Aspirating smoke detector

Setup and control guide
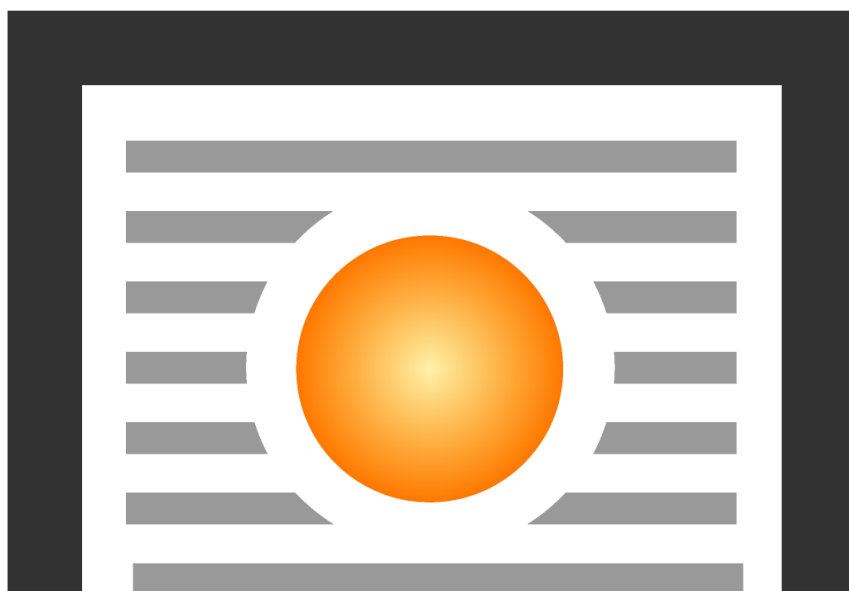
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Aspirating Smoke Detector

Introduction

The FAAST LT aspirating smoke detector is an advanced smoke sensing system for use in early warning and very early warning applications.The system continuously draws air from the controlled environment through a series of sampling holes to monitor the environment for smoke particulate.A range of sensing, operating and output facilities can be configured in the FAAST LT unit by the end user.This is accomplished by programming and downloading control parameters from a PC running the proprietary software application, *PipeIQLT*.This manual describes how to monitor and configure the various operating parameters available in a FAAST LT unit via the user interface provided by PipeIQLT.

Functional state diagram

In operation, the device can be in one of 6 possible states:

1. Initialization
2. Normal
3. Maintenance
4. Remote Maintenance
5. Service Mode
6. Power Out Of Range state

The routes in and out of these states are shown in the diagram below.
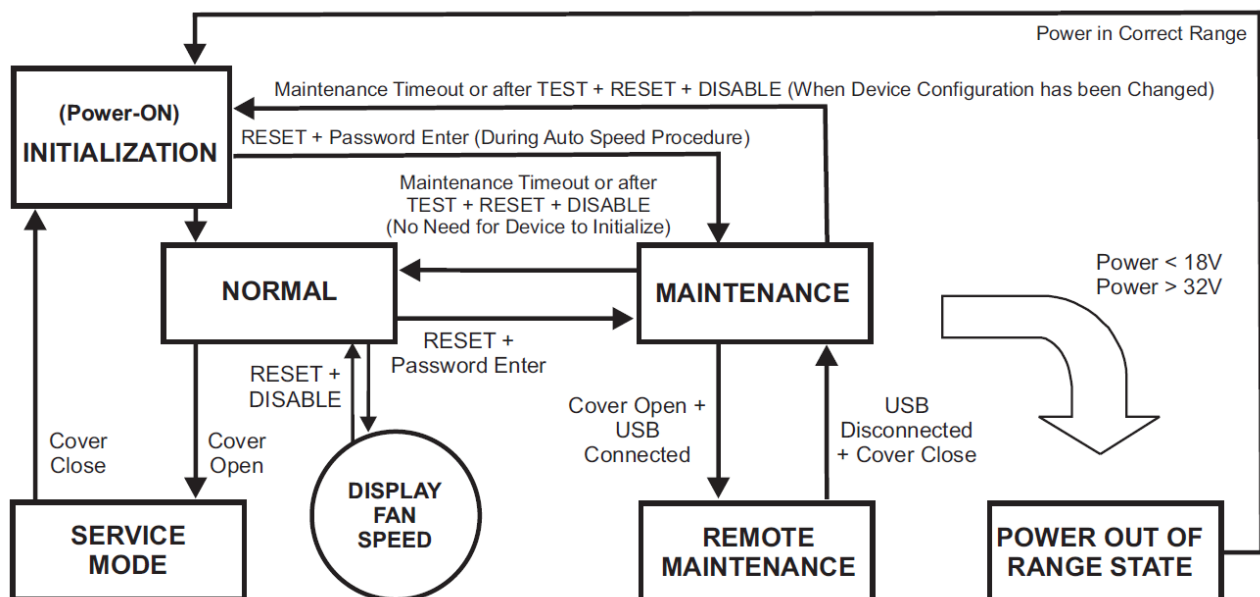
Power-On/Initialisation

A FAAST LT device always powers on in the *Initialisation* state where internal checks are completed before entering the *Normal* state.

Normal

In the *Normal* state the FAAST LT operates as a smoke detector.The main button actions are not active, apart from the combination ***Reset + Disable*** which shows the fan speed number, and the ***Reset*** button itself providing access to the *Password Procedure* to go to the *Maintenance* state.

Note: For the loop based FAAST LT device, the module address will only respond to a panel poll when in *Normal* mode.

Maintenance

When the correct password is entered, a FAAST LT device will enter the *Maintenance* state (See *Password Procedure* for more information).The front panel buttons are enabled for maintenance functions and the FAAST LT unit can be linked to a PC.(See *Remote Maintenance* state).

A FAAST LT device will automatically time-out of the *Maintenance* state after a preset period of inactivity (Default is 5 minutes).

Remote maintenance

To enter the *Remote Maintenance* state from the *Maintenance* mode, open the hinged front cover and connect to a PC with a USB cable.In *Remote Maintenance* state it is possible to control, monitor and re-programme the FAAST LT device via the PC using PipeIQLT.

The *Remote Maintenance* state does not have a time-out. The FAAST LT device will return to the *Maintenance* state when the USB cable is unplugged.

Service mode

When the FAAST LT device is in *Normal*, the *Service Mode* state is entered automatically when the front cover is opened.The FAAST LT unit switches off the power to the unit.Once the service action is complete, and the front cover is closed, the FAAST LT device restarts automatically.

Power out of range state

If the PSU voltage is out-of-range, the FAAST LT unit will stop working, switching off the power to the unit and signalling a power fault and a general fault.

The FAAST LT device remains in this state until it is re-powered or restarts automatically when the supply voltage returns to within the correct range.

Password procedure (To enter Maintenance Mode)

Press and hold **RESET**; left hand flow indicator will turn yellow then green.

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

Press **DISABLE** to increment the LEDs 1…9; press **TEST** (tick button) 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.

When the USB cable is plugged into the unit, it switches to *Remote Maintenance* mode; the maintenance time-out is disabled.

Introduction to PipeIQLT

Overview

The PipeIQLT software program is a convenient and powerful Windows® based application that can be used to set-up and monitor the performance of FAAST LT Aspiration devices via a graphical user interface on a PC.

PipeIQLT also provides facilities to develop and verify the performance of pipe network solutions, configure the design parameters to suit local fire codes and standards and generate pipe layout diagrams, BoMs, parameter tables and event log reports.

With a detailed Help Menu to guide the user through the different screens and options, PipeIQLT is a comprehensive package to support the use of the FAAST LT detector in aspirating applications.

Installing and running PipeIQLT

Load and install PipeIQLT on the PC (See the ***PipeIQLT Quick Start Instructions*** at the back of the *FAAST LT Quick Installation Guides* for details of installing and launching PipeIQLT).

The PipeIQLT User Interface

The graphical user interface for PipeIQLT includes a title bar, menu bar, toolbar, left pane, right pane, and status bar as described in the following table:

Option	Action
Menu Bar	Contains six menus that perform various tasks such as new, open, close, save, change the view, etc
Toolbar	Contains buttons to create, open or save projects
Left pane	Displays all the project elements in a tree structure
Right pane	Displays detailed information of the item selected in the left pane
Status bar	Displays the type of operation (on tabs at the bottom of the Left Pane) Tabs: Configuration; Pipe Design; Monitoring

USING PIPEIQLT TO CONTROL OR MONITOR FAAST LT

FAAST LT USB Connection

PC connectivity is provided by an on board USB **B** socket located in the middle of the FAAST LT unit behind the hinged front cover.The USB interface allows access to a range of additional options, via the PipeIQLT application software (supplied).

Note: To connect, access or change any FAAST LT configuration parameters, the device must be in *Maintenance* mode (See *Password Procedure* to enter *Maintenance* mode).

Connecting a PC to a FAAST LT Device for the First Time

PCs Running Windows 7

Ensure that PipeIQLT is installed on the PC, and that the FAAST LT unit is running in *Maintenance* mode. With Windows 7 running, connect the USB cable from the FAAST LT device to a spare USB port on the PC.The PC will automatically detect the new hardware and find and install the necessary driver software. When this is complete, a message will appear in the bottom right corner of the screen (the FAAST LT device can be viewed in the *Ports (COM & LPT)* field of *Device Manager*).

PCs Running Windows XP

Ensure that the FAAST LT unit is running in *Maintenance* mode.The first time that a PC running Windows XP is connected to the FAAST LT device, the Windows 'Plug and Play' dialog box will pop up on the screen, alerting that a new hardware device has been found and needs to be connected.

Choose the following options:

Select **No, not this time** and **Next** to move to the next window:

Select **Install the software automatically (Recommended)**.

Place the PipeIQ LT disc supplied with the FAAST LT unit into the CD drive and click **Next**. Follow the on-screen instructions to install the new hardware drivers. When complete, a window will display the message **The wizard has finished installing the software for FAAST LT**.

Click **Finish**.

The FAAST LT device will appear in *Device Manager*.

Preparing to Configure or Monitor a FAAST LT Device

To connect and communicate with a FAAST LT device via the PC USB port, PipeIQLT must be running a project (.mdf file) that matches the type of FAAST LT device being used.If no project exists on the PC, one will have to be created prior to connecting (See *Creating a Project* section).

To communicate with a FAAST LT Device.

Ensure that the FAAST LT unit is in *Maintenance* mode, PipeIQLT is running on the PC, and a USB cable is connected from the internal socket to the PC.

In PipeIQLT, open the project file associated with the FAAST LT device to be monitored.The **Left** pane in PipeIQLT will show the aspirating system tree (loading the file may take a little while).

Click on the **FAAST LT Device** to highlight it, as shown below:
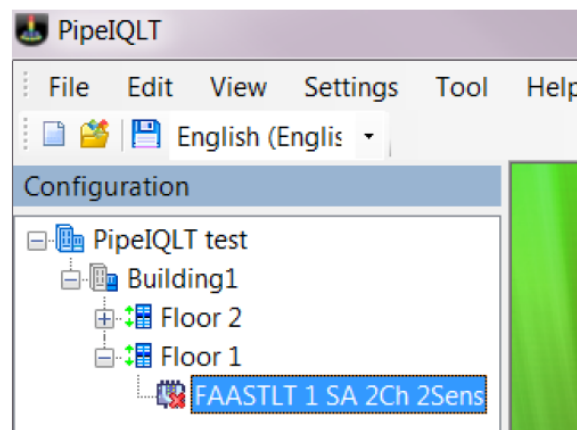
Select **Connect Device** from the **Tool** menu.

Follow the on-screen instructions to make the connection.

The device is connected when a ***Green Tick*** is indicated by the device. A ***Red Cross*** indicates that the device is not connected.
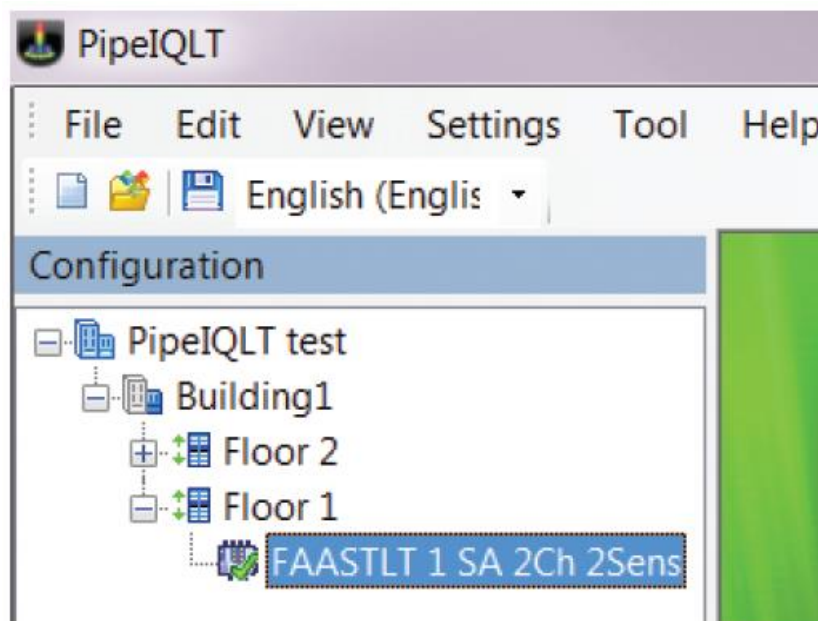
In the *Status Bar* at the bottom of the left pane, a series of tabs allow the user to switch the view as required:
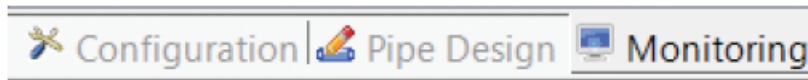
Select the **Monitoring**/**Configuration** tab as required.

Monitoring a FAAST LT Device

Once connected to a FAAST LT device, PipeIQLT can be used to monitor the device; it is possible to check the status (read device information), review event logs, activate relays, test the fan speed and reset the device.

Open a relevant project, highlight the FAAST LT device, Select *Connect Device* from the *Tools* menu and make the connection.Double click the FAAST LT device to open the large pane on the right side of the screen.View the device status features by clicking on the *Monitoring* tab.An additional tab at the top of the pane provides access to further features.

Ensuring that the FAAST LT device is highlighted in the left pane, Select **Device information** from the *Tools* menu to view further info. The *Monitoring* screen view is shown in Appendix A. For more information on using the *Monitoring* options, see the PipeIQLT *Help* Menu.

IMPORTANT NOTES ON ALTERING FAAST LT SETTINGS

FAAST LT devices are shipped with factory default parameters that should be adequate for many aspirating applications; a list of these parameters is shown in *Appendix B*.If these factory default parameters are altered, the validity of the new settings must be confirmed

Air Flow Settings

The FAAST LT operating settings can only be changed using the PipeIQLT application. Pipe layouts should be verified for EN54:20 compliance by running a PipeIQLT simulation project (via the **Pipe Design** tab) and evaluating the results against the strict approval criteria in the program. Sensitivities, air flow rates and limits etc are adjusted and optimised within PipeIQLT; the FAAST LT parameter values are created in the pipe design project and stored in an associated configuration file. The resulting air flow rate should be set as the reference flow into the configuration by pressing the **Apply to Configuration** button in the PipeIQLT *Pipe Design* mode, which will automatically set the new airflow limits.

Modifying the reference flow arbitrarily from within the *Configuration* screen is not recommended.Changing the fan speed using the manual mode from within the *Configuration* screen should be avoided.These change options are available primarily for test purposes only.Manually setting the fan speed to change the air flow will not alter the associated hi/lo flow limit settings in the FAAST LT unit.Therefore this option should not be used to set or change air flow values in an EN54 compliant pipe system; the PipeIQLT *Pipe Design* facility should always be used.

Delay Settings

The default values for flow fault delay, general fault delay, pre-alarm and alarm delay, and remote output alarm time that are pre-set into the FAAST LT unit are critical for compliance to the EN54:20 standard.

Within the *Configuration* options it is possible to increase delay times for these actions, but any changes should be made with extreme caution. Increasing any of these delays should not be done without a clear understanding of the consequences to the requirements of the EN54:20 standard.

Configuring a FAAST LT Device

The PipeIQLT configuration interface provides a method for viewing and editing the device configurations. Once connected to a FAAST LT device, PipeIQLT can be used to configure the device; it is possible to set up relay actions, fan speed, critical times and dates, event log requirements and other operational parameters.For the Stand Alone versions it is also possible to configure the alarm thresholds.

With the *Configuration* options selected, the *General* tab displays in the right pane, with further options available using the **Advanced** button (details such as passwords, time-outs and external input information).If a new project was created, the initial screen display will show the factory default settings for the device type selected.

Select the **Alarms and Relays** tab to show details such as relay latching, alarm mode settings and delays.

Select the **Channels and Sensors** tab to show details such as fan speed settings and sensor or channel disablement.

The *Configuration* screen views are shown in Appendix A.

Note: There are some differences between the graphic screens for the FAAST LT stand alone and loop based units, owing to the variation in control and operation between the two.

For more information on using the *Configuration* options, see the PipeIQLT *Help* Menu.

Follow the steps below to configure a FAAST LT device.

1) Open a relevant project, highlight the FAAST LT device, Select *Connect Device* from the *Tools* menu and make the connection.Double click the FAAST LT device to open the large pane on the right side of the screen.View the device settings by clicking on the *Configuration* tab.At this point, the screen will show the configuration *__from the current project file__*, *__NOT __*the actual device configuration.

2) Ensuring that the FAAST LT device is highlighted in the left pane, Select **Get Configuration** from the *Tools* menu; the FAAST LT current configuration parameters will be uploaded from the device and shown on the PC screen.Note that this uploaded data from the device will overwrite the configuration file values in the current project.

3) Set the configuration as required and click **Apply**, then **OK**.

4) To save this new device configuration in the current project select **Save** from the *File* menu, or to save as a new project select **Save As** from the *File* menu and enter a new filename.

5) **To actually change the operating settings in a FAAST LT device, it is necessary to connect to the unit and send across the configuration file using the USB link; see *Sending a Configuration to a FAAST LT Device* section.**

Sending a Configuration to a FAAST LT Device

The *Send Configuration* option in PipeIQLT will download the saved configuration settings from a PC to a FAAST LT device. Before sending the configuration information, ensure that the device is connected and communicating with the PC.

Select the *Configuration* tab.

In the left pane, right-click the device and then choose the **Send Configuration** option, or choose **Send Configuration** from the *Tools* menu.

Enter the *Maintenance Password* into the dialogue box and click **Download**.

A confirmation message appears. Click **OK**.

Note: When a new configuration is downloaded to a FAAST LT device, the new parameters are not used immediately; it is necessary to exit from the *Maintenance* mode.Disconnect the PC and remove the USB cable, close the front cover and then wait for the *Maintenance* mode time-out (or press the three front panel buttons for 2 seconds - see the *FAAST LT Quick Installation Guide*) and allow the device to restart.

Remember that the data uploaded from the FAAST LT device will overwrite the configuration file in the current project. It is recommended that a copy of the original configuration is made and stored before any changes are made to the FAAST LT control parameters (after selecting *Get Configuration* from the *Tools* menu, select *Save As* from the *File* menu).

For more information on using the *Configuration* options, see the PipeIQLT *Help* Menu.

Time and Date: Setting the Real Time Clock

The time and date clock in the FAAST LT device is set up independent of the configuration parameters.

With the *Monitoring* tab selected in the left pane and the FAAST LT device highlighted, ensure that the *Actions* tab is selected in the right pane. The clock configuration section is located in the bottom left of this pane.

Click **Get** to refresh the date and time display.

Click on **Change FAAST LT Clock** to adjust the date and/or time. Follow the on-screen instructions and then click **Update**. Click **OK** to finish. The clock is immediately reset.

Setting the Alarm Level (Stand Alone Versions Only)

The FAAST LT detector uses an internal laser smoke sensor in each channel. The laser sensor has 9 sensitivity levels allowing 9 different Alarm or Pre-Alarm settings to be available in the detector; these are shown in the table following:

PREALARM / ALARM LEVEL	Obs in %/Feet	Obs in %/meter
Level 1	0,02 % obs/ft	2,00 % obs/ft
Level 2	0,03 % obs/ft	0,10 % obs/m
Level 3	0,05 % obs/ft	0,16 % obs/m
Level 4	0,10 % obs/ft	0,33 % obs/m
Level 5	0,10 % obs/ft	0,66 % obs/m
Level 6	0,50 % obs/ft	1,64 % obs/m
Level 7	1,00 % obs/ft	3,28 % obs/m
Level 8	1,50 % obs/ft	4,92 % obs/m
Level 9	2,00 % obs/ft	6,56 % obs/m

To set these levels, ensure the *Configuration* tab is selected in the left pane and click the *Advanced* button in the *Channels and Sensors* tab of the right pane. Set the required alarm value from the drop down menu.

Using the **Day/Night** mode, a second set of Alarm and Pre-Alarm levels can be configured.

In the common chamber version of the FAAST LT (1 channel - 2 detectors), it is possible to configure the detector to give alarm when only 1 sensor **(OR)** or when both sensors **(AND)** reach the alarm level.

FAAST LT Alarm Mode (Loop based version only)

For a FAAST LT device that uses loop communication the smoke alarm decision is made at the panel. The panel can activate an Alarm status at the FAAST LT unit in one of two ways, pre-settable in the configuration parameters.

Sensor Alarm Mode

In this mode, the FAAST LT unit monitors the sensors' remote outputs; these are under the control of the panel. When the panel sets the remote output ON, the related sensor channel will go into alarm; when the remote output turns OFF, the channel will exit the alarm state.

Module Alarm Mode

In this mode the FAAST LT Alarm state is controlled via the channel module. When the panel sends the output activation ON command to a channel module, the related channel will go into alarm. To exit the alarm state the panel must send the output activation OFF command to the module address.

Note: When the FAAST LT device is set to *Sensor Alarm Mode* and an output activation ON command has been sent to the module address, no alarm LEDs or alarm relay activation will be performed. Also, when the FAAST LT device is in *Module Alarm Mode* the alarm latching options are not allowed.

Setting the FAAST LT Device Fan speed

Before leaving the factory, an air velocity reference value is set into each FAAST unit. This equates to an optimum air flow of approximately 45 l/min. Default high/low flow thresholds are set to guarantee a flow

fault when the air flow is ±20% of the reference flow. The FAAST LT fan speed in each channel can be set to *Auto* or *Manual* control.

Auto Mode

In automatic fan speed mode, the unit will automatically initialise to the best fan speed related to the reference flow value at power ON.

Manual Mode

In manual fan speed mode, the unit uses the configured fan speed, and does not initialise the flow relative to the pre-set reference flow value. The fan speed can be set to operate in the range between 1 and 10 (highest speed).

Fan Speed Test

It is possible to test the fan speed setting using PipeIQ LT.

The FAAST LT device must be connected and communicating with the PC.

Select the *Monitoring* tab in the left pane and highlight the FAAST LT device to be tested; the *Actions* tab will appear in the right pane.In the Test Fans Speed box, select the desired fan speed against the required channel with the slider.Click Test Fan; after a short period the *Flowrate* will be displayed.To terminate the test, click Stop.

FURTHER PIPEIQLT CAPABILITIES

Creating a Project

To create a project select **New** from the *File* menu or click on the toolbar.

The *New Project* dialog box appears.

In the **File Name** box, type the name of the project, and then click **Save**.

The PipeIQ LT project file is created.

A project can comprise a site, buildings, floors, and devices. When creating a project, these items are created by default; they must be defined before designing the pipe layout. For information on configuring elements on a site, see the PipeIQLT Help (select **PipeIQLT Help** from the *Help* menu.

Note: It is possible to add new buildings, floors and devices to a project after the initial site configuration is complete. Editing or modifying a project is carried out in the *Configuration* mode; for more information on adding elements to a project, refer to the PipeIQLT Help Menu.

Designing a Pipe Layout

To create an effective layout, the designer must have knowledge of the following:

Local codes and standards for the site

Pipe network design

Creating layouts using drawing packages (e.g.AutoCAD® software) and similar tools producing DXF format files.

For more information on using the Pipe Design Application Tools, see the PipeIQLT Help Menu.

Creating Reports

PipeIQLT can generate the following reports.

Configuration Reports

Event Log Report

Pipe Layout

Bill of Materials.

For more information on using the Report options, see the PipeIQLT Help Menu.

PipeIQ LT Help

The online help is a guide through the PipeIQLT application.The Help opens in a separate window where it is possible to search and navigate to information on different topics.

Select *PipeIQLT Help* from the *Help* menu or press **F1**.When you press *F1* the help topic for the active window is invoked.

Using Help - Navigation Pane (Left Pane)

This pane includes *Contents*, *Search* and *Index* tabs.Click on the tab to access the content of each.

Index: This tab contains a multilevel list of keywords and keyword phrases. To open a topic in the *Display* pane (Right pane) associated with a keyword, double click the keyword.If the keyword is used in more than one topic, a dialog box is displayed so you can select the topic to view, and then click **Display** or double-click the topic.

Search: This tab helps you to search for a topic or content.Type the word to search and press **Enter** on the keyboard.The list of topics is displayed below.Double click the topic to show it in the *Display* pane.

Contents: This tab lists the Table of Contents that contains categorized books and pages.When you double click a closed book it opens to display its topics, and when you click an open book it closes.Double click a topic to show it in the *Display* pane.

Using Help - Display Pane (Right Pane)

The *Display* pane on the right of the online help displays the content for the selected topic.

Blue Underlined Text Indicates a link to a different topic.

Green Italicized Text Indicates a link to more information or images in the same topic. Re-click the link to hide the information or image.

Appendix A – Monitoring and configuration interface

A1: Connecting to a device
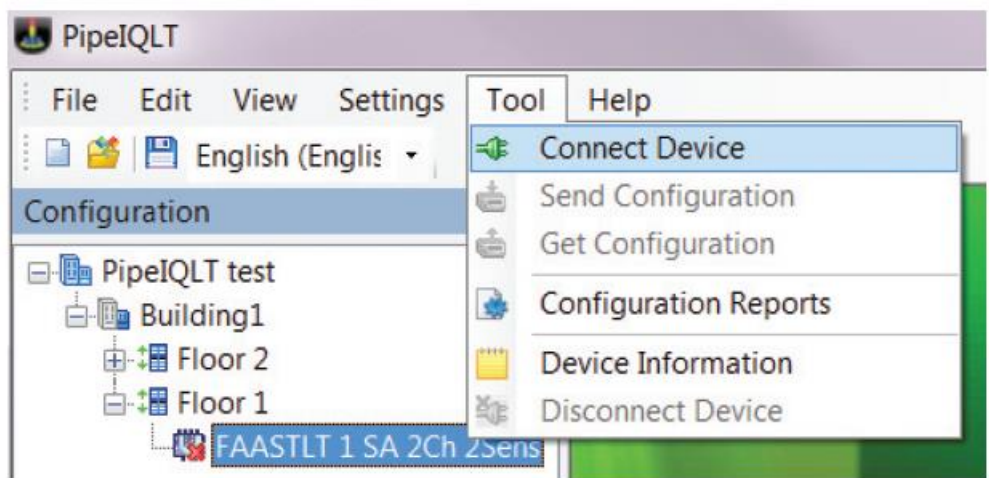
Device connected.
(Green tick on icon)
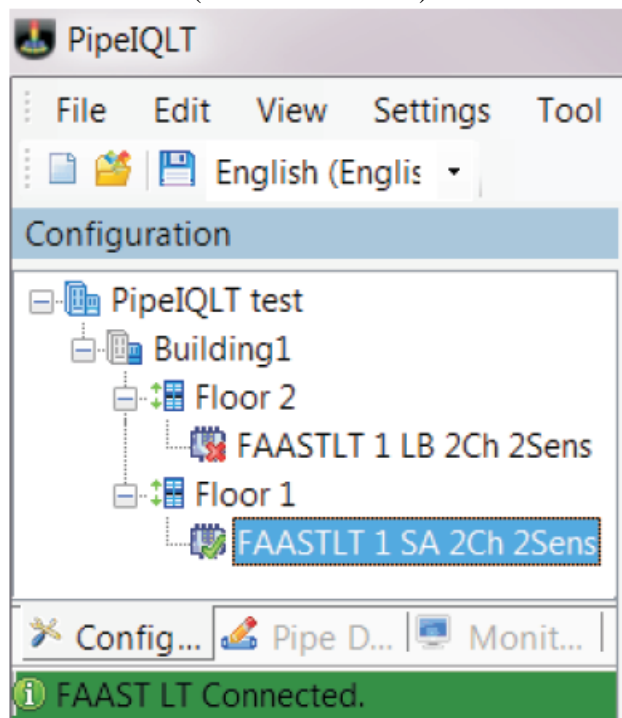
Device not connected.
(Red cross on icon)
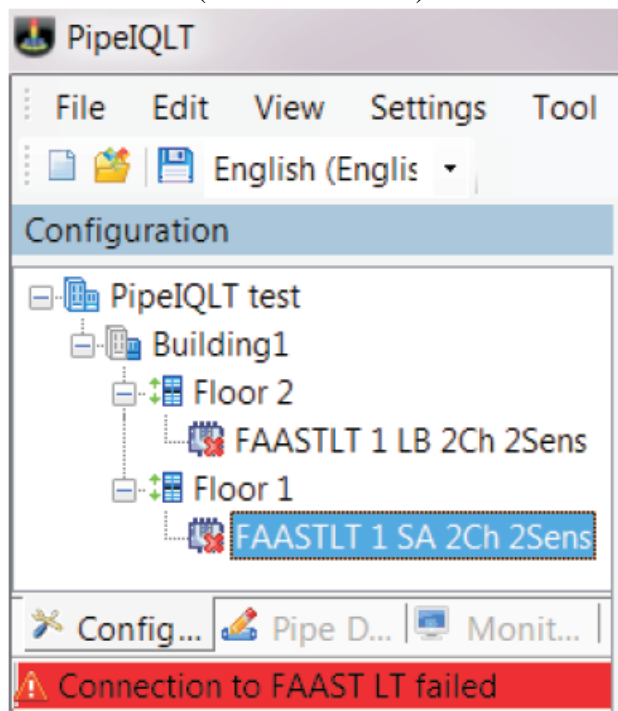
A2: MONITORING MODE PANES

Actions Tab - Stand Alone Versions
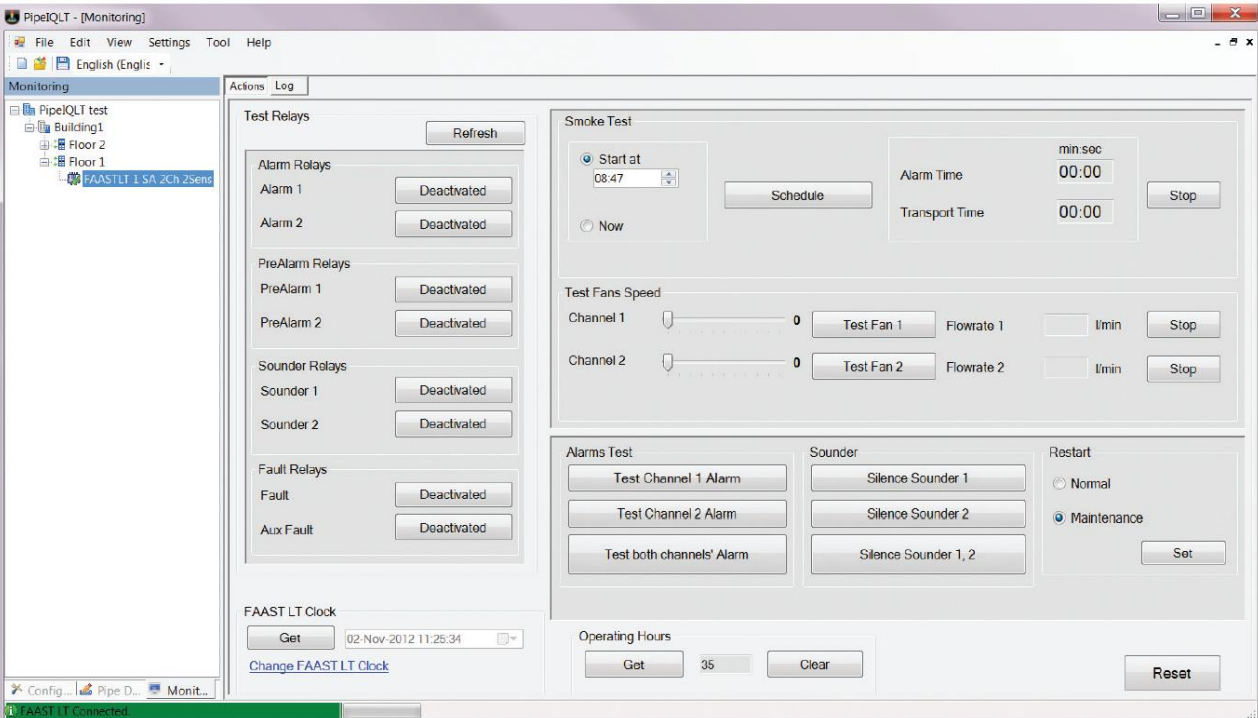
Actions Tab - Loop Based Versions
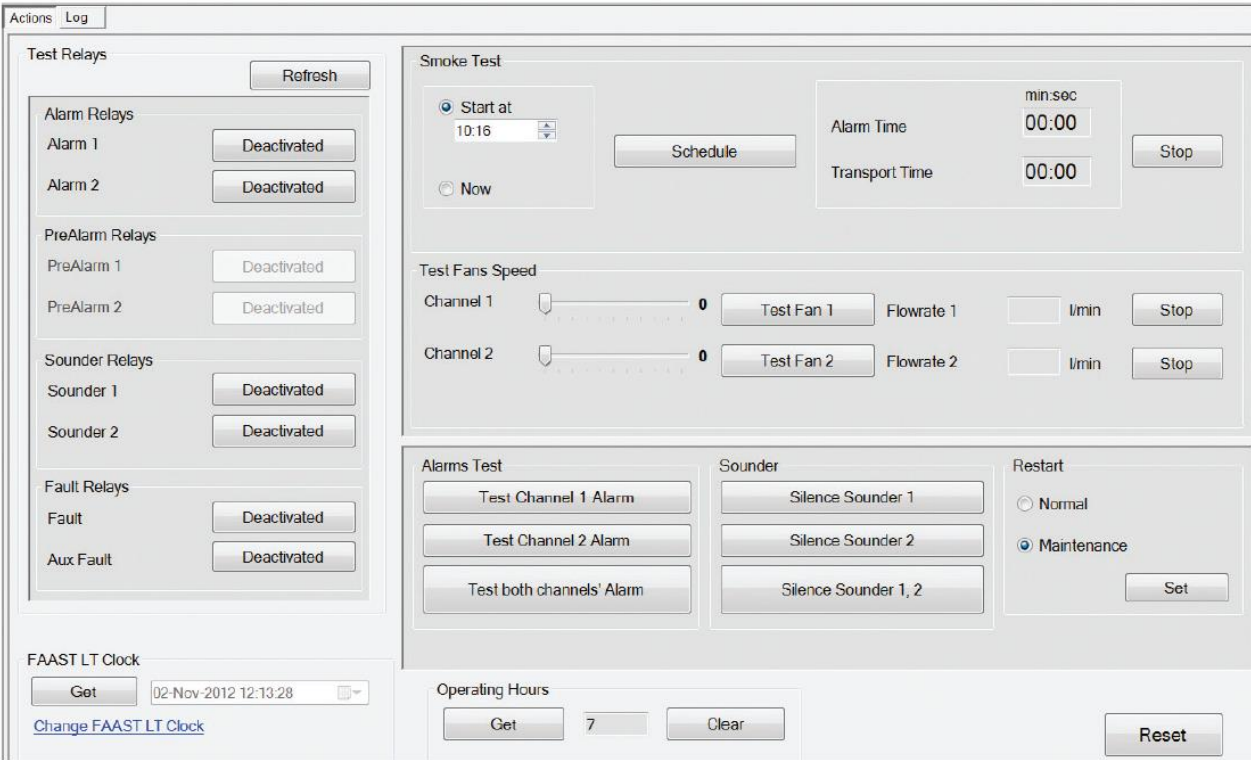
Log Tab
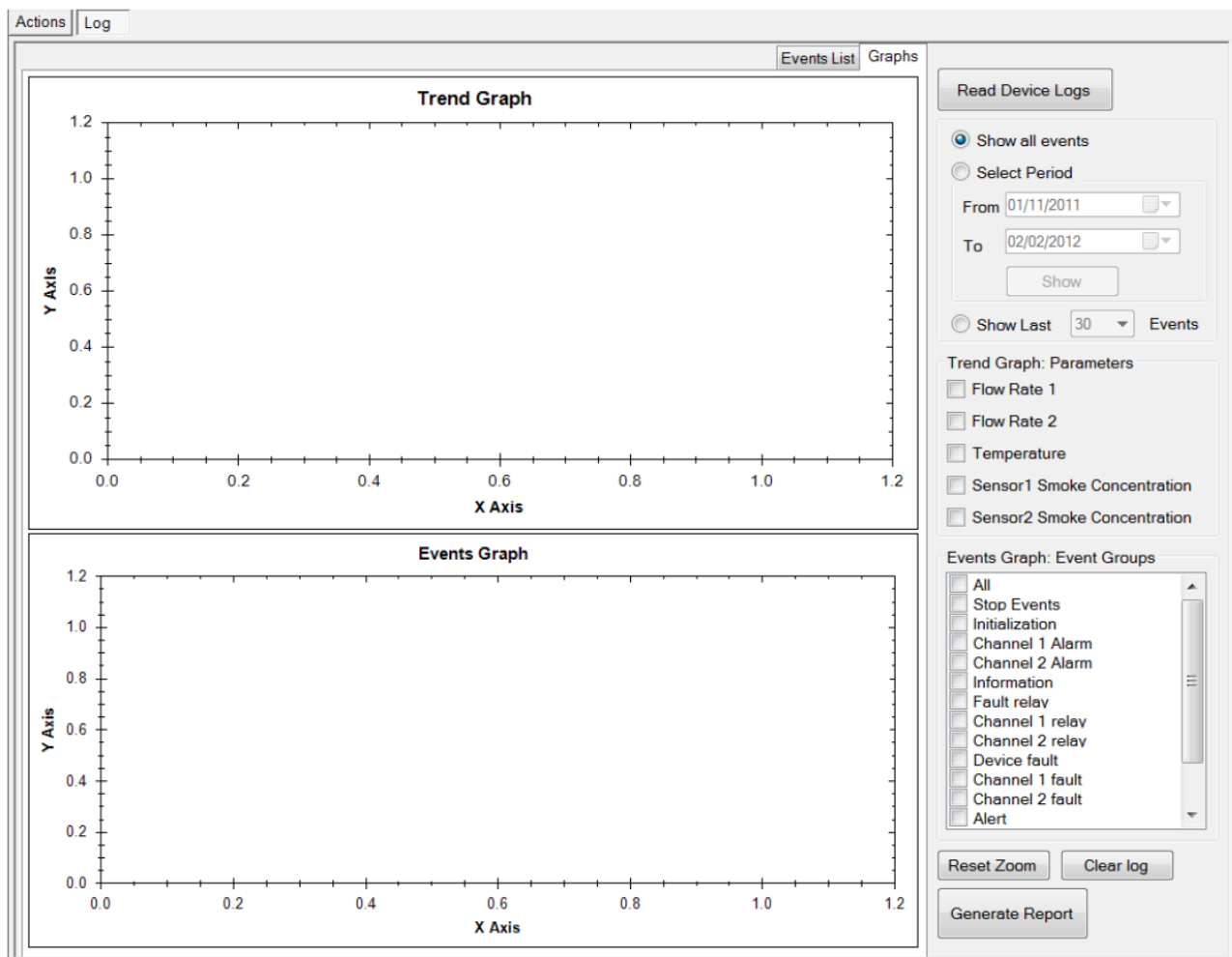
Setting the Clock
(Facility located in the *Actions* tab)
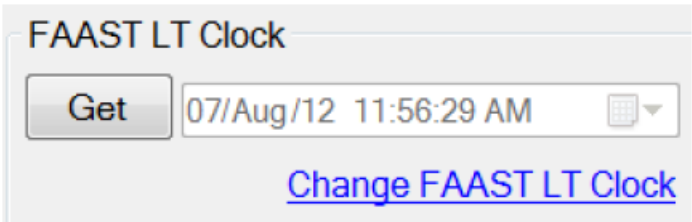
Use **Get** to retrieve the current time and date.

Use **Change FAAST LT Clock** to reset the time and date (to show *Clock Set* view opposite).

Display Device Information

Device Information window (1)   *Device Information* window (2)
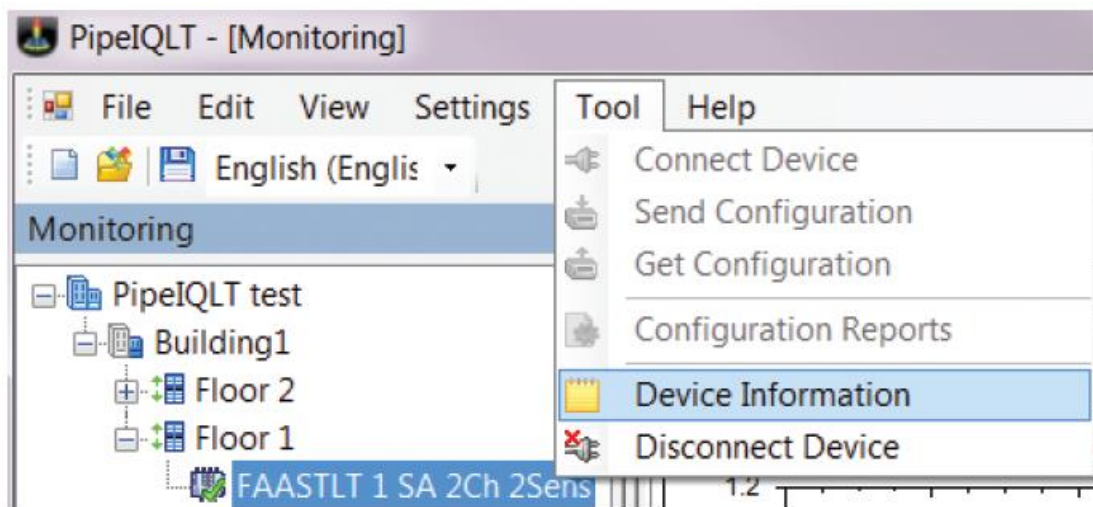
Element	Value
General	
Variant	Standalone
Loop Address	Not applicable
Super User	No
No Of Channels	2
No Of Sensors	2
Manufacture Date	5/17/2012 12:12:00 ...
Serial No	21.44.8.167
Current configuration date	8/1/2012 2:58:36 PM
Current configuration number	3
Device Status	
Configuration Fault	No
General Fault	No
Auxiliary Fault	No
External Input	Open
Operating Hours	23
Relay Alarm 1	Deactivated
Relay Alarm 2	Deactivated
Relay Prealarm 1	Deactivated
Relay Prealarm 2	Deactivated
Relay Sounder 1	Deactivated
Relay Sounder 2	Deactivated
Relay Fault	Deactivated
Relay Auxiliary Fault	Deactivated
Device Status: Channel 1	
Enabled	Yes
Sensor Enabled	Yes
Last Poll	normal
Channel is in Alarm	No

| Element	Value
Flow Temperature (°C)	26
Fan Speed	6
Device Status: Channel 2	
Enabled	Yes
Sensor Enabled	Yes
Last poll	Normal
Channel is in alarm	No
Channel is in pre-alarm	No
Flow (l/min)	45
Flow Temperature (°C)	24
Fan Speed	4
Alarm Levels (1 - 9): Sensor 1	
Day pre-alarm level	1
Day alarm level	1
Night pre-alarm level	1
Night alarm level	1
Alarm Levels (1 - 9): Sensor 2	
Day pre-alarm level	1
Day alarm level	1
Night pre-alarm level	1
Night alarm level	1
Hardware Revision	
FW Minor version	1
FW Build version	1
Firmware Revision	
HW Version	1
Mechanical Version	0
FW Major version	1

A3: CONFIGURATION MODE PANES AND OPTIONS
Configuration Options
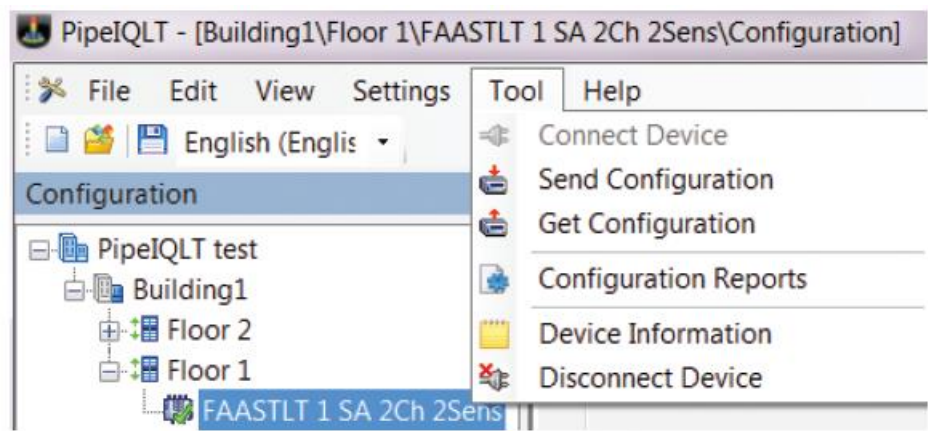
Options:
Send Configuration
Get Configuration
Configuration Reports
Device Information
Disconnect Device

General Tab
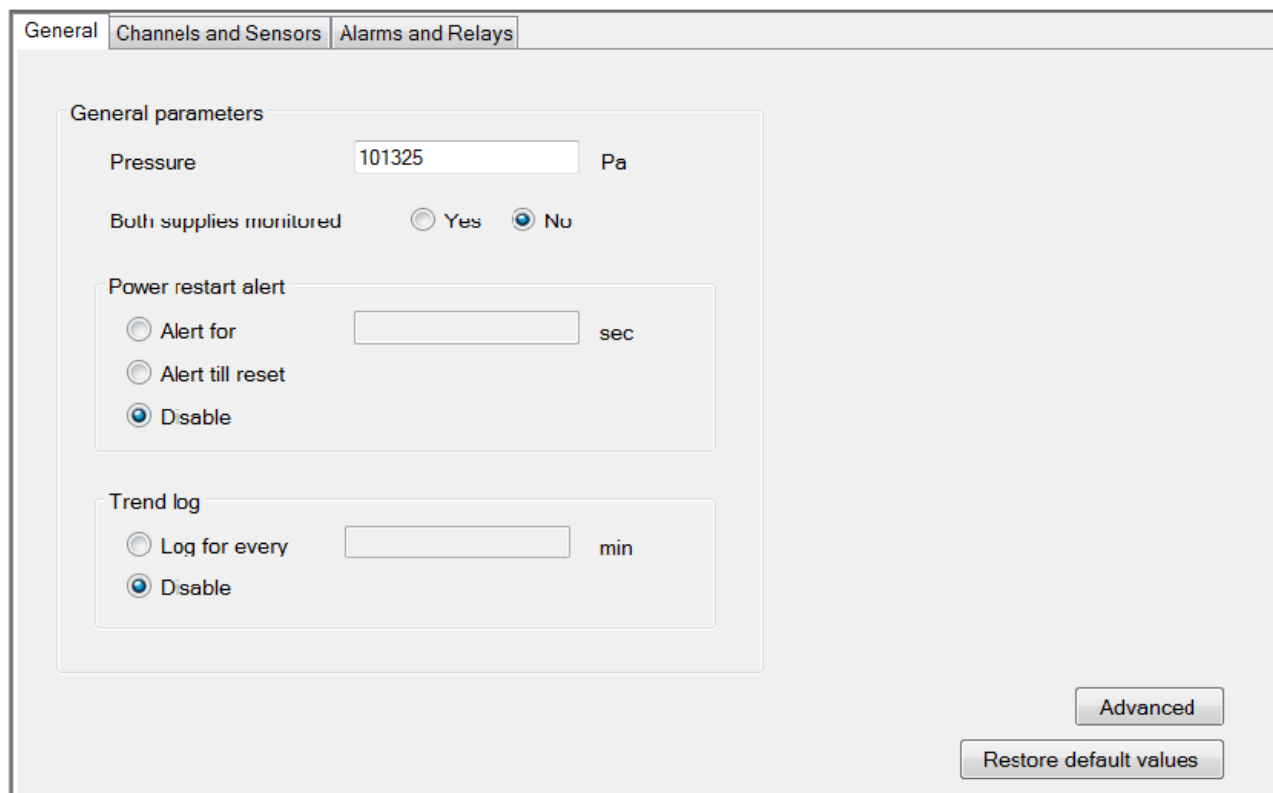
Clicking the **Advanced** button in the *General* tab displays additional configuration settings - there will be different options available for Stand Alone and Loop Based versions.

Advanced Configuration Parameters - Stand Alone Versions

Select tabs as required within this window.

Advanced Configuration Parameters - Loop Based Versions

Select tabs as required within this pane.

Channels and Sensors Tab

| General | Channels and Sensors | Alarms and Relays |

Channels

Number of Channels:2

	Channel 1	Channel 2
	☑ Enabled	☑ Enabled
Label	1	2
Alarm is latched	● Yes ○ No	● Yes ○ No
Fan speed mode	● Auto ○ Manual	● Auto ○ Manual
Fan speed		
Reference flow	45 l/min	45 l/min
Filter due date	01/Jan/99	01/Jan/99

Sensors

Number of Sensors:2

☑ Sensor 1 enabled   ☑ Sensor 2 enabled

Sensor blinking replicated   ● Yes ○ No

Common chamber: 2 sensors required for alarm   ○ Yes ● No

[Advanced]

Alarms and Relays Tab

A4: OTHER FEATURES

Generating a Configuration Report
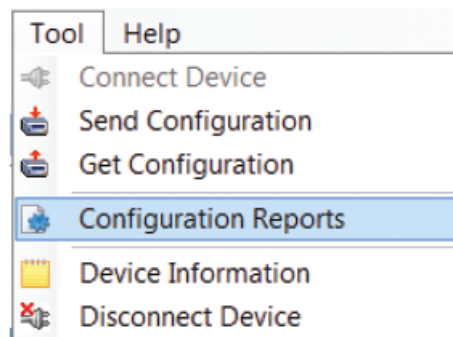
PipeIQ Report Viewer

The configuration report will be multiple pages. Use the arrows on the toolbar to navigate through the pages, zoom or print the report.

Sensors		
Enabled	Yes	Yes
Day PreAlarm Level	1	1
Day alarm level	1	1
Night pre-alarm	1	1
Night alarm level	1	1

Day Light Saving	
Configuration (Yes, No, Auto)	Yes
Start Date	3/25/2012 2:03:00AM
End Date	10/28/2012 2:10:00AM

Alarms and Relays	
Common Chamber sensor required for alarm	No
Sounder automatic cut-off time	Disabled
Alarm Delay	0 sec

Flow fault delay	60 sec
General fault delay	60 sec
General fault latched	False
Auxiliary Relay latched	False
Events triggering auxiliary relay	

Auxiliary relay set on temperature alert	No
Auxiliary relay set on external input in not normal state	No
Auxiliary relay set on power fault	No
Auxiliary relay set on flow fault	No
Auxiliary relay set on sensor fault	No
Auxiliary relay set on power restart alert	No

Sending the Configuration to a FAAST LT Device
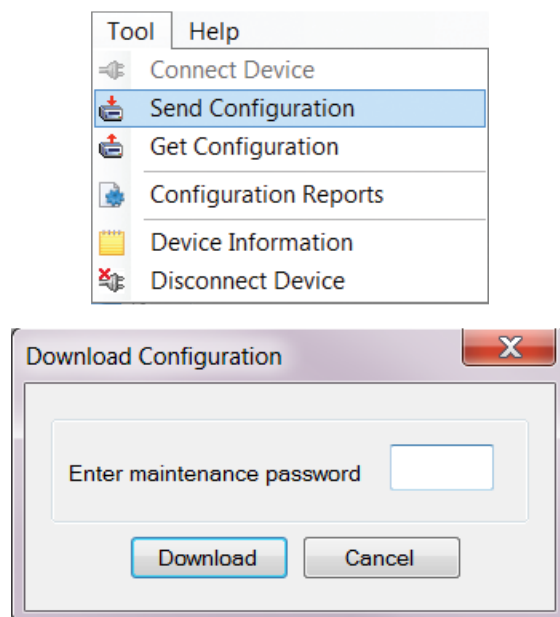
PipeIQLT Help
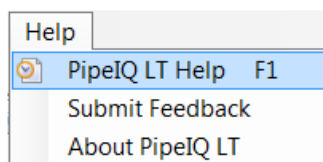
Contents Tab
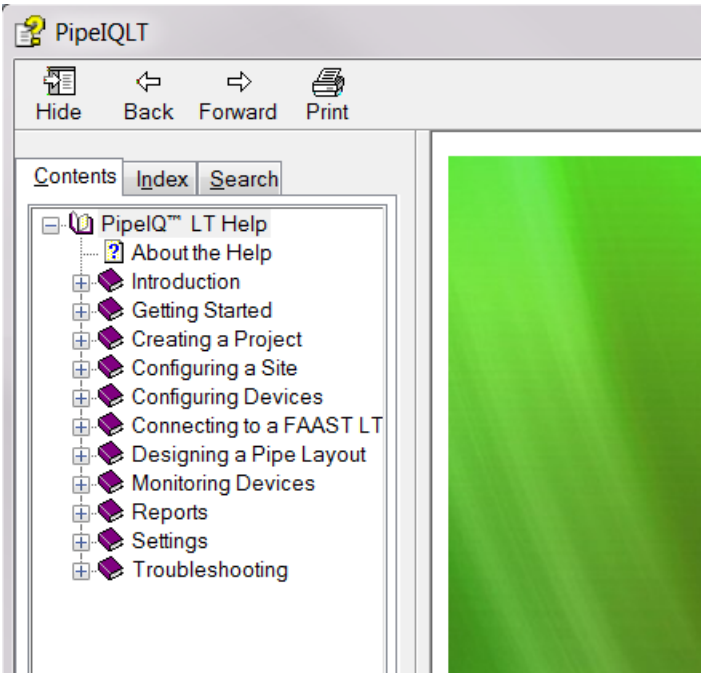
Index Tab
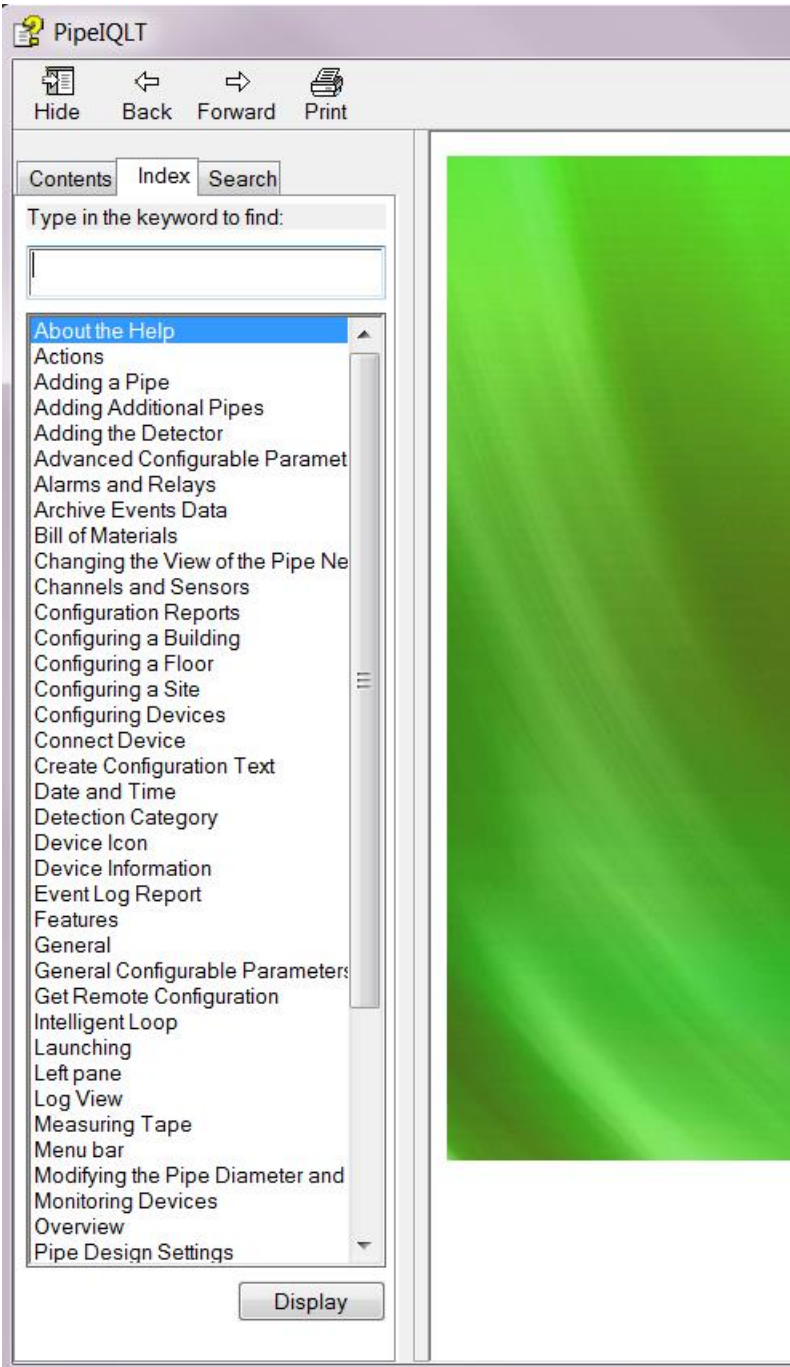
APPENDIX B – FAAST LT CONFIGURATION PARAMETERS AND DEFAULT SET-UP VALUES

B1: FAAST LT CONFIGURATION PARAMETERS

All the FAAST LT configurable parameters are described in Table AB1 below.The default values set into the unit at manufacture are listed in Tables AB2 and AB3. The user can change parameter values using the PipeIQLT application software that runs on a PC and then upload the new configuration into the unit.

SA denotes a Stand Alone unit

LB is a Loop Based (addressable) unit

A ✔ denotes applicable

#	PARAMETER	PARAMETER RANGE	SA	LB	DESCRIPTION	COMMENTS
18	Channel 1 alarm is latched	YES/NO	✔	✔	NO: When alarm condition is reached, the device activates the alarm relay When the alarm condition is removed the alarm relay is deactivated YES: When alarm condition is reached, the device activates the alarm relay When the alarm condition is removed the alarm relay remains set until the device is reset	
19	Channel 2 alarm is latched	YES/NO	✔	✔		
20	Alarm delay	0.240 s	✔	✔	When alarm condition is reached, a delay period can be introduced before the alarm is activated.	If the detector alarm condition is removed before activation, the delay is reset.
21	Auxiliary relay is used for channel 2 faults	YES/NO	✔	✔	NO: Device faults are reported on the fault relay; this relay is common on 2 channel units YES, the AUX relay will separately report CH2 faults; CH1 faults continue to be reported on the fault relay Common faults will be reported by both relays	Faults common to both channel are, for example, ASD EEPROM fault, external input fault, etc.
22	Channel 1 label	16 character (ASCII code from decimal 32 to 127)	✔	✔	Provides a label to name a channel in free text.	Example: "Building A" "Building B"
23	Channel 2 label	16 character (ASCII code from decimal 32 to 127)	✔	✔		
24	Channel 1 fan speed mode	Manual, Auto	✔	✔	Selects the fan speed control mode	The optimal flow though the device is about 45 litres/minute. Typically, this is equivalent to fan speed 5 Low and high flow limits are set to meet the EN54 requirements. A flow fault is given if the flow goes out of the -20% and +20% of the reference flow range. In Auto mode, following initialization, the unit sets the fan speed to reach the reference flow programmed in the device. In Manual mode, the user can set the fan speed. Use PipeIQ LT to change default configuration of the reference flow (both modes) and fan speed (manual mode).
25	Channel 2 fan speed mode	Manual, Auto	✔	✔		
26	Channel 1 manual fan speed	1 10	✔	✔	Defines the fan speed in manual mode	
27	Channel 2 manual fan speed	1 10	✔	✔		
28	Reference flow for channel 1	32 – 65 litres/min	✔	✔	This value represents the correct flow level to maintain	
29	Reference flow for channel 2	32 – 65 litres/min	✔	✔		
30	High flow threshold for channel 1	Internal Setting	✔	✔	High flow threshold	
31	High flow threshold for channel 2	Internal Setting	✔	✔		
32	Low flow threshold for channel 1	Internal Setting	✔	✔	Low flow threshold	

33	Low flow threshold for channel 2	Internal Setting	✔	✔		
34	Flow fault delay	0..240 s	✔	✔	A delay can be set to stop reporting a flow fault for a defined period.	If the fault condition is removed before activation of a fault, the delay will be reset.
35	Channel 1 filter due date	DD/MM/YY	✔	✔	Date to clean air filters When date is reached, the device will give a filter fault.	
36	Channel 2 filter due date	DD/MM/YY	✔	✔		
37	General fault is latched	YES/NO	✔	✔	NO: The general fault relay is activated when a fault is present and will reset when the fault is removed YES: The general fault relay is activated when a fault is present When the fault condition is removed the relay remains set until a device reset	
38	General fault delay	0..240 s	✔	✔	A delay can be set to stop reporting a general fault for a defined period If the fault condition is removed before activation of a fault, the delay will be reset.	
39	Pressure	68758 – 110000 Pa	✔	✔	Not used.	
40	Power restart alert time.	0 (Not Used), 1..240 s, 255 (no time limit)	✔	✔	When the device is switched on, it can give a power on alert The time period for this alert signal can be set by the user.	
41	Auxiliary relay set on low/high temperature alert.	YES/NO	✔	✔	User chooses the event(s) that will activate the auxiliary relay. NO: not used YES: activates the AUX relay.	It is possible to have more than one event set the Aux relay. If any one of the chosen events occurs, the Aux relay will be activated (they are combined as an OR function).
42	Auxiliary relay set on external input in not normal state	YES/NO	✔	✔		
43	Auxiliary relay set on low power alert / high power fault.	YES/NO	✔	✔		
44	Auxiliary relay set on flow fault	YES/NO	✔	✔		
45	Auxiliary relay set on sensor communication fault	YES/NO	✔	✔		
46	Auxiliary relay set on power restart alert	YES/NO	✔	✔		
47	Auxiliary relay is latched	YES/NO	✔	✔	NO: The AUX relay is activated when a chosen event is present and will reset when the event trigger is removed YES: The general AUX relay is activated when a chosen event is present When the event trigger is removed the relay remains set until a device reset	
48	External input normal state	OPEN, SHORT	✔	✔	No action is triggered by the input in this state OPEN: requires closed contacts to cause an input response. SHORT: requires an open circuit to cause an input response.	
49	External input triggers fault	YES/NO	✔	✔	User chooses the activity that is triggered by the external input. NO: not used YES: activated by external input.	Note: External input only active in NORMAL state.
50	External input silences sounders	YES/NO	✔	✔		

					Note that only one action can be selected at a time.	
51	External input resets device	YES/NO	✔	✔		
52	External input disables device	YES/NO	✔	✔		
53	External input disabling time	1..1440 min	✔	✔	When the external input is used to disable the device, this option sets the disable period.	
54	Pre-alarm delay	0 (OFF), 1..240 s	✔		A delay can be set to stop reporting a pre-alarm condition for a defined period If the pre-alarm condition is removed before activation of the pre-alarm is reported, the delay will be reset .	
55	Pre-alarm and Alarm are in cascade.	YES, NO	✔		NO: Alarm (or alarm delay) will activate immediately on alarm condition YES: Alarm condition does not activate until pre-alarm condition (and related delay) has completed	
58	Day start time	HH:MI	✔		Start of daytime mode operation	Minimum daytime period = 1 hour
59	Day end time	HH:MI	✔		End of daytime mode operation	
60	Holiday day #1 date	DD/MM	✔		On these days, the device uses the night time settings only (every year).	00/00 = not used Day/Night mode (Parameter 81) must be set to YES
	Holidays #2…#19	DD/MM	✔			
79	Holiday day #20 date	DD/MM	✔			
80	Sounder activation mode	On Pre-alarm, On Alarm	✔		This option defines which event will activate the sounder relay.	If "On Pre-Alarm" is selected, sounders remain active in alarm.
81	Day/night mode enabled	YES/NO	✔		Allows use of two different sets of alarm and pre-alarm levels. NO: Day settings are always used YES: Device will change between day and night settings at selected times.	
82	Monday is holiday	YES/NO	✔		Allows use of different alarm and pre-alarm levels on one or more days of the week NO: Device will change between day and night settings at selected times (if Parameter 81 set). YES: Night settings are always used	
83	Tuesday is holiday	YES/NO	✔			
84	Wednesday is holiday	YES/NO	✔			
85	Thursday is holiday	YES/NO	✔			
86	Friday is holiday	YES/NO	✔			
87	Saturday is holiday	YES/NO	✔			
88	Sunday is holiday	YES/NO	✔			
89	Sensor 1 day alarm level	1..9	✔		Day and night pre-alarm and alarm level settings.	
90	Sensor 2 day alarm level	1..9	✔			
91	Sensor 1 day pre-alarm level	1..9	✔			
92	Sensor 2 day pre-alarm level	1..9	✔			
93	Sensor 1 night alarm level	1..9	✔			
94	Sensor 2 night alarm level	1..9	✔			
95	Sensor 1 night pre-alarm level	1..9	✔			
96	Sensor 2 night pre-alarm level	1..9	✔			
97	Alarm mode	Sensor Mode, Module Mode		✔	Sets the method used to indicate an alarm SENSOR MODE: When remote output on a sensor is set ON for configured time, that sensor channel goes into alarm When the remote output turns OFF, the channel stops signalling alarm	Note that the Output Activate command will not set an alarm in Sensor Mode, and turning on the sensor remote output will not set an alarm in Module Mode Note that when in Module Mode, an alarm is not latched

					MODULE MODE: When the Output Activate command is sent to a channel module, that channel goes into alarm To exit alarm, an Output Deactivate command must be sent	In common chamber (2 sensor) version – the Sensor Mode is required to enable the AND/OR option.
98	Sensor communication timeout	0 (Not Used), 1…240 s		✔	The device will give a sensor communication fault when a sensor is inactive for this period of time.	Inactive means that sensor remote output is OFF and it is not blinking.
99	Remote output time for alarm	50, 100, 10000ms		✔	The device will go to alarm if the sensor remote output is ON at least for this time.	Not applicable when Alarm Mode is set to Module Mode.

B2: FAAST LT DEFAULT SET-UP VALUES

All the default value settings are listed in the following two tables.Table AB2 refers to Stand Alone units, whilst Table AB3 refers to Loop Based (addressable) units.

X means that a parameter is not applicable.

* value set to Italian time zone at manufacture.

Table AB2: Stand Alone Versions

#	PARAMETER	PARAMETER RANGE	1 Channel 1 Sensor	1 Channel 2 Sensor	2 Channel 2 Sensor
1	Maintenance Password	1111 – 9999	3111	3111	3111
2	Current configuration number	0 255	1	1	1
3	Current configuration date	DD/MM/YY HH:MM:SS	*	*	*
4	Channel 1 enabled	YES/NO	YES	YES	YES
5	Channel 2 enabled	YES/NO	X	X	X
6	Sensor 1 enabled	YES/NO	YES	YES	YES
7	Sensor 2 enabled	YES/NO	X	YES	YES
8	Daylight saving enabled	YES/NO/AUTO	NO	NO	NO
9	Daylight saving start date	DD/MM HH:MM	25/02 02:00	25/02 02:00	25/02 02:00
10	Daylight saving end date	DD/MM HH:MM	28/10 02:00	28/10 02:00	28/10 02:00
11	Disable time	1..240 min	60	60	60
12	Maintenance timeout	1..30 min or 0 (DISABLED)	5	5	5
13	Trend log interval	1..240 min or 0 (DISABLED)	0	0	0
14	Sensors blinking replicated	YES/NO	YES	YES	YES
15	Both supplies monitored	YES/NO	NO	NO	NO
16	Number of sensors required in alarm	1,2	1	1	1
17	Sounder automatic cut-off time	0 (Disabled), 5,10,15,…,600 s	0	0	0
18	Channel 1 alarm is latched	YES/NO	YES	YES	YES
19	Channel 1 alarm is latched	YES/NO	YES	YES	YES
20	Alarm delay	0 ..240 s	0	0	0
21	Auxiliary relay is used for channel 2 faults	YES/NO	YES	YES	YES
22	Channel 1 label	16 char (ASCII code from 32 to 127)	"1"	"1"	"1"
23	Channel 2 label	16 char (ASCII code from 32 to 127)	X	X	"2"
24	Channel 1 fan speed mode	Manual, Auto	Auto	Auto	Auto
25	Channel 2 fan speed mode	Manual, Auto	X	X	Auto
26	Channel 1 manual fan speed	0..10	X	X	X
27	Channel 2 manual fan speed	0..10	X	X	X
28	Reference flow for channel 1	32 – 65 litres/min	45 litres/min	45 litres/min	45 litres/min
29	Reference flow for channel 2	32 – 65 litres/min	X	X	45 litres/min
30	High flow threshold for channel 1	Internal Setting	set to EN54-20 requirements (-20% - +20%)		
31	High flow threshold for channel 2	Internal Setting	X	X	As Above
32	Low flow threshold for channel 1	Internal Setting	set to EN54-20 requirements (-20% - +20%)		
33	Low flow threshold for channel 2	Internal Setting	X	X	As Above
34	Flow fault delay	0..240 s	60	60	60
35	Channel 1 filter due date	DD/MM/YY	01/01/99	01/01/99	01/01/99
36	Channel 2 filter due date	DD/MM/YY	X	X	01/01/99
37	General fault is latched	YES/NO	NO	NO	NO

#	PARAMETER	PARAMETER RANGE			
38	General fault delay	0..240 s	60	60	60
39	Pressure	68758 – 110000 Pa	101325	101325	101325
40	Power restart alert time	0 (Alert disabled), 1..240 s, 255 (no time limit)	0	0	0
41	Auxiliary relay set on low/high temperature alert	YES/NO	NO	NO	NO
42	Auxiliary relay set on external input in not normal state	YES/NO	NO	NO	NO
43	Auxiliary relay set on low power alert / high power fault	YES/NO	NO	NO	NO
44	Auxiliary relay set on flow fault	YES/NO	NO	NO	NO
45	Auxiliary relay set on sensor communication fault	YES/NO	NO	NO	NO
46	Auxiliary relay set on power restart alert	YES/NO	NO	NO	NO
47	Auxiliary relay is latched	YES/NO	NO	NO	NO
48	External input normal state	OPEN, SHORT	OPEN	OPEN	OPEN
49	External input triggers fault	YES/NO	NO	NO	NO
50	External input silences sounders	YES/NO	NO	NO	NO
51	External input reset device	YES/NO	YES	YES	YES
52	External input disables ASD	YES/NO	NO	NO	NO
53	External input ASD disabling time	1..1440 min	60	60	60
54	Pre-alarm delay	0 (OFF), 1..240 s	0	0	0
55	Pre-alarm and Alarm are in cascade	YES, NO	NO	NO	NO
58	Day start time	HH:MI	08:00	08:00	08:00
59	Day end time	HH:MI	17:00	17:00	17:00
60	Holiday day #1 date	DD/MM	Empty	Empty	Empty
	…	DD/MM	Empty	Empty	Empty
79	Holiday day #20 date	DD/MM	Empty	Empty	Empty
80	Sounder activation mode	On Pre-alarm, On Alarm	Alarm	Alarm	Alarm
81	Day/night mode enabled	YES/NO	NO	NO	NO
82	Monday is holiday	YES/NO	NO	NO	NO
83	Tuesday is holiday	YES/NO	NO	NO	NO
84	Wednesday is holiday	YES/NO	NO	NO	NO
85	Thursday is holiday	YES/NO	NO	NO	NO
86	Friday is holiday	YES/NO	NO	NO	NO
87	Saturday is holiday	YES/NO	NO	NO	NO
88	Sunday is holiday	YES/NO	NO	NO	NO
89	Sensor 1 day alarm level	1..9	1	1	1
90	Sensor 2 day alarm level	1..9	1	1	1
91	Sensor 1 day pre-alarm level	1..9	1	1	1
92	Sensor 2 day pre-alarm level	1..9	1	1	1
93	Sensor 1 night alarm level	1..9	1	1	1
94	Sensor 2 night alarm level	1..9	1	1	1
95	Sensor 1 night pre-alarm level	1..9	1	1	1
96	Sensor 2 night pre-alarm level	1..9	1	1	1
97	Alarm mode	Sensor alarm mode, module alarm mode	X	X	X
98	Sensor communication timeout	0 (Disabled), 1…240 s	X	X	X
99	Remote output time for alarm	50, 100,...10000ms	X	X	X

Table AB3: Loop Based (Addressable) Versions

#	PARAMETER	PARAMETER RANGE	1 Channel 1 Sensor	1 Channel 2 Sensor	2 Channel 2 Sensor
1	Maintenance Password	1111 - 9999	3111	3111	3111
2	Current configuration number	0 255	1	1	1
3	Current configuration date	DD/MM/YY HH:MM:SS	*	*	*
4	Channel 1 enabled	YES/NO	YES	YES	YES
5	Channel 2 enabled	YES/NO	X	X	YES
6	Sensor 1 enabled	YES/NO	YES	YES	YES
7	Sensor 2 enabled	YES/NO	X	YES	YES
8	Daylight saving enabled	YES/NO/AUTO	NO	NO	NO
9	Daylight saving start date	DD/MM HH:MM	25/02 02:00	25/02 02:00	25/02 02:00
10	Daylight saving end date	DD/MM HH:MM	28/10 02:00	28/10 02:00	28/10 02:00

11	Disable time	1..240 min	60	60	60
12	Maintenance timeout	1..30 min or 0 (DISABLED)	5	5	5
13	Trend log interval	1..240 min or 0 (DISABLED)	0	0	0
14	Sensors blinking replicated	YES/NO	YES	YES	YES
15	Both supplies monitored	YES/NO	NO	NO	NO
16	Common chamber sensors required for alarm	1,2	1	1	1
17	Sounder automatic cut-off time	0 (Disabled), 5,10,15,…,600 s	0	0	0
18	Channel 1 alarm is latched	YES/NO	NO	NO	NO
19	Channel 2 alarm is latched	YES/NO	NO	NO	NO
20	Alarm delay	0 ..240 s	0	0	0
21	Auxiliary relay is used for channel 2 faults	YES/NO	YES	YES	YES
22	Channel 1 label	16 char (ascii code from 32 to 127)	"1"	"1"	"1"
23	Channel 2 label	16 char (ascii code from 32 to 127)	X	X	"2"
24	Channel 1 fan speed mode	Manual, Auto	Auto	Auto	Auto
25	Channel 2 fan speed mode	Manual, Auto	X	X	Auto
26	Channel 1 manual fan speed	0..10	X	X	X
27	Channel 2 manual fan speed	0..10	X	X	X
28	Reference flow for channel 1	32 – 65 litres/min	45 litres/min	45 litres/min	45 litres/min
29	Reference flow for channel 2	32 – 65 litres/min	X	X	45 litres/min
30	High flow threshold for channel 1	Internal Setting	set to EN54-20 requirements (-20% - +20%)		
31	High flow threshold for channel 2	Internal Setting	X	X	As Above
32	Low flow threshold for channel 1	Internal Setting	set to EN54-20 requirements (-20% - +20%)		
33	Low flow threshold for channel 2	Internal Setting	X	X	As Above
34	Flow fault delay	0..240 s	60	60	60
35	Channel 1 filter due date	DD/MM/YY	01/01/99	01/01/99	01/01/99
36	Channel 2 filter due date	DD/MM/YY	X	X	01/01/99
37	General fault is latched	YES/NO	NO	NO	NO
38	General fault delay	0..240 s	0	0	0
39	Pressure	68758 – 110000 Pa	101325	101325	101325
40	Power restart alert time	0 (Alert disabled), 1..240 s, 255 (no time limit)	0	0	0
41	Auxiliary relay set on low/high temperature alert	YES/NO	NO	NO	NO
42	Auxiliary relay set on external input in not normal state	YES/NO	NO	NO	NO
43	Auxiliary relay set on low power alert / high power fault	YES/NO	NO	NO	NO
44	Auxiliary relay set on flow fault	YES/NO	NO	NO	NO
45	Auxiliary relay set on sensor communication fault	YES/NO	NO	NO	NO
46	Auxiliary relay set on power restart alert	YES/NO	NO	NO	NO
47	Auxiliary relay is latched	YES/NO	NO	NO	NO
48	External input normal state	OPEN, SHORT	OPEN	OPEN	OPEN
49	External input triggers fault	YES/NO	NO	NO	NO
50	External input silences sounders	YES/NO	NO	NO	NO
51	External input reset device	YES/NO	YES	YES	YES
52	External input disables ASD	YES/NO	NO	NO	NO
53	External input ASD disabling time	1..1440 min	60	60	60
54	Pre-alarm delay	0 (OFF), 1..240 s	X	X	X
55	Pre-alarm and Alarm are in cascade	YES, NO	X	X	X
58	Day start time	HH:MI	X	X	X
59	Day end time	HH:MI	X	X	X
60	Holiday day #1 date	DD/MM	X	X	X
	…	DD/MM	X	X	X
79	Holiday day #20 date	DD/MM	X	X	X
80	Sounder activation mode	On Pre-alarm, On Alarm	X	X	X
81	Day/night mode enabled	YES/NO	X	X	X
82	Monday is holiday	YES/NO	X	X	X
83	Tuesday is holiday	YES/NO	X	X	X

84	Wednesday is holiday	YES/NO	X	X	X
85	Thursday is holiday	YES/NO	X	X	X
86	Friday is holiday	YES/NO	X	X	X
87	Saturday is holiday	YES/NO	X	X	X
88	Sunday is holiday	YES/NO	X	X	X
89	Sensor 1 day alarm level	1..9	X	X	X
90	Sensor 2 day alarm level	1..9	X	X	X
91	Sensor 1 day pre-alarm level	1..9	X	X	X
92	Sensor 2 day pre-alarm level	1.9	X	X	X
93	Sensor 1 night alarm level	1..9	X	X	X
94	Sensor 2 night alarm level	1..9	X	X	X
95	Sensor 1 night pre-alarm level	1..9	X	X	X
96	Sensor 2 night pre-alarm level	1..9	X	X	X
97	Alarm mode	Sensor alarm mode, module alarm mode	Sensor	Sensor	Sensor
98	Sensor communication timeout	0 (Disabled), 1…240 s	0	0	0
99	Remote output time for alarm	50, 100,...10000ms	3000	3000	3000

APPENDIX C – PIPE CONFIGURATION TYPICAL EXAMPLES - 1 CHANNEL (can be duplicated for 2 channel units)

Typical Example Pipe Configuration

1 Channel Single Pipe
100m x 18 Holes - Class C

HOLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	END
SIZE (mm)	2	2	2	2	2	2	2	2	2.5	2.5	2.5	2.5	2.5	3	3	3	3.5	3.5	6

Typical Example Pipe Configuration

1 Channel Single Pipe
100m x 10 Holes - Class C

HOLE	1	2	3	4	5	6	7	8	9	10	END
SIZE (mm)	2.5	2.5	2.5	2.5	2.5	3	3	3	3	3.5	6

Typical Example Pipe Configuration

1 Channel Single Pipe
58m x 6 Holes - Class C

HOLE	1	2	3	4	5	6	END
SIZE (mm)	3	3	3	3.5	3.5	4	6

Typical Example Pipe Configuration   **1 Channel T-Piece (2 Pipes)**
                                           80m - Class C

HOLE	1	2	3	4	5	6	7	8	9	END
HOLE	10	11	12	13	14	15	16	17	18	END
SIZE (mm)	2.5	2.5	2.5	3	3	3	3	3	3	3
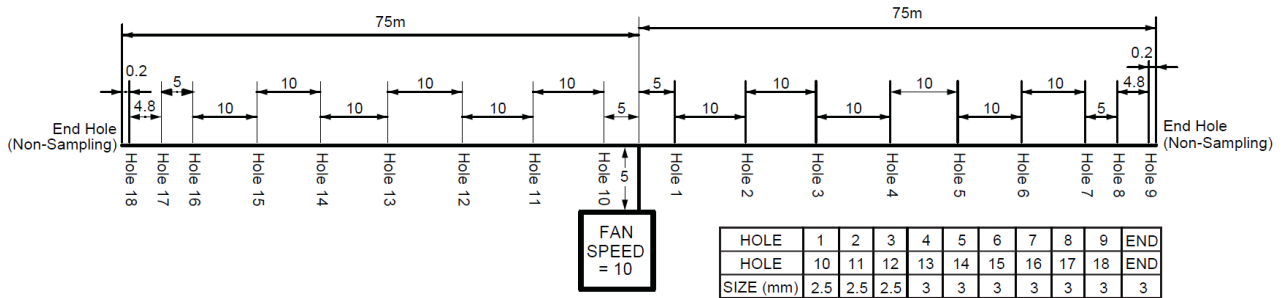
Typical Example Pipe Configuration   **1 Channel**
                                           48m x 2 Pipes x 5 Holes - Class C

HOLE	1	2	3	4	5	END
HOLE	6	7	8	9	10	END
SIZE (mm)	3	3	3	3	3.5	5
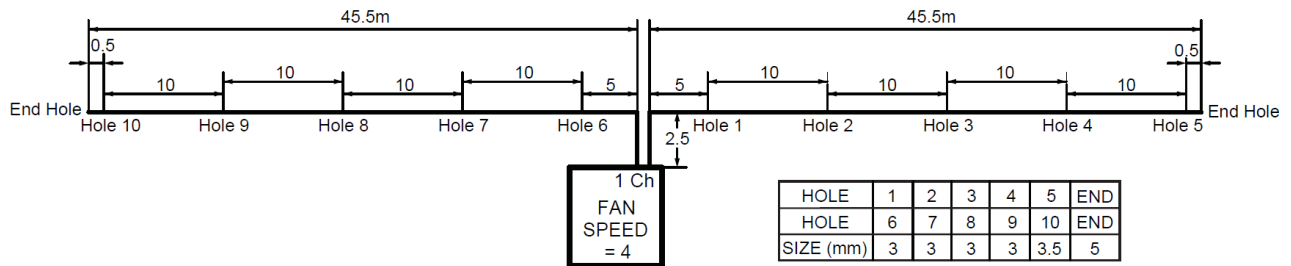
Typical Example Pipe Configuration   **1 Channel T-Pieces (4 Pipes)**
                                           40m x 4 Pipes x 4 Holes - Class C

HOLE	1	2	3	4	END
HOLE	5	6	7	8	END
HOLE	9	10	11	12	END
HOLE	13	14	15	16	END
SIZE (mm)	2.5	2.5	2.5	2.5	2.5
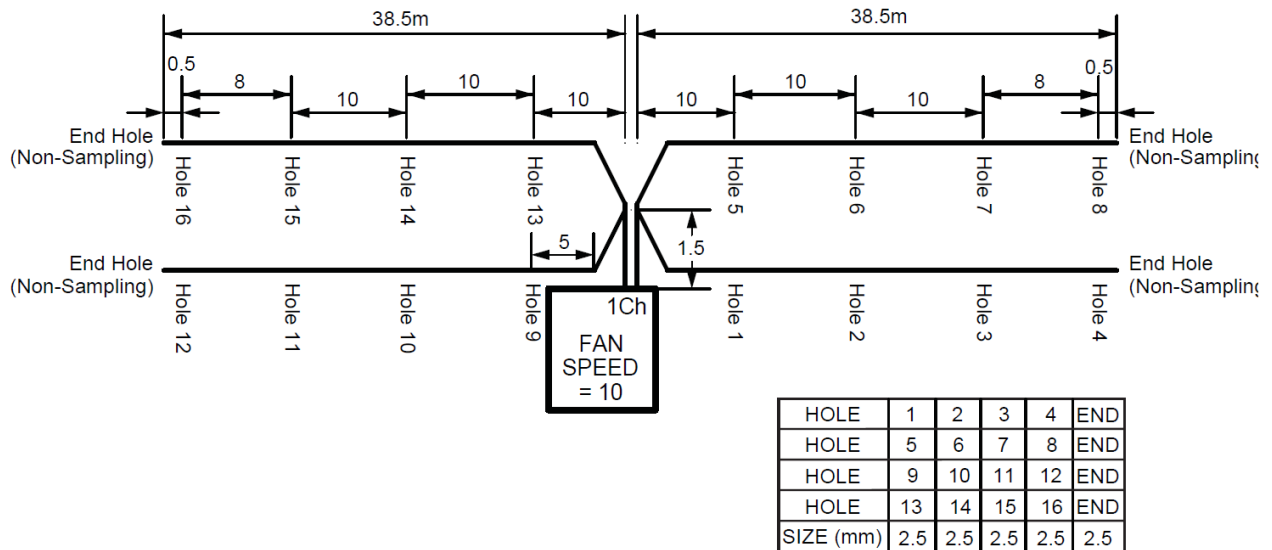
Typical Example Pipe Configuration   **1 Channel Single Pipe**
100m - Class B

95m

| 5 | 10 | 30 | 10 | 39 | 1 |

Hole 1   Hole 2   Hole 3   Hole 4   Hole 5   End hole (Hole 6)

5

FAN SPEED = 10

HOLE	1	2	3	4	5	END
SIZE (mm)	3.5	3.5	4	4	5	5
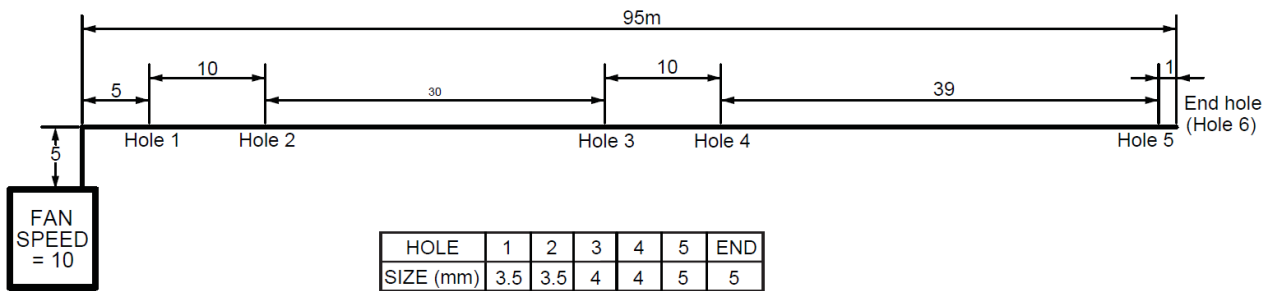
Typical Example Pipe Configuration   **1 Channel Single Pipe**
80m - Class A

75m

| 25 | 45 | 5 |

Hole 1   Hole 2   End hole (Hole 3)

5

FAN SPEED = 10

HOLE	1	2	END
SIZE (mm)	5	6	6