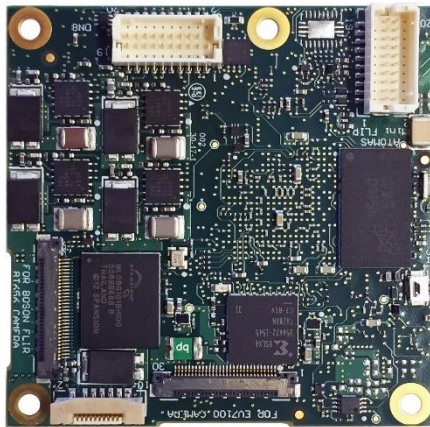# IO NODES

IMAGING TECHNOLOGY

ATOMAS-MINI-DUAL
User Manual

OEM Encoder Platform

Document Version 2.3

ATOMAS-MINI-DUAL
User Manual

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The following words and symbols mark special messages throughout this guide:

Warning: Text set off in this manner indicates that failure to follow directions could result in damage to persons or equipment.

Note: Text set off in this manner indicates special instructions which should be paid attention to.

1   About the ATOMAS-MINI-DUAL

The ATOMAS-MINI-DUAL dual port OEM encoder module delivers high quality H.264 video encoding to the video surveillance market. It is an embedded, high-performance digital video OEM encoder module designed for integration into HD cameras or other video capture products.

Embedding support for networked API's, products based on the ATOMAS-MINI-DUAL can be integrated into a networked video management system allowing for centralized monitoring and management in a scalable and expandable IP surveillance system. Contact IONODES for a list of supported VMS systems.

The high-performance encoding capability of the ATOMAS-MINI-DUAL offers a cost-effective way to convert existing camera designs to benefit from video over IP networks.

The ATOMAS-MINI-DUAL provides innovative configuration options and tools that can significantly decrease the amount of time and effort required to deploy a unit. Using web-based configuration tools, users can easily and remotely manage all aspects of the appliance.

To support high-performance encoding, while keeping the total cost of ownership within budget constraints, the ATOMAS-MINI-DUAL uses highly efficient dual stream H.264 compression and supports an optional MJPEG stream. Each of its 2 video inputs is processed individually and they are accessible from the LAN via a single IP (in the URL the exact input will be specified).

Advanced features, such as "edge-recording" allow you to extend usage of the ATOMAS-MINI-DUAL well into the future.

2 Parts List

Qty **Description**

1 ATOMAS-MINI-DUAL Module
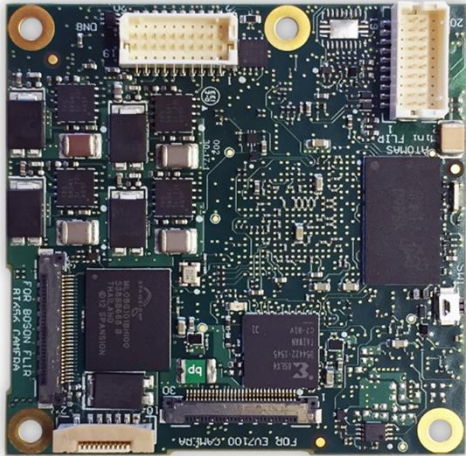
Note: When unpacking, inspect the shipment box and appliance to identify any possible damages due to shipping. Make sure all items have been delivered and that no items are missing. Contact your IONODES representative should you find any damages or defects.

Note: The product serial number label helps our product support team identify your device and its factory configuration in the event that your IONODES product or its components require service. The label is attached to the underside of the PCBA.

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3 Hardware Integration

The ATOMAS-MINI-DUAL has been designed to allow for flexible hardware integration to existing or new product designs. The ATOMAS-MINI-DUAL proposes four (4) mounting holes for securing to your enclosure. In addition, a slight clearance around the board's edge can also be used for extrusion-type enclosures.

When integrating the ATOMAS-MINI-DUAL into a product design, position the module to allow for air circulation around the board in order to maximize the chances of heat dissipation.

Warning: Be careful not to damage the module when using mounting screws.

4 Temperature Considerations

The ATOMAS-MINI-DUAL has been designed with industrial temperature components (-40C to +85C); however, reaching your temperature requirements may require that you add heatsinks to certain board-level components which generate substantial heat. The placement of the SoC and temperature sensor on the PCB are clearly marked in the picture below.
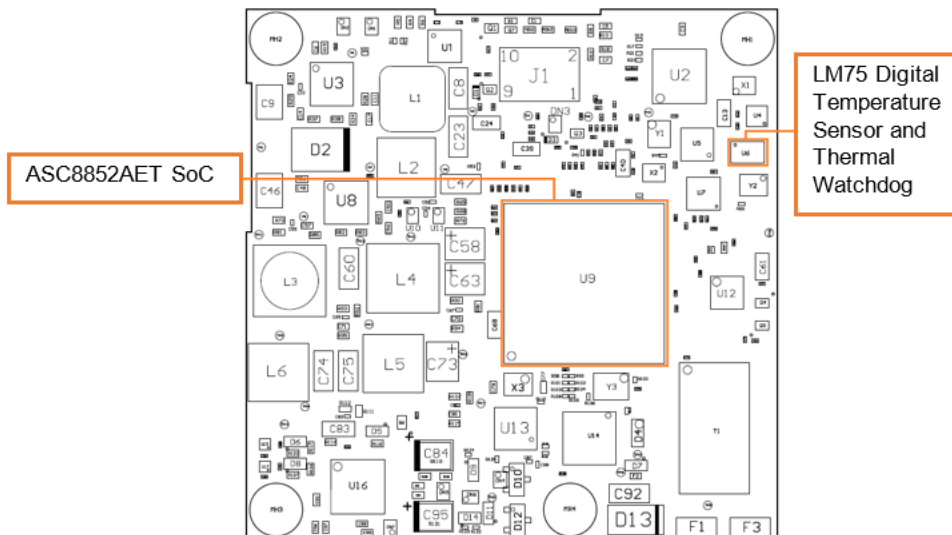
5 ATOMAS-MINI-DUAL

5.1 Board layout
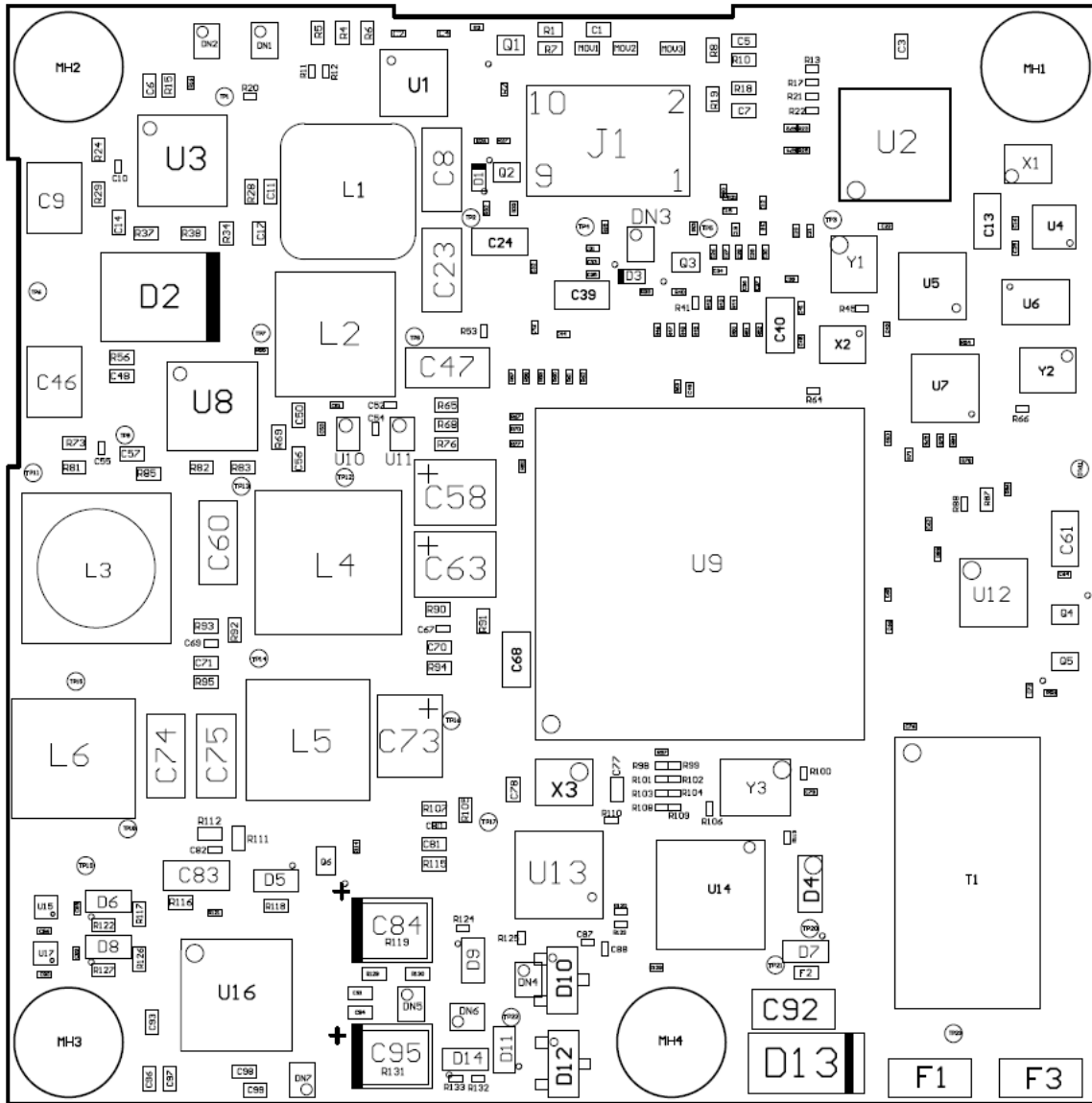
Figure 1 - ATOMAS-MINI-DUAL Top Side
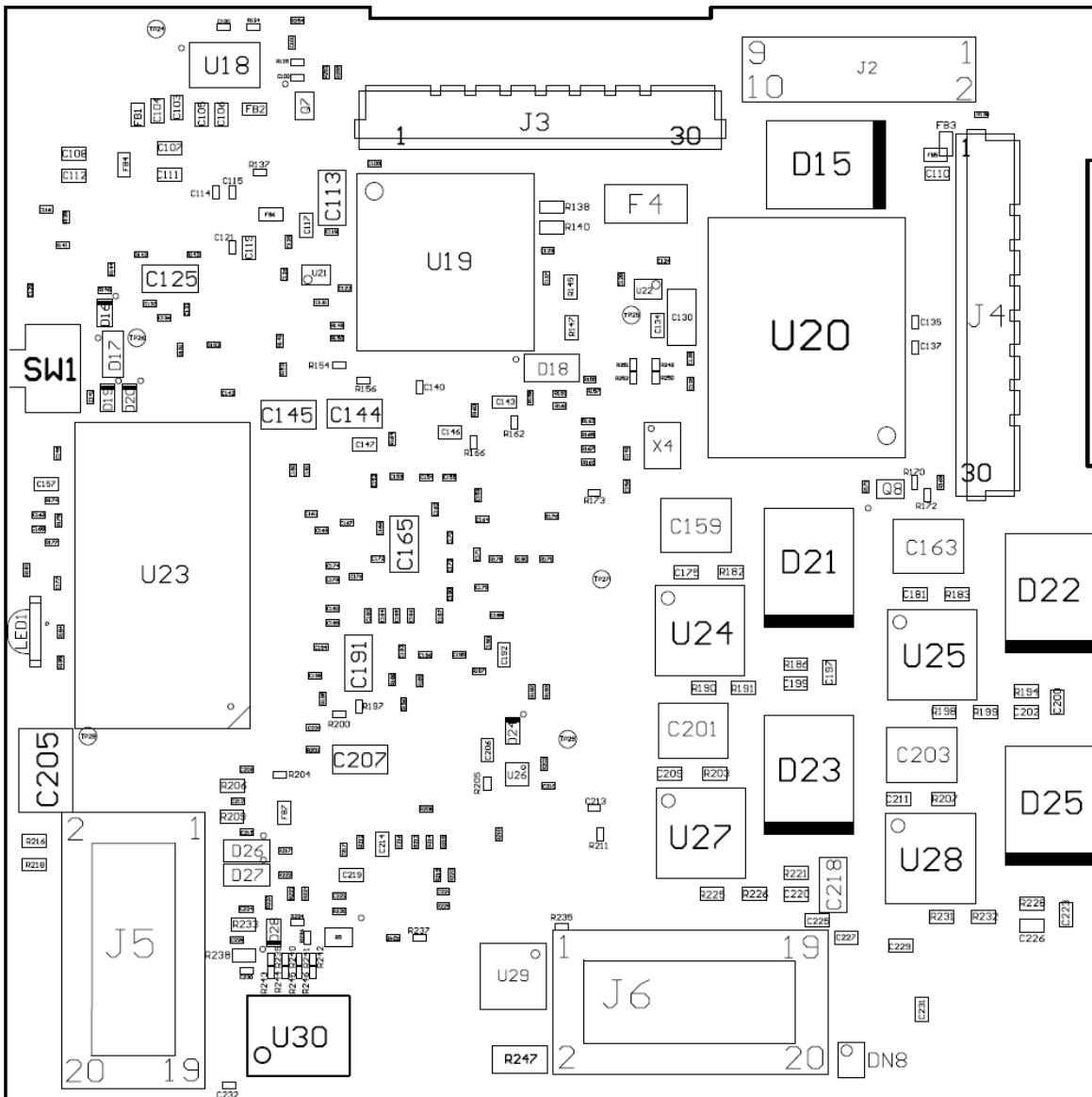
Figure 2 - ATOMAS-MINI-DUAL Bottom Side

Note: On the bottom side of the ATOMAS-MINI-DUAL, near the edge of the PCB, there is a small physical button labelled "*SW1*". This button allows the user to perform a reset to factory default settings. In order to do that the user must press and hold the button until the status LED on the board changes to an alternating Red/Green pattern. Once it is released the board will load default settings and restart automatically. A short press of the button (without waiting for the Red/Green pattern) will simply restart the board.

5.2 Connector Part Numbers

- ATOMAS-MINI-DUAL

  - o Common to all module versions

    - J2 – MicroSD / SD Connector / MOLEX 0525591052

    - J3 – LVDS Video Interface / KEL USL00-30L

    - J5 – Ethernet & Power IN / Hirose DF20F-20DP-1V(56)

    - J6 – Comm, GPIO & Audio / Hirose DF20F-20DP-1V(56)

  - o AR0 model only

    - J1 – Analog Video Interface / Hirose DF20F-10DP-1H

  - o DC0 model only

    - J4 –Second Digital Video Interface / KEL USL00-30L

5.2.1 J1 – Analog Video Interface

Hirose DF20F-10DP-1H

Pin No.	Analog Video Interface Type		
	YPrPb	**S-VIDEO**	**CVBS**
1	RESERVED	RESERVED	RESERVED
2	Pr IN	N/C	N/C
3	RESERVED	RESERVED	RESERVED
4	GND	GND	GND
5	GND	GND	GND
6	Pb IN	C IN	N/C
7	GND	GND	GND
8	GND	GND	GND
9	GND	GND	GND
10	Y IN	Y IN	CVBS IN

Note: The RESERVED ports are for internal use by IONODES and should be left disconnected on production designs.

5.2.2 J2 – Micro SD / SD Connector

MOLEX 0525591052

Pin No.	Name	Comments
1	WRITE PROTECT	
2	CARD DETECT	
3	DATA BIT 2	
4	DATA BIT 3	
5	COMMAND LINE	
6	POWER	3.3 VDC
7	CLOCK	
8	GND	
9	DATA BIT 0	
10	DATA BIT 1	

Note: In order to use the micro SD / SD functionalities, make sure to have a 2GB to 64GB microSD / SD card of class 6 or above. You must also make sure the card is formatted in FAT32 or EXT3.

5.2.3 J3 – LVDS Video Interface

KEL USL00-30L

Pin No.	Name	Comments
1	LVDS DATA3 +	
2	LVDS DATA3 -	
3	LVDS CLK +	
4	LVDS CLK -	
5	LVDS DATA2 +	
6	LVDS DATA2 -	
7	LVDS DATA1 +	
8	LVDS DATA1 -	
9	LVDS DATA0 +	
10	LVDS DATA0-	
11	GND	
12	CAM UART TX	Connects to camera's TxD
13	CAM UART RX	Connects to camera's RxD
14	DC OUT	6V
15	DC OUT	6V
16	DC OUT	6V
17	DC OUT	6V
18	DC OUT	6V
19	GND	
20	GND	
21	N/C	
22	N/C	
23	N/C	
24	N/C	
25	N/C	
26	RESET OUT	Reset: Low (GND), Normal: Open (1.8V)
27	N/C	
28	N/C	
29	N/C	
30	N/C	

5.2.4 J4 – Second Digital Video Interface

KEL USL00-30L

Pin No.	Name	Comments
1	VIN SENSOR	FLIR BOSON: VIN=3.3V (can also be set to 5V)
2	VIN SENSOR	FLIR BOSON: VIN=3.3V (can also be set to 5V)
3	GND	
4	FLIR DATA BIT 14	
5	FLIR DATA BIT 8	
6	BT656 FLIR DATA BIT 4	
7	BT656 FLIR DATA BIT 7	
8	FLIR RESET	
9	FLIR UART RX	voltage 1.8V
10	BT656 FLIR DATA BIT 5	
11	BT656 FLIR DATA BIT 6	
12	FLIR DATA BIT 13	
13	FLIR UART TX	voltage 1.8V
14	FLIR DATA BIT 15	
15	FLIR DATA BIT 10	
16	FLIR DATA BIT 12	
17	BT656 FLIR PCLK	
18	FLIR DATA BIT 9	
19	FLIR DATA BIT 11	
20	BT656 FLIR DATA BIT 2	
21	GND	
22	BT656 FLIR VSYNC	
23	BT656 FLIR DATA BIT 3	
24	BT656 FLIR DATA BIT 1	
25	FLIR I2C0 SCL	
26	FLIR I2C0 SDA	
27	BT656 FLIR HSYNC	
28	BT656 FLIR DATA BIT 0	
29	BT656 FSYNC FLIR DATA EN	
30	GND	

Note: The Second Digital Video Interface is only available on the ATOMAS-MINI-DUAL-DC0 version. In order to connect a camera block via this interface an adapter board is required. Currently, the only supported camera blocks are the FLIR BOSON 320/640 (60 Hz version only).

5.2.5 J5 – Ethernet and Power IN

Hirose DF20F-20DP-1V(56)

Pin No.	Name	Comments
1	10/100 LAN TX +	Connects directly to RJ45 or network wiring.
2	10/100 LAN RX -	Connects directly to RJ45 or network wiring.
3	10/100 LAN TX -	Connects directly to RJ45 or network wiring.
4	10/100 LAN RX +	Connects directly to RJ45 or network wiring.
5	N/C	
6	N/C	
7	VRTC	DC Power Input for RTC (1.3V to 5.5V)
8	10/100 LAN LED1	Connects directly to RJ45 or network wiring.
9	GND	
10	10/100 LAN LED2	Connects directly to RJ45 or network wiring.
11	CON FACT DFLT	
12	GND	
13	GND	
14	GND	
15	3.3V OUT	3.3V DC Power Output (max. 100mA)
16	5V OUT	5V DC Power Output (max. 500mA)
17	VIN	Input voltage: 8V to 36V
18	VIN	Input voltage: 8V to 36V
19	VIN	Input voltage: 8V to 36V
20	VIN	Input voltage: 8V to 36V

VRTC is provided in order to allow for optional integration of an external battery source (1.3V to 5.5V) for feeding the module's real-time clock (RTC). VRTC is only required to keep the date/time when the main power supply is not connected. All other data is saved in the persistent FLASH memory. The expected consumption is around 0.060 mA (+/- 0.005 mA). Based on the desired holdup time, the system integrator should select the appropriate battery capacity.

J5 provides standard 4-wire network connectivity. You only need 4 wires for 10/100 Base-T network connection; please connect the appropriate network connection pins to your RJ45 connector or wiring. Network status LED pins are also accessible if needed.
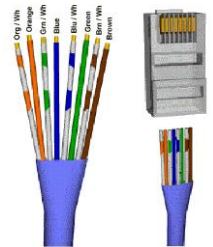
5.2.1 J6 – Comm, GPIO and Audio

Hirose DF20F-20DP-1V(56)

Pin No.	Name	Comments
1	COM2 +	MAIN UART0 TX (-DC0) or RS-485 TX + (-AR0)
2	COM1 +	RS-485 RX + (-AR0) or CAN + (-DC0)
3	COM2 -	MAIN UART0 RX (-DC0) or RS-485 TX – (-AR0)
4	COM1 -	RS-485 RX – (-AR0) or CAN – (-DC0)
5	PWM2	
6	PWM1	
7	GND	
8	PWM3	
9	AUDIO LINE OUT LEFT	
10	AUDIO LINE OUT RIGHT	
11	AUDIO COMMON	
12	AUX SDA	I2C Data. For internal purposes only. DO NOT USE.
13	GND	
14	AUX SCL	I2C Clock. For internal purposes only. DO NOT USE.
15	CON OUT	
16	GND	
17	CON IN 2	
18	AUDIO LINE IN RIGHT	
19	CON IN 1	
20	AUDIO LINE IN LEFT	

Note: The first 4 pins of the J6 can either start with RS-485 configuration (in the ATOMAS-MINI-DUAL-AR0) or UART/CAN configuration (in the ATOMAS-MINI-DUAL-DC0).

5.3 Understanding LED Status

Status of the ATOMAS-MINI-DUAL is exposed via the on-board bi-color LED (Green/Red). The following describes the system status LED mappings of the ATOMAS-MINI-DUAL:

Normal Operation:

- Operating system boot up – LED is steady orange (max. 30 seconds)
- Internal application startup – LED is flashing orange (2 second interval)
- System ready – LED is steady green
- Media streaming – LED is flashing green (1/2 second interval)

Special Operations:

- Identify command received – LED is flashing orange/green
- Reset to factory settings – LED is flashing rapidly red/green
- Software watchdog is rebooting the appliance – LED is flashing rapidly red
- Firmware update in progress – LED is flashing slowly red/green

6 ATOMAS-SDIO

The ATOMAS-SDIO breakout card is an optional module offered by IONODES, which provides microSD storage support to your ATOMAS-MINI-DUAL module.

The ATOMAS-SDIO module is provided as part of the ATOMAS-SDIO-KIT part number which also includes a flat flex cable required to connect the ATOMAS-SDIO to the ATOMAS-MINI-DUAL module.

6.1 Board layout
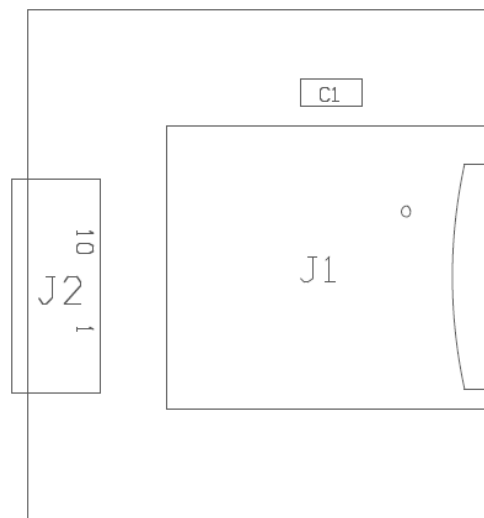
Figure 3 - ATOMAS-SDIO Top Side

6.2 Connector Part Numbers

- J1 – MOLEX 502570-0893

- J2 – TE CONNECTIVITY 1-1734839-0

Note: The J2 connector on the ATOMAS- SDIO is designed to mate with connector J2 of the ATOMAS-MINI-DUAL module. Pinout is inverted to keep the harness cable straight.

6.2.1   J2 – 10-pin microSD / SD connector

TE CONNECTIVITY 1-1734839-0

| Pin No.	Name	Comments
1	DATA BIT 1	
2	DATA BIT 0	
3	GND	
4	CLOCK	
5	POWER	2.7V – 3.6V DC
6	COMMAND LINE	
7	DATA BIT 3	
8	DATA BIT 2	
9	CARD DETECT	
10	WRITE PROTECT	Not Connected

7   ATOMAS-MINI-BOSON-ADAPT

The ATOMAS-MINI-BOSON-ADAPT module is a video interface add-on module, designed for use with the ATOMAS-MINI-DUAL encoder platform. This optional module provides a direct connection to FLIR BOSON 320/640 (60Hz variant) thermal camera on the secondary digital video input of the ATOMAS-MINI-DUAL.

7.1 Board layout
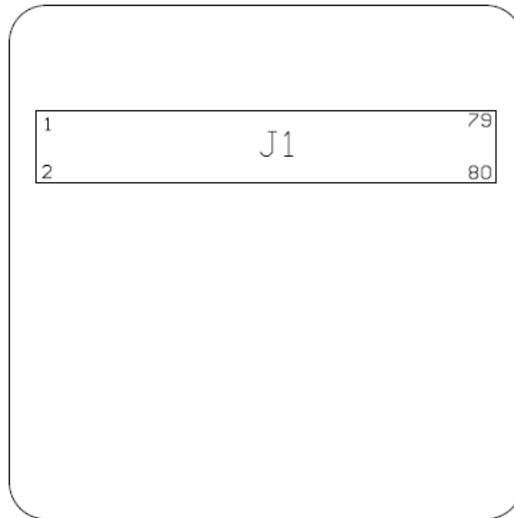
Figure 4 - ATOMAS-MINI-BOSON-ADAPT Top Side
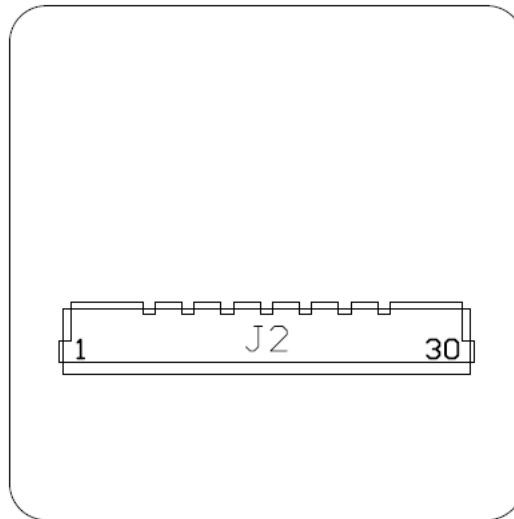
Figure 5 - ATOMAS-MINI-BOSON-ADAPT Bottom Side

7.2 Connector Part Numbers

- J1 – FLIR Connector / Hirose DF40HC-(4.0)-80DS-0.4V

- J2 – KEL Connector (towards ATOMAS-MINI-DUAL) / KEL USL00-30L

Note: The J2 connector on the ATOMAS-MINI-BOSON-ADAPT module is designed to mate with connector J4 of the ATOMAS-MINI-DUAL module.

8 System Configuration

For initial set-up, the ATOMAS-MINI-DUAL needs to be configured prior to using it with your network video management system. In most cases, only network configuration will be required. Since not all ATOMAS-MINI-DUAL parameters can be controlled via networked video management systems, advanced parameters may need to be set-up as well through the ION specific software tools.

The initial configuration can be done locally on the ATOMAS-MINI-DUAL using a laptop/workstation directly connected to the device's network port, or remotely over the network.

8.1 Initial Network Configuration

By factory default, the ATOMAS-MINI-DUAL is configured in DHCP. If you are not using a DHCP server it will automatically allocate itself an APIPA (Automatic Private IP Addressing) address in the range 169.254.0.1 to 169.254.255.254, with subnet mask 255.255.0.0.

Initial device network configuration is done via the IonConfigTool (ICT), a tool provided by IONODES that can be found on the company's web site, under the Support > Tools section.

The ICT plays 5 important roles:

1. Discovery of all ATOMAS-MINI-DUAL and other ION devices on the network

2. Remote configuration of the IP address and subnet mask

3. Identify an ION device by flashing the LED (orange/green)

4. Batch firmware upgrade of all common ION devices

5. Access to the web based ION management application

In order to better understand all of its functionalities, please check the ICT user manual.

Note: Your computer must be in the same subnet (169.254.*.*) in order to be able to communicate with the ATOMAS-MINI-DUAL.

8.2 Using the ATOMAS-MINI-DUAL Web Management Application

When entering the web interface, you will be asked for a username and password.

Upon first access to the web interface the user will need to choose a new password for the administrator account. This password must be between 8 and 32 characters in length and contain at least 3 out of 4 types of characters from the following: numeric, lowercase, uppercase and special character (!@#$%*()+=).
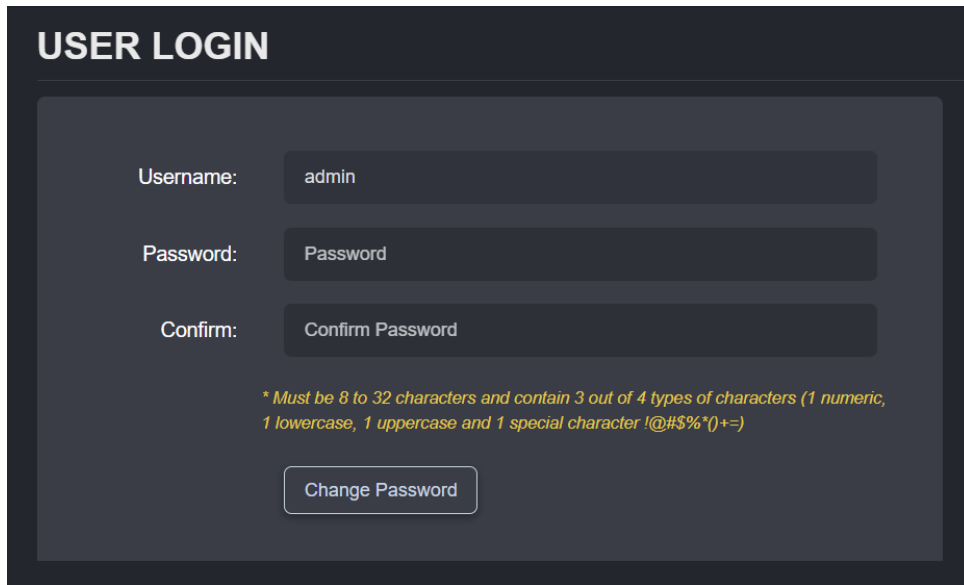
On subsequent access, the following window will be displayed:
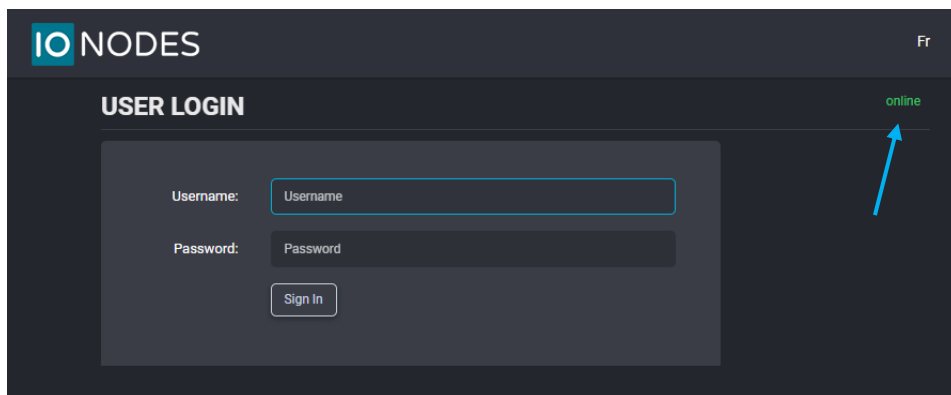
The "**online**" indicator in the top-right corner shows that the web interface can communicate with the board. During a firmware update or manual reboot the indicator will turn to "**offline**", until the board completes the bootup sequence, making this indicator very useful for troubleshooting purposes.

8.2.1 System Status

Upon successfully logging into the web interface, a **Dashboard** screen will be presented. This screen shows the device's product information, system status and system resources usage.

A link is provided for the older Silverlight-based web interface that is still needed for modifying some advanced settings. Once these features are migrated to the new HTML5-based interface, the older interface will not be required anymore.
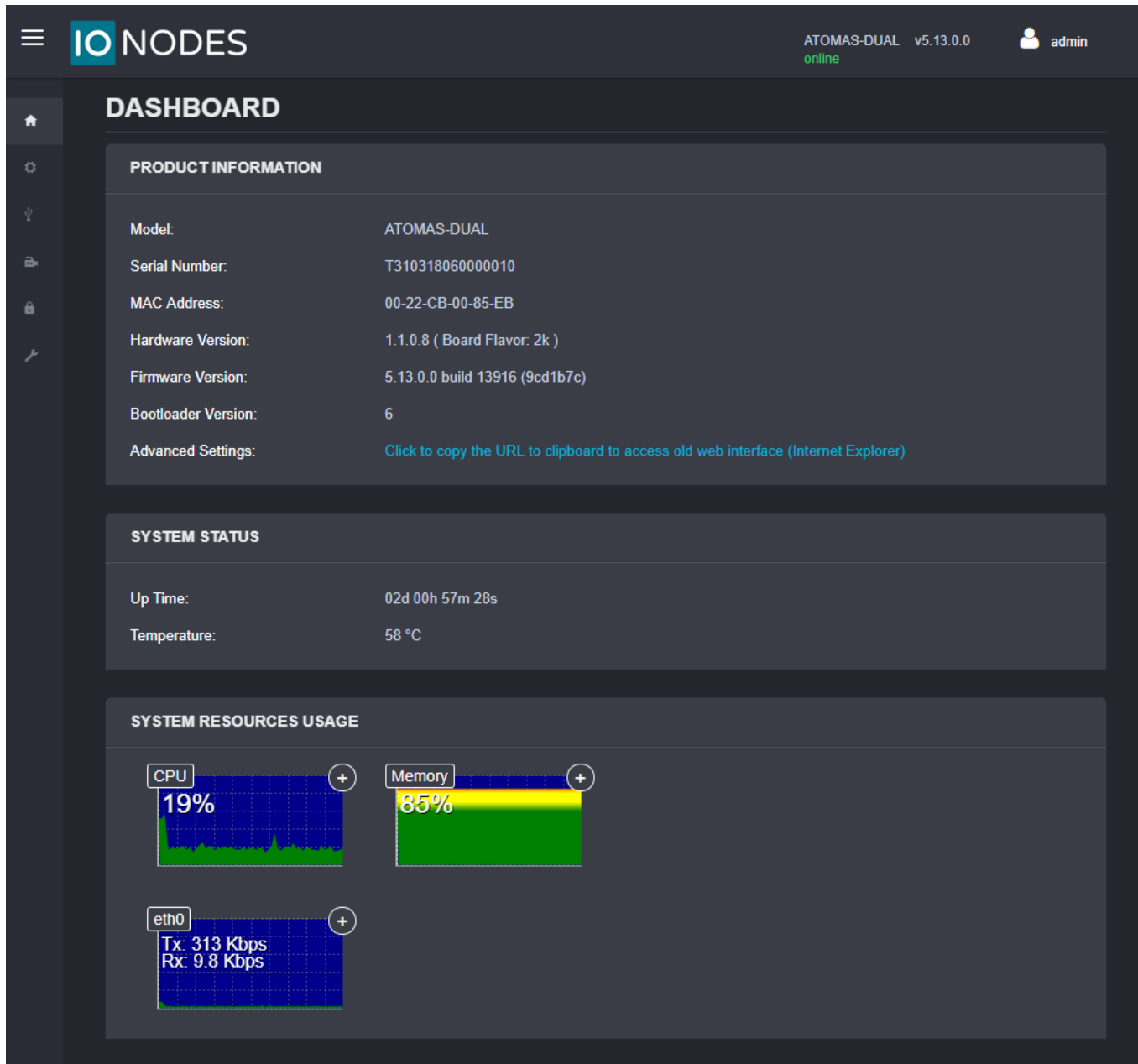
8.2.2 Configuration / System
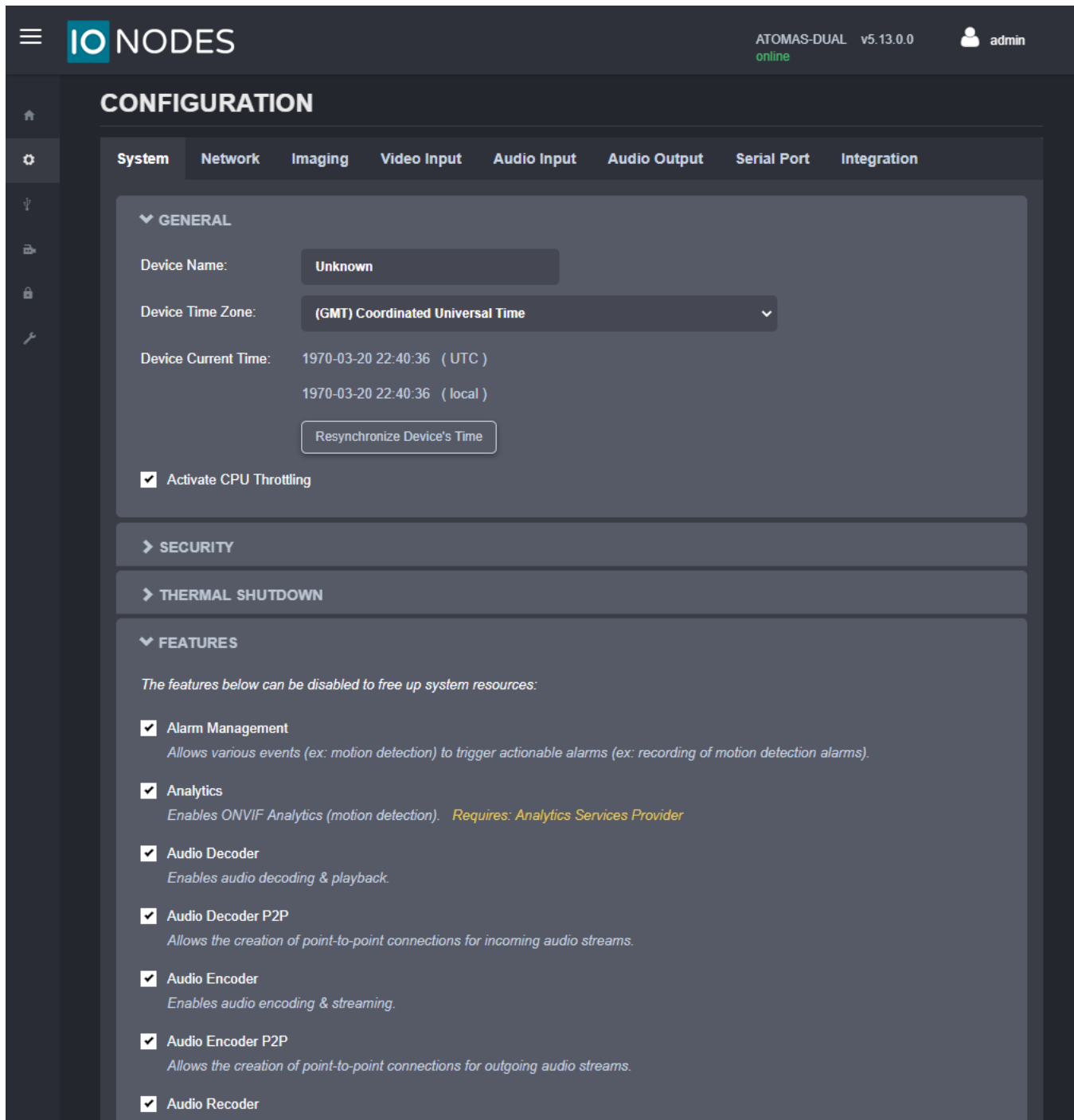
Under the **Configuration** section, select the **System** tab to perform the following operations:

- Specify a **Device Name**; this custom name can be used by third-party software to display a friendly name for the device

support@ionodes.com | https://imaging.ionodes.com | 1-450-696-1060

- Set the device's **Time Zone**; based on this setting, as well as the current UTC time, a local time is calculated and displayed. The button "Resynchronize Device's Time" will force a time synchronization between the encoder's internal clock and the local system that is used to open the web interface.

- **Activate CPU Throttling**; this feature aims to reserve a part of the CPU's processing resources for critical tasks, like handling PTZ commands. This is achieved by reducing the video quality during a short period when the CPU load is too high. After the CPU load decreases, the video quality is restored automatically.

- Set the device's **Security** policy. Here the user can define the minimum & maximum length of the password for all user accounts. By validating the option "*Enable Protection for Multiple Login Failures*", the device is instructed to block all login attempts after X failed ones, until the timeout of Y seconds runs out (X and Y are user-configurable).
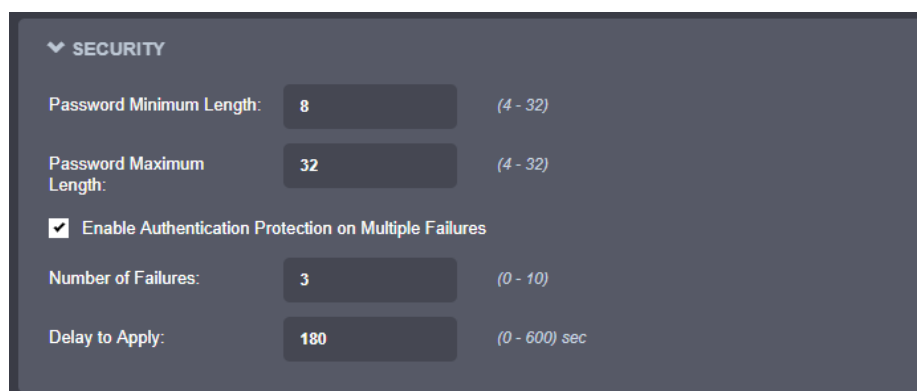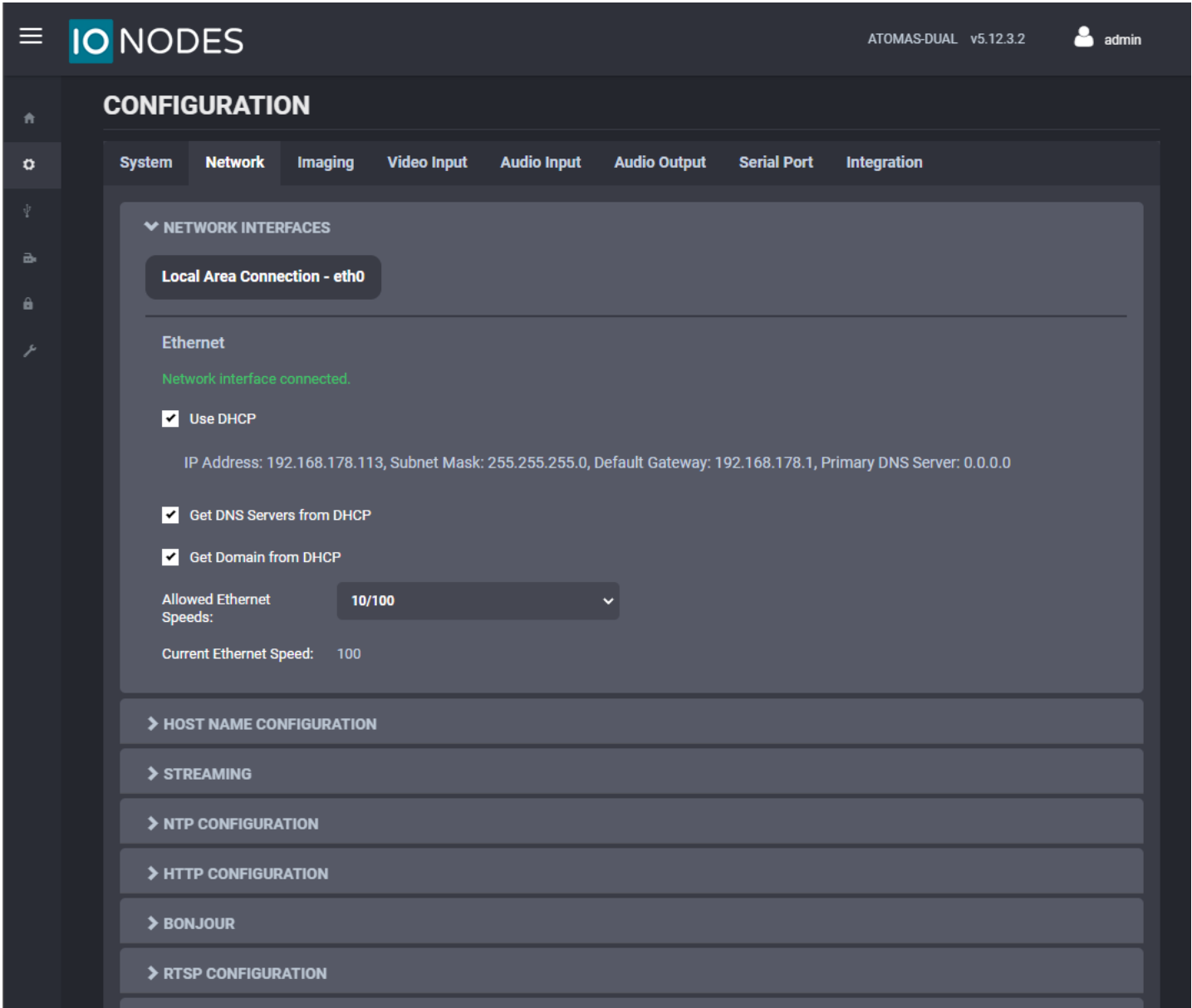

- Set **Thermal Shutdown** thresholds; these are used for controlling the behaviour of the platform when very high operating temperature conditions are encountered (which can otherwise affect the platform's reliable operation). The encoder will enter RESET mode when the shutdown temperature is reached and remain in this state until the temperature drops below the recovery temperature.

- **System Features**; a list of the features supported by the system, along with their dependencies (if applicable), is presented to the user. Based on the application/project where the encoder is being used, some features considered irrelevant may be disabled. For each feature, a brief description is provided.

Warning: If your thermal shutdown thresholds are not correlated with the thermal performance of your cooling solution, the platform may experience unstable operation, so please use this feature very carefully and apply it in the field only after extensive qualification in the lab!
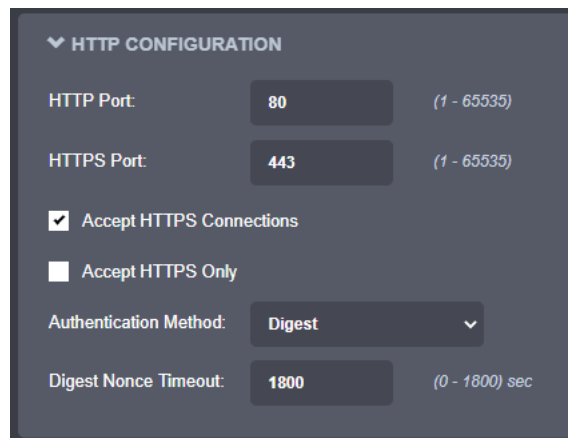
8.2.3 Configuration / Network

Under the *Configuration* section, select the *Network* tab to perform the following operations:

- **Network Interface** – Set the encoder's IP parameters; DHCP or static IP information. The user can also choose the allowed Ethernet Speed in order to increase compatibility with 3rd party networking equipment that the encoder is directly connected to.

- **Host Name Configuration** – Set the encoder's network name.
- **Streaming** – Set the MTU size for all media related RTP packets sent on the network; avoid changing this setting unless absolutely necessary.

- **NTP Configuration** – Configure an NTP server to allow the device to automatically update its internal clock using an NTP server.

- **HTTP Configuration** – Change the device's HTTP configuration
  o **HTTP Port** – TCP port used by the HTTP server
  o **HTTPS Port** – TCP port used for SSL connections on the HTTP server
  o **Authentication mode** – Basic or Digest Authentication for HTTP connections
  o **Accept HTTPS connections** – Enables support of SSL connections
  o **Accept HTTPS only** – Forces the HTTP server to accept only SSL connections
  o **Authentication mode** – Basic or Digest Authentication for HTTP connections
  o **Digest Nonce Timeout** – define the period of time for which the nonce remains active. For example, on an active HTTP connection, it is possible to make multiple requests using the same nonce provided by the server, not requiring user credentials for each command or action performed in the same user session. The value 0, indicates that a new nonce must be used for each HTTP-based request.

- **Bonjour** – Enable Bonjour discovery protocol and configure search domain.

- **RTSP Configuration** – Change the device's RTSP configuration
  o **RTSP Server Port** – TCP port used by the RTSP server.
  o **Session Timeout** – Configure timeout in seconds for RTSP session. The RTSP client will need to send a keep-alive before the timer for the session runs out. As a best practice please configure your RTSP client to send the keep-alive at around half of the session timeout. If the keep-alive is sent very late and the network performance is degraded (packets are being buffered and arriving late) the keep-alive might not make it in due time to the RTSP server and the session will be closed.
  o **Authentication mode** – Basic or Digest Authentication for RTSP connections.
  o **Send RTCP Reports** – Enables the RTCP sender's report, that is used to provide reception quality feedback between the sender and receiver of the video stream

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RTSP CONFIGURATION

RTSP Server Port:	554	(1 - 65535)
Session Timeout:	30	(1 - 120)
Authentication Method:	Digest	
☐ Send RTCP Reports		
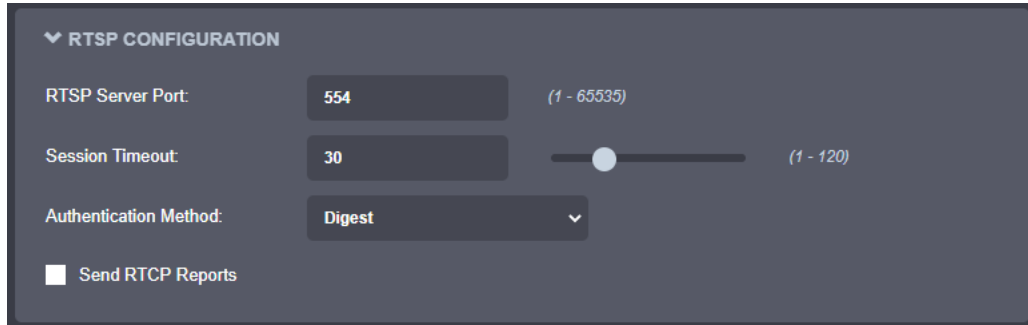
- **SNMP** – Modify SNMP settings to match with any SNMP software you wish to use for monitoring the device.

- **Multicast** – Change the global starting multicast IP address, starting port and TTL for automatic assignation of all outgoing multicast streams. By default, each outgoing multicast stream will be automatically assigned a multicast IP address and port based on the configured range. Manual configuration is also possible on individual media profiles which will override the global configuration.

	Global multicast setting		
Per profile multicast setting	Enabled / Port value not-equal-to 65535	Enabled / Port value equal-to 65535	Disabled
Automatic assignation	Multicast available	No multicast available from this specific profile	N/A
Manual Assignation / Port value not-equal-to 65535	Multicast available	Multicast available	N/A
Manual Assignation / Port value equal-to 65535	No multicast sent from this specific profile	No multicast sent from this specific profile	N/A
No assignation possible	N/A	N/A	No multicast possible (RTSP multicast connection refused)

- **Mail Server Configuration** – Change email server settings to use for email alerts and events. The mail frequency parameters allows you to limit the number of emails which can be sent out per minute. The number of retry parameter allows you to set a limit to the number of retries before an email transmission is aborted.

- **Miscellaneous ports** - Enable or disable various system ports used for auxiliary functionality (like system logs for instance)

8.2.4 Configuration / Imaging
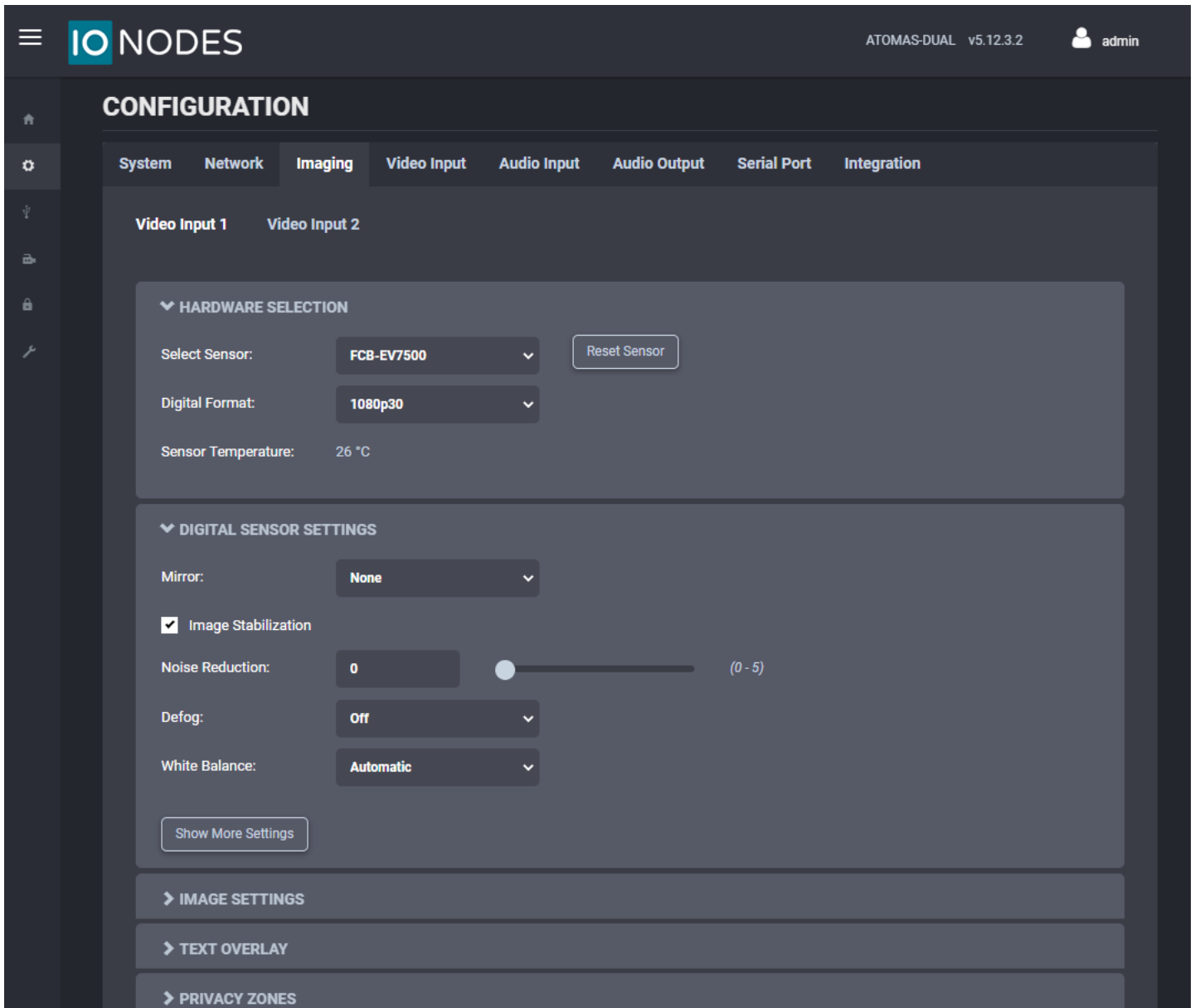
Under the **Configuration** section, select the **Imaging** tab to perform the following operations:

- **Hardware selection** – This section allows you to select the sensor connected, as well as the digital input format for each of the video inputs onboard the encoder
  - o **Select Sensor** – Select the appropriate camera sensor model connected to the ATOMAS-MINI-DUAL (for the selected Video Input). Select *Custom* if you would like to disable any command / control communication between the encoder module and the camera sensor; in this mode the encoder will act as a slave and only process incoming video data. In custom mode, the camera sensor command and control will only be accessible via a transparent TCP connection over which

an external program will have the ability to exchange command and control data with the camera sensor directly.

- o **Digital Format** – Select the video resolution you would like to use on the connected camera sensor. The selected value will be set to the camera sensor upon boot-up, unless the sensor is set to Custom, in which case the encoder module will not communicate with the camera sensor (here the user needs to ensure that the camera block is configured correctly so that it can work with the encoder).
- o **Reset Sensor** – Will trigger the reset line of the sensor

- **Digital Sensor Settings** – This section exposes all camera sensor parameters available. These parameters are set and saved to the camera block itself if possible. Note that these settings are only available if the Sensor selection is set to something other than Custom.
  - o **Use Transparent Port** – Enable this feature to expose the camera sensor command and control port to external systems via a transparent TCP connection. When enabled, a serial port instance will be displayed and made configurable via the **Serial Port** configuration section.   The name of this serial port instance is displayed via the **Transparent Port Instance** field.

- **Image Settings** – This section exposes the camera sensor's image settings. These parameters are set and saved to the camera block itself if possible. Note that these settings are only available if the Sensor selection is set to something other than Custom.

- **Text Overlay** – This section allows you to add text overlays to encoded video streams. Note that these strings will be embedded into the images streamed out of the device. The position, as well as text size, can be customized according to the user's preferences.

  Within the same OSD, two independent texts can be configured. You can have for instance the camera name plus the time/date.
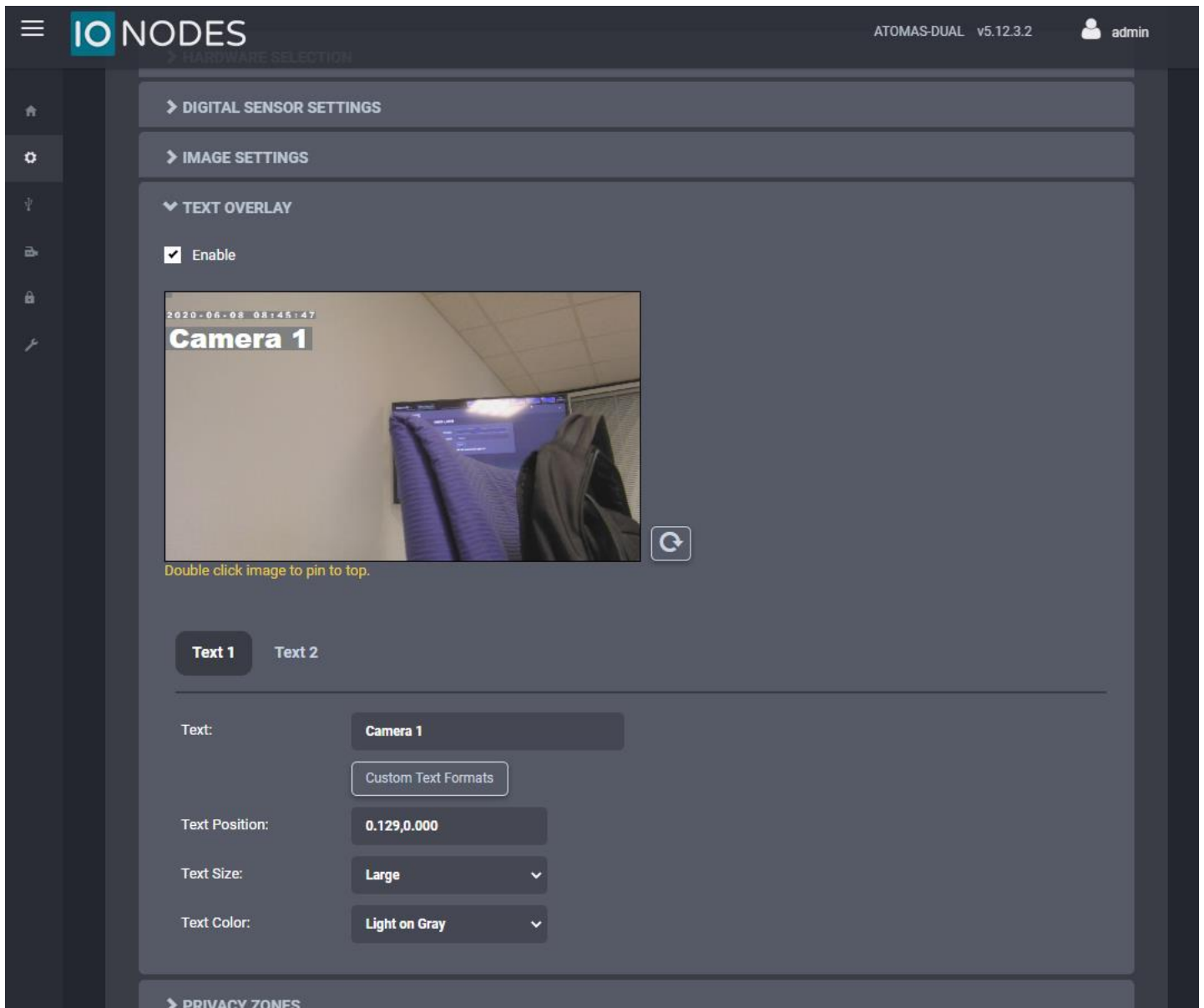
Please check "*Custom Text Formats*" for details on the available automatic (dynamic) text options.
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CUSTOM TEXT FORMATS

%d	Display the date/time (local time) in the format yyyy-mm-dd HH:mm:ss.
%dz	Display the date/time (UTC time) in the format yyyy-mm-dd HH:mm:ss.
%t	Display the time (local time) in the format HH:mm:ss.
%tz	Display the time (UTC time) in the format HH:mm:ss.
%h	Display the camera heading (short). Ex: N, W, SE, NW.
%H	Display the camera heading (long). Ex: NORTH, WEST, SOUTH EAST.
%ht1 - %ht9	Display the camera heading (short) for 1 to 9 seconds when the camera moves.
%Ht1 - %Ht9	Display the camera heading (long) for 1 to 9 seconds when the camera moves.
%p	Display the current azimuth & elevation. Ex: AZ 280.72 EL 12.98.
%pt1 - %pt9	Display the camera azimuth & elevation for 1 to 9 seconds when the camera moves.
%c[*format*]	Display the date/time (local) in the custom format specified. See format definition below.
%cz[*format*]	Display the date/time (UTC) in the custom format specified. See format definition below.

%Y	Year (0000-9999)	%a	Weekday, abbreviated
%y	Year (00-99)	%H	Hour (00-23)
%m	Month (01-12)	%I	Hour (01-12)
%B	Month name	%M	Minute (00-59)
%b	Month name, abbreviated	%S	Second (00-59)
%d	Day of month (01-31)	%p	AM/PM designation
%A	Weekday		

Ex: %cz[%B %d, %H:%M] could yield « September 20, 13:19 ».

Close

- **Privacy Zones** – This section allows you to configure up to 16 privacy zones. Please note that the zones' positions are fixed.

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IMAGING TECHNOLOGY

IONODES ATOMAS-DUAL v5.12.3.2 👤 admin

System | Network | **Imaging** | Video Input | Audio Input | Audio Output | Serial Port | Integration

Video Input 1   **Video Input 2**

> HARDWARE SELECTION

> DIGITAL SENSOR SETTINGS

> IMAGE SETTINGS

> TEXT OVERLAY

⌄ PRIVACY ZONES

☑ Enable

Double click image to pin to top.

Select Zone: | Zone 1 ⌄ | | Add Zone |

Zone Position: | 0,0,0,0 |

8.2.5 Configuration / Video Input
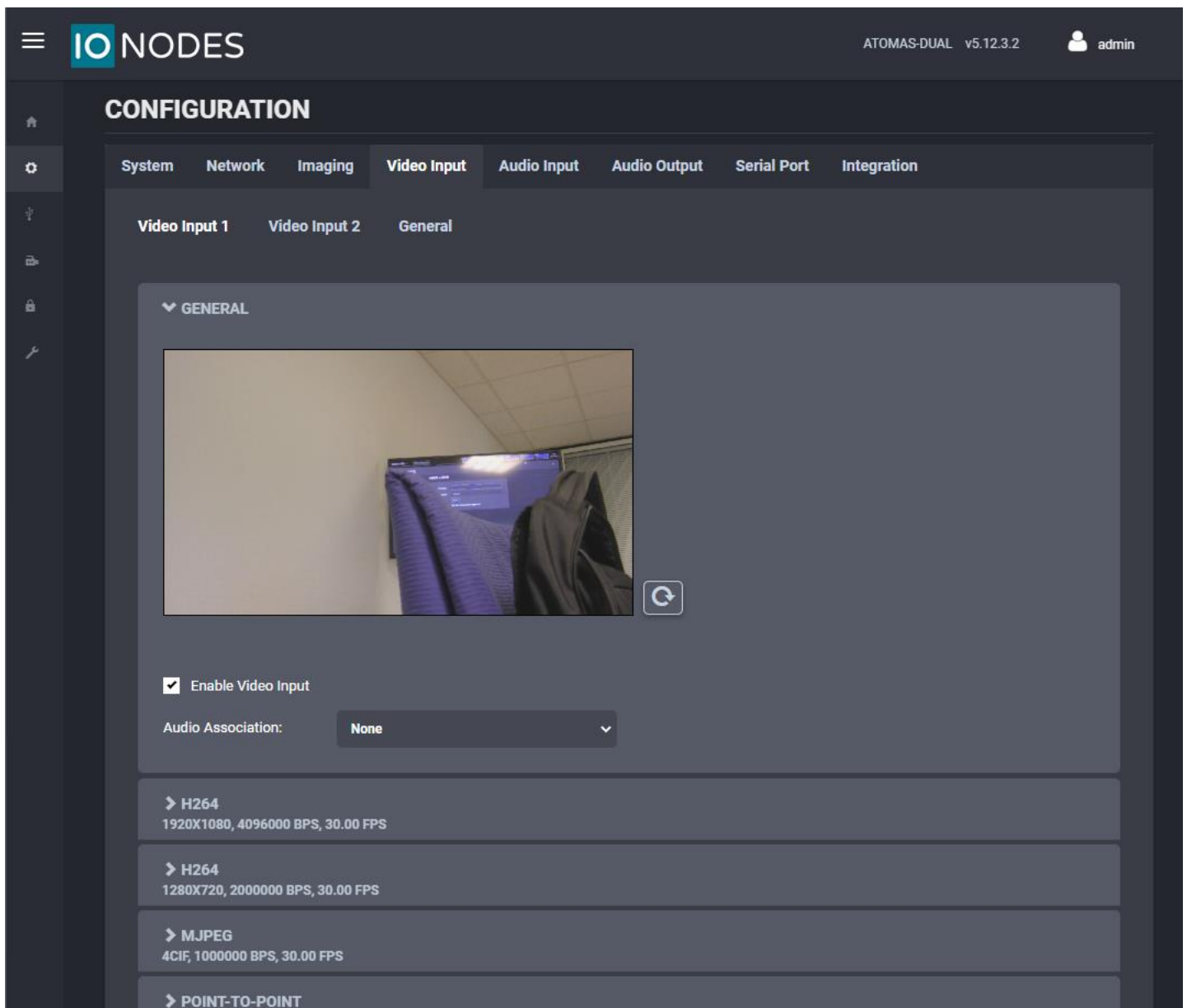
Under the **Configuration** section, select the **Video Input** tab to perform the following operations:

- **General** – This section allows you to enable/disable the currently selected video input, as well as associate audio from one of the audio in sources

- **Video Compression** – This section allows you to configure video compression parameters for any of the three available codec instances (Primary, Secondary and MJPEG).
  - o **Enable Encoder** – Allows you to enable the encoder to be utilized
  - o **Custom Name** - Allows you to define a custom name for that specific encoder
  - o **Encoder type** - Allows you to choose your codec (H.264 is the only codec supported right now)
  - o **Profile** – Select the H.264 profile you wish to use
  - o **Resolution** – Select the video resolution to stream
  - o **Frame skip rate** – Select the number of video frames to be skipped from the input in order to create an output stream with a certain frame rate (resulting frame rate is always shown, based on the selected skip rate)
  - o **Target bit rate** – Select the desired target bitrate
  - o **Rate control** – Select between Constant Rate or Variable Rate
  - o **Minimum QP / Maximum QP** – These parameters allow you to specify the compression range that the codec will use to determine image quality during compression. In order to force a specific quality setting, you can set the minimum and maximum to the same value. The lower the value, the better the quality will be. We do not recommend changing default values unless you have a good understanding of the H.264 compression process.
  - o **Intra interval** – Defines the GOP size
  - o **VBR aggressiveness** is unique to IONODES encoders and proposes various levels (disabled to aggressive) of motion triggered rate control. The more aggressive the setting, the more variation motion will have on the rate control. It is strongly suggested to disable VBR aggressiveness for low bit rate scenarios (below 1Mbps) as this parameter may negatively affect perceived video quality
  - o **Multicast Assignation** – This allows you to manually configure the Multicast IP & Port for the outgoing stream; when the automatic setting is enabled the encoder will automatically assign the Multicast IP & Port based on the range defined in the Network > Multicast section of the web interface.– Please note that, when in Manual mode, the multicast settings for the specific stream will override the global settings.

- **Point to Point** – This section allows you to configure point to point video connections for creating persistent video streams from the encoder to a network endpoint. A maximum of 3 point-to-point connections can be defined & enabled.
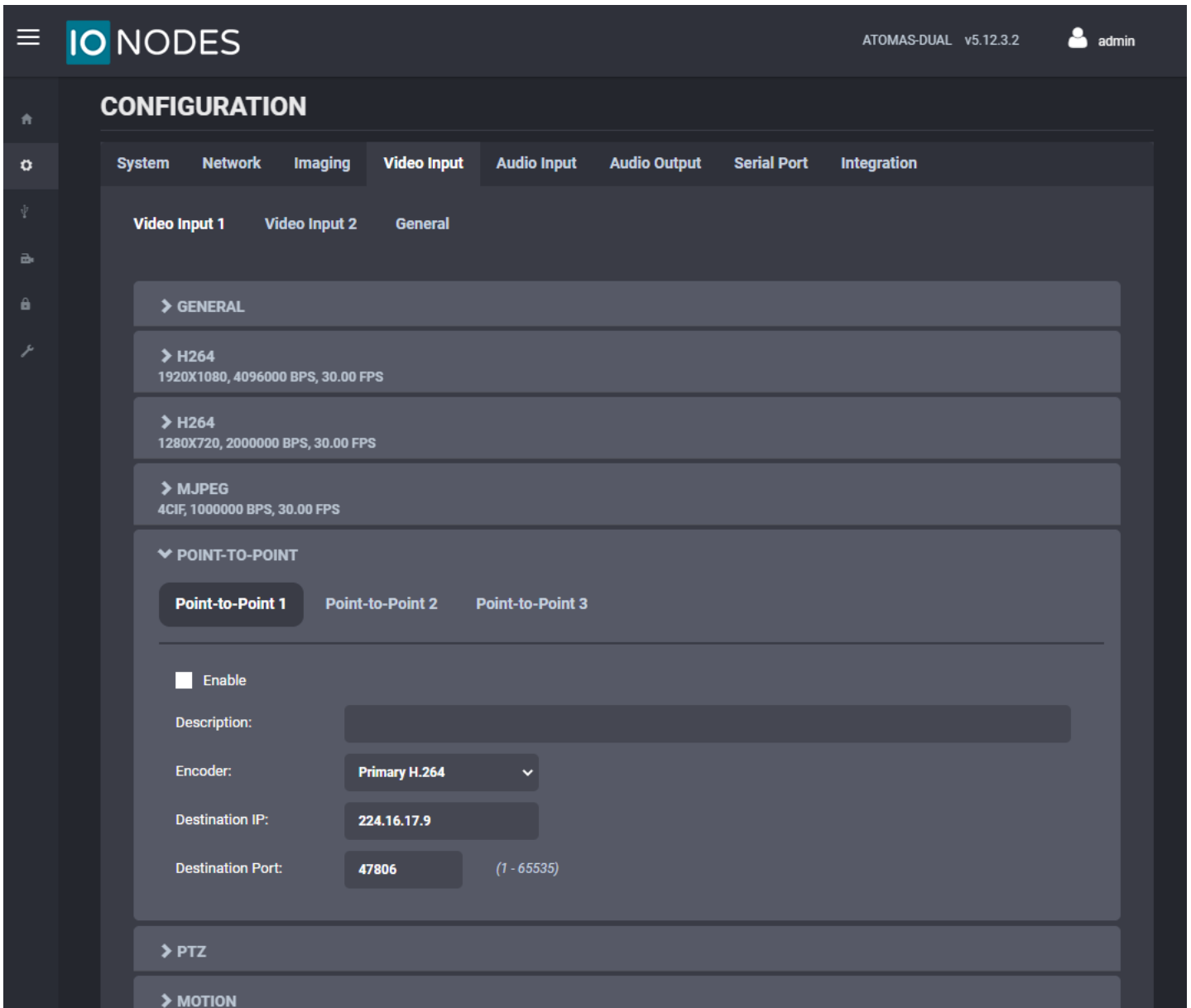
Here's a quick overview of the settings available for each point-to-point connection:

- **Enable**: Indicates whether this connection is to be used or not.
- **Description**: Free-form user description of the connection, not used by the device.
- **Encoder**: Indicates which video feed is to be sent over the point-to-point connection. The values refer to the encoders configured in previous sections of the web interface.
- **Destination IP**: Address where to send the video stream. Please note that the destination can be a multicast group address.
- **Destination Port**: Network port where to send the video stream.

Once all the settings have been set, click on **Save** at the bottom of the page in order to apply them. The ATOMAS-MINI-DUAL then creates or updates the connection as needed.

- **PTZ** – This section allows you to configure PTZ control behaviour.
  - ○ **Enable** – Allows you to enable PTZ support on this encoder module.
  - ○ **Camera ID** – Logical ID associated to the PTZ controller connected to this encoder module.
  - ○ **Control Protocol** – PTZ protocol used for communicating with the PTZ controller**.**
  - ○ **Serial Port** – Serial port instance on which the PTZ controller is connected.
  - ○ **Override Default Speed** – Allows you to set a different default speed for PTZ movements.
  - ○ **Override Number of Programmable Presets** – Allows you to set the number of PTZ presets that can be programmed via the encoder module.
  - ○ **Enable Proportional Pan/Tilt Speed** – Allows the encoder to automatically modify the Pan/Tilt Speed based on the current Zoom position (the further you Zoom In the lower the Pan/Tilt Speed)

- o **Preset Tour** – This sub-section allows you to configure up to 8 preset tours. These tours are managed by the encoder module.

  To configure a PTZ preset tour, add or remove presets as needed. The tour starts at the top of the preset list and moves to the next preset in the list after the specified time. Once the tour has reached the end of the preset list, it moves back to the top of the list. If the preset list is empty, the tour simply stops without moving the camera.

  A preset tour supports up to 32 presets.

  To configure a preset in the tour, select the preset in the preset list by clicking on it. The preset number and duration can then be changed. Preset numbers range from 0 to 31 and durations from 1 to 60 seconds. You can also reorder of the preset list by selecting a preset in the list and by clicking the UP or DOWN button on the right side of the preset list to move it up or down.
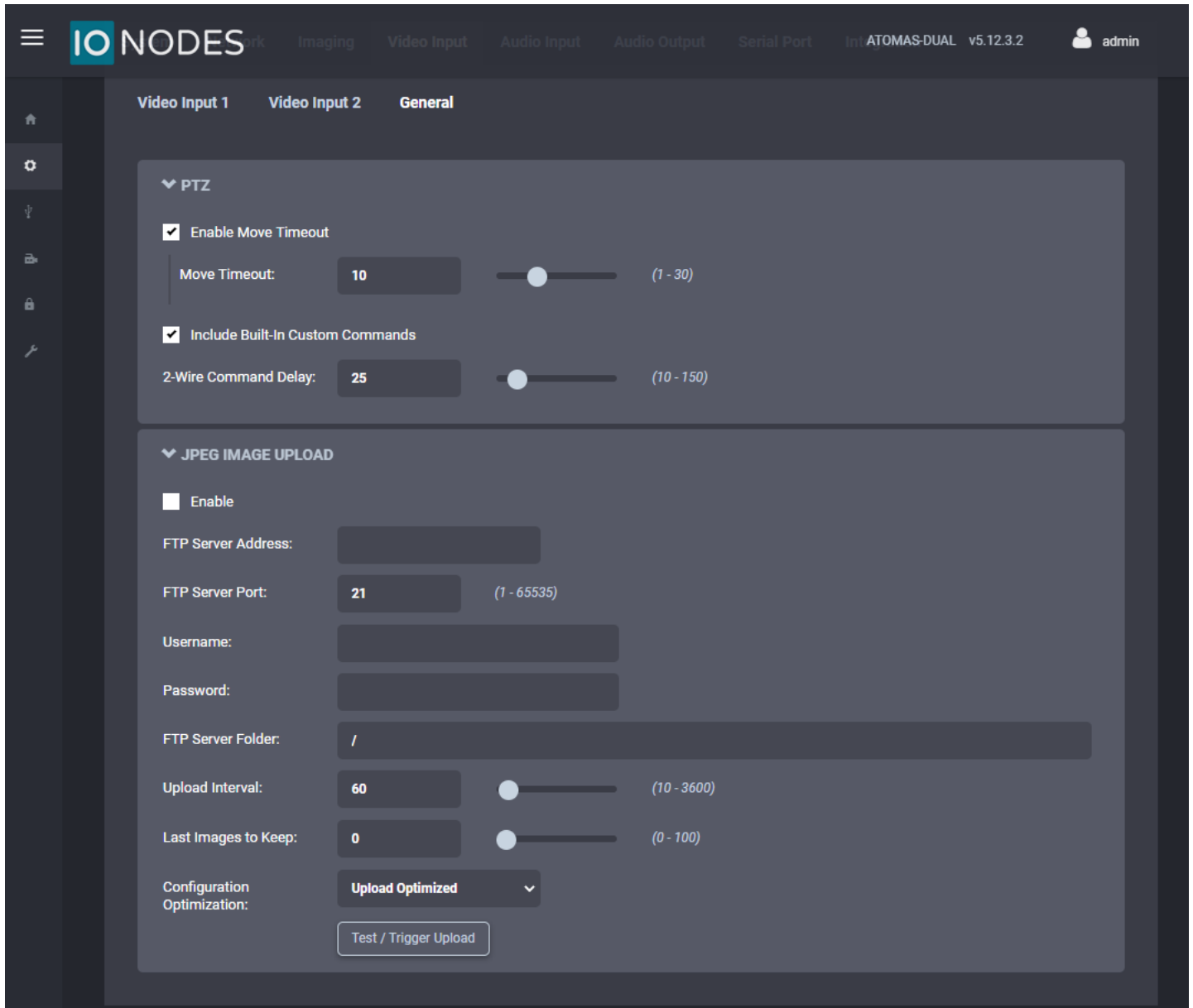
  The changes are applied to the tour when you click on the **Save** button at the bottom of the web page.

- o **Override Presets** – Allows you to override a specific PTZ preset. Following the selected protocol, a fixed set of presets can be configured. But, depending of the PTZ controller, more presets may be available. To be able to call a preset over the official protocol preset range, a preset can be overridden to call an extended preset id.

- **Motion Detection** – This section allows you to configure motion detection regions of interest, as well as all of the parameters associated with motion detection (frame count, sensitivity, on/off thresholds, alarm on/off delay). Based on the applied settings, a red bar will show the current level of motion activity inside a specific region of interest.

Under the **Configuration** section, select the **Video Input > General** tab to perform the following operations:

- **PTZ** – This sub-section allows you to configure general parameters related to PTZ functionality
  - **Enable Move Timeout** – sets the timeout for stopping a move PTZ command
  - **Include Built-In Custom Commands** – allows the encoder's PTZ module to use built-in Custom Commands
  - **2-Wire Command Delay** – sets the command delay for cases where the serial connection to the PTZ controller is working in 2-wire mode

- **JPEG Image Upload** – This section allows you to configure JPEG Upload functionality.
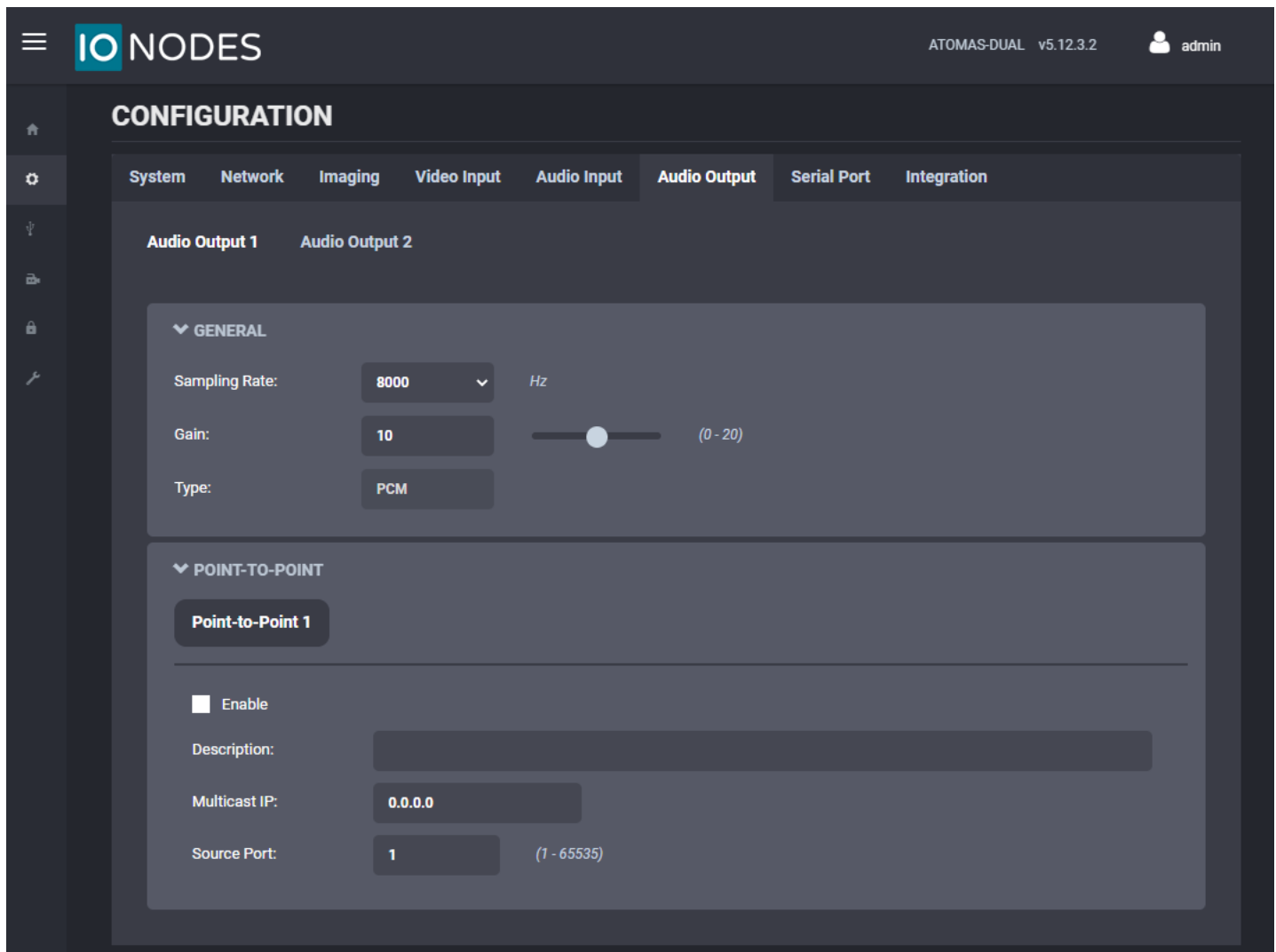
8.2.6 Configuration / Audio Input

Under the **Configuration** section, select the **Audio Input** tab to perform the following operations:

- Configure audio input compression parameters for each of the audio inputs on the encoder

- Configure point to point audio connections (up to three) for creating persistent audio streams from the encoder to a network endpoint

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8.2.7 Configuration / Audio Out

Under the **Configuration** section, select the **Audio Output** tab to perform the following operations:

- Configure audio output parameters

- Configure a point to point audio connection for receiving a persistent audio stream from a network endpoint
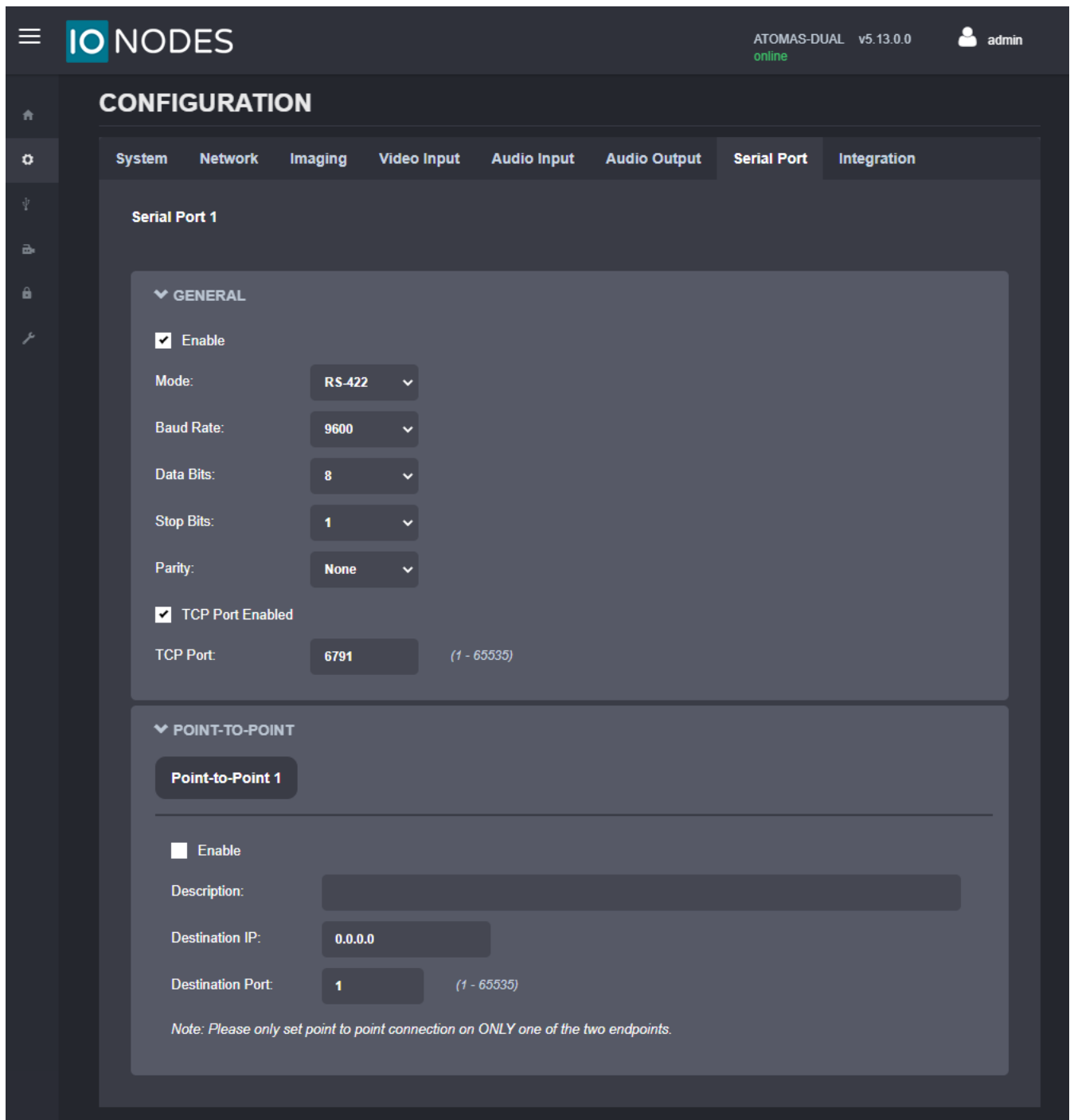
8.2.8 Configuration / Serial Port

Under the **Configuration** section, select the **Serial Port** tab to perform one of the following operations:

- **Serial Port 1** – This section allows you to configure serial port parameters for the serial port 1, exposed on connector J6 (pins 1-4). This serial port is intended for connection to a PTZ controller. Configure the serial port settings to match the serial port settings of your PTZ controller.

Note: The TCP port under Serial Port 1 allows the user to send data received on the Eth interface, on the defined TCP port, directly to the serial port, without any alteration. If your application does not require this functionality, there is the possibility of disabling it by unchecking the corresponding tick box.
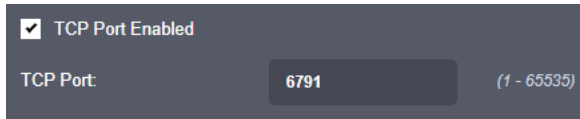
- **Serial Port 1 Point to Point** – This section allows you to configure a point to point serial port connection for creating a persistent serial port connection with a network endpoint.

- **Serial Port 51** – This section will only appear if you have enabled the "*Use Transparent Port*" feature in the Imaging > Digital Sensor Settings section in the Configuration menu. This serial port instance represents the serial port connection between the encoder module and the camera sensor via the corresponding video interface. This section allows you to configure the TCP port on which the encoder module will accept transparent TCP connections – this connection allows external software / devices to send command and control data directly to a camera sensor. When in Custom sensor mode, this section will expose serial port settings to allow you to properly configure the serial port connection with your custom camera sensor.

8.2.9 Configuration / Integration
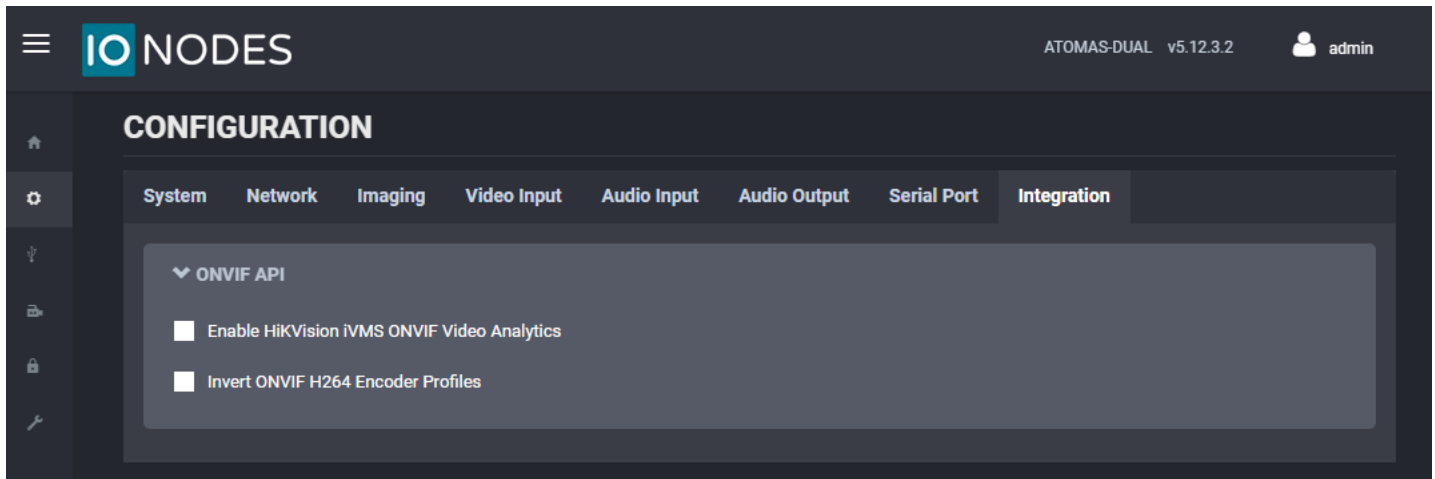
Under the **Configuration** section, select the **Integration** tab to perform one of the following operations:

- **Enable Hikvision iVMS ONVIF video analytics** – This enables the integration with the Hikvision iVMS by leveraging the ONVIF Video Analytics feature (VideoCellMotionDetectorModule); more details on how to use this integration can be found in the dedicated tech article on the Support Center
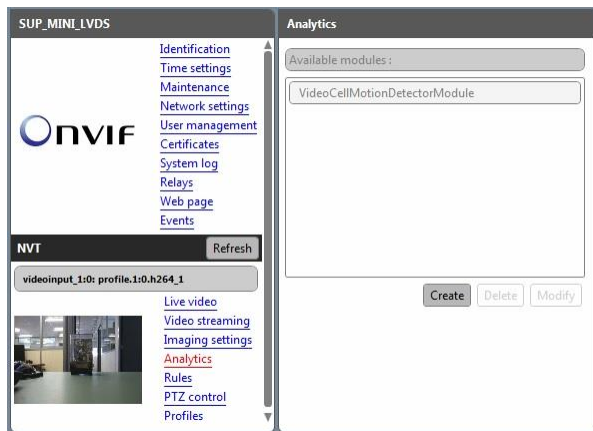
- **Invert ONVIF H264 encoder profile** - This will invert the profile number for the two H.264 profiles that the encoder exposes to a VMS; for instance H.264_1 will actually be recognized by the VMS as Profile 2, while H.264_2 will become Profile 1 for the VMS

8.3 Peripherals
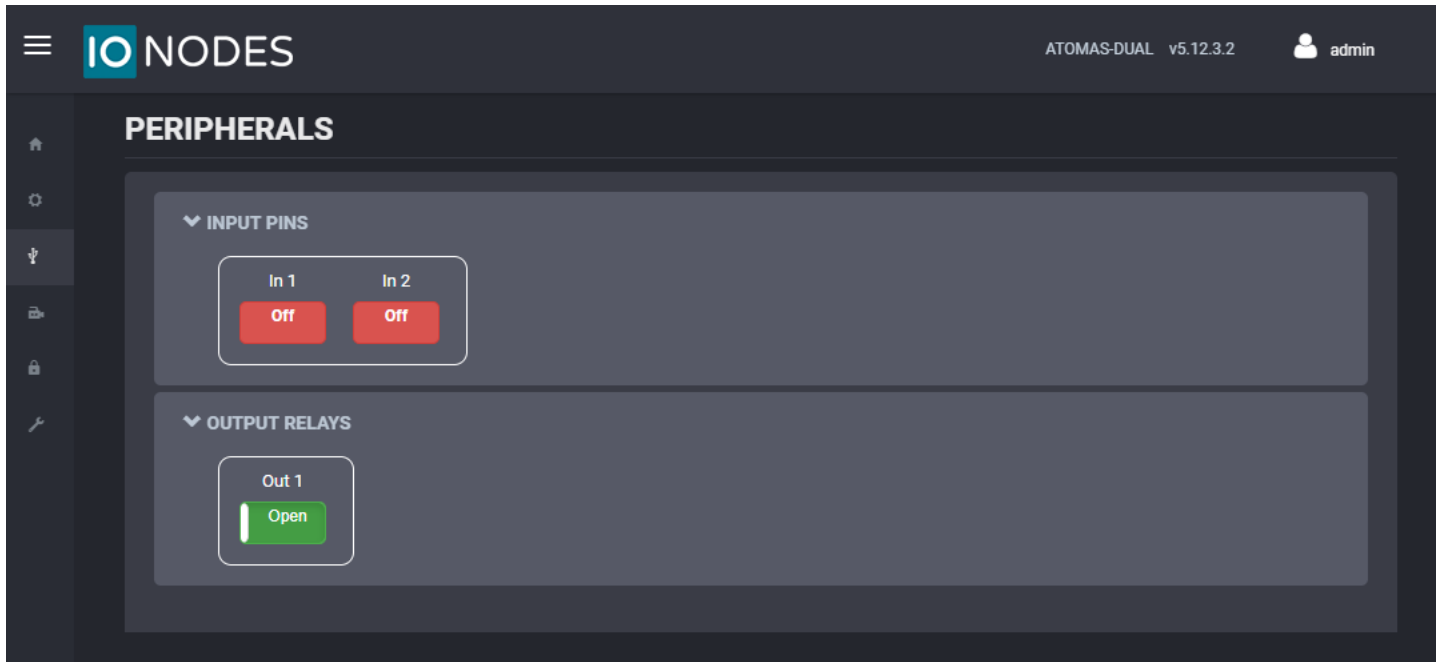
The ATOMAS-MINI-DUAL provides various digital I/O interfaces for control tasks purposes.

The status of the input pins can be seen in the corresponding subsection. With regards to the output relay, clicking on the corresponding icon will trigger a change in its state (from open to closed or vice-versa).

8.4   Live Viewer

The Live Viewer page allows you to display an MJPEG video stream preview of the captured scene (MJPEG codec needs to be enabled), as well as have access to the PTZ control (including PTZ tours). This is intended to be used for the initial configuration of the final camera system.
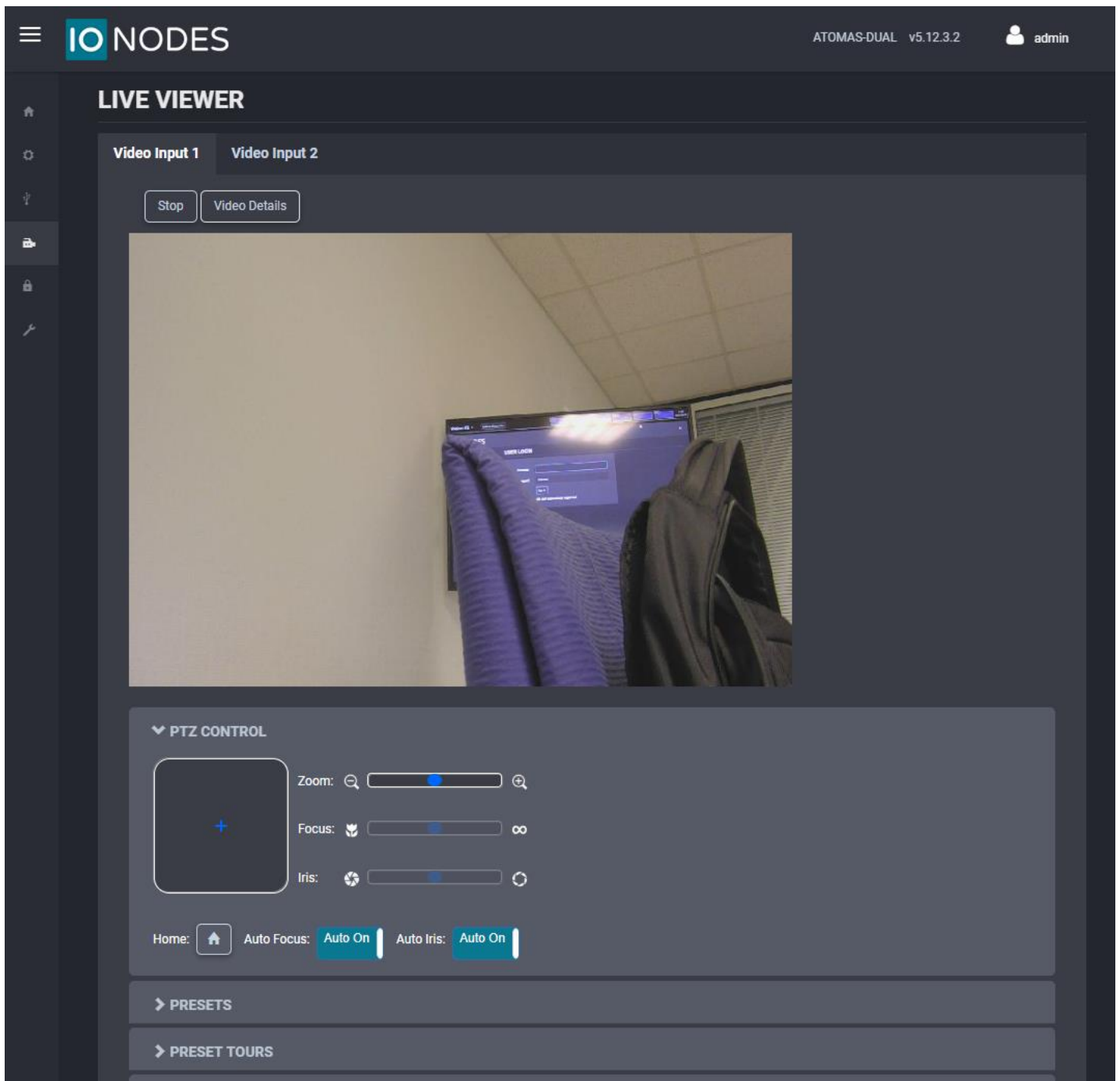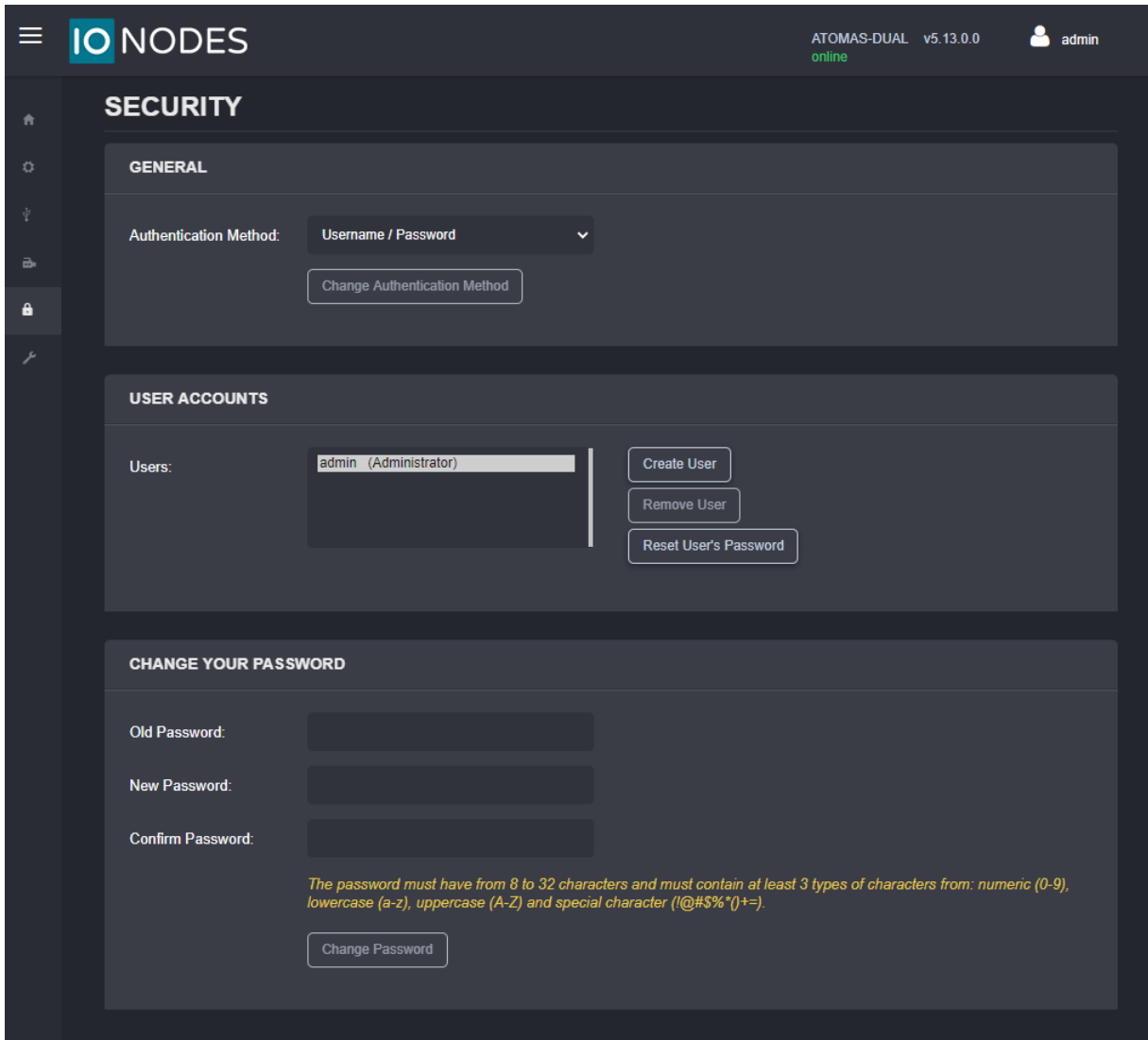
8.5 Security

The *Security* section allows you to perform the following operations:
- o   Select the web interface's authentication method.
- o   Manage user accounts which have access to the device.

The user account roles are defined as follows:
- o   The **User** role allows access to viewing only, no permission to change any settings
- o   The **Poweruser** role allows access to live video and changing any setting aside from the user accounts list. This role does not grant access to recorded video clips.
- o   The **Superuser** role allows access to live and recorded clip viewing and changing any setting aside from the user accounts list.
- o   The **Administrator** role allows access to viewing and changing any setting in the system.

8.6   Maintenance

The Maintenance page allows you to retrieve the system information ("*SysInfo*") file, perform a firmware update, reboot the unit and perform a factory reset (with or without including the network settings). You can also identify a specific unit (if you have multiple units of the same type in the same location) by flashing its status LED.
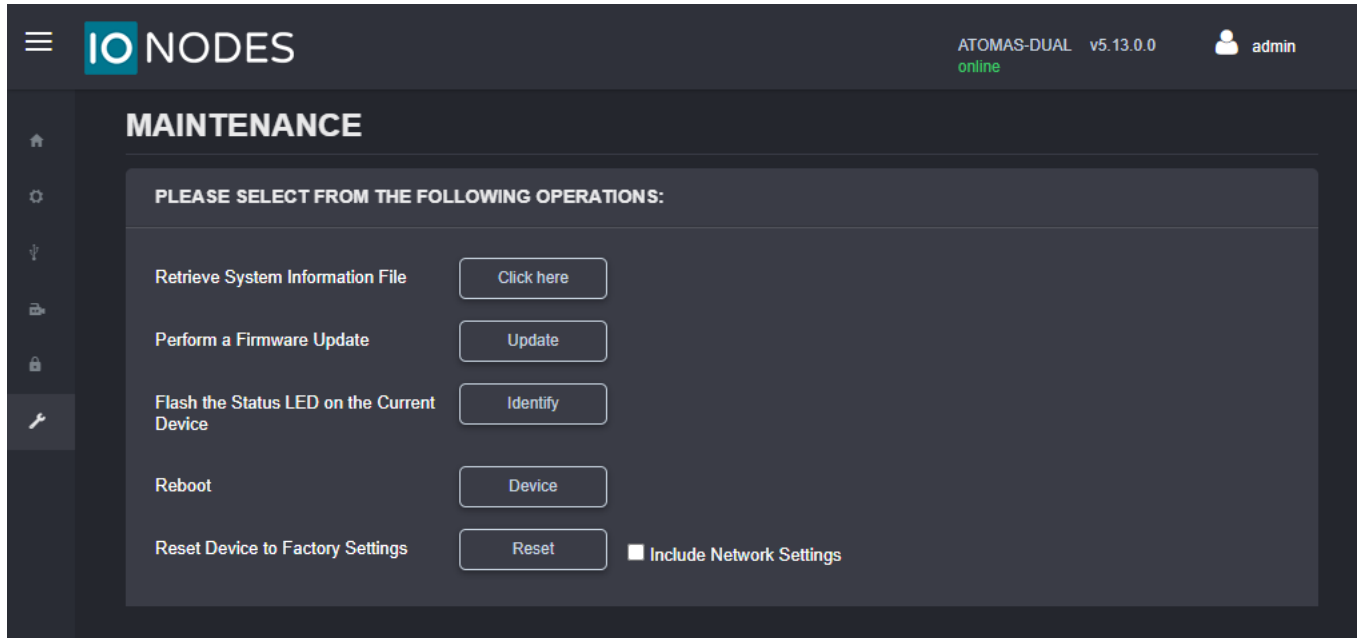
8.6.1 Performing a Firmware Update

This section describes how to update your ATOMAS-MINI-DUAL to newer firmware versions from the web application.

1. Navigate to your device's web application using your favorite web browser.
2. Click on the **Maintenance** tab.
3. Click on the **Update** button. You will be asked for the firmware update file; please select the **.iof** file which was provided by IONODES.
4. You will see the following messages indicating the status of the update:
    o Firmware upload in progress... (100%)
        ▪ Lasts around 95 seconds.
        ▪ Status LED is green.
    o Firmware uploaded. Saving to internal storage... (0%)
        ▪ Lasts around 45 seconds.
        ▪ Status LED is flashing red-green.
    o Validating and decompressing firmware... (0%)
        ▪ Lasts around 105 seconds.
        ▪ Status LED is flashing red-green.
    o Firmware ready for installation. Rebooting device... (0%)
        ▪ Web page will disconnect from device until device has rebooted.
        ▪ You will be prompted for login once the device is up again.
        ▪ Lasts around 110 seconds.
        ▪ Status LED is orange.
    o Testing firmware stability... (26%)
        ▪ Lasts 120 seconds.
        ▪ Status LED is flashing red-green.
5. Firmware update complete. (100%)

8.6.2 Batch Firmware Update

In order to perform a batch update of multiple ATOMAS-MINI-DUAL devices to newer firmware versions you'll need to use the ICT (IonConfigTool). The procedure is explained in detail in the ICT user manual. Please check our website for the latest version.

Annex A - Troubleshooting Guide

- **Device does not seem to boot-up**
  - o Verify that a suitable power supply is connected to the device.
  - o When a valid power source is detected, the status LED will light up orange.
  - o Verify the status of the system status LED to determine the state of the device as it powers up.

- **Cannot discover the device or communicate via the network**
  - o Before the device can be discovered, the status LED must be lit GREEN as this indicates ready state of the device.
  - o Make sure you have connected the device to your network.
  - o Dynamic discovery of the ATOMAS-MINI-DUAL requires multicast networking to be supported by your network and switch equipment. (Bonjour protocol)
  - o Ensure your computer accessing the device is in the same subnet

- **Camera is not detected**
  - o Validate the flex cable is properly connected into the ATOMAS-MINI-DUAL and into the camera
  - o Verify that the video connectors on both the ATOMAS-MINI-DUAL as well as the camera block are not physically damaged

- **No video is displayed in the GUI**
  - o Ensure the MJPEG codec is enabled

- **Device is not streaming**
  - o Make sure the encoder instance (e.g. Primary H.264) you are streaming from is enabled
  - o Ensure you are using the right URL
  - o Validate the camera is correctly connected to the ATOMAS-MINI-DUAL
  - o Validate your network firewall is not blocking your video stream. Use Live Viewer (requires MJPEG encoder being enabled) to make sure the Atomas is currently streaming

Annex B - Statement Limited Warranty

The warranties provided by IONODES Inc. (IONODES) in this Statement of Limited Warranty apply only to ATOMAS-MINI-DUAL products purchased from an authorized IONODES Inc. (IONODES) Reseller, Integrator or

Distributor and returned from European, Asian or North American countries, and excludes all Latin American countries. The term "ATOMAS-MINI-DUAL" means an ATOMAS-MINI-DUAL module, any module upgrade, or accessories, or any combination of them. The term "ATOMAS-MINI-DUAL" does not include any software programs, whether pre–loaded with the ATOMAS-MINI-DUAL, installed subsequently or otherwise, and any installed Micro SD Card, which are covered by a separate Limited Warranty. Nothing in this Statement of Warranty affects any statutory rights of purchaser that cannot be waived or limited by contract. If you have any questions regarding this limited Warranty, contact IONODES Inc. and its resellers. The Warranty period for the ATOMAS-MINI-DUAL is 2 years from date of billing for the ATOMAS-MINI-DUAL product.

The IONODES Warranty for ATOMAS-MINI-DUAL

IONODES warrants that each ATOMAS-MINI-DUAL is free from defects in materials and workmanship, and conforms to the ATOMAS-MINI-DUAL Official Published Specifications (See http://www.IONODES.com for details). The warranty period for an ATOMAS-MINI-DUAL is a specified, fixed period commencing on date of billing by IONODES for the Product. If a valid proof of billing cannot be found, the warranty may be void by IONODES Inc. or measured from the date the ATOMAS-MINI-DUAL has shipped from an IONODES Depot center based on its serial number.

If, during the warranty period, the ATOMAS-MINI-DUAL is not in good working order, IONODES will, at its option, repair or replace it at no additional charge, except as is set forth below. In some cases, the replacement product may not be new and may have been previously installed. Regardless of the replacement product used, IONODES' appropriate warranty terms apply. In case IONODES or your reseller are unable to repair an IONODES ATOMAS-MINI-DUAL, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired ATOMAS-MINI-DUAL or ask for a cancellation of the respective agreement for such ATOMAS-MINI-DUAL and get your money refunded.

Extent of Warranty

The warranty does not cover the repair or exchange of an ATOMAS-MINI-DUAL resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by the end user, or failure caused by a product for which IONODES is not responsible. The warranty is voided by removal or alteration of ATOMAS-MINI-DUAL or parts identification labels, but not by the installation or replacement of Micro SD medium.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Items Not Covered by Warranty

IONODES does not warrant uninterrupted or error–free operation of an ATOMAS-MINI-DUAL. Any technical or other support provided for an ATOMAS-MINI-DUAL under warranty, such as assistance via telephone with "how–

to" questions and those regarding ATOMAS-MINI-DUAL set–up and installation, will be provided WITHOUT WARRANTIES OF ANY KIND.

For more information, please contact our technical support team:
• Call: 450-696-1060 or 1-844-696-1060 (North America Toll Free)
• Send an email to: support@IONODES.com
• Web request: https://support.IONODES.com/supportcenter/s/contactsupport