

PERCEPT

PERCEPT Body Camera

User Manual
Document Version 1.1



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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.

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1 What is included with the product?

Qty	Description
1x	IONODES PERCEPT Body Camera
1x	3-ft (1m) USB Charging Cable (Type-A male to USB Type-C male)
1x	Klick Fast System Mount Adaptor
1x	Klick Fast Clip-On Dock
1x	Quick Install Sheet

Note: When unpacking, inspect the shipment box and product to identify any possible damages due to shipping. Make sure all items have been delivered and that no items are missing. Contact your IONODES reseller should you find any damages or defects.

Warning: Operation, maintenance, and servicing of this device must be done by a trained professional following proper safeguards to avoid unintended damage

1.1 Optional accessories

1.1.1 Battery Replacement Kit (PERCEPT-BWC-BATTKIT)

The battery replacement kit is useful for replacing the original battery pack inside the body camera when the performance drops below an acceptable level (all batteries degrade with usage over time).

Warning: Please carefully read and acknowledge the safety and charging instructions below before performing any maintenance on the battery of your body camera!

Warning: Using a 3rd party battery (not supplied by IONODES) will void your body camera's warranty.

Battery Safety information

- Do not dismantle, open, or shred the battery.
- Do not short circuit the battery. Do not store batteries haphazardly in a box or drawer where they may short circuit each other or be short circuited by conductive materials.
- Do not remove a battery from its original packaging until required for use.
- Do not expose batteries to heat or fire. Avoid storage in direct sunlight.
- Do not subject the batteries to mechanical shock.
- In the event of a cell leaking, do not allow the liquid to come into contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- Equipment is designed to prevent incorrect insertion of the battery and its connector.
- Store the batteries in a dry place with temperature below +35°C (or +45°C for no more than 30 days to minimize cell degradation).
- Charging the battery outside of the body camera enclosure will void warranty.

Disposal

- When disposing of batteries, keep cells or batteries of different electrochemical systems separate from each other.
- Recycle or dispose of this battery in accordance with local regulations.

Battery Power rating

Below are the PERCEPT Body Camera battery specifications:

- Rated Voltage: 3.8 VDC (nominal)
- Rated Current: 2.8A (max)
- (Internal battery powered device, external DC input only for charging)
- -20°C to 50°C (Operating)
- 0°C to 45°C (Battery Charging)
- -20°C to 60°C (Battery Discharging)

2 Product Compliance

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. Changes or modifications to this product not authorized by Apple could void the electromagnetic compatibility (EMC) and wireless compliance and negate your authority to operate the product.

Industry Canada Compliance Statement

The product has been tested to comply to *ICES-3(B)/NMB-3(B)*. This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled: "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

3 Product Overview

The IONODES PERCEPT Body Camera features multiple innovative functions that make it a truly wearable IoT device. It also includes user control interfaces to enable audio/video recording, take still pictures, as well as other auxiliary functions, while providing feedback to the user on the current state of operation. The following images show the different feature elements of the IONODES PERCEPT Body Camera.



4 Getting started

4.1 Charging the camera

To charge the PERCEPT Body Camera, use one of the two following options:

- PERCEPT DCK1 Single Unit Docking Station (available as an optional accessory from IONODES)
- QuickCharge 3.0 USB wall charger or power bank, with a USB Type-A female connector



a)



b)

To ensure optimal battery capacity throughout the life of the product, please follow these recommendations on normal use:

- Always use the camera within the operating temperature range of -20°C to 50°C (-4°F to 122°F).
- Always charge the camera within the charging temperature range of 0°C to 45°C (32°F to 113°F).
- Recharge a camera that is turned off with a low battery signal as soon as possible.

Warning: Do not leave the body camera in a parked vehicle at high or low temperatures. Temperatures in parked vehicles, especially in hot summer days, can exceed the specified temperature range.

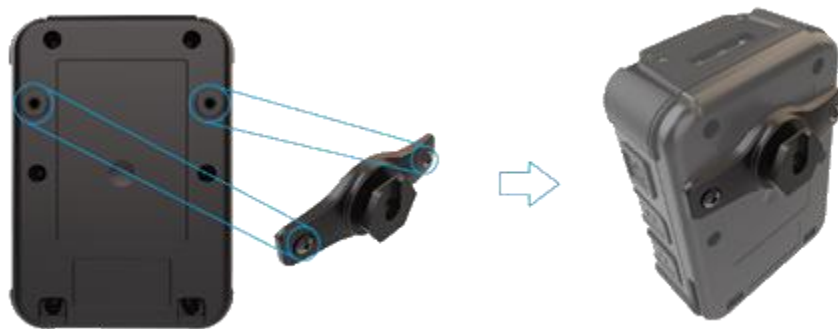
To ensure optimal battery capacity throughout the life of the product, please follow these recommendations on storage:

- Always store the camera at the recommended storage temperature, -40°C to 85°C (-40°F to 185°F). Storing the camera outside of the specified temperature may damage the battery.
- Do not store the camera with the battery fully charged. Doing so shortens the expected battery life.
- Do not store the body camera with a depleted battery. Doing so shortens the expected battery life.

4.2 Attaching the universal mount

A standard Klick Fast stud (universal mount) and a Klick Fast Clip-On Dock are included with your PERCEPT body camera.

To attach the universal mount to the body camera, please screw in, using a standard Philips head screwdriver, the 2 mounting screws to the back of the body camera's chassis, as shown below:



Once the mount is installed, the user can attach different compatible accessories (like the included Clip-On Dock) by simply sliding them onto the hook and then twisting them into the desired position.



Note: Multiple Klick Fast mounting accessories are available as optional items. Please contact your authorized IONODES reseller for more information.

4.3 Care and cleaning

To guarantee optimum performance, as well as a long service life of the product, please follow the recommendations below:

- Keep the product away from corrosive substances.
- Make sure the product is completely dry before charging.

Warning: Do not pierce or scrape the product.

To clean the product:

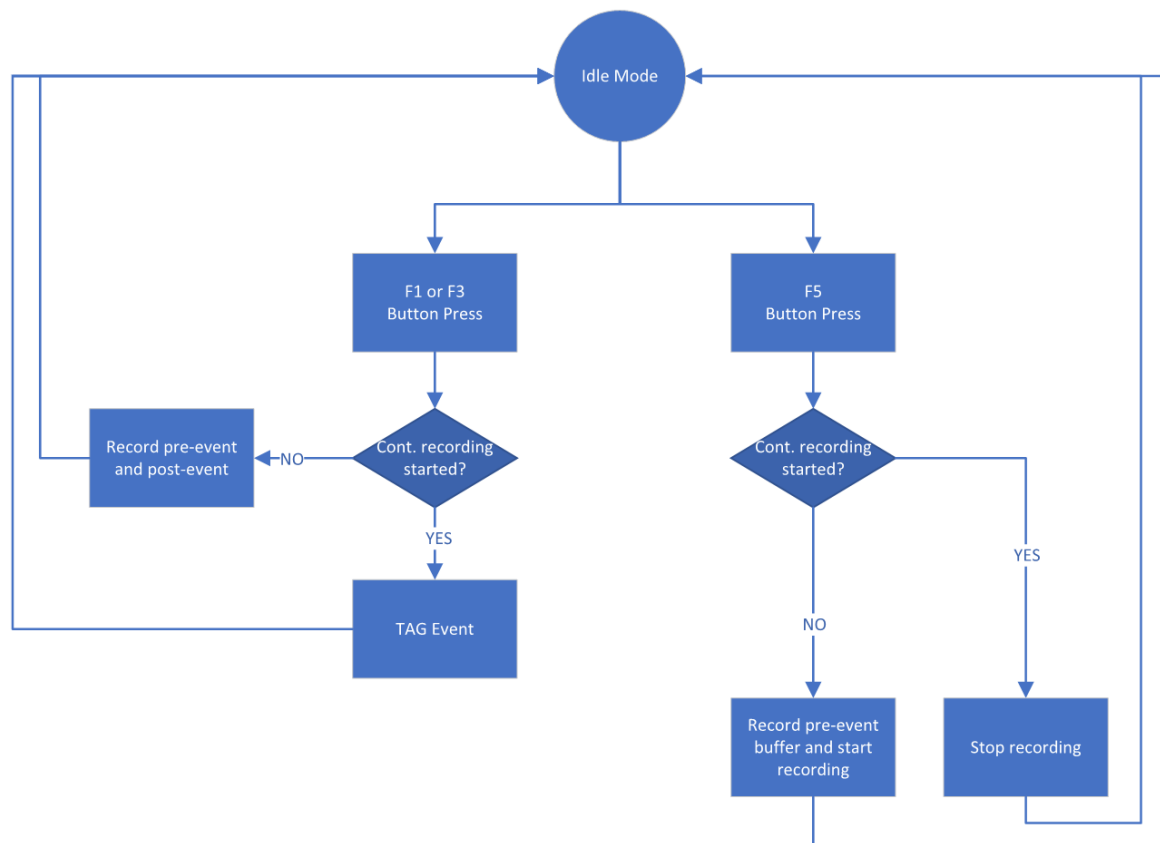
- Use a non-abrasive, solvent-free neutral soap, or detergent, with water.
- Use a soft microfiber cloth, or moist non-abrasive sponge.
- Dry with a soft cloth to prevent water spotting.

Warning: Do not use any type of solvent, such as thinner and benzene, as they may damage the surface of the product.

Warning: Do not use abrasives of any kind to clean the camera, as they can scratch the lens cover, leading to degraded image quality.

5 Basic Operations

The following section describes the basic operations that can be performed on the body camera and their associated user feedback. The body camera has two recording modes: *continuous recording* (records video continuously until instructed to stop) and *event recording* (tags events if already in continuous recording or records a short clip based on pre- and post-buffer if not already in continuous recording mode). The machine state for both modes is presented in the diagram below.



User operation	User manipulation	User feedback	
		Status LED	OLED text
Powering On	Press power button for ≥ 3 sec	Flashing* Cyan	Booting
Powering Off	Press power button for ≥ 5 sec		Shutdown...
Changing Wi-Fi configuration	Press F2 & F4 simultaneously for ≥ 5 sec then scan new QR code containing Wi-Fi access point information	Heartbeat Flashing*** Blue	Scan Network QR
Start/stop continuous recording	Press F5 for < 3 sec to start (when body camera is on) Press F1 or F3 or F5 for > 3 sec to start (when body camera is off) Press F5 for > 5 sec to stop	Heartbeat Flashing*** Red	Cont. Recording
Start event recording (or tagging an event when in continuous recording)	Press F1 or F3 for < 3 sec	Heartbeat Flashing*** Red	Event Recording
Still image capture	Press F2 or F4 for < 3 sec		Snapshot...
Show current battery charge	Press power button for < 3 sec and cycle displayed data		Level: (%)
Show SD card status when SD card detected	Press power button for < 3 sec and cycle displayed data		SD Storage Used (%)
Show SD card status when SD card is faulty or not detected	Press power button for < 3 sec and cycle displayed data		No storage
Show current date and time	Press power button for < 3 sec and cycle displayed data		Current date and time
Show WLAN status	Press power button for < 3 sec and cycle displayed data		<ul style="list-style-type: none"> • Signal: Weak • Signal: Moderate • Signal: Good • Signal: Great • Signal: Disconnected IP address MAC address
Show cellular status	Press power button for < 3 sec and cycle displayed data		<ul style="list-style-type: none"> • Signal: Weak • Signal: Moderate

User operation	User manipulation	User feedback	
		Status LED	OLED text
			<ul style="list-style-type: none"> • Signal: Good • Signal: Great • Signal: Disconnected
Show Ethernet status****	Press power button for <3 sec and cycle displayed data		<ul style="list-style-type: none"> • ETH: Connected • ETH: Disconnected IP address MAC address
Show GPS status	Press power button for <3 sec and cycle displayed data		<ul style="list-style-type: none"> • Signal: Locked • Signal: Not Locked
Silent mode on/off	Not defined	Front LED: OFF Top LED: ON	
Privacy mode on/off	Press F1 & F3 simultaneously for >5 sec	Front LED: Steady Orange Top LED: Flashing* Orange	Privacy Mode
Reset to factory settings	Press F1 & F2 & F3 & F4 simultaneously for >5 sec		Reset config...
Turn flashlight on/off	Press F2 & F4 simultaneously for <5 sec		

*flashing: alternating ON for 500ms/ OFF for 500ms

**rapid flashing: alternating ON for 250ms/ OFF for 250ms

***heartbeat flashing: ON for 250ms/ OFF for 250ms/ ON for 250ms/ OFF for 1250ms

****Ethernet status will be available when connecting to the network via the docking station

6 Body Camera States

This section describes the user feedback for the various states of the body camera.

Body camera state	User feedback	
	Status LED	OLED text
Idle and ready (first boot)	Heartbeat Flashing*** Blue	Scan Initial QR
Idle and ready	Steady Blue	
Recording	Heartbeat Flashing*** Red	Cont. Recording or Event Recording (based on current recording mode)
Media streaming	Flashing* Red/Green	
No storage space		SD Full
Critical problem	Steady Red	Critical Problem
Charging	Flashing* Yellow	Charging... Level(%)
Fully charged	Returns to previous state	
Firmware updating		Firm. Update...

*flashing: alternating ON for 500ms/ OFF for 500ms

**rapid flashing: alternating ON for 250ms/ OFF for 250ms

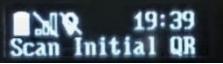
***heartbeat flashing: ON for 250ms/ OFF for 250ms/ ON for 250ms/ OFF for 1250ms


7 Advanced Operations

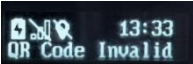
7.1 Connecting to the network

The PERCEPT body camera can be integrated via ONVIF to many video management systems, either on-premises or cloud-based (like the PERCEPT Cloud for example). For initial set-up, the PERCEPT body camera needs to be configured prior to using it with your network video management system. In most cases, only network configuration will be required.

The initial configuration can be done locally using a mobile, laptop or workstation connected to the Internet. The user will need to enter his Wi-Fi access information on a dedicated web portal (<https://www.ionodes.com/percept-body-cam-QR>) and generate a specific QR code. When the body camera

is ready to scan the QR code, the user will see the message "Scan Initial QR"  on the OLED screen. By scanning this code with the body camera, the Wi-Fi configuration will be imported to the device automatically.

After the QR code is scanned, a new message may appear on the OLED, "E: Wifi Config" , indicating to the user that the body camera encountered an error when attempting to connect to the Wi-Fi network using the information contained in the QR code. If the Wi-Fi password is incorrect, the body camera will revert back to QR scanning mode after about 15 sec. If the QR code is not recognized at all (for instance if it's not a QR code generated from the dedicated IONODES web portal) the message "QR

Code Invalid"  will appear on the OLED.

Note: Please check the IONODES Support Center for dedicated technical guides on how to integrate the body camera to different video management systems.

QR Code Generator

On first boot up of your PERCEPT Body Camera, the camera will be searching for a QR Code to initialize base parameters needed to connect to your Wifi network. This initial QR code will also allow you to set the default 'administrator' password, select the device's language and choose whether to enable silent mode or not.

By default, the QR Code Generator is set to generate a full QR code needed for initial settings. You can also opt to generate a QR Code for WiFi settings reset only by choosing the appropriate option below.

Reset WiFi settings only: ☐

Enter your WiFi
network name (SSID):

Enter your WiFi
network password:

Choose the
'administrator'
password:

Repeat the
'administrator'
password:

Choose a language:

 ▼

Select a Cloud service:

 ▼

Do you want to enable
silent mode?

 ▼

Generate QR Code

When successfully connected to the Wi-Fi network, the IP address of the device will be displayed on the body camera's OLED screen. The user simply needs to scroll through the presented information on the OLED screen by repeatedly short pressing the power button on the side of the chassis.

To change existing Wi-Fi configuration or add a new access point later on, simultaneously press both the F2 and F4 buttons for more than 5 sec. The device will display the message *"Scan QR Code"*



on the OLED screen. After that the user can scan a new QR code containing only Wi-Fi access information. This is achieved by enabling the *"Reset WiFi settings only"* in the QR Code Generator web page.

QR Code Generator

PERCEPT

On first boot up of your PERCEPT Body Camera, the camera will be searching for a QR Code to initialize base parameters needed to connect to your Wifi network. This initial QR code will also allow you to set the default 'administrator' password, select the device's language and choose whether to enable silent mode or not.

By default, the QR Code Generator is set to generate a full QR code needed for initial settings. You can also opt to generate a QR Code for WiFi settings reset only by choosing the appropriate option below.

Reset WiFi settings only: ☒

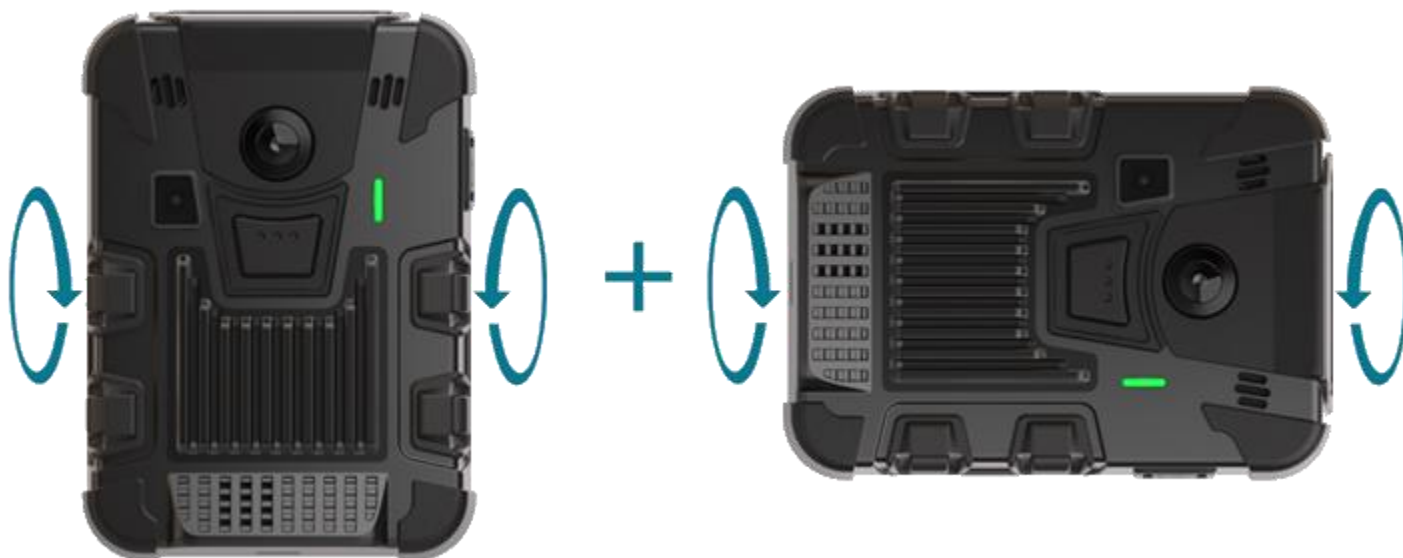
Enter your WiFi
network name (SSID):

Enter your WiFi
network password:

Generate QR Code

7.2 Motion sensor calibration

Following certain operations, like a complete device reset for example, a message might appear on the OLED that the PERCEPT 9-axis motion sensor must be recalibrated. To do so, simply hold the camera vertically and slowly rotate it 360° and then hold it on its side and repeat the 360° movement as indicated below. Once calibrated, the calibration message will disappear.



7.3 Using the Web Management interface

The web interface is accessed by entering the IP address of the body camera in your favorite browser. The recommended browsers are Microsoft Edge and Google Chrome.

When entering the web interface, you will be asked for a username and password. Upon first access to the web interface, if the password was not configured via the QR code, 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 (!@#\$%*()+=).

USER LOGIN

Initial Security Setup
The security of your device has not been set up. Before you log in, please select a password for the system administrator account.

Username: administrator

Password: Password

Confirm: Confirm Password

The password must have from 8 to 32 characters and must contain at least 3 types of characters from: numeric (0-9), lowercase (a-z), uppercase (A-Z) and special character (!@#\$\$%*()+=).

Change Password

On subsequent access, the following window will be displayed:

online Fr

USER LOGIN

Username: Username

Password: Password

Sign In

The “online” indicator in the top-right corner shows that the web interface can communicate with the body camera. During a firmware update or manual reboot, the indicator will turn to “offline”, until the body camera completes the bootup sequence, making this indicator very useful for troubleshooting purposes.

Right next to the “online” indicator there is a small toggle for changing the language of the web interface from English (En) to French (Fr) and vice-versa.

7.3.1 Dashboard

Upon successfully login to the web interface, a *Dashboard* screen will be presented. This screen shows the device's product information, system status and health status.

The screenshot displays the PERCEPT Dashboard web interface. On the left is a dark sidebar with navigation links: Dashboard (selected), Configuration, Peripherals, Live Viewer, Recording, Security, and Maintenance. The main content area is titled 'DASHBOARD' and is divided into three sections: 'PRODUCT INFORMATION', 'SYSTEM STATUS', and 'HEALTH STATUS'.

PRODUCT INFORMATION

Model:	PERCEPT-BWC
Serial Number:	200140C042100070
MAC Address:	C4-41-37-53-D9-99
Hardware Version:	2.0.0.0
Firmware Version:	10.0.3.1 build 15451 (5e92218)
Image Version:	2.1.3.1

SYSTEM STATUS

Up Time: 00d 20h 10m 49s

Health

System:	Healthy
Video:	Healthy

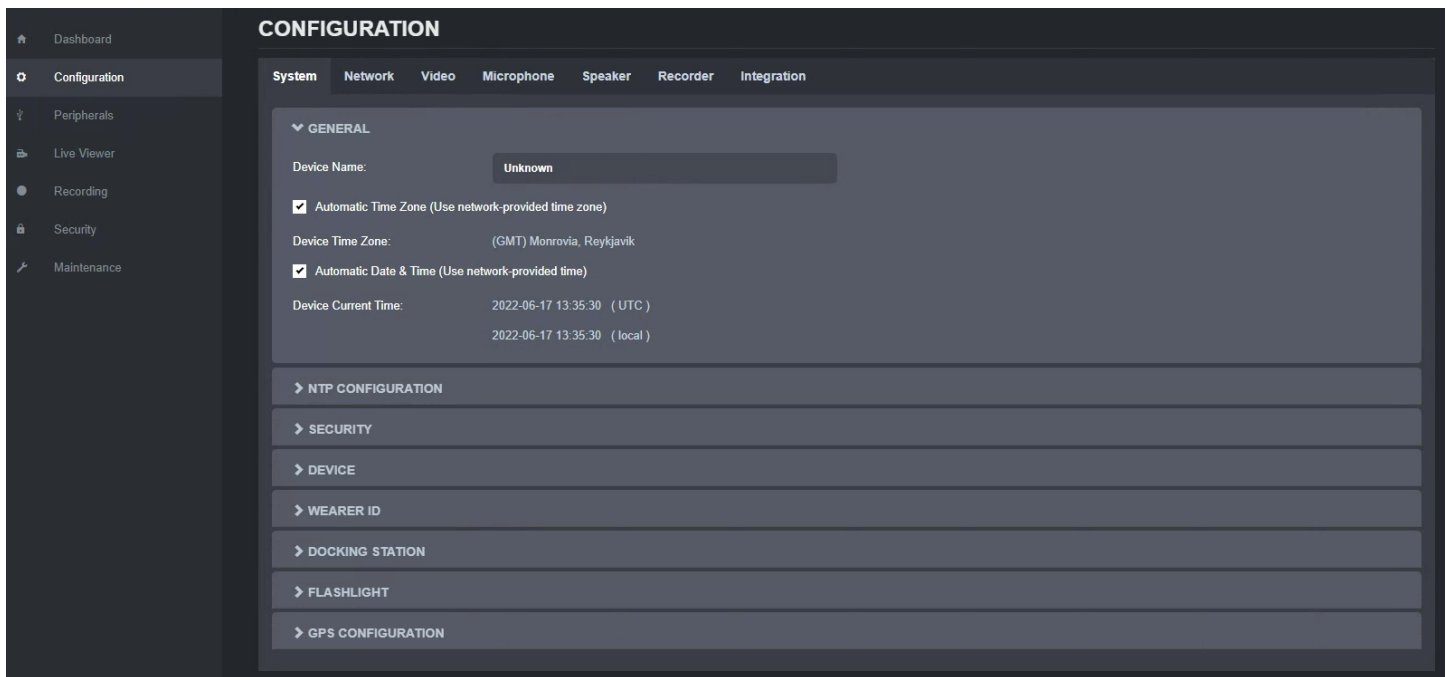
Temperature

System:	34.0 °C
Sensor:	Idle
Battery:	28.0 °C

HEALTH STATUS

A row of six status buttons with icons: SYSTEM (laptop icon), BATTERY (battery icon), NETWORK (network icon), STORAGE (storage icon), GPS (location pin icon), and 9 AXIS (compass icon).

7.3.2 Configuration/System




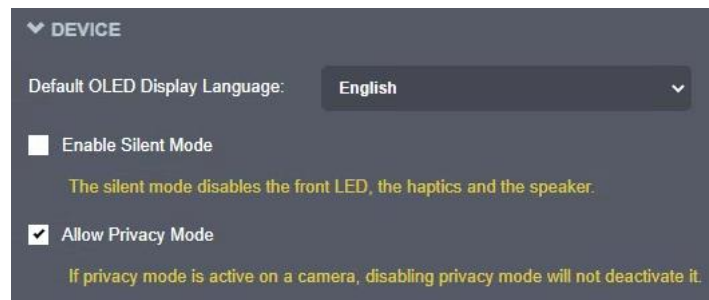
Under the *Configuration* section, select the *System* tab to perform the following operations:

- Specify a *Device Name*; this custom name can be used by third-party software to display a friendly name for the device
- Set the device's *Time Zone* and *Date/Time*; these can also be automatically configured by the body camera using information received from the GPS or from the network (Wi-Fi or Cellular) if the corresponding connection is present. Based on this setting, as well as the current UTC time, a local time is calculated and displayed.
- Configure an *NTP* server for real-time clock synchronization
- 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).

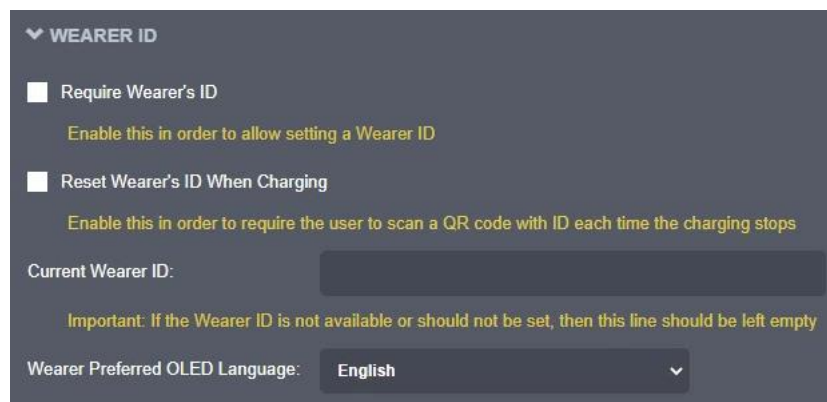


- Set general *Device* settings like the default OLED display language and activating Silent Mode (which disables the front LED, the haptics, and the speaker).

The system administrator can also choose to allow or not the Privacy Mode. When the body camera is switched to Privacy Mode the audio and video are disabled, both for live streaming, as well as for local recording (the body camera will only send a Privacy Mode logo  when being requested the live stream). A typical scenario for activating this feature would be a situation where the camera wearer is entering a restricted or private area or when he is handed over confidential documents.



- Set general *Wearer ID* and associated parameters.
 - *Require Wearer's ID*: Each time the body camera is unplugged from the charger, if the Wearer ID is empty, the camera will automatically switch to Scan QR mode and will wait for the user to scan a QR code containing the Wearer ID (the QR code can consist of only the Wearer ID, all other information is optional)
 - *Reset Wearer's ID When Charging*: The Wearer ID is reset each time the body camera is plugged in for recharging
 - *Current Wearer ID*: character string (up to 24 characters) indicating the ID
 - *Wearer Preferred OLED Language*: language used for the information on the OLED screen when the Wearer ID is not empty



- Set *Docking Station* settings to ensure body camera is ready when accessing recorded clips. To be ready (Online), the docking station must charge the body camera to a certain *Minimum Battery Level* + *Starting Online Mode Offset* and for a specific time (*Charging Timeout*). You can also control certain streaming operations when the body camera is docked.

▼ DOCKING STATION

☒ Enable Online Mode

The Ethernet connection is activated when thresholds are reached.

Minimum Battery Level: (20 - 50) %

Minimum battery level to allow the online mode.

Starting Online Mode Offset: (10 - 30) %

Online mode will be activated only when the battery reaches the minimum battery level plus this offset.

Network Transfer Inactivity Timeout: (120 - 600) sec

Timeout to switch in charging mode if no playback activity is running.

Charging Timeout: (600 - 2700) sec

Timeout in charging mode to switch in online mode.

☐ Allow Live Media Streaming When Docked

☐ Allow Recorded Playback and Clip Download Over WIFI When Docked

- Enable the front *Flashlight* and set its brightness level. Please note that continuous use of the flashlight can drain the battery very quickly, especially on high brightness levels.

▼ FLASHLIGHT

☒ Enable

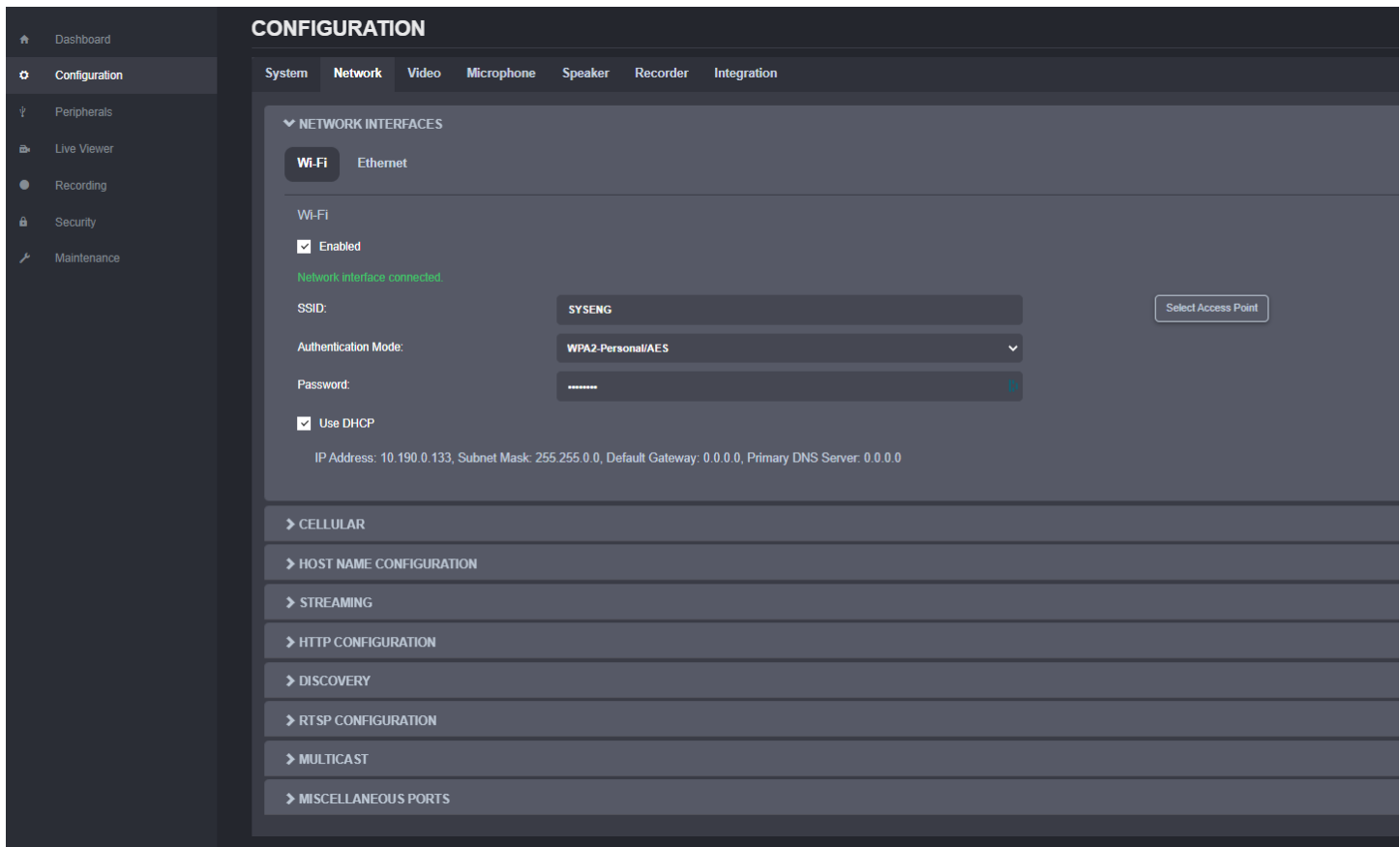
Brightness: (1 - 5)

- Set the sampling rate for the *GPS* information (this is the interval between two consecutive GPS position readings).

▼ GPS CONFIGURATION

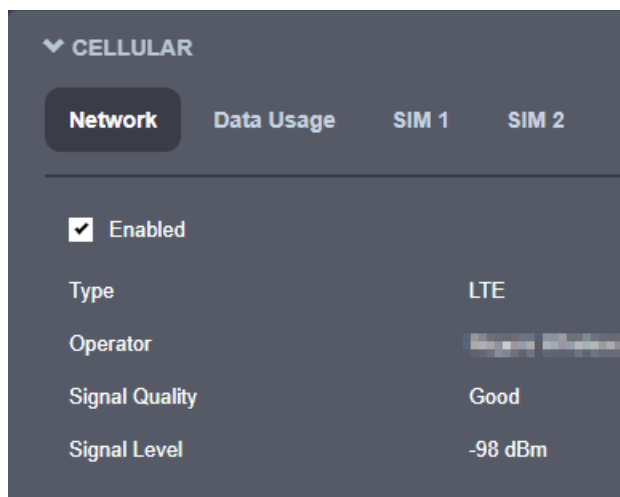
Sampling: (1 - 3600) sec.

7.3.3 Configuration/Network

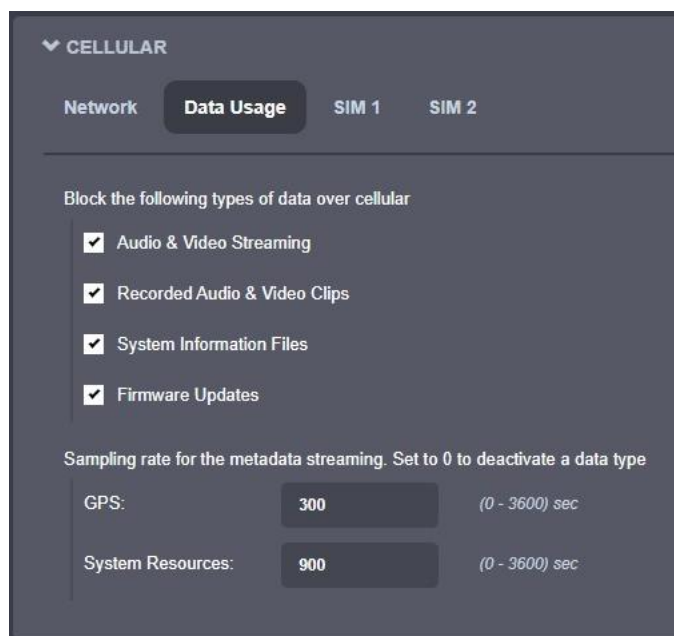


Under the Configuration section, select the Network tab to perform the following operations:

- *Network Interface* – Set the body camera's network interface parameters; DHCP or static IP information.
- *Cellular* – Displays information related to the cellular connection. The connection can be disabled if needed. The administrator can configure the type of data that is allowed over the cellular network, such as live audio & video, recorded clips, system information files or firmware updates. For metadata streaming (GPS or system resources usage) the frequency of the updates is also user configurable.
 - Network - The connection can be disabled if needed. Different health check points are displayed to monitor the quality and status of the cellular link.



- Data Usage - The administrator can configure the type of data that is allowed over the cellular network, such as live audio & video, recorded clips, system information files or firmware updates. For metadata streaming (GPS or system resources usage) the frequency of the updates is also user configurable.



- SIM 1 (same for SIM2) – Provides SIM card information to the one installed in your PERCEPT body camera. You can also enable or disable mobile data if needed as well as add or select your APN provided by your network operator. Different status points such as SIM presence and Data connectivity are provided for monitoring.

Note: When using an IONODES SIM card, your APN is JTM2M.

The screenshot shows the 'CELLULAR' settings page with tabs for 'Network', 'Data Usage', 'SIM 1', and 'SIM 2'. The 'SIM 1' tab is active. It features a 'Data Enabled' checkbox which is checked. Below this is a 'Preferred APN' field with a dropdown menu and three buttons: 'Select APN', 'Create New APN', and 'Reset APNs'. A list of cellular details follows, including IMEI (865303040455190), SIM State (Ready), Data State (Connected), Id (8944501806214056017), IMSI (234500050405601), MCC/MNC (234/50), and Carrier (T-Mobile).

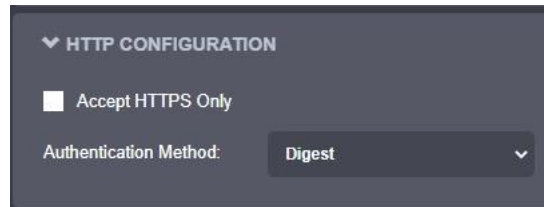
- *Host Name Configuration* – Set the body camera’s network name.
- *Streaming* – Provide streaming control points
 - Media – Prevent playback streaming over a wireless link

The screenshot shows the 'STREAMING' settings page with tabs for 'Media' and 'Metadata'. The 'Media' tab is active. It contains a single checkbox labeled 'Prevent Media Playback Over a Wireless Connection'.

- Metadata - Set the sampling rate for the metadata (GPS and system resources usage)

The screenshot shows the 'STREAMING' settings page with the 'Metadata' tab active. It includes a descriptive text: 'Sampling rate for the metadata streaming. Set to 0 to deactivate a data type'. Below this are two input fields: 'GPS' with a value of '60' and a range '(0 - 3600) sec', and 'System Resources' with a value of '5' and a range '(0 - 60) sec'.

- *HTTP Configuration* – Change the device's HTTP configuration
 - Accept HTTPS only – Forces the HTTP server to accept only SSL connections
 - Authentication mode – Basic or Digest Authentication for HTTP connections



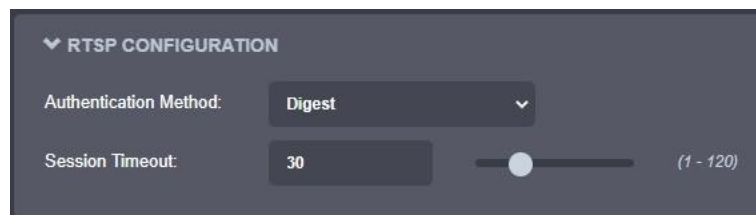
The screenshot shows the 'HTTP CONFIGURATION' panel. It has a dropdown arrow on the left. Below the title, there is a checkbox labeled 'Accept HTTPS Only' which is currently unchecked. Below that, there is a label 'Authentication Method:' followed by a dropdown menu showing 'Digest' with a downward arrow.

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



The screenshot shows the 'DISCOVERY' panel. It has a dropdown arrow on the left. Below the title, there is a checked checkbox labeled 'Discovery Enabled'. Below that, there is a label 'Search Domain:' followed by a text input field containing '.local'.

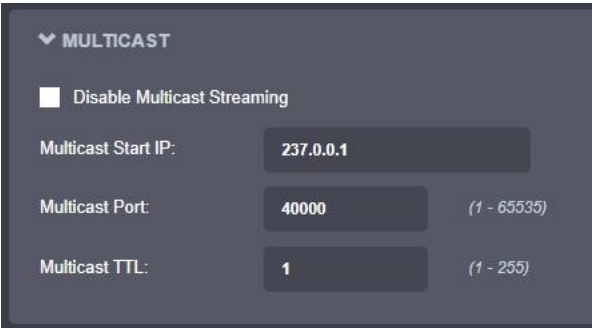
- *RTSP Configuration* – Change the device's RTSP configuration
 - Authentication method – Basic or Digest Authentication for RTSP connections.
 - Session Timeout – Configure timeout in seconds for RTSP session. The RTSP client will need to send a keep-alive before the timer for the session runs out. 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 streaming session will be closed.



The screenshot shows the 'RTSP CONFIGURATION' panel. It has a dropdown arrow on the left. Below the title, there is a label 'Authentication Method:' followed by a dropdown menu showing 'Digest' with a downward arrow. Below that, there is a label 'Session Timeout:' followed by a text input field containing '30', a slider control, and a range indicator '(1 - 120)'.

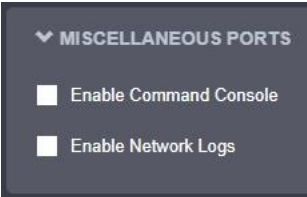
- *Multicast* – Change the global multicast settings for all outgoing multicast streams. By default, the multicast functionality is disabled. Once the user enables it, each outgoing multicast stream will be automatically assigned a multicast IP address and port based on the configured global range.

Manual configuration is also possible on individual media profiles, which will override the global configuration.

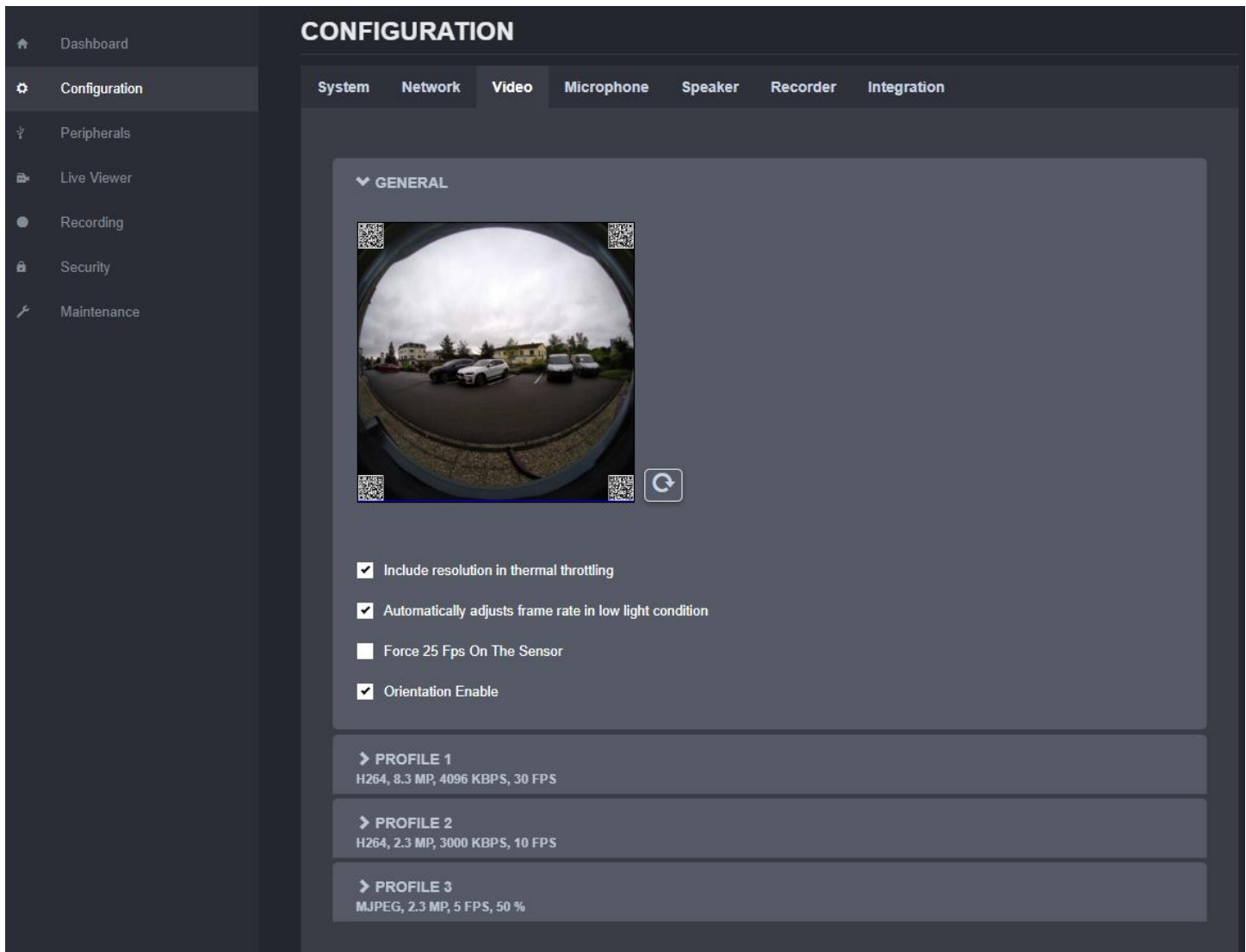


	Global multicast setting		
Per profile multicast setting	Enabled / Port value not-equal-to 65535	Enabled / Port value equal-to 65535	Disabled
Automatic assignation	Multicast available	No multicast available from this specific profile	N/A
Manual Assignation / Port value not-equal-to 65535	Multicast available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

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



7.3.4 Configuration/Video



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

- *Include the resolution in thermal throttling* – CPU throttling prevents damage to the body camera when high temperature is detected (for system, video sensor or battery). To lower the unit's temperature, the body camera automatically scales down the resolution/frame rate/bit rate according to a pre-configured algorithm. There are several throttling stages. First-stage and device shutdown thresholds are listed below.

	First Threshold	Device shutdown
System	71°C	80°C
Video Sensor	61°C	80°C
Battery	51°C	60°C

- *Automatically adjusts frame rate in low light condition* – Enabling this feature will improve image quality during low light conditions by maximizing the sensor’s exposure to light. To support this, the actual frame rate may be lower and not correspond the one configured in the video profiles.
- *Force 25 Fps On The Sensor* – Locks the sensor’s frame rate to 25 FPS. This setting is useful with some integrations where the frame rate is limited to 25 fps.
- *Orientation enable* – If the option is ticked, the orientation information from the body camera is embedded into the QR codes. Disabling this will remove the orientation information from the QR codes, which could help with the dewarping in some specific cases (with some particular VMS).
- Configure the primary, secondary, and tertiary profiles

Note: The primary and secondary profiles can be configured to H.264 or H.265, while the tertiary profile can only be configured to MJPEG. All three profiles can operate simultaneously.

Note: The capture resolution & frame rate from the sensor are automatically adjusted based on the configuration of the three encoding profiles (the new capture parameters need to be sufficient for all profiles). This is done on-the-fly by the body camera and may lead to an increase in the sensor’s temperature.

The screenshot shows the configuration page for 'PROFILE 1' in the PERCEPT interface. The profile is set to H264, 4.2 MP, 2500 KBPS, 30 FPS. The 'Enable Encoder' checkbox is checked. The 'Encoder Type' is set to H264. The 'Resolution' is set to 4.2 MP. The 'Frame Rate' is set to 30 fps. The 'Target Bit Rate' is set to 2500 Kbps, with a range of (10 - 20000) Kbps. There is a button 'Set Optimal Target Bit Rate'. The 'Intra Interval' is set to 90 frame, with a range of (0 - 1000) frame. The 'Rate Control' is set to Variable Bitrate. The 'Profile' is set to Main. The 'VBR Aggressiveness' is set to Disabled. The 'Use Automatic Multicast Assignment' checkbox is unchecked. The 'Multicast IP' is set to 237.0.1.19. The 'Multicast Port' is set to 40189, with a range of (1 - 65535). The 'URL (click to copy):' is displayed as 'Interface 1: rtsp://10.190.0.99:554/videoinput_1.0/h264_1/media.stm'. There is a button 'Hide Advanced Settings'.

▼ PROFILE 1
H264, 4.2 MP, 2500 KBPS, 30 FPS

☒ Enable Encoder

Encoder Type: H264

Resolution: 4.2 MP

Frame Rate: 30 fps

Target Bit Rate: 2500 (10 - 20000) Kbps

Set Optimal Target Bit Rate

Intra Interval: 90 (0 - 1000) frame

Rate Control: Variable Bitrate

Profile: Main

VBR Aggressiveness: Disabled

☐ Use Automatic Multicast Assignment

Multicast IP: 237.0.1.19

Multicast Port: 40189 (1 - 65535)

URL (click to copy): Interface 1: rtsp://10.190.0.99:554/videoinput_1.0/h264_1/media.stm

Hide Advanced Settings

For the **primary and secondary profiles**, the following settings are available:

- *Enable Encoder* – Allows you to enable/disable the specific profile.
- *Encoder type* - Allows you to choose your profile type (H.264 or H.265)
- *Resolution* – Select the video resolution (expressed in MP)
- *Frame rate* – Select the frame rate (expressed in fps)
- *Target bit rate* – Select the desired target bitrate (expressed in kbps)
- *Set Optimal Target Bit Rate* – Sets an optimal value (based on IONODES experience) for the target bit rate, considering the current resolution and frame rate
- *Intra interval* – Defines the GOP (Group-Of-Pictures) size (expressed in number of frames)
- *Rate control* – Select between Constant Rate or Variable Rate
- *Profile* – Select the profile for H.264 or H.265
- *VBR aggressiveness* is unique to IONODES products 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.
- *URL* – displays the URL that can be used for direct streaming from this specific profile.
- *Multicast Assignment* – This section will only appear if the Global Multicast setting is enabled. It allows you to manually configure the Multicast IP & Port for the specific outgoing stream; when the automatic setting is enabled the encoder will automatically assign the Multicast IP & Port based on the global range defined under *Configuration > Network > Multicast*.

▼ PROFILE 3
MJPEG, 2.3 MP, 2000 KBPS, 5 FPS

☒ Enable Encoder

Encoder Type: MJPEG

Resolution: 2.3 MP

Frame Rate: 5 fps

Rate Control: Fixed quality

Quality: 50 (0 - 100)

☒ Use Automatic Multicast Assignment

Multicast IP: 237.0.0.5, Multicast Port: 40006

☒ Multipart Compliant

URL (click to copy): Interface 1: rtsp://10.190.0.99:554/videoinput_1:0/mjpeg_3/media.stm

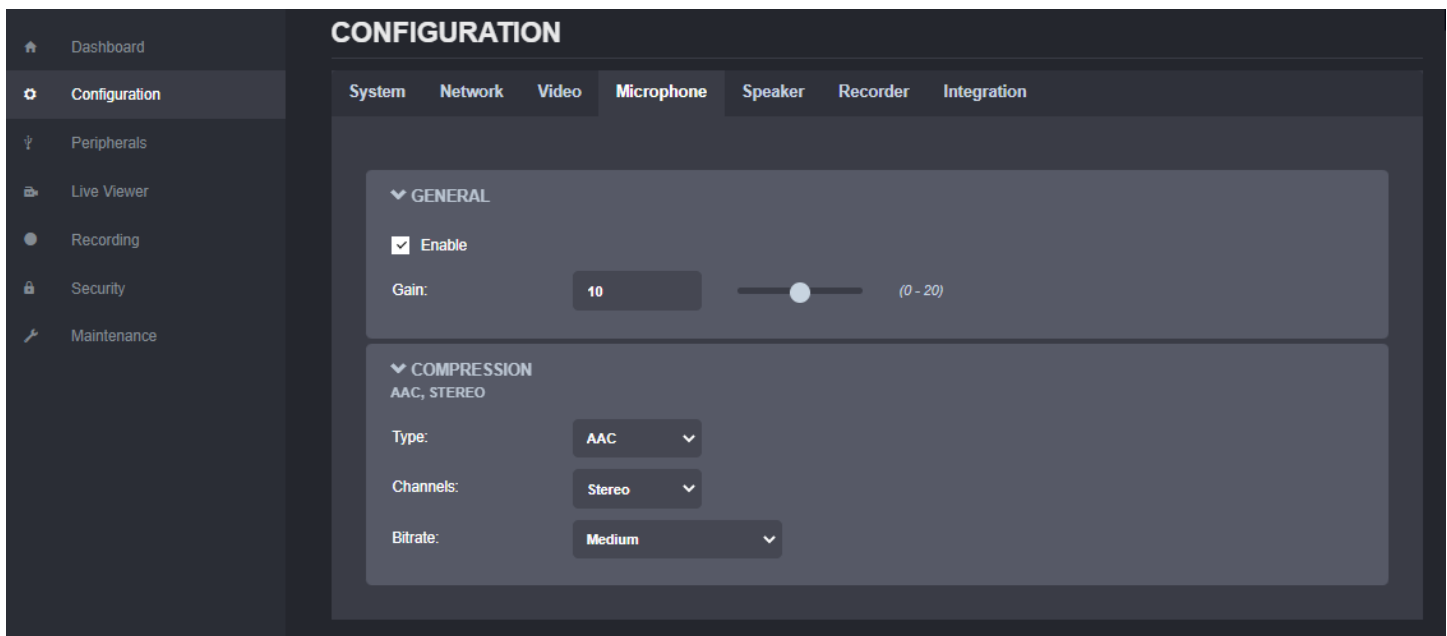
Hide Advanced Settings

For the **tertiary profile**, the following settings are available:

- *Enable Encoder* – Allows you to enable/disable the specific profile.
- *Encoder type* – Only MJPEG is available here
- *Resolution* – Select the video resolution (expressed in MP)
- *Frame rate* – Select the frame rate (expressed in fps)
- *Rate control* – Select between Fixed Quality or Variable Rate
- *Quality* – Set the image quality (expressed as a percentage from the maximum)
- *Multipart Compliant* - informs the client to expect several parts (frames) in response to a GET request for the MJPEG stream.
- *URL* – displays the URL that can be used for direct streaming from this specific profile.
- *Multicast Assignment* – This section will only appear if the Global Multicast setting is enabled. It allows you to manually configure the Multicast IP & Port for the specific outgoing stream; when the automatic setting is enabled the encoder will automatically assign the Multicast IP & Port based on the global range defined under *Configuration > Network > Multicast*.

Note: When in manual assignation mode, the multicast settings for a specific stream will override the global settings.

7.3.5 Configuration/Microphone

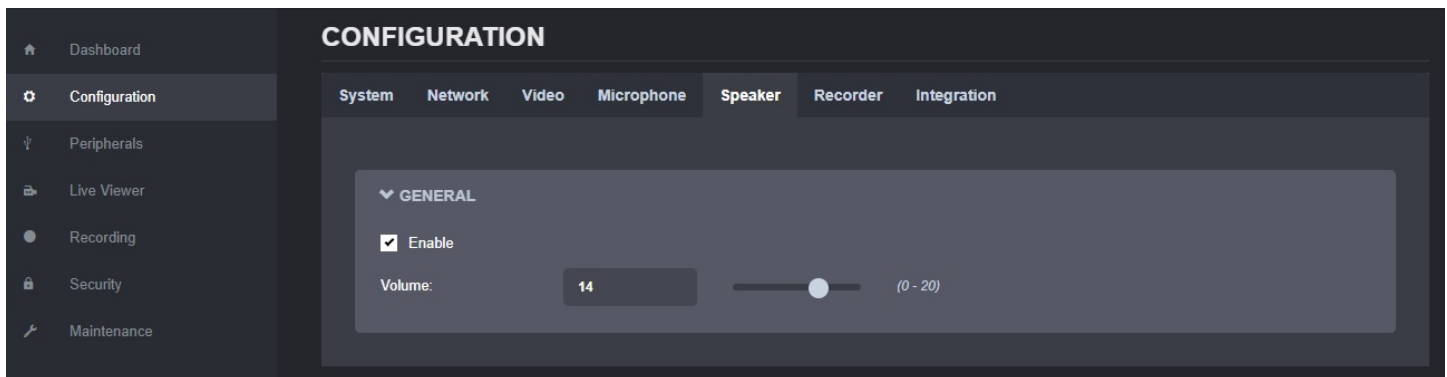


Under the *Configuration* section, select the *Microphone* tab to perform the following operations:

- Enable or disable the onboard dual microphone system.
- Control the audio gain.

- Configure the compression for the audio (type/ channels/ bitrate)

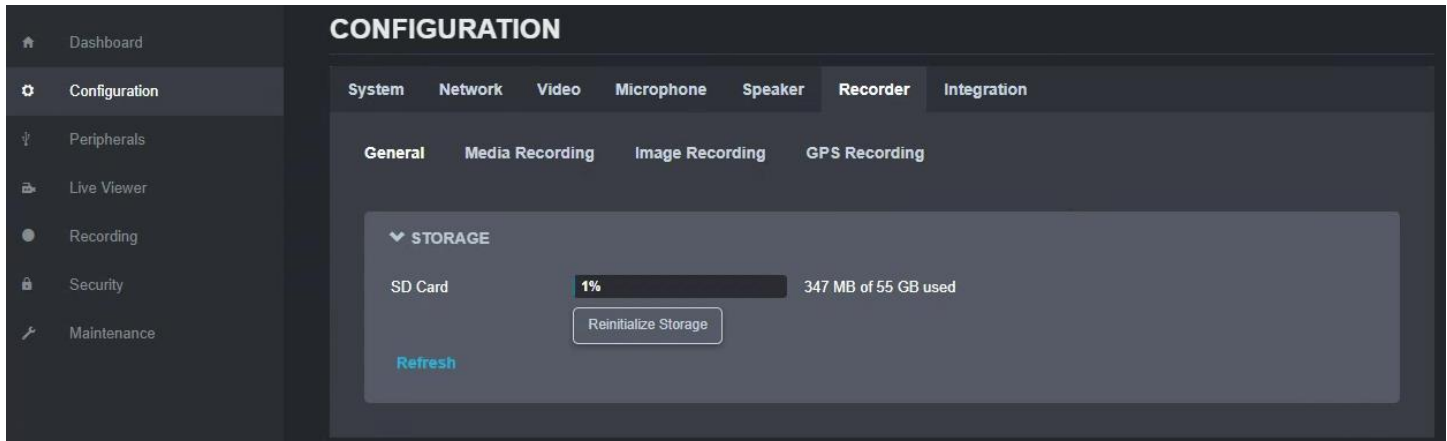
7.3.6 Configuration/Speaker



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

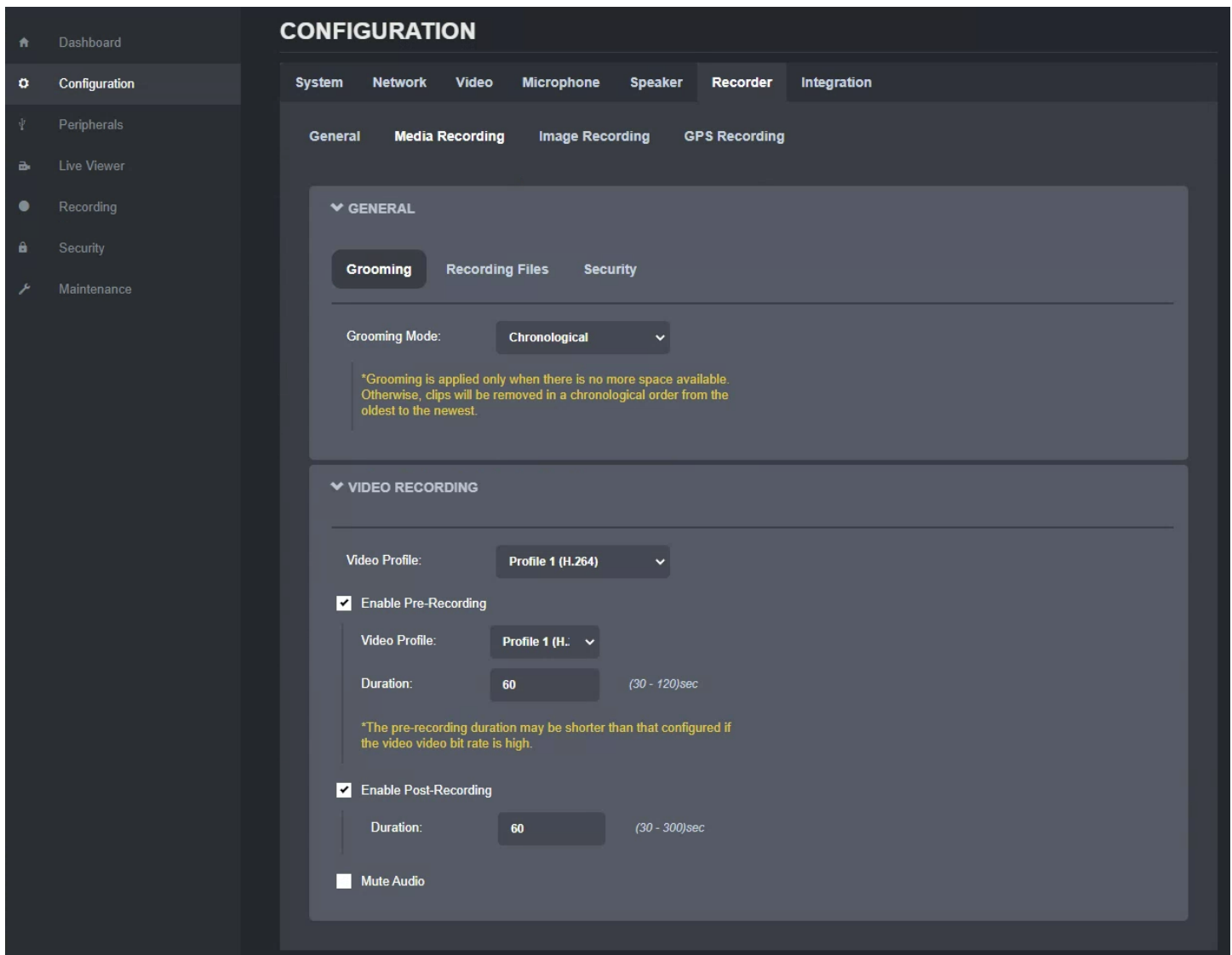
- Enable or disable the onboard speaker
- Configure the output volume

7.3.7 Configuration/Recorder



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

- View the total and currently available capacity of the onboard SD card
- *Reinitialize Storage*: this will delete all user recorded data on the SD card and return it to factory state



- Configure the Media Recording parameters
 - *Grooming Mode*: defines what files will be overwritten when there is no more available space on the SD card
 - Chronological: clips are deleted in chronological order from the oldest to the newest
 - Manual: a manual intervention is needed to delete the clips
 - By retention time: clips are automatically deleted when the retention time is met
 - *Recording Files*: defines the maximum recording file duration and file size

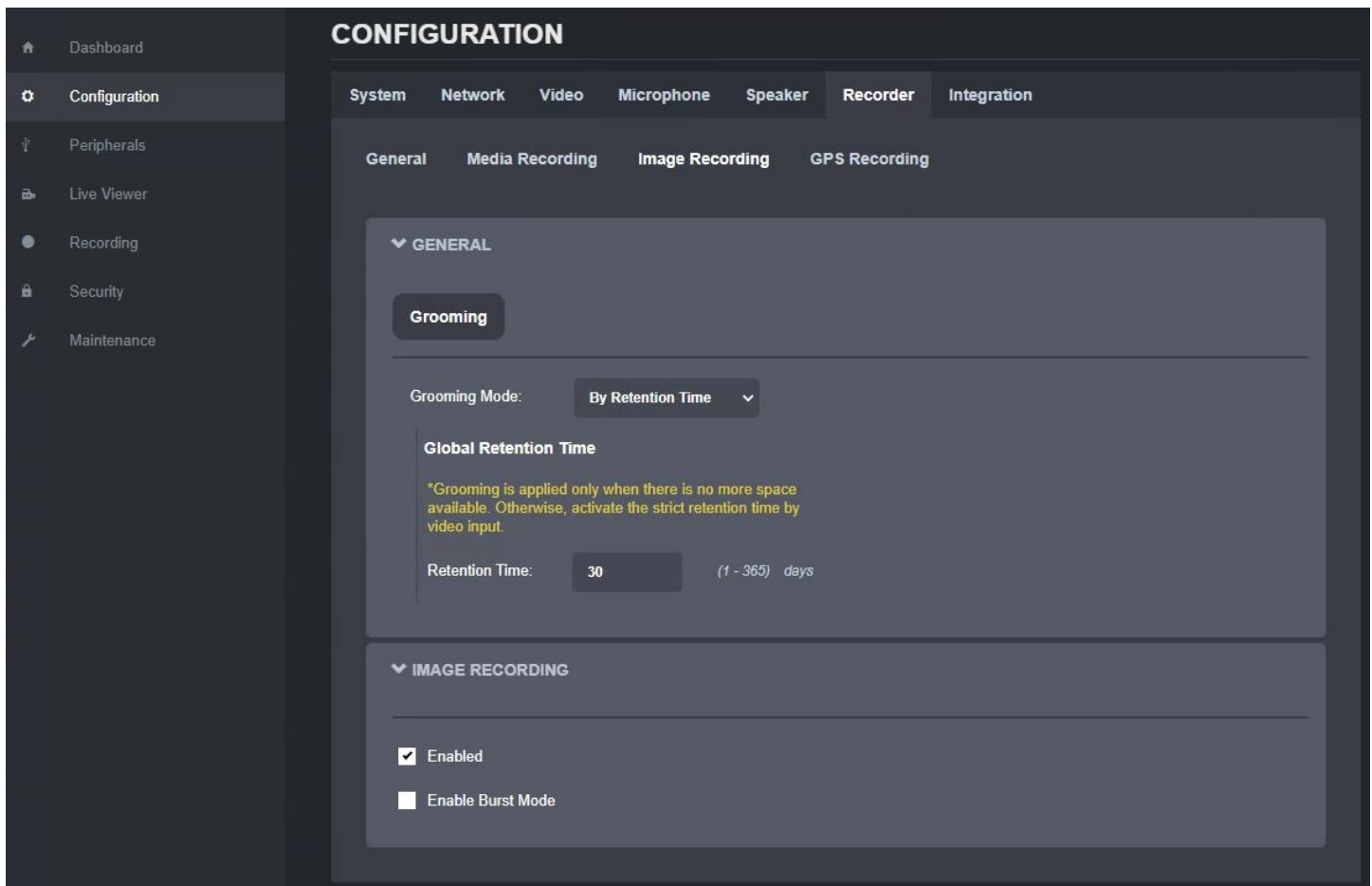


- *Security*: the system administrator can define the key used for encryption of the locally recorded video + audio. The PERCEPT body camera uses the industry standard AES-256 for the encryption.

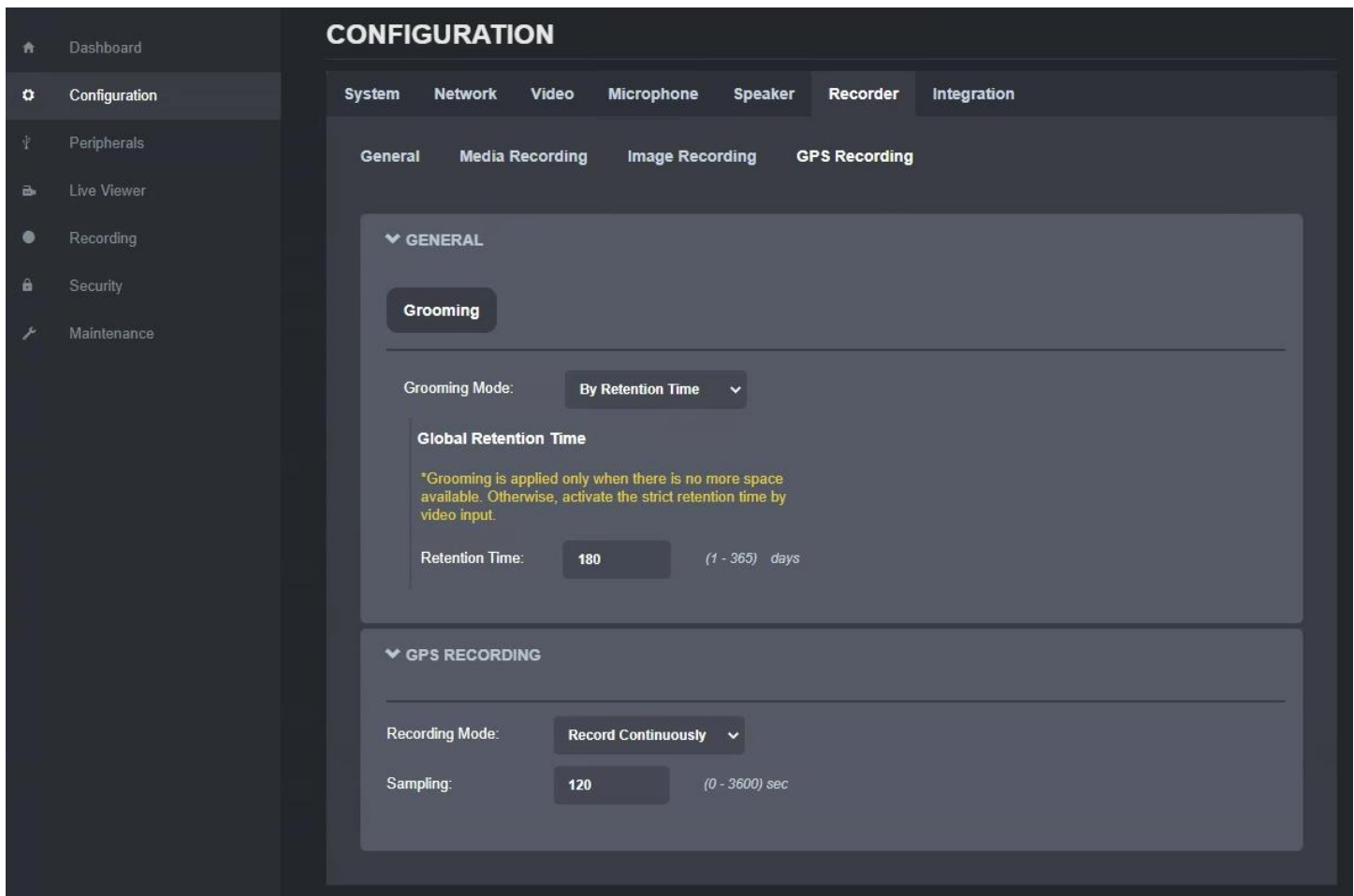


The screenshot shows a web interface with three tabs: 'Grooming', 'Recording Files', and 'Security'. The 'Security' tab is active. Below the tabs, there are two input fields: 'Encryption Key:' and 'Confirm Encryption Key:'. Below these fields is a link that says 'Clear the Encryption Key' in blue text.

- Video Recording parameters
 - *Video Profile*: the profile to be used for recording purposes
 - *Enable Pre-Recording*: enables the body camera to record buffered video before the recording is triggered
 - Video Profile: the profile to be used for Pre-Recording
 - Duration: the duration of the Pre-Recording
 - *Enable Post-Recording*: enables the body camera to record video after the recording is ended
 - Duration: the duration of the Post-Recording
 - Mute Audio: disables the audio recording



- Configure the Image Recording parameters
 - *Grooming Mode*: defines what files will be overwritten when there is no more available space on the SD card
 - Chronological: images are deleted in chronological order from the oldest to the newest
 - Manual: a manual intervention is needed to delete the images
 - By retention time: images are automatically deleted when the retention time is met
 - *Retention Time*: defines the duration of time that recorded images must be maintained when grooming in retention mode
- Image Recording parameters
 - *Enable*: Enables recording of a single image
 - *Enable Burst Mode*: Enables recording of a quick series of images



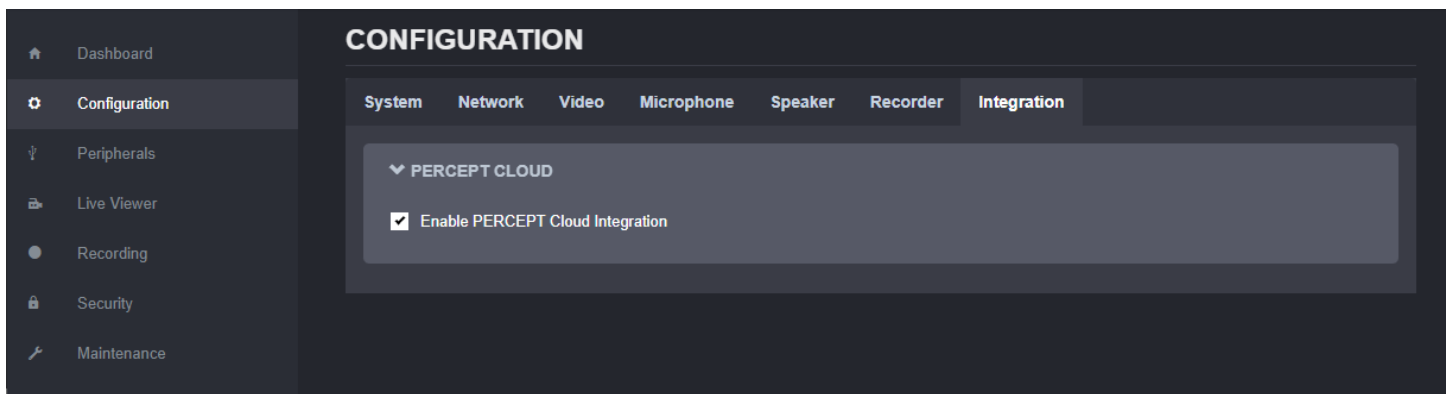
Note: This section only controls the GPS data recording to a separate file. The corresponding file (*.gpx) can be trimmed (based on a specific time interval) and downloaded from the "Recording" menu in the web interface.

Note: The bodycam automatically adds GPS information to the QR codes that are then embedded into the corners of each full-frame warped image. This feature cannot be deactivated.

- Configure the GPS Recording parameters
 - *Grooming Mode*: defines what files will be overwritten when there is no more available space on the SD card
 - Chronological: GPS data is deleted in chronological order from the oldest to the newest
 - Manual: a manual intervention is needed to delete the GPS data
 - By retention time: GPS data is automatically deleted when the retention time is met
 - *Retention Time*: defines the duration of time that recorded GPS data must be maintained when grooming in retention mode

- GPS Recording parameters
 - *Recording Mode*: Determines when the GPS data should be recorded
 - *Record Continuously*: GPS data is recorded all the time
 - *On Video Recording*: GPS data is only recorded while video is being recorded
 - *Do not record*: GPS data is not recorded at all (even if available)
 - *Sampling*: Defines the frequency of GPS data recording

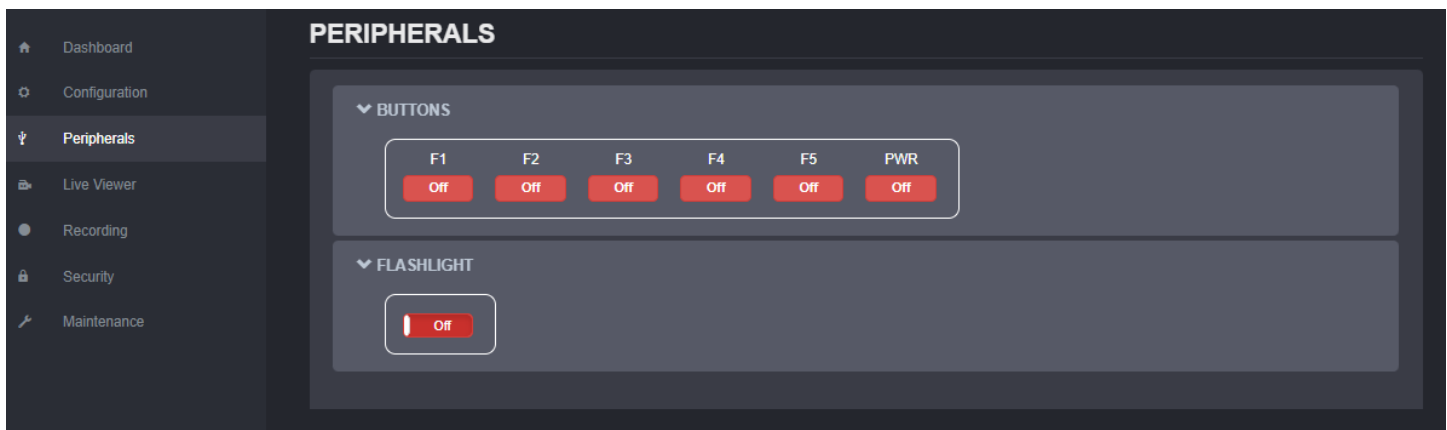
7.3.8 Configuration/Integration



Under the *Configuration* section, select the *Integration* tab to enable the integration of the body camera to PERCEPT Cloud platform.

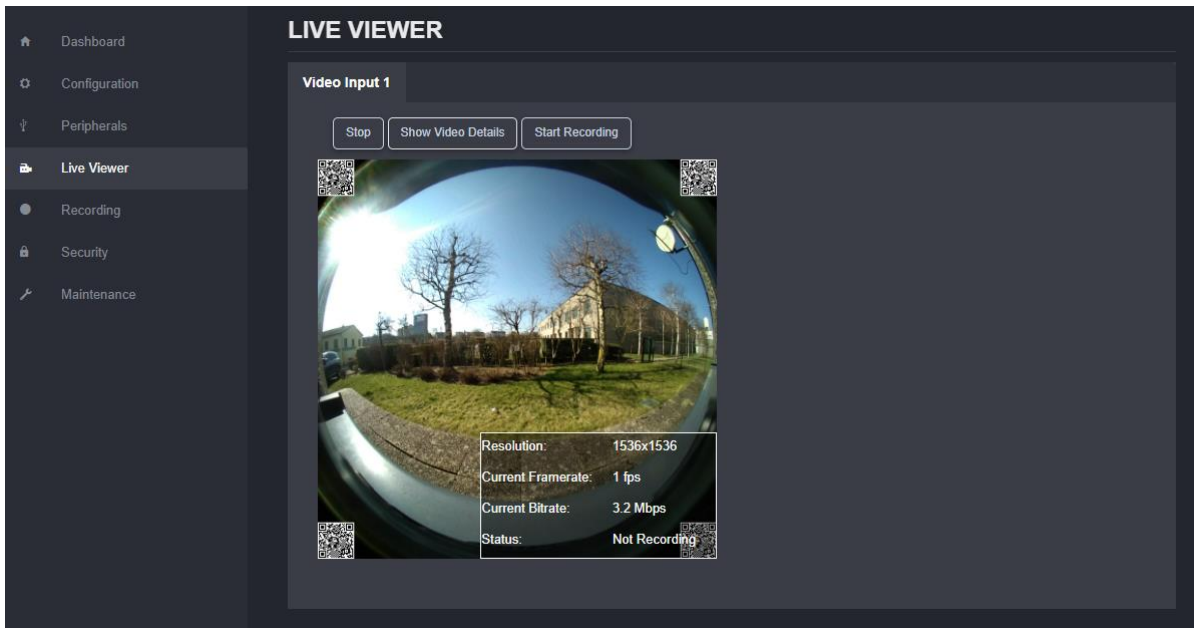
Note: Enabling the integration to PERCEPT Cloud will change the microphone from stereo to mono.

7.3.9 Peripherals



The *Peripherals* section offers the user an overview of the current status of the onboard function buttons and flashlight.

7.3.10 Live Viewer

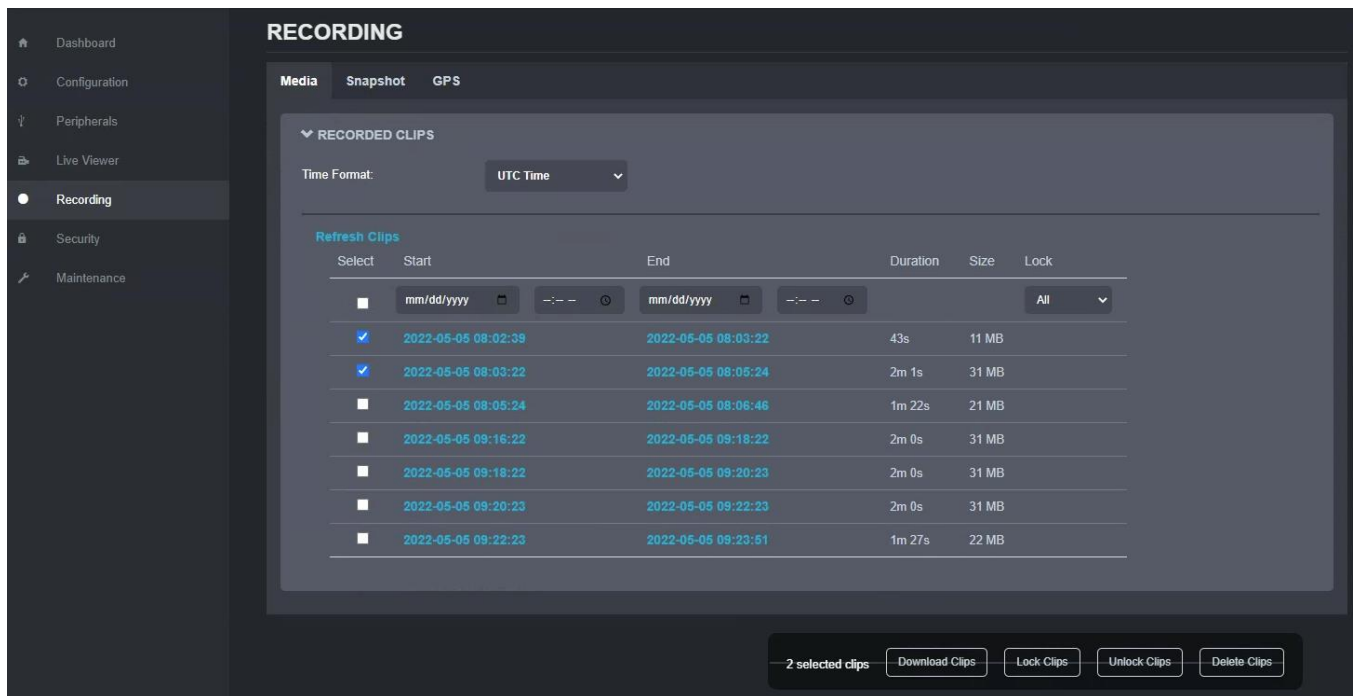


The *Live Viewer* page allows you to display an MJPEG video stream preview of the captured scene (MJPEG profile needs to be enabled), as well as starting/stopping an on-demand recording session.

By pushing on the “Show Video Details” button, the user can see the parameters (resolution, frame rate, bitrate) of the MJPEG stream that is currently playing. It also shows if the body camera is currently recording video or not.

Note: The recording session triggered from the Live Viewer tab will always use the configuration set under Configuration > Recorder > Media Recording section in the web interface. So, either the Profile 1 or 2 (H.264 or H.265) stream will be recorded, not the live MJPEG stream that is being displayed in the Live Viewer section.

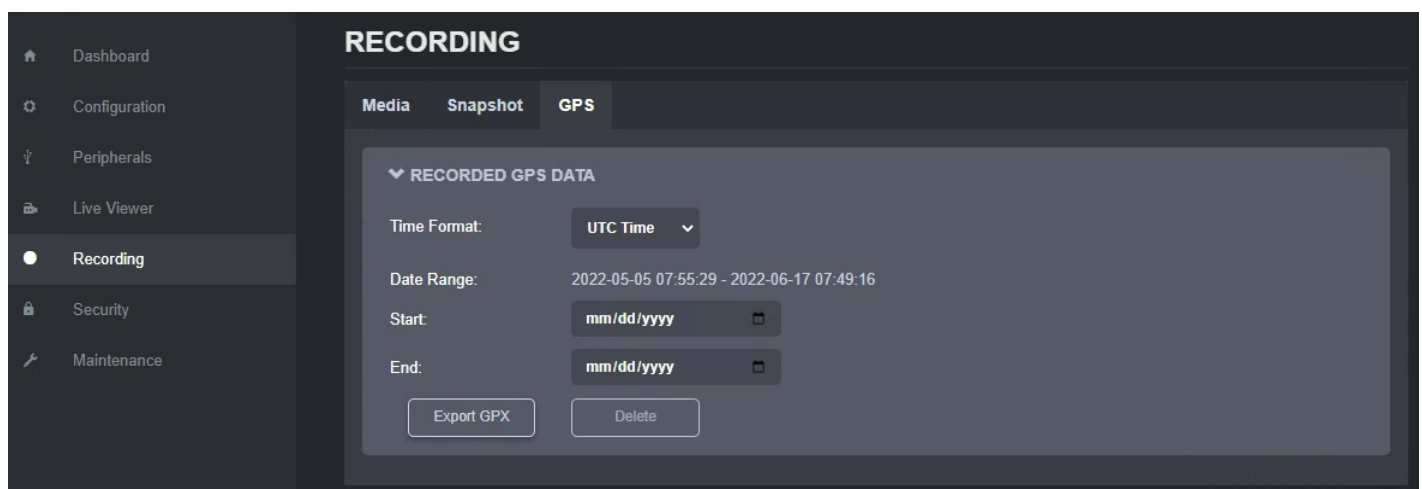
7.3.11 Recording



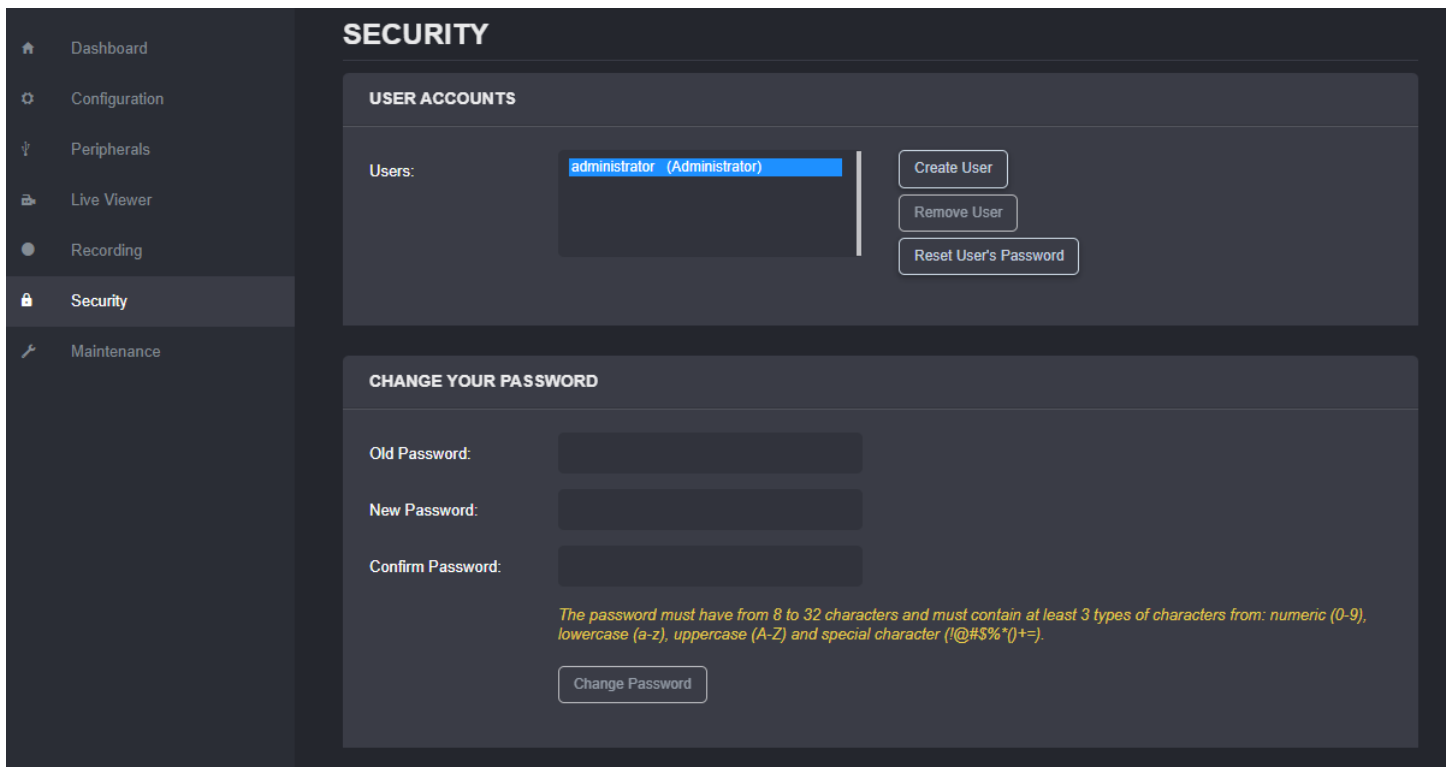
The *Recording* page provides access to all recorded clips, snapshots and GPS data on the internal SD card. The user selected clips/images can be downloaded, locked (to prevent them from being groomed), unlocked or deleted.

Note: If the list of recorded clips/images is very long, it might take a few seconds for the body camera to display it to the end user.

A GPS data information file (*.gpx) can be exported based on a specific time interval.



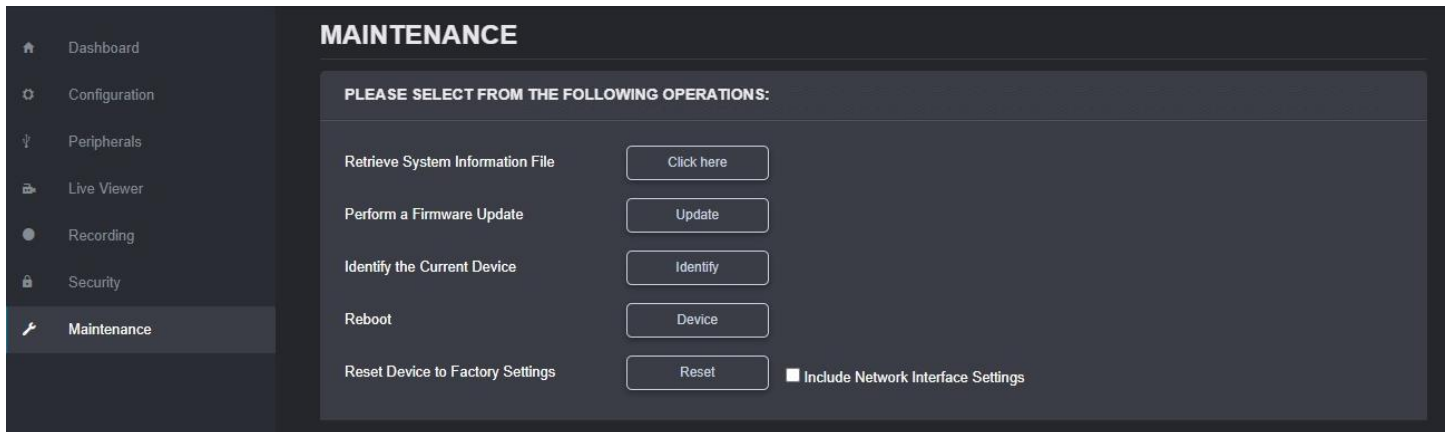
7.3.12 Security



The *Security* section allows you to manage user accounts which have access to the device. A description for the permissions of the different roles is provided below.

Role	Description
User	<ul style="list-style-type: none"> can access Dashboard (Product Info/System Status sections only) can access Live Viewer can change his own password
Poweruser	*in addition to the User role: <ul style="list-style-type: none"> can access Dashboard (Health Status section) can change all configuration settings can initiate On-demand Recording can access the Maintenance section, but cannot perform a firmware update or reset to factory default settings
Superuser	*in addition to the Poweruser role: <ul style="list-style-type: none"> can access the Maintenance section and can perform a firmware update and reset to factory default settings
Administrator	*in addition to the Superuser role: <ul style="list-style-type: none"> can create or modify all user accounts

7.3.13 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 the current device (if you have multiple units of the same type in the same location) by flashing its status LED and vibrating.

8 Troubleshooting

8.1 Common issues & resolutions

Symptoms	Possible cause	Resolution
Body camera does not power up	The battery is depleted	Charge the camera
	The battery is faulty	Replace the battery. The operation can be performed by a service technician, using the battery replacement kit & instructions provided by IONODES.
Body camera does not charge when connected to the dock	Dock is not connected to mains power or it is connected via an incompatible power adapter	Connect the dock to a power outlet via a compatible power adapter. A Green status LED on the dock will confirm that everything is ok.
No status LED feedback	The battery is depleted	Charge the camera
	Silent mode is enabled	Disable silent mode
Body camera does not record video, still pictures or audio	SD card is full	Offload the data from the internal storage (user). Verify the grooming strategy (admin).
	SD card is faulty	Body camera needs to be returned on RMA, to have the internal SD card replaced. The end client cannot replace the card on his own, as this will void the warranty.
Time and date are inaccurate	NTP not active	Check time & date synchronization settings in the web interface and configure an NTP server (admin).

8.2 Contact IONODES Support

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>

Annex – Statement Limited Warranty

Please visit www.ionodes.com for the latest warranty information on all our products.