



FoxBox 3.2.0 software user guide

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Part



1 Introduction

1.1 Getting Started



The contextual help is available on each page by clicking on the icon  in the right top menu (on a computer or a tablet). The corresponding help page opens in a new tab.

Full documentation in PDF format can also be downloaded from the Foxstream website:

<http://www.foxstream.fr/get.php?product=foxbox&version=3.2.0&type=doc&lang=en>

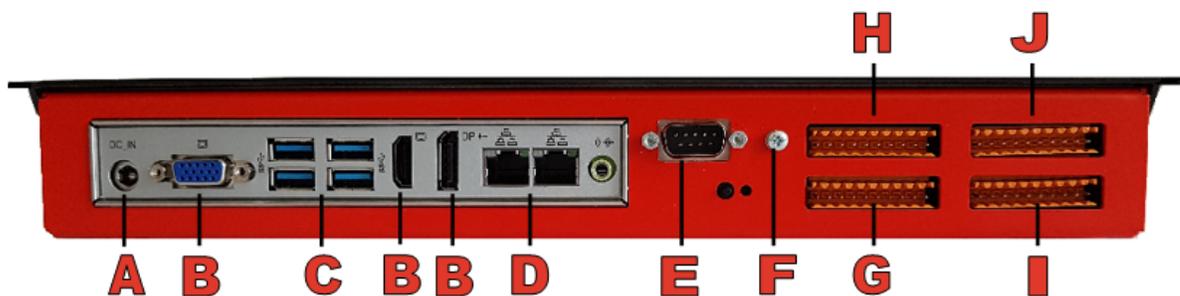
1.1.1 Quick start guide

Before using FoxBox, make sure you have the following components:



- A. FoxBox
- B. Power cord
- C. 110V/220V~ to 12V – 3A mains adapter
- D. Octopus cable to capture 4 analog video signals (only for hybrid models)
- E. 10 points connectors (2 connectors for 2 and 4 channels models, 4 connectors for the 8 channels model)

FoxBox connectors



- A. Power plug to connect the FoxBox to the mains adapter
- B. VGA/HDMI/DisplayPort adapters to connect the FoxBox to a screen
- C. 4 USB ports to connect a keyboard, mouse and a flash drive
- D. 2 Ethernet ports to connect the FoxBox to the network
- E. Plug to connect the BNC octopus cable for analog cameras (only for hybrid models)
- F. Earth ground
- G. Connector 1 to 5 for on-off control outputs (dry contact, max 12V/100mA)
- H. Connector 6 to 9 for on-off control outputs (dry contact, max 12V/100mA) (only for the 8 channels model)
- I. Connector 1 to 5 for powered inputs

- J. Connector 6 to 9 for powered inputs (only for the 8 channels model)

Reminder: During normal use, the screen, the keyboard and the mouse are not used.

FoxBox screen



The FoxBox screen allows to know the FoxBox state. Here are the possible messages:

On screen message	Meaning
<i>No message / Black screen</i>	The FoxBox is switched off. Plug the FoxBox into the mains through the adapter.
FOXBOX INIT	The FoxBox is initializing (starting, restarting, configuration update). This step may take up to 2 to 3 minutes.
ANALYSIS -> OFF	The FoxBox is working properly but the analysis is not enabled.
ANALYSIS -> ON ALARM -> OFF	The analysis is enabled. No alarm is raised.
ANALYSIS -> ON ALARM -> ON	The analysis is enabled. An alarm is raised.
SYSTEM ERROR	A malfunction appeared. Unplug the FoxBox and plug it back in after about ten seconds. If the problem persists after 5 minutes, contact support.

Connection settings

The default FoxBox connection settings through a web browser (Chrome, Firefox) are:

- IP address of the left :192.168.0.199 (subnet mask:255.255.255.0) connector
- IP address of the right : DHCP connector
- Administrator profile : username = "admin", password to set on first use

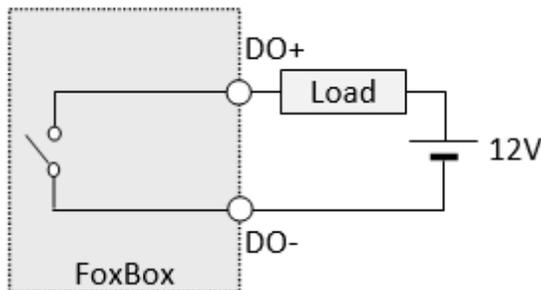
Video connection

When using an analog camera, a ground potential difference may exist between the different BNC cables. This can cause signal noise and damage circuits.

We recommend that you use ground bar insulators.

Connecting inputs / outputs

Diagram for connecting outputs

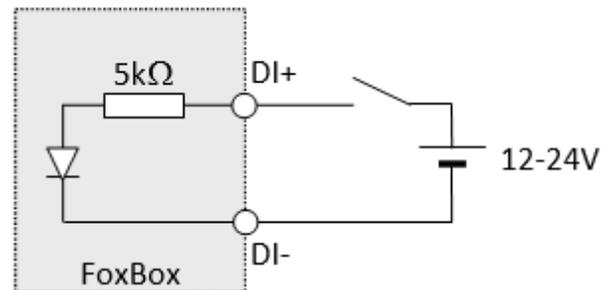


Power supply voltage: 12 Vdc

Maximum current: 100 mA*

*If necessary, provide an R current limiting resistor to prevent a short circuit in the external power supply.

Diagram for connecting inputs



Power supply voltage: 12 to 24 Vdc

Power consumption: 2 mA to 4 mA

Connector H (front view)

N/A	N/A	DO 9-	DO 9+	DO 8-	DO 8+	DO 7-	DO 7+	DO 6-	DO 6+
<i>Connector G (front view)</i>									
DO 5-	DO 5+	DO 4-	DO 4+	DO 3-	DO 3+	DO 2-	DO 2+	DO 1-	DO 1+

Connector J (front view)

N/A	N/A	DI 9-	DI 9+	DI 8-	DI 8+	DI 7-	DI 7+	DI 6-	DI 6+
<i>Connector I (front view)</i>									
DI 5-	DI 5+	DI 4-	DI 4+	DI 3-	DI 3+	DI 2-	DI 2+	DI 1-	DI 1+

Observations:

The inputs and outputs are associated respectively with cameras with the same indices, according to the maximum number of cameras allowed.

Input 9 (or input 5 for the 4-channel model, or input 3 for the 2-channel model) can be used to activate / deactivate the analysis.

The use of output 9 (or output 5 for the 4-channel model, or output 3 for the 2-channel model) is configurable.

Foxstream support team contact

Phone: **+33 4 27 11 80 32** (from monday to friday , 9am-12.30am and 1am-6pm, 5pm friday)

Email: support@foxstream.fr

SAFETY INSTRUCTIONS



Electrostatic discharge can damage the FoxBox: use an anti-static wrist strap before any intervention.

INSTRUCTIONS FOR RESPECTING THE CE STANDARD



Use an Ethernet cable less than 30m long

Connect the FoxBox to earth with a cable smaller than 3m

1.1.2 Connection

To connect to FoxBox, simply connect to the network, open any web browser (Internet Explorer, Google Chrome, Firefox, Safari, Edge, etc.) and enter 192.168.0.199 into the browser address bar.

It is also possible to connect a screen/keyboard/mouse to the unit. The FoxFox account has no password. It is used for local configuration of the unit. Sessions opened in client account close after 5 minutes of inactivity. This connection method with a screen/keyboard/mouse is the faster way to modify the FoxBox IP address and to check/find its IP address (menu Configuration/System/Network).

You can reset all the FoxBox configuration by opening a local session (with screen/keyboard/mouse) and then going to the address `http://127.0.0.1/api/LocalOnly/ConfigurationReset.php`

1.1.3 Checking system

In order to ensure that a connection to FoxBox can be set up correctly, before you connect FoxBox to the network, check that the IP address 192.168.0.199 is available.

In Windows, launch 'Command Prompt' from the Windows 'Accessories' window (or type in 'cmd

) and enter the command 'ping 192.168.0.199'. You should normally receive a message like 'destination host unreachable'.

If you receive a series of messages starting with 'Answer from 192.168.0.199 ... ', this means that another device already has the address in question. In this case, you should temporarily disconnect that particular device from the network or separate your subnet by disconnecting the hub from inbound traffic.

You should also check whether the network settings of the machine from which you want to connect to FoxBox are compatible. To check this, launch 'Command Prompt' again from the Windows 'Accessories' menu and enter the command 'ipconfig'. Depending on the complexity of your device and the number of network or wireless network cards it has, several transmission lines will be available.

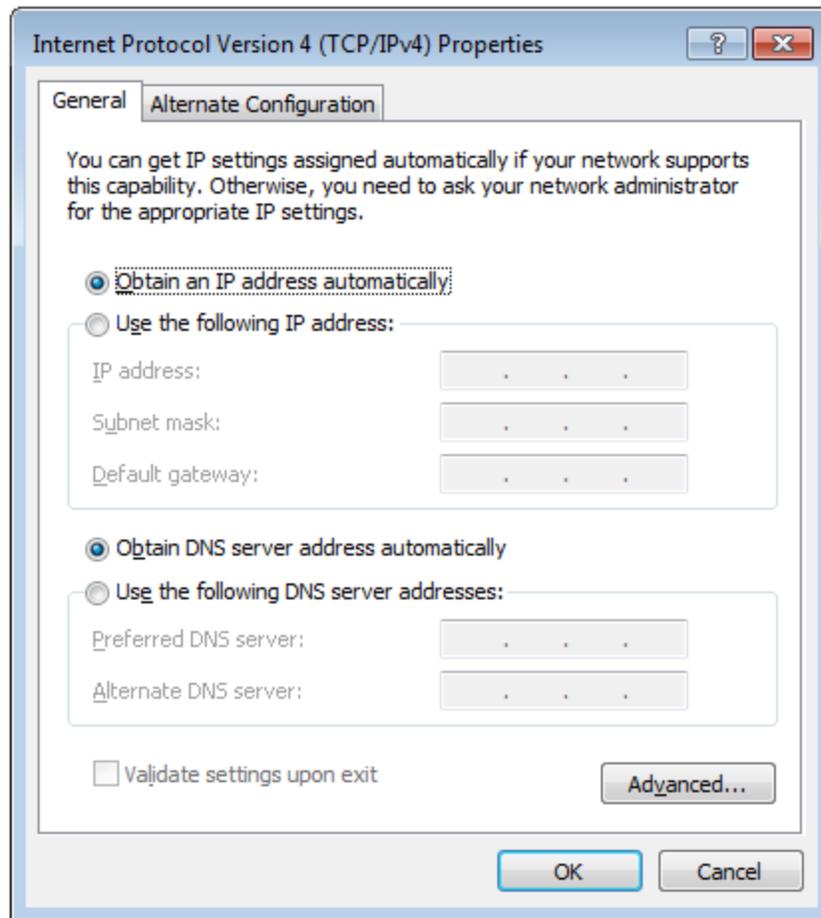
On most devices, the wired Ethernet connection is made via the 'Local Area Connection' card. Check that the IPv4 address under the heading 'Ethernet Adapter Local Area Connection' is a 192.168.0.xxx number where xxx is a number between 1 and 255. If your IP address is not of this type, or if the value of xxx is 199, you must change your network settings.

Warning

If you change your network settings, this may cause your computer or other devices connected to your network to malfunction. It requires network knowledge and administrator rights to change network settings. If in any doubt, contact your network administrator.

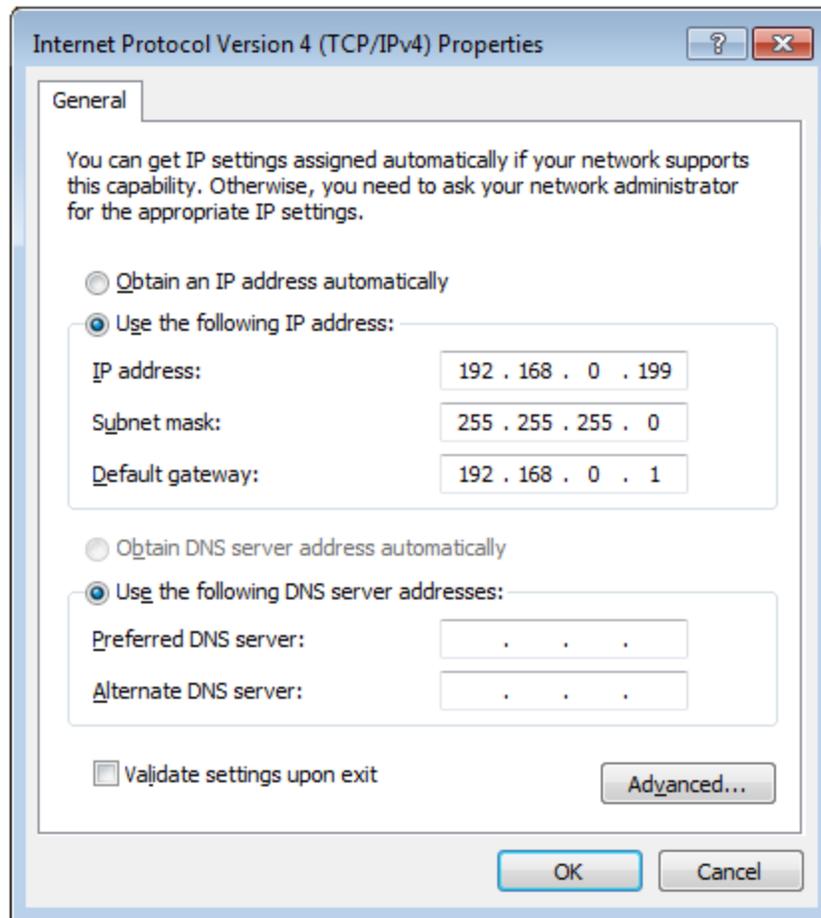
Foxstream declines all liability for any changes to these network settings.

The following information is useful for changing network settings. Generally computers are configured in such a way that their IP address is given by a DHCP server. For example, in Windows, the Properties window contains the following settings:



This window can be opened by going to Windows 'Network and Sharing Centre' selecting 'Change Adapter Settings', then 'Connect to LAN', then 'Internet Protocol Version 4' and finally clicking the 'Change' button.

You can also enter the following configuration:



Make sure that the address that you are about to enter is not already used by another device on the network.

When you have finished configuring FoxBox, remember to restore your original network settings.

Warning:

FoxBox may not detect very brief power outages (of around one second). Consequently, it may fail to restart after an outage. If your installation is prone to power outages, use an inverter.

Part



2 Live viewing and recording

2.1 Connection

If you want to view the FoxBox home screen, simply enter the FoxBox IP address into any web browser which supports HTML 5.

The FoxBox has two types of profile: the “administrator” profile which allows full access to viewing and configuration, and the “user” profile which only allows viewing of live video streams and their recordings. At first use, the first page prompts you to create your username and password for the system administrator:



Choose your username and password for the admin account EN ▾

OK

Then, and for each new connection, the first page invites you to enter the connection identifiers:



A login form with two input fields and a button. The first field has a person icon and the second has a lock icon. A red button with a right-pointing arrow and the text "FoxBox" is centered below the fields.

Connection page

2.2 Home Page

To go to the homepage, you have to login using your ID. This ID remains valid for the entire session.

All FoxBox pages follow the same format. They comprise:

- a top banner which contains the menu,
- a centre body,
- if the display is large enough and you are navigating in the configuration, the configuration menu is displayed on the left.

FOXSTREAM
SMART VIDEO ANALYTICS

Home Live video Recordings Configuration

EN ?

FoxBox
FoxBox Site

Equipment
FoxBox 3.0.1.35341
Serial number:
Model FB8I

Cameras	Signal	Analysis	Alarms
Cam1	✓	✓	7
Cam5	✓	✓	5
Cam6	✓	✓	2
Cam8	✓	✓	2
Alarms of the last 24 hours:			16

[See the getting started guide](#)
[Registering your FoxBox](#)

FoxStream - 6 rue du Dauphiné - 69120 Vaulx-en-Velin, France <http://www.foxstream.us.com>
Technical support: +33(0)4 27 11 80 32 - support@foxstream.fr

Sample page with top banner, top menu bar and centre body.

Flags on the banner allow you to select the website language.

When you click help (?) you red the help associated with the current page.

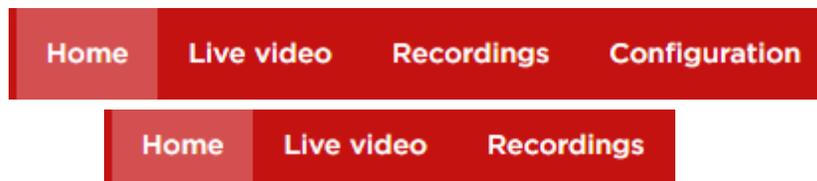
The 'DISCONNECT' button allows you to close the session and return to the login page.



Language selection, help and disconnect buttons.

The menu you see on the left depends on the rights you acquired upon connecting (based on your profile). Whichever profile you have, it will include at least the three following items: ‘*Home*’, ‘*Live Video*’ and ‘*Recordings*’.

If you have administration rights, the menu will include a fourth item ‘*Configuration*’.



Administrator menu on top and user menu below.

The home page contains the following information:

- Top right, the site identity certificate. When you first connect and until you have filled in the different fields on the configuration page, this identity certificate will be empty, by default.

FoxBox
FoxBox Site_1
6 rue du dauphiné

Vaulx-en-Velin
France

Customisable site identity certificate

- The list of all active cameras is at the center bottom. Each camera is linked to two indicator lights. If the first visual indicator is ticked () , camera stream acquisition is correct and there are no faults. If the visual indicator bears a cross () , there is a fault with the camera stream. The second visual indicator shows whether the camera stream is currently analyzing or not. If a camera does not appear on the list, it has been disabled.

Cameras	Signal	Analysis	Alarms
Cam1	✓	✓	7
Cam5	✓	✓	5
Cam6	✓	✓	2
Cam8	✓	✓	2
Alarms of the last 24 hours:			16

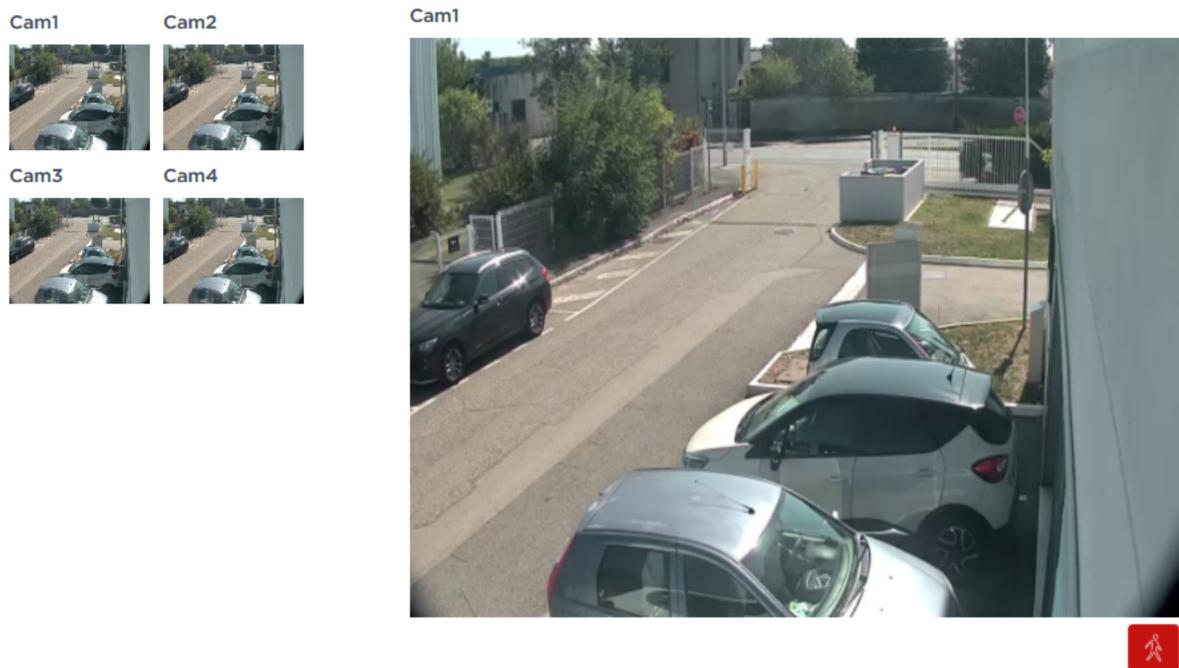
List of cameras

Warning. The information contained on this page is not updated automatically. It dates from the time when the page was first displayed. If you want to see the status of the cameras or the alarms, click on either the *'update'* or the *'refresh'* button of your browser.

2.3 Live video

The 'Live Video' page is used to view the images transmitted by the cameras connected to FoxBox in real time. You can view up to 8 cameras simultaneously.

You can view a camera with medium resolution (640×480) in the center of the page. You can view on the left video streams with low resolution and a reduced frame rate.



Camera Viewing Page

When you click on a low-resolution image, the associated camera will then be displayed in the medium-resolution frame. If you click on the medium-resolution image, it is then displayed in native resolution, but you can no longer view the other cameras. Click on the high-resolution image to return to the previous setting.

The button  is used to display or not display the outlining of objects in alarm. By default, object outlining is enabled.

2.4 Recordings

The 'Recordings' page is used to view videos recorded on FoxBox. This page looks as follows:

Date	Time	Camera
03/07/2019	11:41:50	Cam1
03/07/2019	11:40:46	Cam1
03/07/2019	11:40:30	Cam1
03/07/2019	11:39:24	Cam1
03/07/2019	11:36:11	Cam1
03/07/2019	11:33:30	Cam1
03/07/2019	11:26:20	Cam1
03/07/2019	11:25:30	Cam1
03/07/2019	11:24:44	Cam1
03/07/2019	11:22:40	Cam1
03/07/2019	11:21:41	Cam1
03/07/2019	11:16:59	Cam1
03/07/2019	10:46:54	Cam1

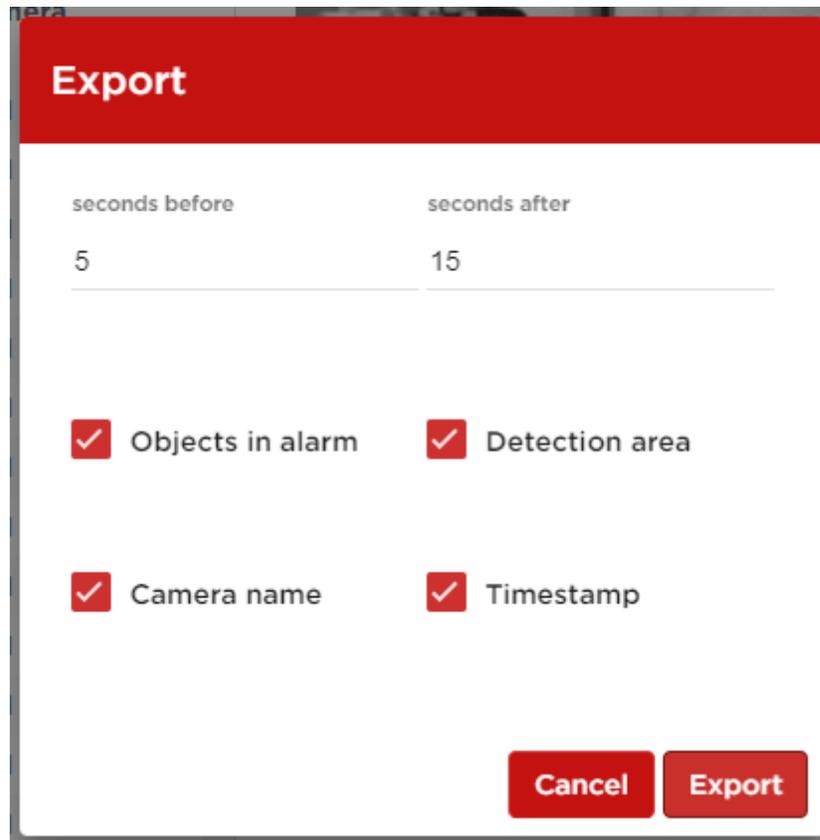
Refresh alarms

Recording viewing page

It contains a video display area, an index list in a table with 2 tabs. In the first one, you can choose to see the alarms of the current day. In the second one, you select a date (under the tab "All alarms"), and eventually a camera, to see alarms of this day. There is also a data-entry area (under the "Continuous recording" link) where you can view any segments of video which are not accessible through the index. The 'export' button is used to export several seconds of video sequence (see below for more details).

The control buttons under the video allow you to respectively: rewind x images, rewind one image, pause playback (and re-start), advance by one image, advance by x images. The last button  is used to display or hide the outlining of objects in alarm.

The 'export' is used to export several seconds of video sequence from the image displayed on the screen. When you click on this button, the video is interrupted and a pop-up menu appears on the screen. This allows you to set the number of seconds before and after the segment that you currently are viewing, object contours and other information :

A screenshot of a software dialog box titled "Export". The dialog has a red header bar with the word "Export" in white. Below the header, there are two input fields: "seconds before" with the value "5" and "seconds after" with the value "15". Below these fields are four checked checkboxes arranged in two columns: "Objects in alarm", "Detection area", "Camera name", and "Timestamp". At the bottom right of the dialog are two red buttons: "Cancel" and "Export".

seconds before	seconds after
5	15

<input checked="" type="checkbox"/> Objects in alarm	<input checked="" type="checkbox"/> Detection area
<input checked="" type="checkbox"/> Camera name	<input checked="" type="checkbox"/> Timestamp

Cancel Export

Pop-up menu for video export

The file is exported as an AVI file, a standard format used for most video players. The exported video is compressed using XVID.

Part

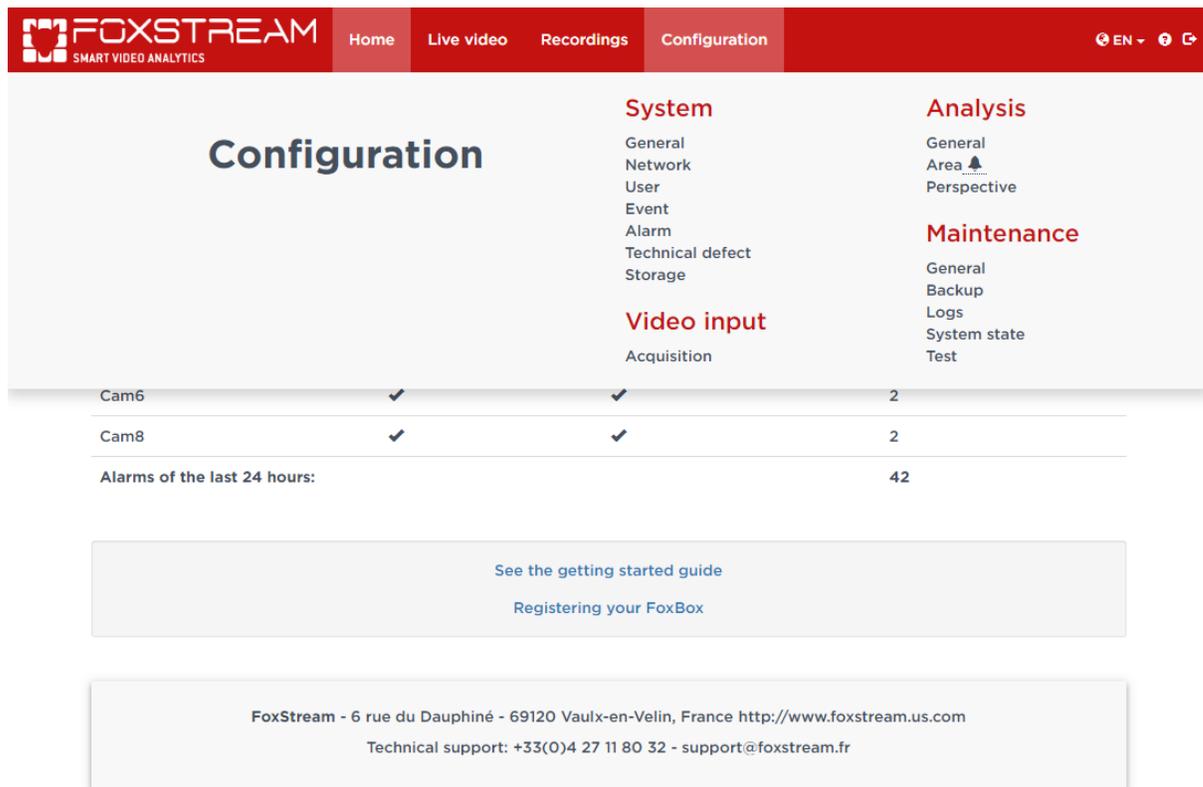


3 Configuration

3.1 General

The configuration pages can only be accessed by users with an administrator account. They are used to configure the behaviour of FoxBox.

When you click on ‘*Configuration*’, the sub-menu is displayed under the menu bar:



Configuration Menu and First Configuration Page

Important: All pages have at least one ‘Save’ button. This button lets you save any changes you make to a page or section of page. Changes are then saved but will not be implemented by FoxBox until you have clicked on the ‘Click here to apply configuration’ button on top of the main menu. This button is only visible when the changes have been made and saved, but not yet applied.

There is no need to apply the configuration every time that you ‘Save’ a page or page section. You can apply when you have finished changing the settings for all the pages. When you apply a configuration, site monitoring is temporarily suspended.

The configuration menu comprises four main sections: *System Settings*, *Video Input*, *Analysis* and *Maintenance*.

- *System Settings* includes the settings for access to FoxBox and for its behaviour in relation to different stimuli.
- *Video Input* is used to configure the acquisition of the different channels.
- *Analysis* is used to set the sensitivity, analysis areas, and to configure the perspective.
- *Maintenance* is used to view log files and test the behaviour of FoxBox.

Camera names must consist only of letters and numbers, and the character "_". The characters accepted by the system (except for camera names) are standard ASCII characters :

- Usual letters and digits : a-z; A-Z; 0-9
- Punctuation : ! " ' () , - . : ; ?
- Other characters : # \$ % & * + / < > = @ [] \ ^ _ ` { } | ~
- Space

3.2 System Settings

The *System Settings* on the configuration menu is used to enter the general settings for FoxBox. It includes several sub-menus listed below.

3.2.1 General

Setting the FoxBox "ID card", date and local time zone. The FoxBox ID card contains information used to facilitate the identification of FoxBox.

This information is displayed on [the FoxBox home page](#)¹³ and also sent by FoxXml protocol to any client that wants to connect to it.

Some of the fields of the ID card have a particular purpose:

* *Name* is used as a default prefix for export configuration files.

The *Message Language* setting is used to format alarm messages which can be embedded in images in the chosen language.

3.2.2 Network

IP configuration of the FoxBox: by default, the "Ethernet1" card (connection on the left when looking at the back of the box) is configured with static IP with the address 192.168.0.199; the "Ethernet2" card (connection on the right when you look at the back of the box) is in DHCP.

Please remember that if you select *obtain an IP address automatically*, you should have all the tools you need to discover FoxBox on the network or that you can plug a screen/mouse/keyboard on the FoxBox.

There is a procedure to restore the configuration to default settings. For further information, please see the chapter entitled ['Getting Started'](#)².

3.2.3 User

Setting up a username and password for the two profiles available on FoxBox. The *Administrator* profile gives access to all FoxBox pages, including configuration and functional testing.

The *User* profile only gives access to the live viewing and playback pages.

The user and administrator passwords can be used for a FoxXml connection to the unit's port 4000.

3.2.4 Event

This page is used to configure FoxBox's behaviour in response to different stimuli.

Before presenting the different options, it is important to note that logic inputs 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channels model) and logic outputs 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channels model) are associated respectively with acquisition channels 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channels model).

The 'Events' or more precisely the '*Events Manager*' configuration pages presented below:

Alarm condition

Analysis activation	Continuous
I/O logic	Positive (Normally Open)
Alarm	Analysis only
Inhibition delay (s)	0

Events manager configuration page

The first setting concerns the activation of the video images analysis. This activation can be permanent, scheduled or depend on input No 5 (or input No 9 for the 8-channels model, or input No 3 for the 2-channels model). Only one of the three options displayed may be chosen.

- Permanent activation means that FoxBox continuously analyses all video streams 24 hours a day seven days a week.
- Scheduled activation means that analysis is activated depending on a pre-set schedule and local date and time. You will therefore need to check that the date and time of FoxBox are synchronised on the [General](#) page.

It is possible to configure the schedule by clicking on '*Configuration*' to the right of '*Scheduler*'. The schedule comprises a weekly timesheet in which each line corresponds to a day of the week and each column to a 30-minute period. The red boxes indicate the times for which the analysis has been enabled and the (light or dark) grey boxes, the times for which the analysis has been disabled. To toggle between one and another (grey/red or red/grey), simply click on the

corresponding box.

Schedule

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
M																									
T																									
W																									
T																									
F																									
S																									
S																									

Sample of schedule where analysis is deactivated on working days (Monday, Tuesday, Wednesday, Thursday and Friday) from 8.30 am to 6.30 pm.

- Activation of input 5 (or input No 9 for the 8-channels model, or input No 3 for the 2-channels model) means that analysis is disabled when the electrical circuit connected to input 5 is closed, and analysis is activated when input 5 is open. Please remember that, if you are using Normally Open logic, the behaviour of input 5 is reversed. In any case, regardless of activation mode, analysis activation and deactivation applies to all acquisition channels.
- User control activation is done primarily through FoxXml communication (see the Network page for the connection port). To do this, you must send a "setevent" request with the parameter "AnalysisAll" equal to 0 to disable the analysis or equal to 1 to activate the analysis (consult the FoxXml protocol documentation, available on request, for further information). It is also possible to enable or disable the analysis via a button that appears on the home page when this option is selected:

FoxBox

FoxBox Site

Analysis

Disabled



Equipment

FoxBox 3.0.0.0
Serial number: **S0**
Model **FB4A**

Input/output logic is used to enable active inputs and outputs.

In positive logic (Normally Open), active corresponds to high voltage or a closed circuit.

In negative logic (Normally Closed), active corresponds to low voltage or an open circuit.

The alarm setting corresponds to the events, or combination of events, which will trigger the sending of an alarm notification. There are several possible options:

- *Analysis Alone* means that only intrusions detected from the analysis of video will trigger an alarm. This is the default option.
- *Input Logic* means that only a change in status of one of the logic inputs 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channels model) will trigger an alarm. This is the option to select when video stream analysis is not used and intrusions are detected by (infrared, volumetric or other) sensors.
- *Input Logic and Analysis* requires, for an alarm to be triggered, for there to be a relative simultaneity (< to 5s) between the triggering of a sensor and the detection of an intrusion by analysis of the video stream of the camera associated with this particular sensor.
- Under *Input Logic or Analysis*, the triggering of a sensor or the detection of an intrusion by analysis of the video stream of the camera associated with this particular sensor will trigger an alarm.
- Under *Deactivated*, regardless of the status of the inputs or the result of the analysis, no alarm will be triggered. This is the option generally used during the installation phase or site maintenance to prevent false alarms.

Inhibition time allows the number of alarms generated to be restricted in order to avoid overloading the FTP or TCP servers. Before examining how it functions, two remarks:

- the number of alarms involved in the inhibit is fixed at five, regardless of the value of the time inhibit;
- if the value of the time inhibit is equal to zero, the inhibition function is disabled.

For all other values greater than zero, the inhibition principle is as follows. Regardless of how frequently they appear, the first five alarms are systematically generated. Thereafter, if the time between the current 'n' alarm and the 'n-5' alarm is less than the inhibition time, no alarm is sent and an 'inhibition' message is added to the logs. As long as time between the current 'n' alarm and the 'n-5' alarm is less than the inhibition time, no alarm is sent. For a new alarm to be sent, the time between that alarm and the 'n-5' alarm must be greater than the inhibition time.

This mode of operation guarantees that there will be not more than 5 alarms for time period entered.

3.2.5 Alarms

This page is used to configure the behaviour of FoxBox when an alarm is generated. This page is particularly important because this setting is responsible for the detection of an intrusion and the sending of an alarm notification.

Before looking at the different options, it is important to note that logic inputs 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channels model) and logic outputs 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channel model) are associated with acquisition channels 1 to 4 (or 1 to 8 for the 8-channels model, or 1 to 2 for the 2-channel model) respectively.

The configuration page for ‘Alarms’ or more specifically the ‘Events Manager’ is outlined below.

Alarm notification

Use of output 9	<input type="text" value="Technical defect"/>
TCP alarm message	<input type="checkbox"/>
Send alarm sequence on FTP	<input type="checkbox"/>
Immix client	<input type="checkbox"/>
Send SIA messages	<input type="checkbox"/>

Alarm sending

Sequence of alarm images [Configuration](#)

Events Manager or ‘Alarm’ Configuration Page for the 8 channels model

Output 5 (or output No 9 for the 8-channels model, or output No 3 for the 2-channels model) is used to specify the information which output 5 should carry.

- *Technical Fault* indicates that output 5 (or output No 9 for the 8-channels model, or output No 3 for the 2-channels model) is used when a technical fault (generally the loss of the video signal) is observed by FoxBox.
- *General Alarm* indicates that output 5 (or output No 9 for the 8-channels model, or output No 3 for the 2-channels model) is used when an alarm associated with any camera or sensor is detected. In other words, output 5 is used when any other output is used.
- *Analysis in Progress* means that output 5 (or output No 9 for the 8-channels model, or output No 3 for the 2-channels model) is used when the analysis is activated.

TCP Alarm message

An alarm message may be sent as a simple transmission frame to a TCP server. This function can be enabled or disabled from this page. To configure the server settings and message contents click on the 'configuration' button located on the right.

Server

Address	<input type="text" value="169.178.78.41"/>
Port	<input type="text" value="1234"/>

Message to send

Message 1	<input type="text" value="Alarm camera 1"/>	Test
Message 2	<input type="text" value="Intrusion detection"/>	Test
Message 3	<input type="text" value="Door open"/>	Test
Message 4	<input type="text"/>	Test

[Back](#)

[Save](#)

Configuration Page for TCP Alarm Messages

These server settings are simply its IP address and its listening port. Each message can be customized by filling in the corresponding field. The message matches the name of the camera, by default. The 'Test' buttons linked to each message allow the message to be sent manually to the server. Please remember that, as is the case for all FoxBox functions, you must first 'save' and 'apply' your changes if you want them to be taken into account.

Send alarm sequence on FTP

The fact that alarm sequences are sent via FTP means that a sequence of images can be sent to an FTP server when an alarm is detected. You can enable or disable this function on this page. You can access the full settings for this function by clicking the *Configuration* button on the right.

FTP server

Server	<input type="text" value="169.178.78.41"/>
Port	<input type="text" value="21"/>
User	<input type="text" value="demo"/>
Password	<input type="password" value="•••••"/>
Mode	<input type="radio"/> Active <input checked="" type="radio"/> Passive

Test

Image sequence on FTP

Sequence type	<input type="radio"/> JPEG image <input checked="" type="radio"/> MJPEG movie
---------------	--

Back

Save

Configuration page for sending a sequence of images to an FTP site

The configuration for sending sequences to an FTP can be broken down into two parts. The first part concerns the connection settings to the FTP server. It is also possible to test the connection to the server. The second part relates the sequence content (and container).

- The connection settings are fairly conventional. They are the server address (or URL), the listening port and the user ID (namely the login and the password).
- *Sequence Type* is used to set file type (out of two possible choices). The sequence sent may take the form of a succession of JPEG images recorded in different files, but compiled into a single AVI video file. In either case, the name of each file contains the camera name, the date and the time of the alarm. In the case of JPEG images, the file name also includes the image sequence index.

IMMIX Client

The configuration of the Immix client makes it possible to send alarm messages containing the images of the alarm to the remote monitoring station. The complete configuration of this feature can be accessed by pressing the “Configuration” button on the right after activating the function.

Immix client

SMTP Server	<input type="text" value="1.2.3.4"/>
SMTP port	<input type="text" value="25"/>
Destination address	<input type="text" value="station@monitoring.com"/>

[Back](#) [Save](#)

The remote monitoring station must provide connection information to their SMTP server (IP and port) as well as the destination address (which must be in the format of a valid email address).

Send SIA messages

The configuration of the SIA messages makes it possible to send alarm messages and activation of the surveillance to the remote monitoring station. The complete setting of this feature is accessible by pressing the *Configuration* button on the right after activating the function.

SIA account identification

Account number	<input type="text" value="01234567"/>
----------------	---------------------------------------

SIA server

Main address	<input type="text" value="1.2.3.4"/>	Port	<input type="text" value="5151"/>
Secondary address	<input type="text" value="1.2.3.5"/>	Port	<input type="text" value="6161"/>

Test gateway

Server	<input type="text" value="Test principal server"/>
--------	--

[Test](#)

Periodic sending

Interval	<input type="text" value="24 Hours"/>
----------	---------------------------------------

[Back](#)

[Save](#)

Configuration page for sending SIA messages

All fields must be filled, this information must be provided by the remote monitoring station. When this feature is enabled, an SIA alarm message is sent each time an alarm is triggered by video analysis. A message will also be sent to signal activation and deactivation of the surveillance. Periodic sending is used to signal that the system is still operational.

Sequence of alarm images

Each camera has a frame buffer which allows a series of images to be generated when an alarm is detected and for it to be sent via FTP or on request in FoxXml format. The settings for this buffer can be changed by clicking on the *configuration* button located on the right.

Sequence of alarm images

Interval between images (ms)	<input type="text" value="500"/>
Number of images after alarm	<input type="text" value="10"/>
Number of images before alarm	<input type="text" value="10"/>
Format	<input checked="" type="radio"/> 4CIF <input type="radio"/> CIF

[Back](#)
[Save](#)

Frame buffer configuration

- *Interval* is used to set the time interval between two images used to construct a sequence. Whatever the value used here, it does not affect the rate of image acquisition or the frequency of video stream recording in any way.
- *Number of images before alarm* shows the number of images saved before the alarm event. This number can be equal to 0.
- *Number of images after alarm* shows the number of images saved after the alarm event. This number can be equal to 0.
- *Image Format* sets the size of the images recorded. 4CIF (704×576) offers good resolution but increases file size and therefore transmission time for the sequence of images. CIF (352×288) reduces file size and also transmission time, but at the expense of resolution.

The sequence always contains the alarm image, added to the pre-/post- alarm images.

Alarm sending

It is possible to increase transmission delay by a fixed value and check transmission conditions after user-specified time has expired. This function is only available if the inhibition has been enabled. The choice of delay type (when activating, deactivating or both) is available when a value is entered in the alarm delay field:

Alarm sending

Sequence of alarm images

Configuration

Delay alarm notification of (s) (0 - 30)

30

Delay alarm

when activating and deactivating analysis



Save

A drop-down list is displayed when entering an alarm delay value

This function is useful particularly in situations where analysis is activated by an alarm control panel, but to deactivate the panel (and the analysis), a person must pass through a monitored zone. By delaying alarm transmission when deactivating, a person who deactivates the control panel within the specified time will not cause the alarms to be sent externally (FTP, FoxXml). In concrete terms, this means that all alarms are delayed, and if the analysis is deactivated before the end of the delay, the alarm is canceled. When the delay is activated for activation, the analysis only really starts after the delay time.

The time interval available for the delay varies between 0 and 3 times the time set for the inhibition delay.

3.2.6 Technical Fault

FoxBox regularly checks that its different services are properly functioning, and has corrective procedures should faults occur.

If a fault cannot be corrected within a reasonable period of time, a technical fault may be generated. The '*System - Technical Fault*' page is used to select faults which should be notified. This page only covers sending a notification; faults which are not activated are, nonetheless, monitored and corrected where possible.

The fault video stream loss occurs when the camera signal is lost (after several seconds for an analog camera and around ten seconds for an IP camera).

The fault low framerate occurs when the acquisition or analysis framerate is below 4 images per second or when the time gap between 2 acquired or analyzed images is greater than 600ms. It can occur when there is latency in the camera or network or when the FoxBox is overloaded. This fault is continuously monitored but the alarm is raised every 2 minutes.

3.2.7 Storage

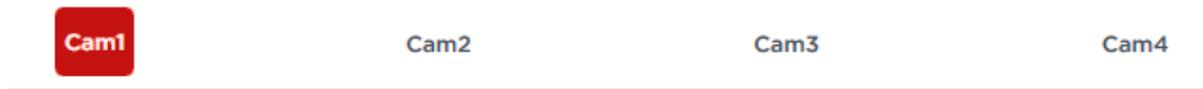
The storage page is used to set the period of time for which the recordings are to be stored. For informational purposes, and provided that the bitrate remains at a reasonable average, the FoxBox can record video streams 24 hours a day over a period of 30 days with the following configurations (2-channels, 4-channels and 8-channels models having the same storage capacity):

- 2 video streams in 800x600 resolution at 12 frames per second
- 4 video streams in 800x600 resolution at 12 frames per second
- 8 video streams in 640x480 resolution at 8 frames per second

When user-specified retention period has expired or the disk space is full, the oldest recordings are automatically deleted.

3.3 Video input

You can use the video input configuration pages to configure streaming acquisition. Each page has a series of tabs, below the menu bar, which can be used to select the video input.



Video input selection tab - 4-channels model



Video input selection tab - 8-channels model

3.3.1 Acquisition

This page is used to configure the acquisition of video streaming. It comprises two parts. The first part concerns general settings. The second part depends on acquisition type: analog or IP. Every FoxBox support IP acquisition. There is a hybrid version of the 4-channels model that support analog and IP acquisition.

The general settings are:

- *Camera Name*. This name is used to identify the camera for the live viewing and recording pages. This name is also used to create the name for the image sequences transmitted.
- *Acquisition Type* is used to select the type of video stream: 'analog' or 'IP'.

It is possible to deactivate each camera using the "Enable / Disable" button. Disabled cameras won't appear anymore on the home page and visualization pages. In order to avoid signal loss technical alarms, the cameras that are not used should be disabled.

If analog acquisition is selected, the additional settings are:

- *Channel Number* (not modifiable).
- *Video Format* is used to specify the type of video signal of the camera, either 'PAL' or 'NTSC'.
- *Convert to Greyscale* is used to set greyscale for the acquisition of a colour signal.

When a colour video signal is very degraded (electromagnetic interference, poor lighting at the scene, etc.), conversion to greyscale improves the picture.

Cam1
Cam2
Cam3
Cam4

General

Enable / Disable

Name

Acquisition type

Analog camera

Channel number

Video input format PAL NTSC

Gray level conversion

Save

Analog Input Configuration Page

To configure IP cameras, you must know your camera types, their IP addresses and their usernames/passwords. You can search for IP cameras from FoxBox. If you click on 'Search for IPCameras', the box sends an ONVIF query to all devices on the network and displays the result on a list. This list can be used to help you with the configuration but it does not permit autofill.

You should also check that the camera video stream does not exceed 800x600 pixels and a frame rate of 12fps for the 2-channels or 4-channels models, or 640x480 pixels and a framerate of 8fps for the 8-channels models.

The 'Camera Type' drop-down box is used to choose a camera manufacturer. In this mode, you simply have to enter the camera's IP address, username and password configured on the camera. Once the IP address is entered, a link "Access the camera" appears above and allows direct access to the web page of the camera. The password is hidden but can be showed by clicking on the eye icon. FoxBox creates an acquisition URL, which can be seen at the bottom of the page after clicking on "Display url". It can be changed manually, by clicking on 'Change'. This changes the setting to 'Generic Camera' mode.

General

Enable / Disable

Name

Acquisition type

Axis (H264)
▼

IP Camera

Access the camera

IP address

User

Password

.....
👁

URL

Display url
Customise

The IP stream must have a resolution between 320x240 and 400x300
 The framerate should be between 5 and 8 fps
 The video must be compressed in MPEG4 ou H264

IP Input Configuration Page

‘Generic Camera’ mode can be used to change the acquisition URL manually. You can also select several IP acquisition modes:

- prioritise image integrity: priority is given to the reception of complete images even if this causes the loss of images. This mode is not compatible with all cameras
- prioritise speed: priority is given to receiving the images as quickly as possible, even if they are not complete. This mode can cause problems on an overloaded network.
- robust acquisition: similar to the prioritise speed mode, but the unit tries to detect incomplete images and delete them.
- image by image (MJPEG): acquisition in HTTP/MJPEG mode.

With certain cameras, there may be problems when replaying videos – alarm images which are not immediately sharp. In this case, you should check the ‘Iframes Correction’ box (generic mode only). This mode is not retroactive. It does not correct videos that have already been recorded.

Warning. When you change the settings of an RTSP camera from the camera software or its web interface, you must be sure to restart FoxBox by clicking on ‘Restart’ on the [Maintenance – General](#) ⁴⁰ page.

3.4 Analysis

This tab is used to configure the analysis settings for each camera.

3.4.1 General

This page is used to specify the level of analysis sensitivity. There are 4 sensitivity levels: not very sensitive, sensitive, very sensitive and extremely sensitive.

You can also choose the type of sensor used. Thermal-imaging cameras have specific settings which permit greater detection distances. If you are using colour cameras without integrated infrared lighting, you should ensure that there is sufficient light at night.

Foxstream does not recommend cameras with integrated infrared lighting. They can attract insects and this adversely affects analysis. Similarly, rain and snow can be too visible on the image and trigger false alarms or lead to missed detections. This mode is included in the unit for compatibility purposes. When you activate this mode, the unit's detection capability may be reduced.

3.4.2 Zone

The 'Zone' page is used to set the region or regions of interest in the image, namely the zones of the image which will be analysed. If no particular zone of the image has been specified, the entire image will be analysed. This page includes a view of the camera to the left of the window, and one or more buttons on the right.

To add a zone, first click on the '+' button, then click on the camera view to insert the points. Each time you insert a point, it is linked to the previous one by a line. These lines combine to form a polygon. It is essential to close the polygon by clicking on the first point. Once the polygon is closed, you can click and drag with the mouse to adjust the points correctly. However, you may no longer add any points. If the region of interest needs further points to set it correctly, you must delete the zone and create a new one with the required number of points.

You can select a zone by clicking on the button corresponding to that zone. When a zone is selected, the lines around the zone become thicker and each point (or vertex of the polygon) is represented by a red square. In addition, a '-' button appears beneath the others. This button is used to delete the selected zone.



Zone of Interest Configuration Page

If perspective has been configured, the image also displays the detection zone limits recommended by Foxstream (the part of the image hatched in red). Beyond these limits, objects are too small and cannot be detected. Detection limits can be different for thermal-imaging cameras and color cameras.

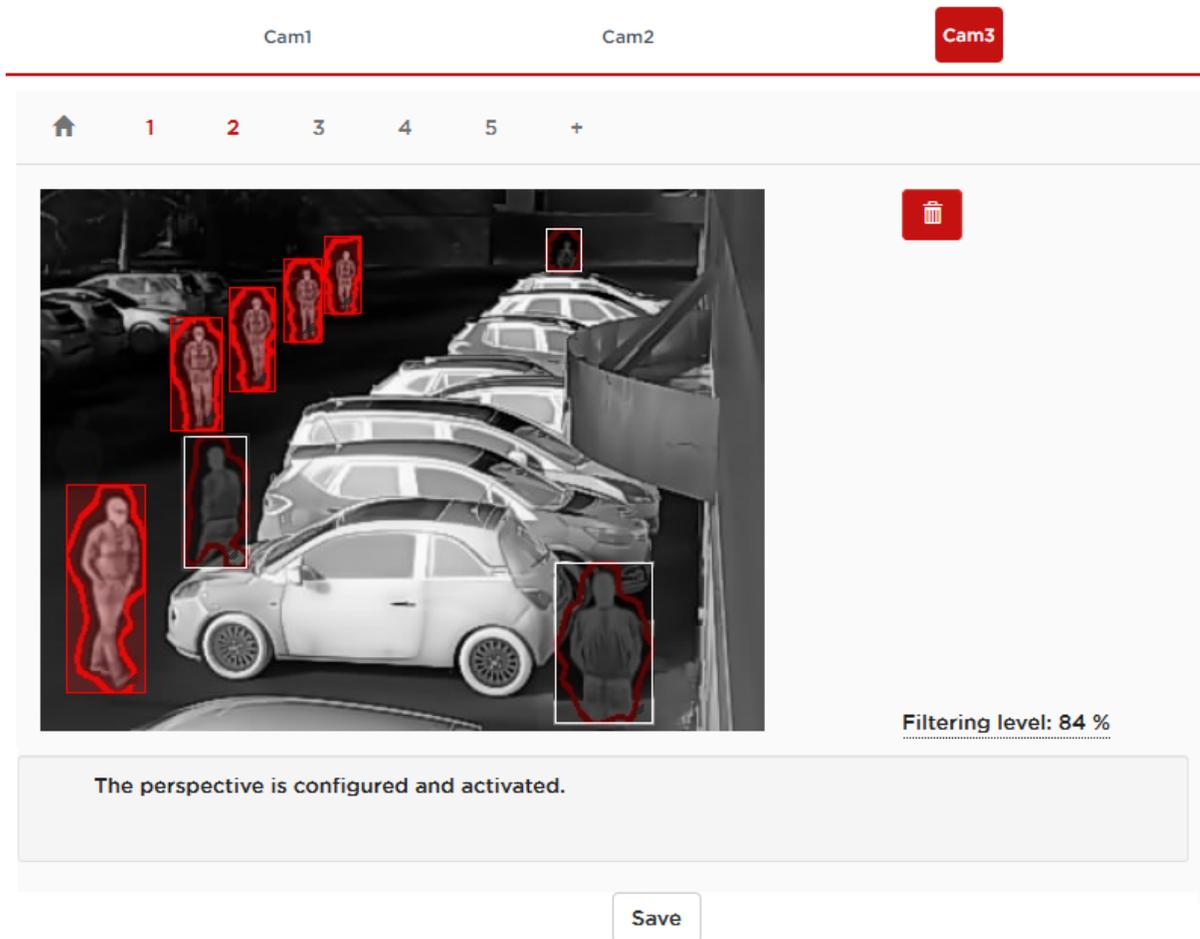
3.4.3 Perspective

The analytics contained in FoxBox can, to a certain extent, adapt configuration settings according to perspective. This option can be enabled or disabled. There are two modes for configuring perspective: automatic (recommended) and manual.

In automatic mode, we specify to the system one or more sequences with a moving person in the image. The system extracts the necessary data and automatically calculates perspective. It is the recommended mode.

Clicking the '+' button, in order to add sequences and images, will take you to the playback page. Choose a sequence with a person in it. For best results, all other movements (except for those of the person) must be minimal. Once you have chosen the sequence click on "Add sequence" button. If the sequence contains useful data, you should get an image similar to the one displayed below. If not, an error message will appear, and you must try again, and select another sequence. It is also possible to select only one image from the sequence, using the button "Add image". You

will then have to select enough images, or mix single images and sequences, in order for the system to have enough data.



Automatic Perspective Configuration Page

You can resize and move the rectangles to match the shape of the person in the image, if necessary. The clipping of the object triggering the alarm is also displayed to facilitate the selection of the reference images. You can disable a rectangle that would not fit by double-clicking it (it then becomes grayed out). You can add as many sequences and images as desired. Navigation between the different selections is done through the tabs under the name of the camera. The "Recycle Bin" button is used to delete a selection. In order to have a correct perspective, only the shapes having only one person must be selected. You need to have multiple shapes in the foreground, middle and background. The shape has to fit exactly the person, no more (in this case you need to resize the rectangle), no less (in this case you need to disable the shape).

The computed filtering level is displayed below the image for information. A low value means less objects are filtered by the perspective. The filtering level is usually between 80 and 85%. Below 80% means that there is a shape smaller than a person. Above 85%, there are probably not enough

person shapes in the image list (in the front or in the background).

Once you have done the modification, you need to save the configuration.

In manual mode, perspective is calibrated by placing two rectangles representing a person in the image (one rectangle in the foreground and the second in the background) and adjusting the size of these rectangles to the size of a person placed at these points in the image. You have to move and resize using the mouse.

Filtering levels offer greater flexibility in terms of the objects filtered. A low value means less objects are filtered by the perspective.

The screenshot shows the FoxBox manual perspective configuration interface. At the top, there are three camera selection buttons: 'Cam1', 'Cam2', and 'Cam3'. 'Cam3' is highlighted in red. Below the camera selection, there is a navigation bar with a home icon and a plus sign. The main area displays a grayscale camera feed of a street scene. Two red rectangles are overlaid on the image: one in the foreground on a car and one in the background on a car. To the right of the image, there are two red buttons: 'Manual' with a dropdown arrow and a refresh icon. Below these buttons is a slider control for the filtering level, currently set at 90%. A message box at the bottom of the interface states: 'The perspective has been manually configured.' Below the message box is a 'Save' button.

Manual Perspective Configuration Page

3.5 Maintenance

The maintenance pages are used to monitor whether the FoxBox is functioning properly and to test its configuration.

3.5.1 General

The 'General' page is used to display the FoxBox version number and also contains several control buttons.

- 'Restart Software' is used to restart FoxBox's software. It should be used in particular when the [RTSPstreams](#) have been modified.
- 'Restart Hardware' is used to reboot FoxBox unit. Please remember, a complete shutdown, will shut down FoxBox's power supply. If FoxBox does not restart of its own accord, it will no longer be possible to restart it remotely. The only solution is to push on the on/off button at the back of the FoxBox unit.
- 'Default Values of all Settings' is used to erase FoxBox's entire configuration and return it to factory default. You will have to redefine the system administrator.
- 'Full system reset' is used to erase FoxBox's entire configuration (except its IP address) and return it to factory default, and also the logs and footages. You will have to redefine the system administrator.

There is also a 'software update' function. It can only be enabled via an installation program verified by Foxstream (*Firmware-FoxBox-<version>.7z*). Use the 'Browse' button to select a location on your hard disk for the installation program and then click on the 'Update' button. The installation program is then transferred to FoxBox and verified. If the program is compliant the installation procedure is completed. This procedure takes about 1 min and then FoxBox is restarted. Throughout the procedure, FoxBox functions are disabled.

3.5.2 Backup

The 'Back-up' page is used to import and export configurations.

- The 'Import' function is used to download a configuration saved on a computer hard disk onto FoxBox. The 'Browse' button is used to select a file from the computer.
- The 'Export' function is used to copy the entire configuration of FoxBox and save it to the hard disk of a remote computer. The default name of the back-up is composed of the site name and the current date and time. You can change this name before you export the configuration.

3.5.3 Log

The ‘*Log*’ page is used to view the log file of most of the latest events occurred while FoxBox was operating. Events are classified in chronological order going from the most recent to the first event saved.

You can also filter the events displayed by criticality or section.

3.5.4 System state

The ‘*Notification Area*’ page is used to check FoxBox and display the status of the main items:

- Storage Capacity and free space,
- Acquisition frame rate for each input channel,
- Analysis frame rate for each video stream when analysis is activated,
- Acquisition resolution for each input channel.

We can also see the date of the oldest record on the FoxBox.

3.5.5 Test

The ‘*Test*’ page is used to simulate an alarm for each of the input channels, read input status and set output.

When you click on one of the ‘*Alarm*’ buttons for a channel, this generates an artificial alarm which will be handled like a conventional alarm.

- For live streaming, a red rectangle is displayed which moves from left to right,
- Addition of an index in the storage space,
- Recording and broadcast of the outlining of the (artificial) alarm,
- Output setting,

- &

You can also similarly test the sending of technical alarms.

This page is used to view the status of inputs and outputs. You can also change the status of outputs.

Warning. When you set output manually, this setting will remain the same until the next time outputs are updated by the unit. For example, if you set an output from 1 to 4, it will remain at the same setting until the next alarm, the next manual setting or the next restart. It is recommended to perform a software restart after the tests.

