FIRE & GAS DETECTION TECHNOLOGIES INC.

Communicator User Guide

FlameSpec **IR3-HD**

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1 Introduction

The FGD Communicator software is required to configure and monitor the FlameSpec-IR3-HD flame detector. The main features of the software are:

1. Communicate using Modbus over an RS-485 port to the FlameSpec-IR3-HD. Modbus commands allow to configure parameters and monitor the status of the detector.
2. Communicate using ONVIF / HTTP protocols over a TCP/IP connection to the FlameSpec-IR3-HD. ONVIF allows to receive a live video stream from the FlameSpec-IR3-HD. With HTTP, it is possible to download recorded video fire events.

2 Installation

1. Go to www.fg-detection.com web site to download the latest FGD communicator software.
2. Install the FlameSpec-IR3-HD Communicator software msi on your machine.
3. Verify that you have an RS-485 connection from your PC/Laptop to the FlameSpec-IR3-HD. See the FlameSpec-IR3-HD user manual / RS-485 Communication Network section for how to wire the FlameSpec-IR3-HD RS-485 port.
4. If you want to see live video and video recordings, connect an ethernet cable to the FlameSpec-IR3-HD. The network cable can connect directly to your PC or via a network router. The FlameSpec-IR3-HD will request an IP from the DHCP server and be available on the network. The FlameSpec-IR3-HD supports the ONVIF protocol. ONVIF is an open industry forum that provides and promotes standardized interfaces for effective interoperability of IP-based physical security products. Supporting ONVIF allows the FlameSpec-IR3-HD to be used as any IP camera and will allow viewers to connect surveillance management systems with the FlameSpec-IR3-HD video capabilities.

3 Ethernet Wiring

White & Green Terminal 16.

Solid Green Terminal 17.

White & Orange Terminal 18.

Solid Orange Terminal 19.

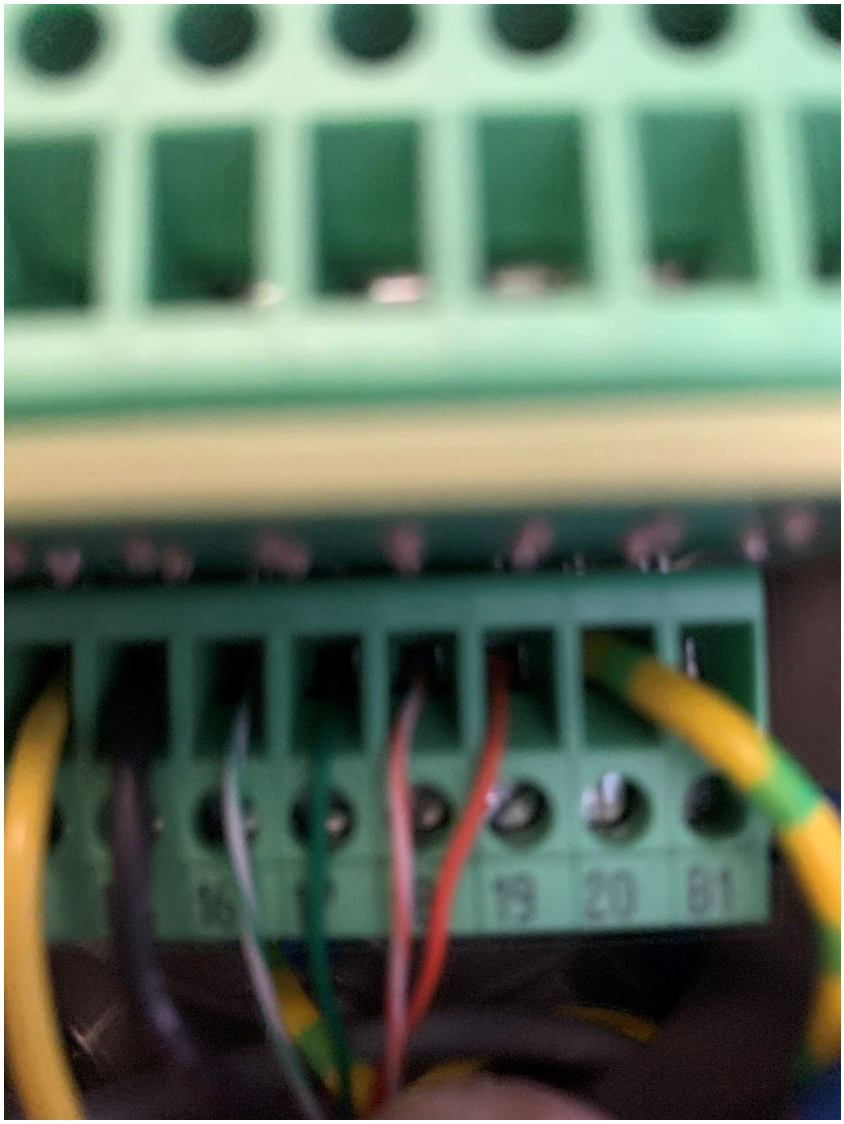


FIGURE 1 - ETHERNET WIRING

4 Operation

4.1 Start up

After installation, Click on the desktop icon: FGD Communicator on your desktop

The following screen will appear:

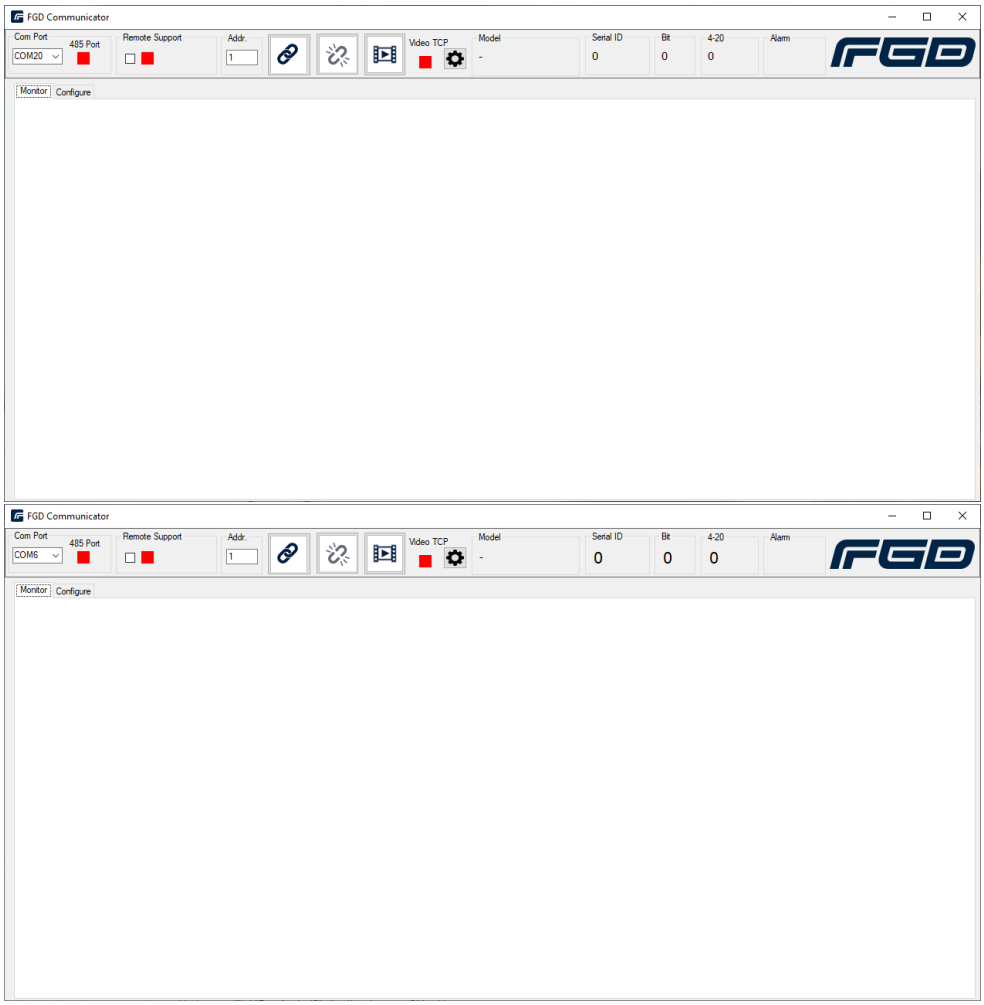


FIGURE 2 - INITIAL SCREEN WHEN OPENING THE FGD COMMUNICATOR

Click the Com Port dropdown button and select the com port that is connected to the RS-485 communication terminal of the Flamespec-IR3-HD. If the com port doesn't exist, check your network setup.

In the Addr text field, set the Modbus address of the FlameSpec-IR3-HD. The factory setting is address 1. The Modbus Address is configurable and if the default was changed, the FGD communicator will not be able to connect until the correct address is populated in the Addr text field.

After selecting the com port and populating the Modbus Address field, click on the connect button . The FGD communicator will attempt to connect to the detector. If the detector is powered up and the green led is showing in the detector led indicator, the connection will succeed and the 485-port indicator will turn green. As long as the 485-port indicator is green, the connection to the detector is active. Once this indicator turns red, it means that communication

to the detector was lost. To reconnect to the detector, click on the connect button again and the FGD communication will attempt to reconnect.

Once a 485 connection is established, the FGD communicator will retrieve from the FlameSpec-IR3-HD diagnostic data about the state of the detector. The serial ID, Bit failure indicator, 4-20 value and alarm state will appear in the top ribbon. The tab selector will change to the Configure tab to show the configuration parameters set on the detector.

4.2 Video Streaming

If the TCP/IP terminals on the FlameSpec-IR3-HD are connected to the IP network, the FGD communicator will read from the RS-485 the assigned IP address. The FGD Communicator will connect to the detector IP and if successful, will set the Video TCP indicator to green. Be aware that after powering up the detector, it takes about 1 minute from startup for the detector to be available on the network.

Access to live video and recordings are password protected. The default user/password is fgcam/admin. The user/password can be set by clicking on the settings button . Note: Sync Time should only be ticked if you want the time & date stamp of the detector to be synchronized with the laptop

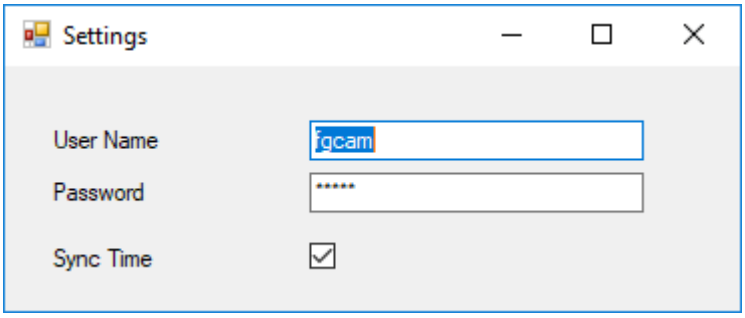


FIGURE 3 - SETTINGS FORM

Changing the user password is done via an ONVIF client.

Once the Video TCP indicator is green, video is enabled and the correct user name/password is set, the monitor tab will show the live video stream. Recordings are available by clicking on the "Show Video Recordings" button .

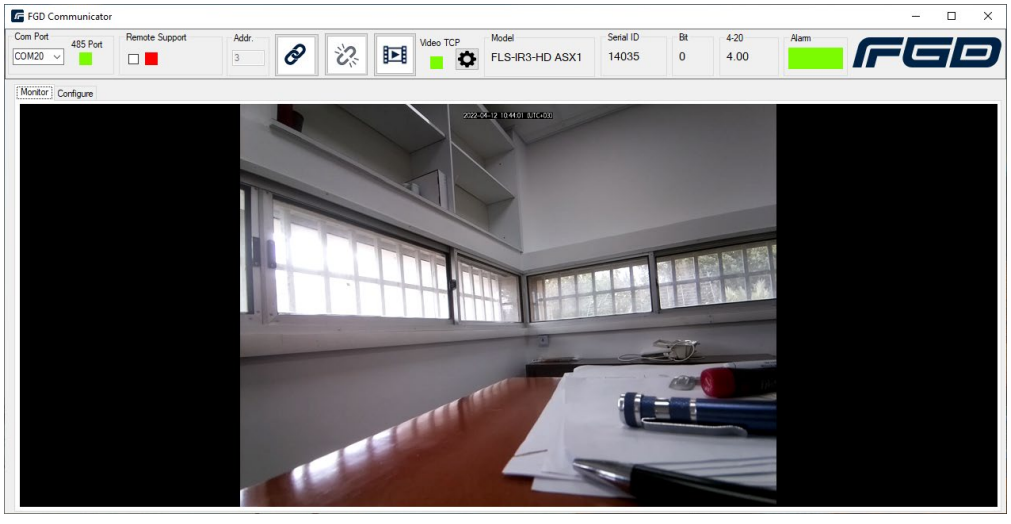


FIGURE 4 - MONITOR SCREEN WITH VIDEO STREAMING

4.3 Video Recordings

When the Video TCP indicator is green, it is possible to view the video recordings stored in the FlameSpec-IR3-HD every time an alarm occurs.

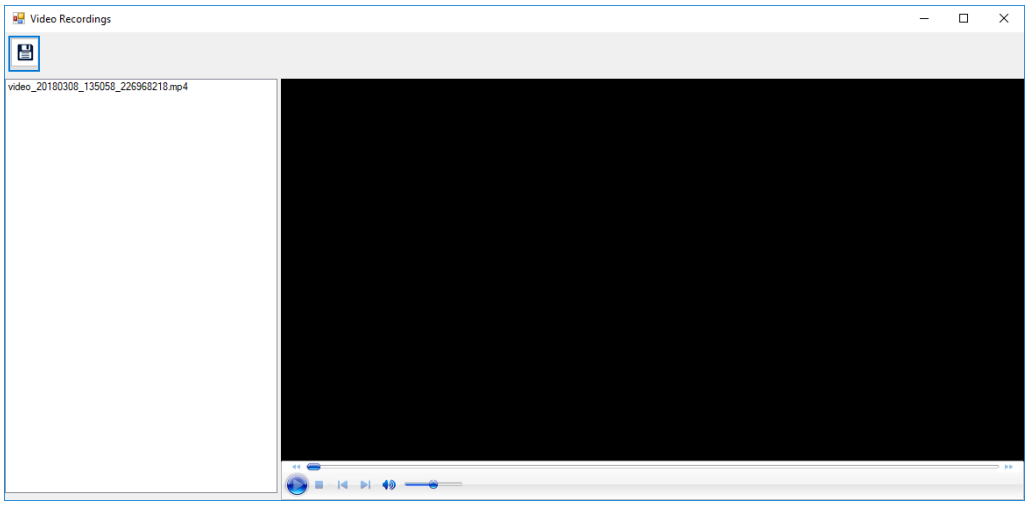


FIGURE 5 - VIDEO RECORDINGS SCREEN

On the left pane, the video recordings will appear from the latest to the earliest. Selecting the recording on the left will automatically stream the video to the player on the right.

To save the recording, click on the save button and select a directory to store the mp4 file.

It is also possible to connect to the detector through the LAN by opening a browser and setting the URL to: http://<ip>/videos

Enter the username/password (default is fgcam/admin) to access the files.

4.4 Settings

Changing the settings is done on the configuration tab. The configure tab allows to perform setting modifications. Make sure you understand each parameter before performing any changes.

When an editable field is modified, the field name is highlighted. To save the configuration, the save button must be pressed. Once the highlight disappears, the FlameSpec-IR3-HD setting is modified. See section Configure for details about the available configurable settings.

4.5 Remote Support

In case remote support is required, the FGD communicator can allow Fire & Gas Detection Technologies personal to remotely connect to the communicator. The remote connection is only possible if the Remote Support checkbox is marked and an internet connection is available. Remote support is only possible from a Windows 10 or 11 device. Through the remote support link, Fire & Gas Detection Technologies support can download diagnostic logging from fire events. A full analysis can be conducted as well as updating configuration parameters if required.

5 Field Description

The following section will describe the fields available in the FGD communicator

5.1 Top Ribbon

1. **Com Port** will show the available com ports. Select the com port that has the 485-communication channel.
2. **Remote Support** – Mark the check box when instructed by Fire & Gas Detection Technologies personnel to remotely collect diagnostics from the detector in case of a support case. (Works on Windows 10 only)
3. **Addr** – Modbus address.
4. Connect button  Connects to RS-485 Modbus and TCP/IP ONVIFF service.
5. Disconnect Button  from RS-485 Modbus.
6. Video Recordings  Clicking on this icon will open the video recordings when the Video TCP indicator is green.
7. Video TCP indicator – When green, the communicator is able to connect to the TCP/IP ethernet. Video streaming will be seen in the monitor and recording can be viewed from the detector. When the detector is turned on, it may take up to 3 minutes before the IP address is assigned and the indicator turns green. When red, the communicator is unable to connect to the video TCP/IP communication channel.
8. Settings – Opens the settings form.
9. **Serial ID** – shows serial id of the detector via 485.
10. **Bit** – Bit failure indicator via 485.
11. **4-20** – 4-20ma output current value reported through RS-485 output channel.
12. Alarm – when red – fire alert. Green – no fire alert.

5.2 Monitor Tab

When a TCP/IP connection is available, the monitor tab will show the video streaming as being transmitted from the FlameSpec-IR3-HD. The stream is using an RTSP protocol. The RTSP address is rtsp://<user>:<pwd>@<IP>:8554/unicast.

5.3 Configure Tab

5.3.1 Toolbar

Export  – Creates export file to save the configuration. File saved in JSON format.

Import  - Import a file exported from the export button. Click on save after the import to apply the modified fields.

Revert  - Revert changes to current saved fields.

Save  - save modified configuration parameters to FlameSpec-IR3-HD

5.3.2 Configure tab fields

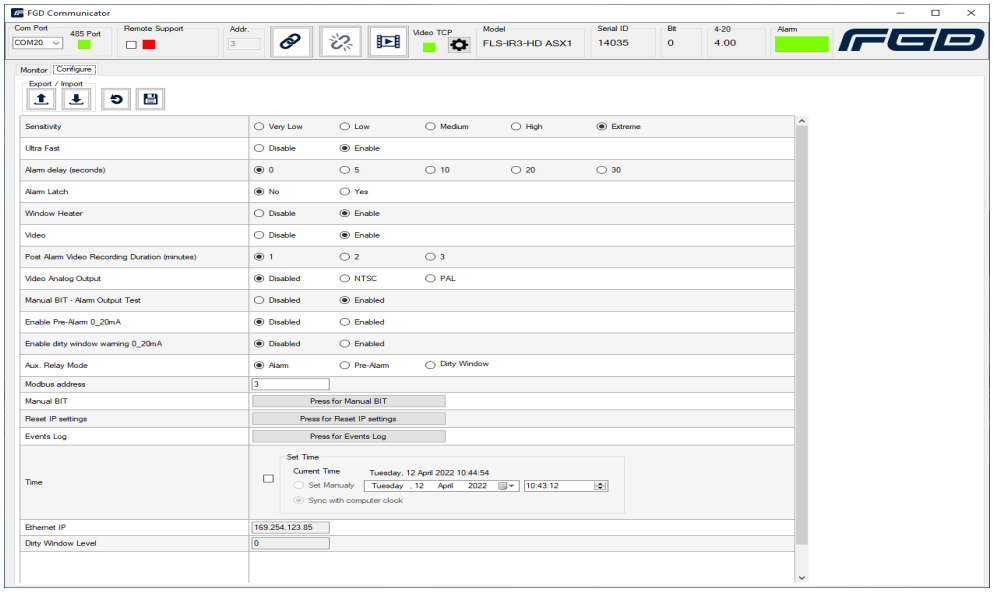


FIGURE 6 - CONFIGURE TAB SCREENSHOT

1. **Sensitivity** – for gasoline pan fire 1sq foot. (default Medium)
    a. Very Low – 7.5m
    b. Low – 15m
    c. Medium - 30m
    d. High – 60m
    e. Extreme – 80m
2. **Ultra-Fast** – enables ultra-fast detection. (Default: off)
3. **Alarm delay (seconds)** – delay in seconds from (default 0)
4. **Alarm Latch** – default off.
5. **Heater** – Default enabled
6. **Video** – enabled / disables video. Default enabled. Requires restart or until a bit test to be applied.
7. **Post alarm video recording duration (minutes)** – (default 1)
8. **Video Analog Output –** Disabled, NTSC, PAL – Default disabled. Allows to configure the video analog output.
9. **Manual BIT – Alarm Output Test** – enables / disables the feature. Default disabled. When enabled, the alarm outputs are activated when a **Manual** BIT is initiated from the communicator software. See detector user manual for more details.
10. **Enable Pre-Alarm 0_20mA** - If the Pre-Alarm is enabled and Alarm Delay is greater than 0, The detector 0-20mA output will be 16mA and the red LED will blink in case of a fire condition.
11. **Enable dirty window warning 0_20mA** - If enabled, this feature assists predictive maintenance by indicating an alert when the BIT signal is reduced by 75% of the value needed to trigger a BIT fault failure. When activated, the milliampere output will drop to 3mA and the LED will remain steady green, it should be noted that a fire signal will override the dirty window warning. A process variable of optical contamination (BIT signal level) is accessible via HART and / or MODBUS. The value of the field ranges from 0 (clean) to 100% (BIT fault).

12. **Aux Relay Mode** - The Aux relay can be set to operate in parallel to the alarm relay, at pre-alarm level or on “dirty window warning”.
13. **Modbus address** – when modified, the 485 port will be disconnected. Set the Modbus address to the new setting and click on connect again.
14. **Manual Bit** – Press button to perform manual bit
15. **Reset IP settings** – Press button to reset detector IP address to DHCP setting. Warning message will appear when pressed. Static IP settings will be reset.
16. **Events Log** – The detector stores events during its operation time. Events like Power Up, Fire Alarm Detection, Pre-Alarm State etc. Clicking on the “Press for Events Log” will open a window with events stored in the detector memory. See Log Viewer for more details
17. **Time** – Enabled when Auto Sync Time is unchecked in the settings screen. Select the check box to either sync the time with the computer clock or manually set. When the Auto Sync Time is checked, the communicator will always monitor the time and set it if it is different from the computer clock.

5.3.3 Non-configurable parameters

1. **Ethernet IP** – the IP assigned via the TCP/IP connection and reported via the 485 connections.
2. **Dirty Window Level**
3. **Alarm** – alarm state.
4. **Fault** – fault state
5. **4-20 Value** – the 4-20 value as reported via the RS-485 channel
6. **Model** – firmware model id
7. **Serial ID** – serial ID of the detector.

5.4 Settings

The settings window appears when pressing the settings icon on the top ribbon .

1. **User Name** – the user name used to connect to the TCP/IP channel. The live stream and recordings are password protected.
2. **Password** – the password to connect to the TCP/IP channel. The live stream and recordings are password protected.
3. **Sync Time** – When checked, the communicator will synchronize the FlameSpec-IR3-HD clock with the PC clock the communicator is installed on. The clock is used by the video recordings to timestamp the file. It is also used by internal logging that is accessible by Fire & Gas Detection Technologies remote support when enabled. When the detector is restarted, it will use the last time it was set too before it was shutdown.

5.5 Log Viewer

The log viewer shows events the detector stores during its operation time. Evets like Power Up, Fire Alarm Detection, Pre-Alarm State etc. Clicking on the “Press for Events Log” will open a window with events stored in the detector memory. See Figure 7 - Log Viewer for screen example.

The viewer has 3 columns, the time of the event, the event type and the event ID. The filter allows to filter by event type .When opening the screen, the 50 most recent events are loaded. Pressing on the Next Page button will load the next 50 events. Export will open a file selector to export events in csv format.

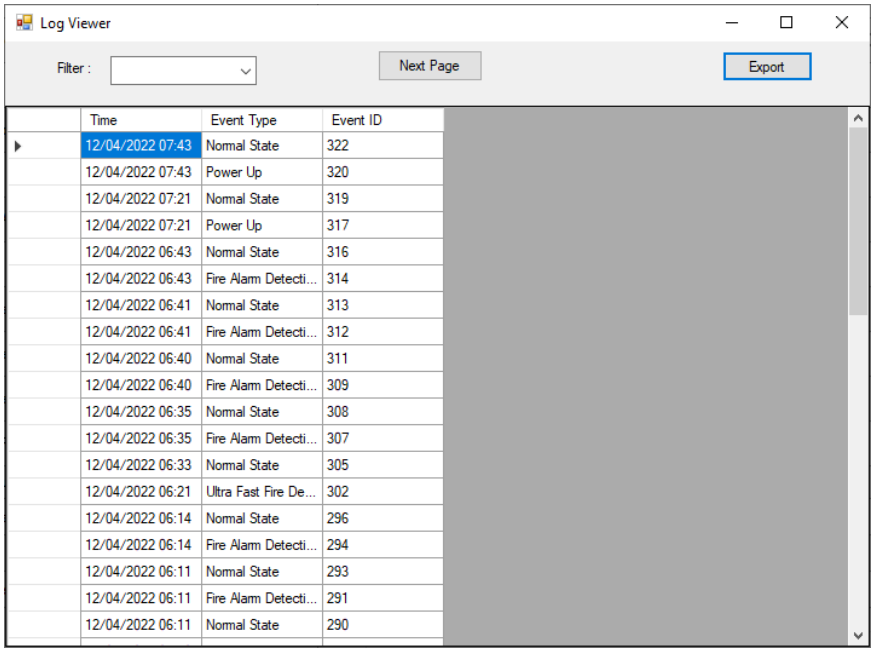


FIGURE 7 - LOG VIEWER

6 ONVIF Network Device Client

FlameSpec products with video and LAN communication support the ONVIF protocol. ONVIF allows to monitor and configure the detectors. An ONVIF network device client can be downloaded from the following link:

https://sourceforge.net/projects/onvifdm/

Once the ONVIF client is installed and activated, it will see all the detectors connected to the network. They will be displayed with their IP and host name on the left side.

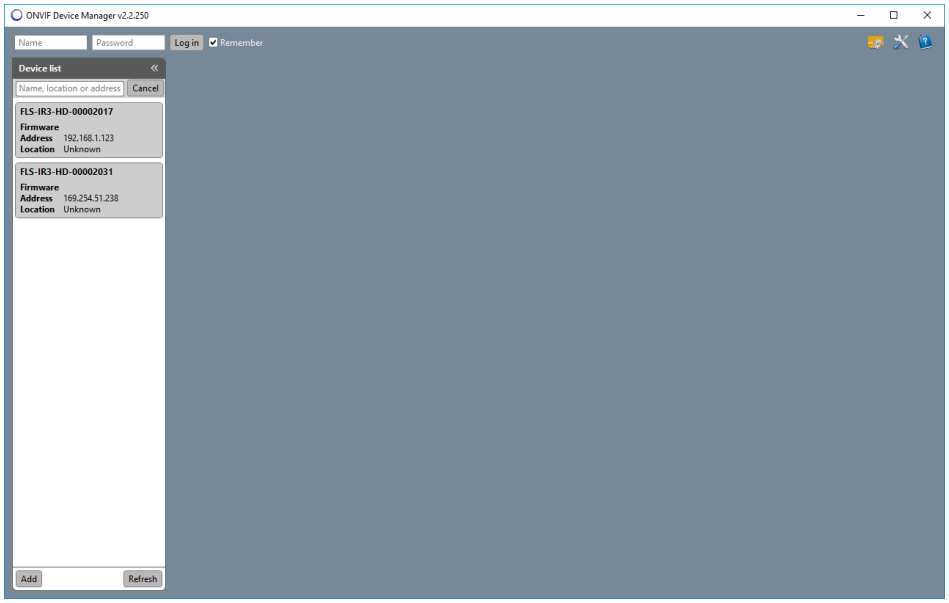


FIGURE 8 - ONVIF DEVICE CLIENT - OPENING WINDOW

To access the detector, you must enter the user/password on the top left side (default is fgcam/admin)

Clicking on the device in the device list will show the settings and NVT (Network Video Transmitters) on the right pane.

FIGURE 9 - ONVIF DEVICE CLIENT – LOGIN

6.1 HOSTNAME setting

With the ONVIF Device Client it is possible to set the host name of the device. The default hostname is <model>-<serial num>. For example, FLS-IR3-HD-0201. To change the hostname, select the Identification link on the top list of settings in the right pane. Change the hostname and click on the apply button.

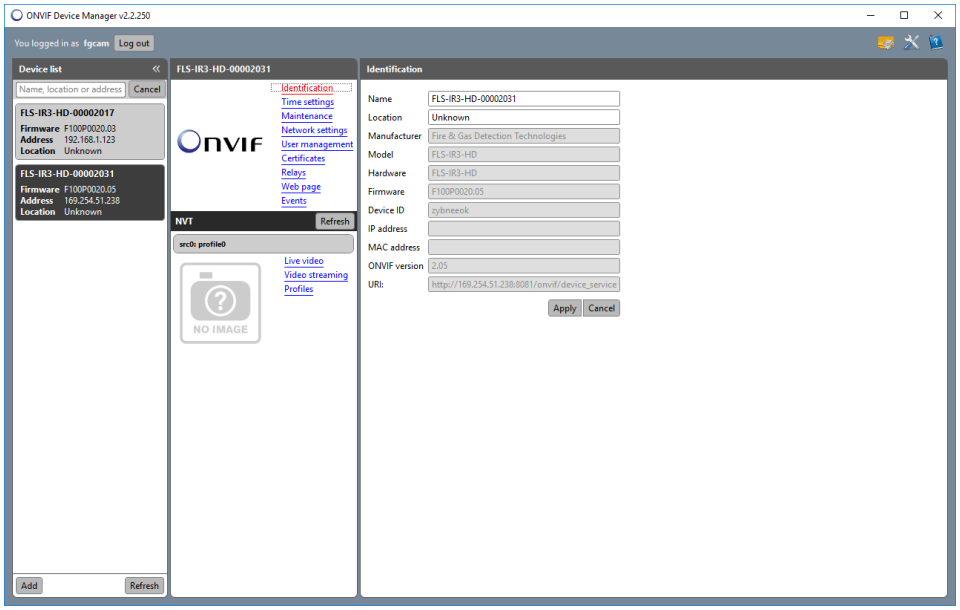


FIGURE 10 - ONVIF DEVICE CLIENT - CHANGE HOST NAME

6.2 Time Setting

The ONVIF protocol allows to set the time of the detector. The time setting will be displayed as a timestamp on the video stream as well as a timestamp for internal logging that is stored on the detector. To set the time, click on the Time Setting link in the settings list on the right pane of the detector.

The time as well as the time zone can be set from the form. Click apply when done. Once modified, the timestamp on the real time stream will be updated.

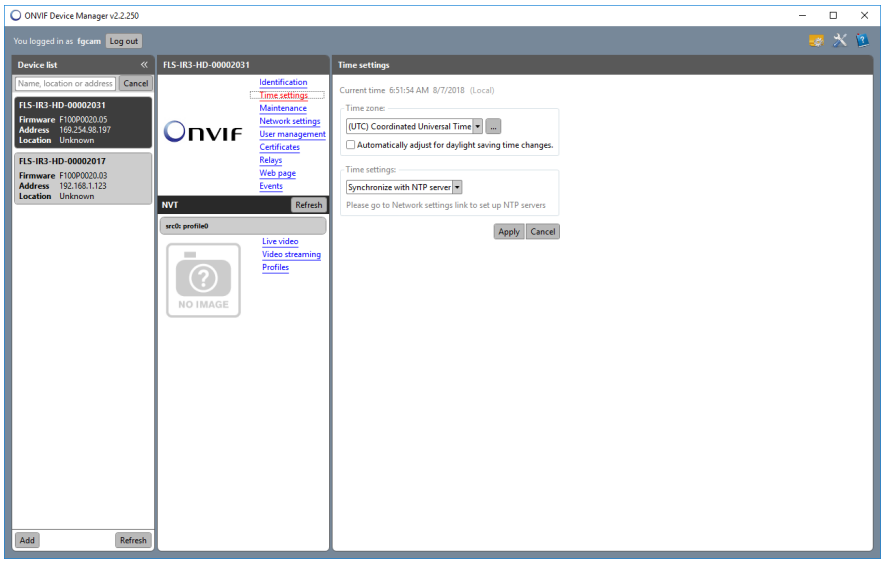


FIGURE 11 - ONVIF DEVICE CLIENT - TIME SETTING FORM

6.3 Network Settings

Networks settings can be modified via the ONVIF device client. The IP can be set to static as well as settings to the DNS, NTP servers. Once the IP settings are changed, a restart of the device is required. Restart can be done by powering off and on the detector or by using the reboot button in the maintenance form.

Once the IP is changed, it is the responsibility of the network administrator to maintain access to the device through the network. The configured static or dynamic IP can be seen with the communicator in the Ethernet IP field.

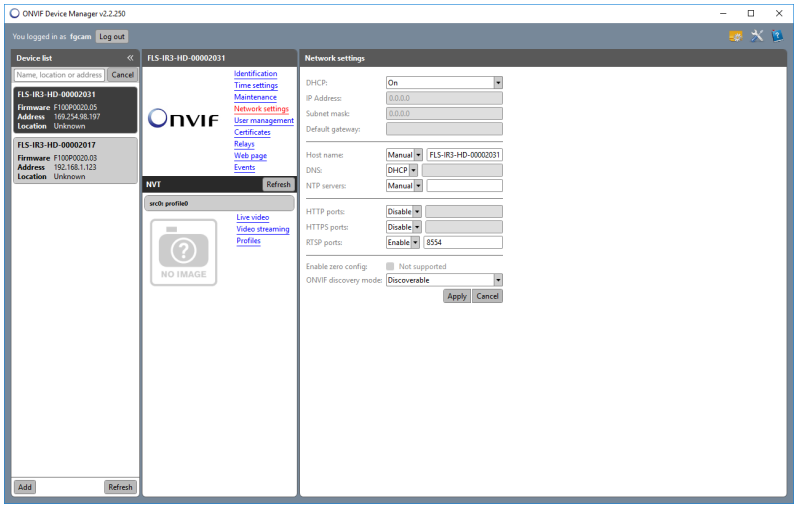


FIGURE 12 - ONVIF DEVICE CLIENT - NETWORK SETTINGS

6.4 User Management

Access to the video stream or to the recordings is password protected. The default user password is fgcam/admin. ONVIF device client allows to change the default user password. Click on the User Management link on the right pane. A User Management form will be displayed with a Modify button. Click modify and change the user password. The user password needs to be changed in the ONVIF device client. Click on the logout button and then reenter the user password. The communicator user password should also be changed to see video stream and recordings. See 4.2 Video Streaming for details on changing the user password in the communicator.

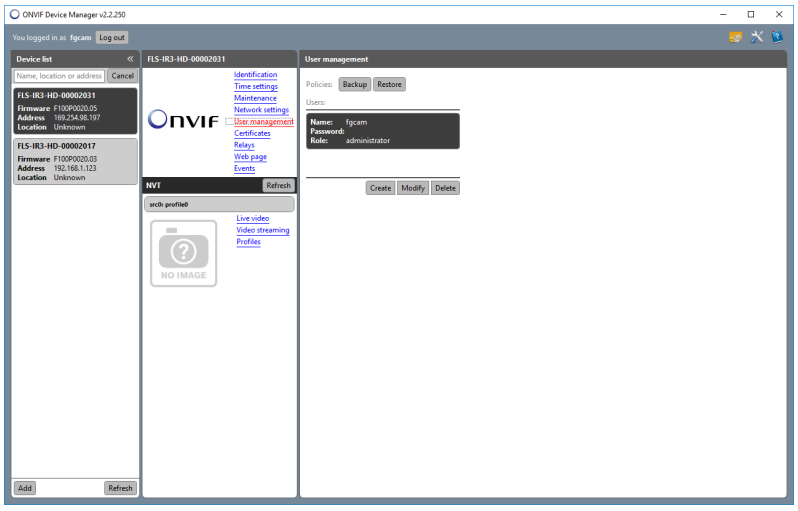


FIGURE 13 - ONVIF DEVICE CLIENT - USER MANAGEMENT

6.5 Video Streaming

With the ONVIF device client, it is possible to see the live video stream. Click on the link Live Video or Video Streaming to see the live video.

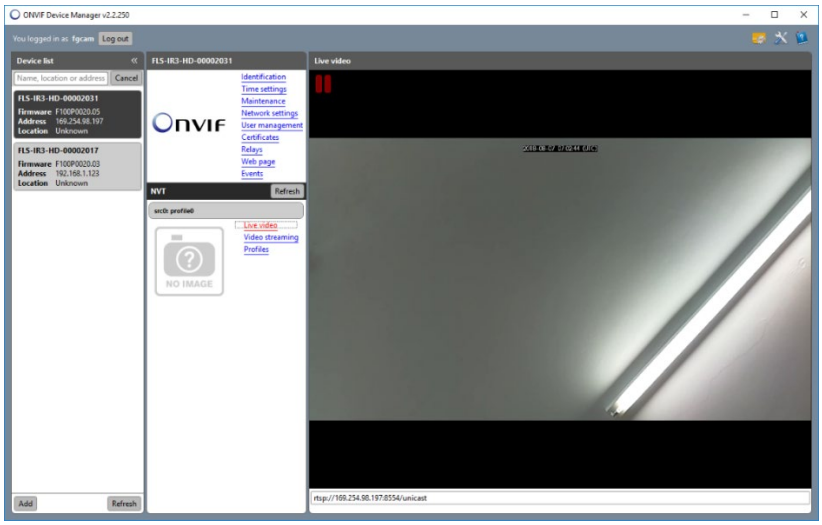


FIGURE 14 - ONVIF DEVICE CLIENT - LIVE STREAMING

6.6 Video Recordings

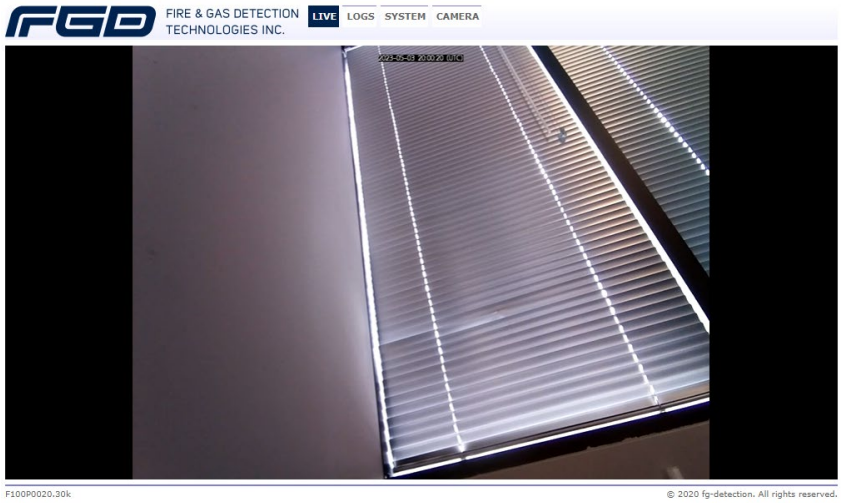
It is not possible to access video recordings with ONVIF at the moment. See 4.3 Video Recordings for details on accessing video recordings. Video recordings can be accessed either via the communicator or through http.

7 Google Browser Access to Video and Camera Setup.

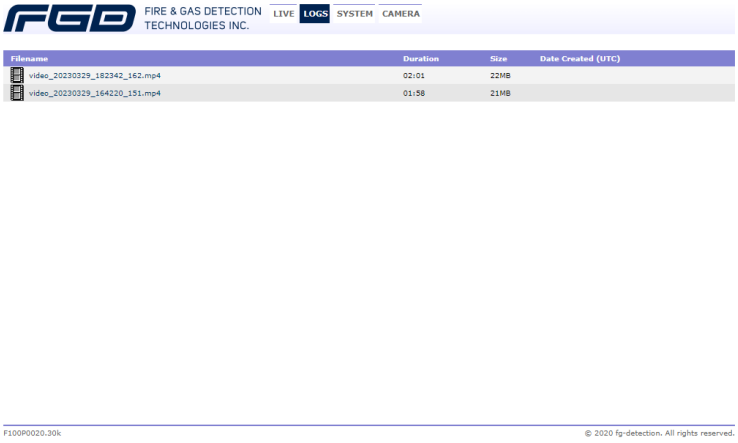
Using the FGD communicator Software identify the IP address of the detector, open a Google Browser window and type the IP address in the address bar and enter. You will be required to input the Username and passcode and a live screen of the video will open up.

7.1 Live Video Screen.

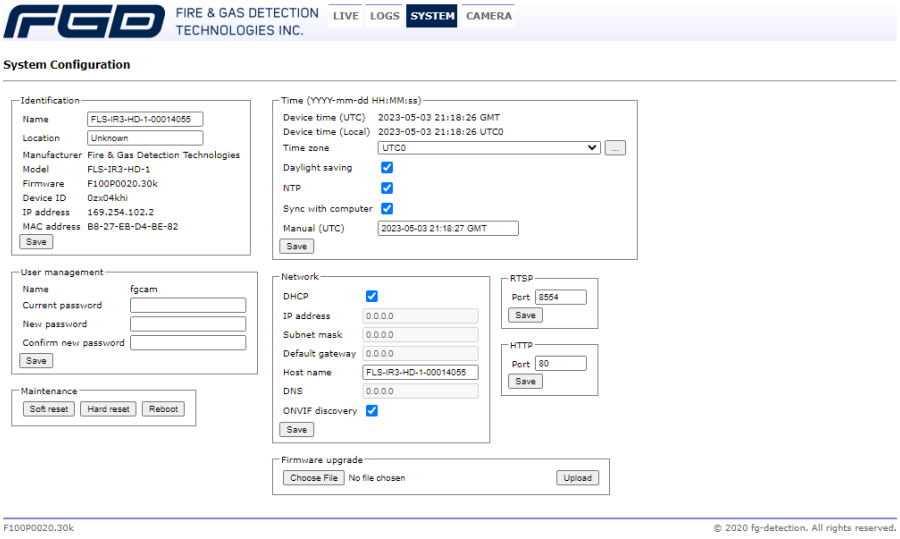
Note: The Video Firmware version is shown in the lower left corner of all 4 screen tabs.



7.2 Events



7.3 System Configuration



7.3.1 Identification.

- Add name and camera location
- Change name of camera

7.3.2 User Management

- Change camera passcode

7.3.3 Set detector video feed, time stamp via UTC, computer or manually.

- World time zone
- Day light savings

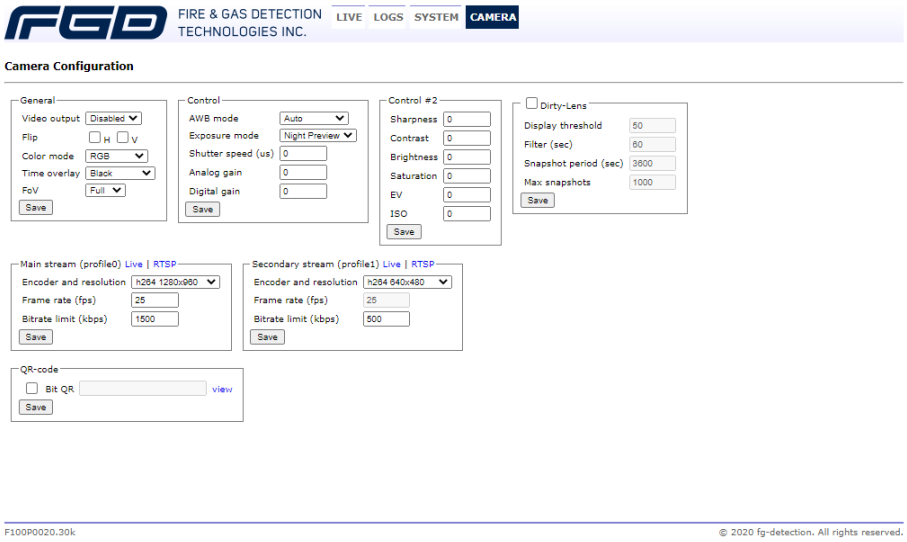
7.3.4 Define Dynamic or Static IP Address.

- Static HTTP port = 8081
- ONVIF discovery ON

7.3.5 Camera firmware upgrade

- Requires a Firmware patch file to be emailed from FGD.
- Do not upgrade Firmware unless you have the approval of FGD

7.4 Camera Configuration



7.4.1 General.

- Flip camera orientation -Horizontal or Vertical
- Color mode: RGB or Greyscale.
- Time stamp overlay; Black, White, transparent or disable.

7.4.2 Control.

- Picture quality controls.
- Exposure mode default.
- Night preview

7.4.3 Dirty-Lens.

- Can be selected to monitor camera contamination levels.
- Alert threshold configurable.

7.4.4 Snapshot – onboard log

- Default 1 hour (3600s)
- Default max log 1000 images

7.4.5 Video feed configuration

- Main and secondary feed, configured based on bandwidth available

7.4.6 QR code

- Free text for testing HD detector via manual BIT
- Only works if manual BIT selected via communicator