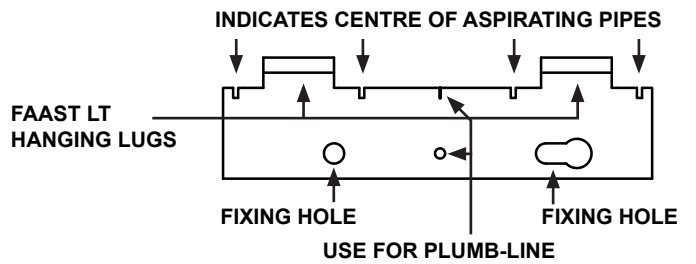
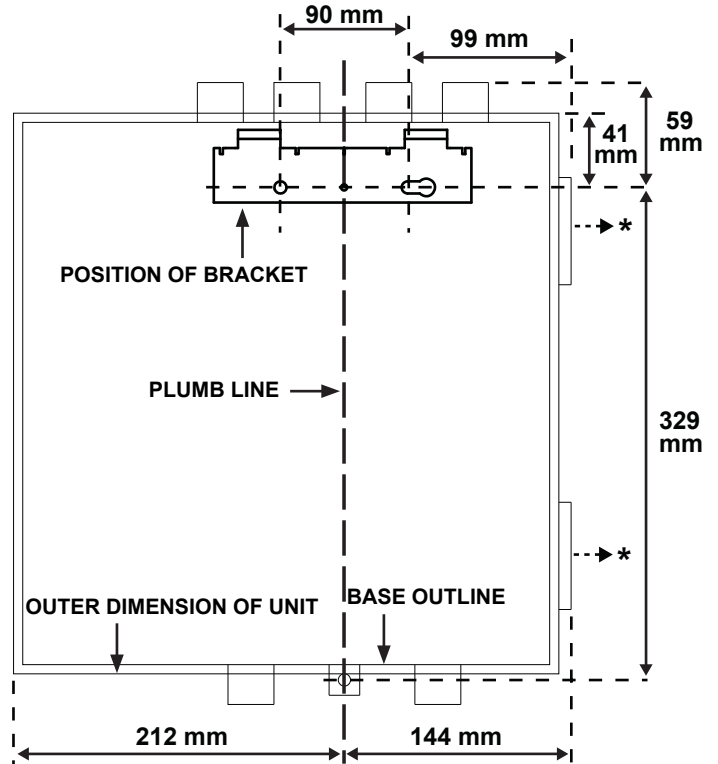


Figure 5: Mounting Bracket



* Minimum clearance required from hinges to open door = 35 mm.

Figure 6: Fasten the mounting bracket to the wall

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:

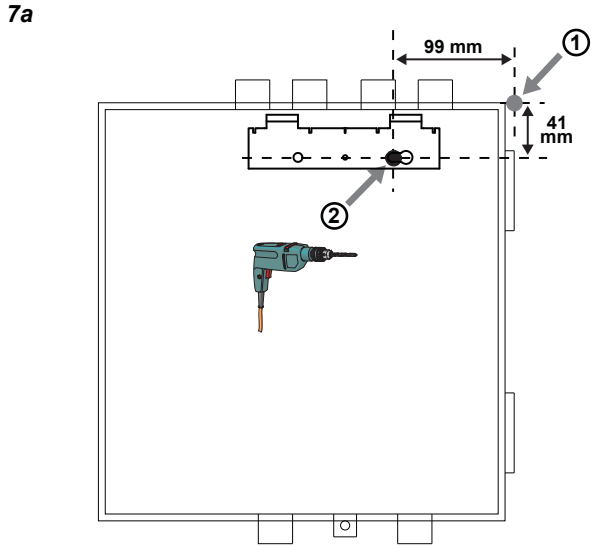


Figure 8: Pipe Holes

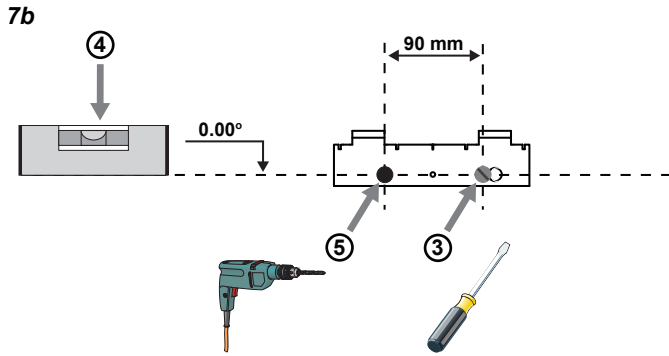
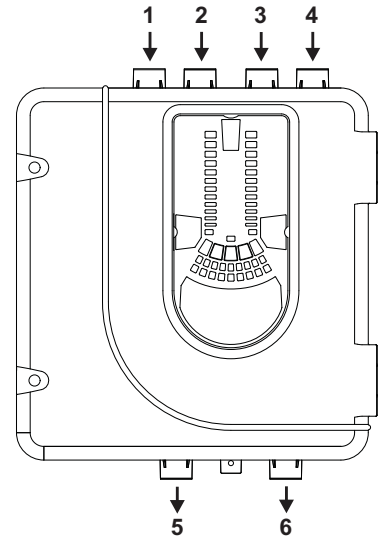


Table 1: Pipe Holes Used for Each FAAST LT Model

| 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 Channel 2 - 3 & 4, or 3 or 4 | 5 6 |

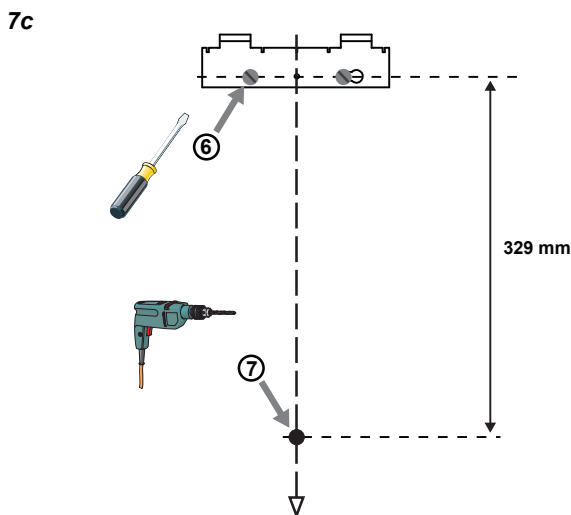
Note 1: Pipe holes not used should be kept sealed.

Note 2: Do **NOT** glue pipes into the pipe holes.

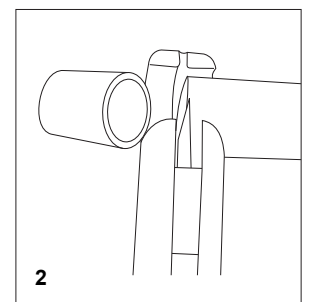
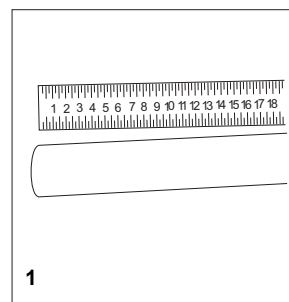
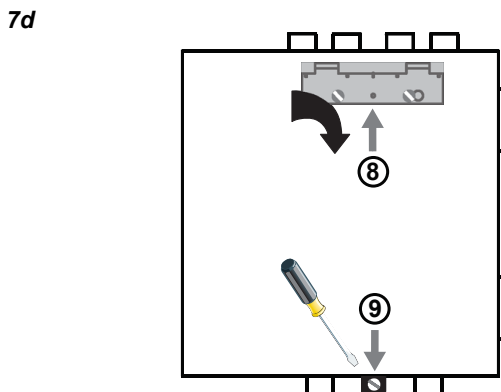
Table 1a: Maximum Number of Pipe Holes Allowed Per Channel

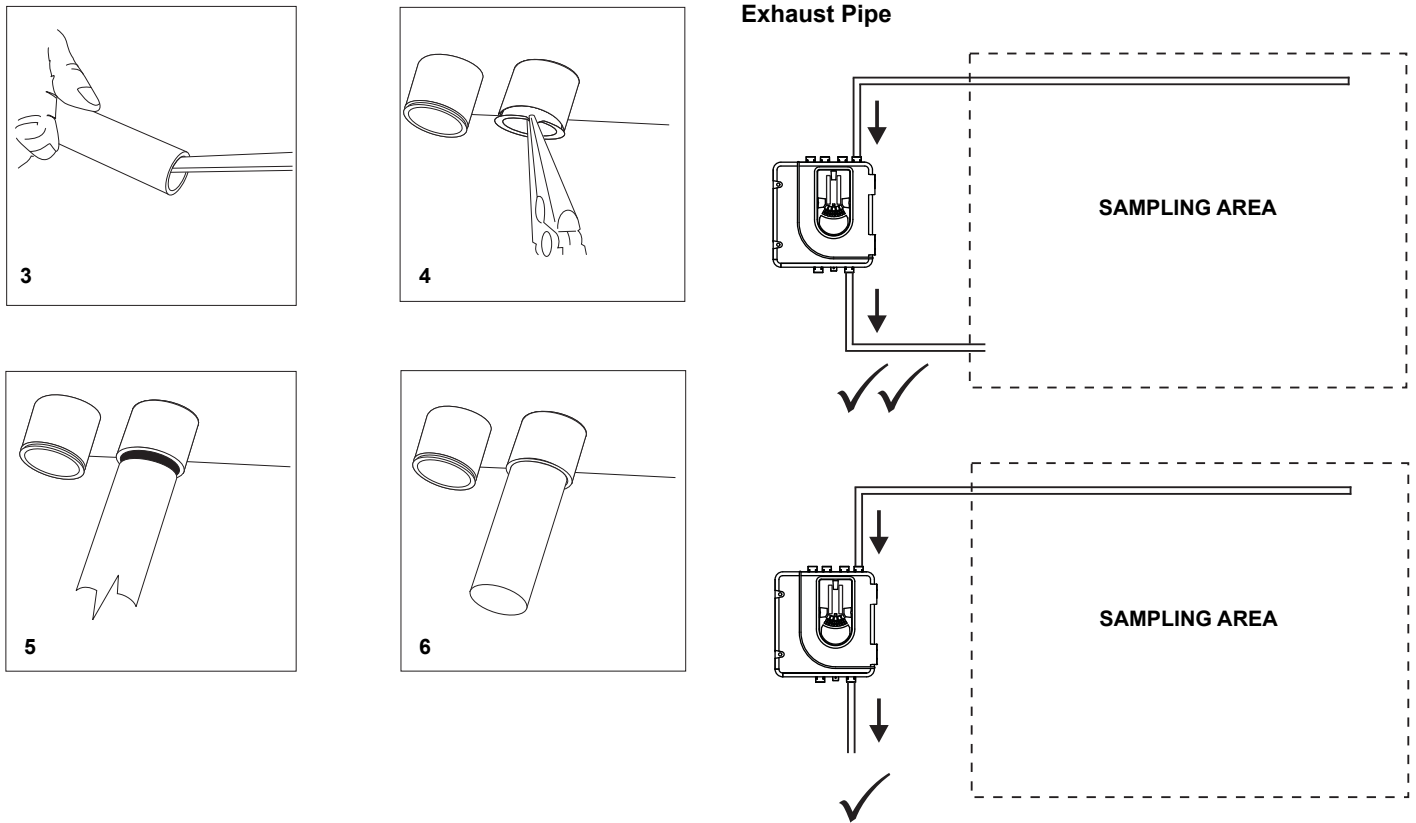
All figures quoted using highest (level 1) sensitivity

| CLASS | PIPE LENGTH (m) | MAX NUMBER OF HOLES PER CHANNEL |
|-------|-----------------|------------------------------------------------------|
| C | 100 | 18 (10 x 2.5mm, 8 x 3mm) + 3mm non sensing end hole) |
| B | 100 | 6 (4 x 4mm, 2 x 5mm inc end hole) |
| A | 100 | 2 x 6mm (+ 6mm non sensing end hole) |
| A | 80 | 3 (1 x 5mm, 2 x 6mm inc end hole) |



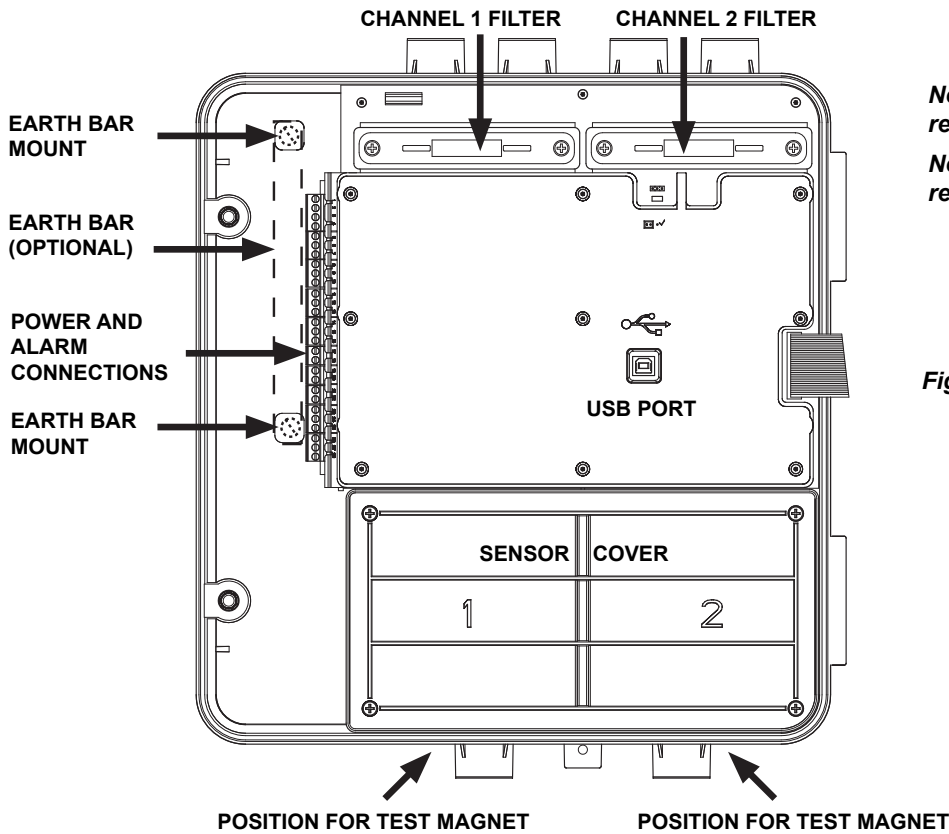
Pipe Installation





WIRING INSTALLATION

Power, Alarm and Control Connections



Note 1: All wiring should comply with local requirements and regulations.
Note 2: Loop wiring must observe the recommendations of the panel manufacturer

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 + | | T1 |
| 2 | Ext Power In - | Primary PSU | |
| 3 | Aux Power In + | Primary PSU | |
| 4 | Aux Power In - | Not used in default 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 + | 47 k-ohm EOL Resistor | |
| 19 | Sounder Output 2 - | | T7 |
| 20 | Sounder Output 2 + | 47 k-ohm EOL Resistor | |
| 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 common FAULT 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.

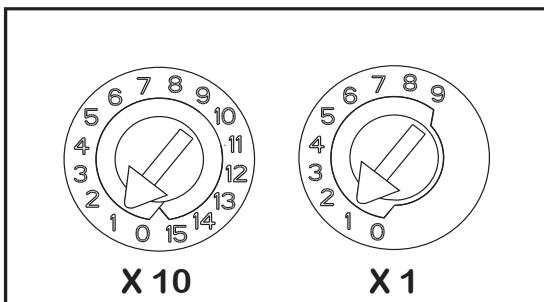


Figure 10: Address Switches

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.)

Note: The module address will only respond to a panel poll when in **Normal** mode.

POWERING UP

Using Default Settings

1. Connect a suitable 24VDC supply (complying with European Standard EN 54-4) 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).

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.

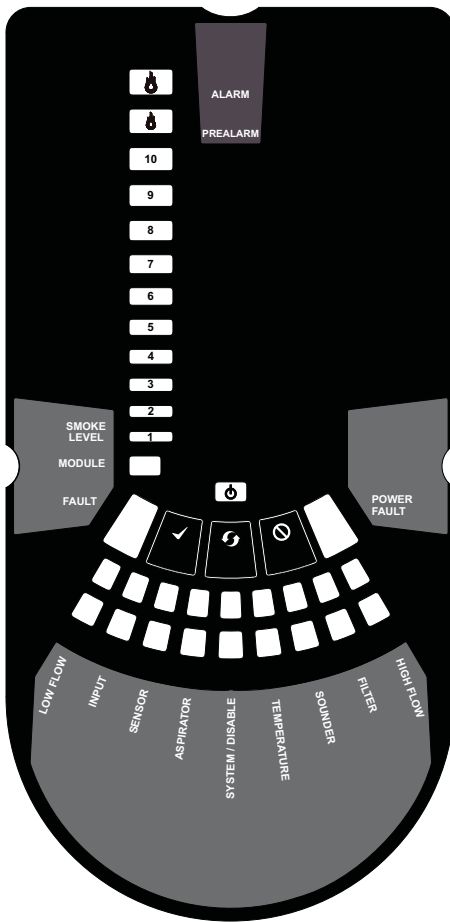
FRONT PANEL

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

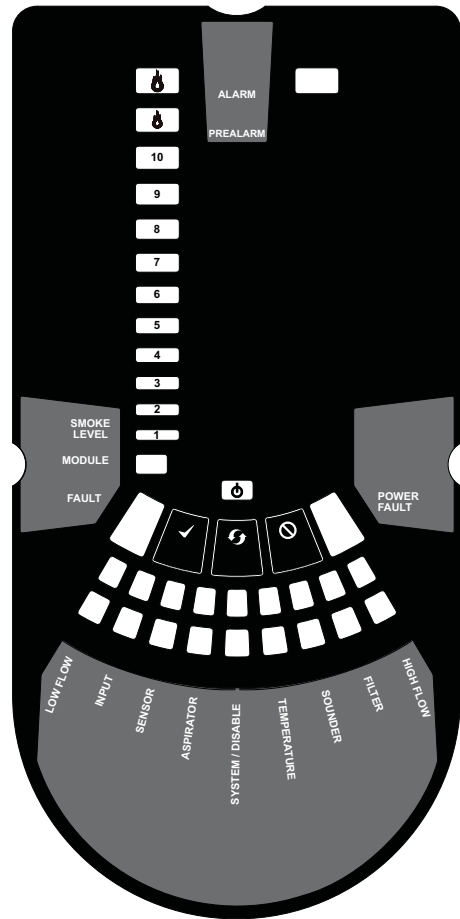
The following information is displayed:

- 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)
- Flow Level
- Test, Reset and Disable Buttons

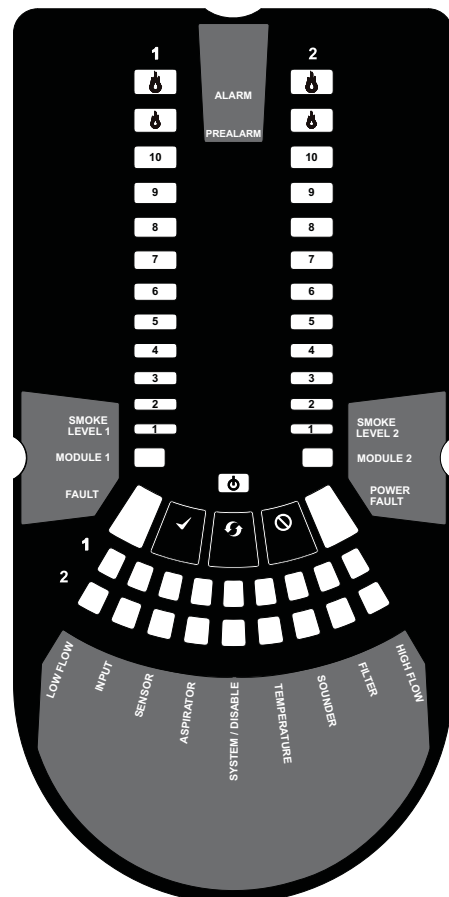
Figure 11: Front Panel Display



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) | 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 | | |
| | BLINK | Module communication | |
| FAULT | ON Yellow | Common or multiple faults | |
| POWER | ON Green | FAAST LT is powered | Displays Yellow when initialising |
| 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 SENSOR | 1 BLINK | External input fault | Not used with default settings |
| ASPIRATOR | 2 BLINKS | Sensor communication fault | Check sensor addresses and installation; replace sensor. |
| | 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. |
| DISABLE | 2 BLINKS | Fan fault | Try to restart device. |
| | 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.

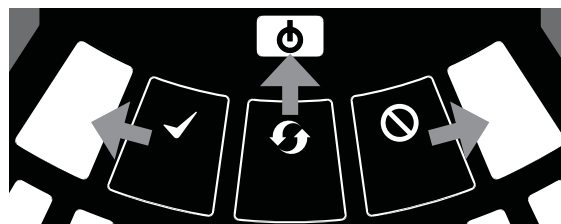
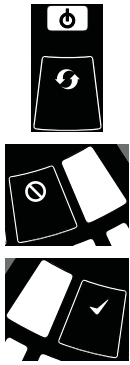


Figure 12: User Interface Buttons

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. Alarm controlled by panel. If alarm persists, set again immediately after the reset In DISABLE Mode, if pressed for 2 s unit will exit from DISABLE Mode (but remains in MAINTENANCE Mode) |
| DISABLE | Used to increment Password digits in PASSWORD PROCEDURE | When pressed for 2 s, device enters DISABLE Mode for 60 minutes (default). Alarm and fault relays reset. Smoke sensors continue to report alarm and their faults to the panel. (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 in **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.

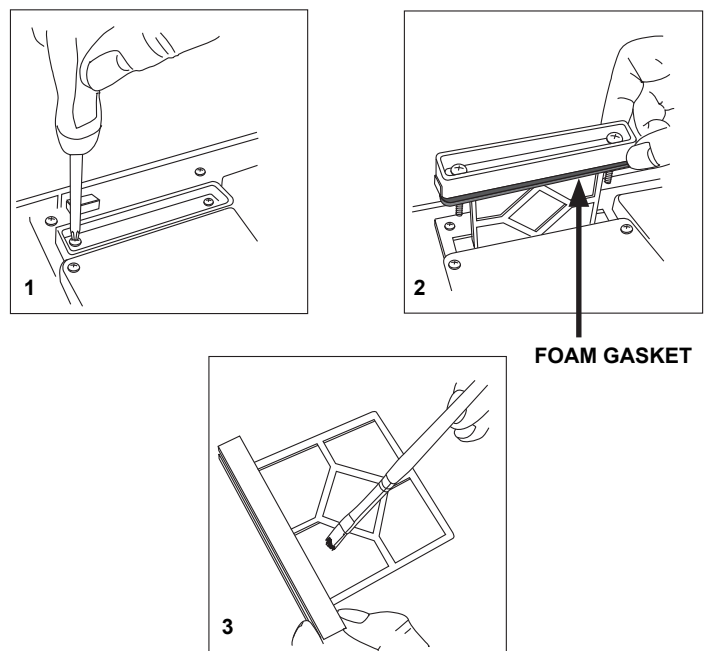
Service Mode

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 (the smoke sensors continue to communicate with the 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:



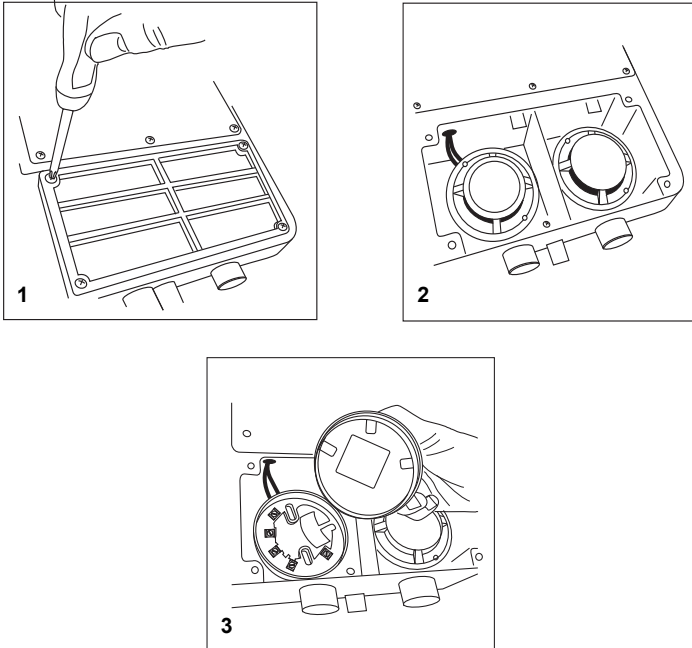
Either replace the filter assembly or carefully brush off the accumulated dust.

Note: If replacing the filter, remove the foam gasket from the old filter and place onto the new filter. When placing the new filter into the slot, ensure that the gasket is correctly aligned.

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.

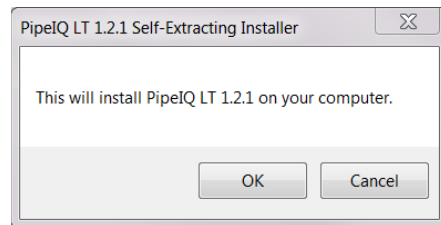
5 GB of free hard disc space

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

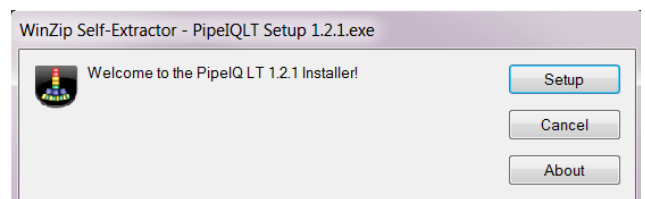
Click on the link to PipeIQLT at www.systemsensoreurope.com.

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

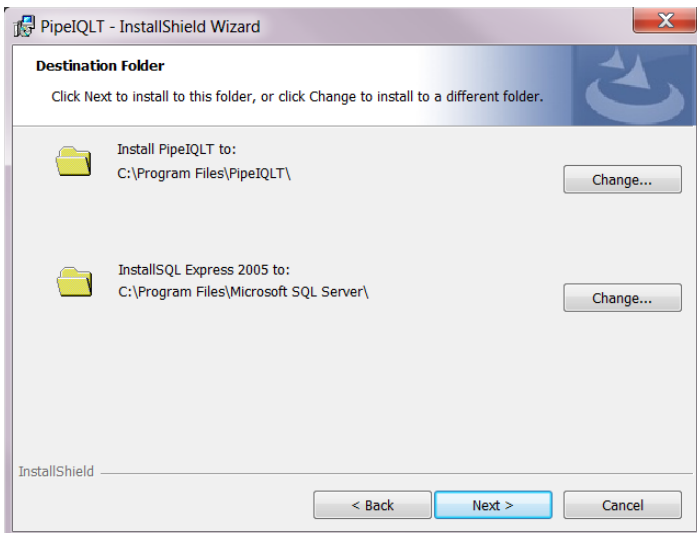
When the below dialog box appears, click **Setup** to start the wizard:





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.



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.

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


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.

| |
|----------------------------------------------------------------------------------------------------------|
|  0832 |
| FL2011E: 0832-CPD-1993 12 FL2012E: 0832-CPD-1994 12 FL2022E: 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 |