



GUARD-1[®]

Description of Features and Functionalities

Purpose of the Document

This document describes GUARD-1[®] from the perspective of its features, functionalities and main use scenarios. It is not intended as a detailed technical specification, but rather as a summary aimed at presenting the system, supporting internal discussion and sharing information with technical or scientific stakeholders.

1. General Overview

GUARD-1[®] is an autonomous system for the intelligent acquisition and on-edge processing of images and videos in underwater environments. It is designed for long-duration monitoring missions and for applications where it is necessary to observe the marine environment in a programmable and repeatable way, with reduced human intervention, transforming the camera from a simple optical sensor into an intelligent visual analysis platform capable of elaborating data directly on board.

The system integrates a camera, controlled lighting, onboard image processing capabilities, Ethernet connectivity and software tools to configure missions, monitor device status, display acquired data and manage a bi-directional communication to servers or cloud infrastructures. Computer vision and AI functions make it possible to identify subjects of interest in the acquired images, supporting organism detection and classification along the water column or on the seabed to reduce the volume of data to be transferred.

In addition to the acquisition of single images and timed sequences, the system can manage local recording of video clips with configurable duration, allowing dynamic events or specific operational windows to be documented without necessarily requiring continuous streaming. The flexible programmable capabilities and integrated management of images, videos, logs and local memory status allow GUARD-1[®] to be used as an autonomous acquisition, elaboration and storage node, with data transfer adjustable according to connection availability and mission requirements. Thanks to this flexibility, the device can also support adaptive mission logic, where the automatic detection of a relevant event may modify its operating behavior, for example switching from time-lapse imaging to time-lapse video recording when a specimen of a specific species is detected.

GUARD-1[®] is conceived as a professional platform for scientific, environmental and industrial activities. It can be used for environmental observation, animal behavior analysis, geological structures (e.g., gaseous emission from chimneys or hydrothermal vents), monitoring of submerged sites and artificial infrastructures (e.g. underwater pipelines, wind farming, harbor structures), support for experimental campaigns and data acquisition in contexts that are difficult to access (e.g. deep sea, polar regions). The integration of optical acquisition, onboard inference and cloud analysis makes the system suitable both for documentary data collection and for producing operational and scientific information from images.

2. System Variants

Variant	Use Scenario	Functional Description
GUARD-1[®] Lite	Shallow water, down to 50 m	Version intended for coastal installations, shallow observatories, experimental trials and contexts requiring compact dimensions and operational simplicity.
GUARD-1[®] Deep	Deep water, down to 1000 m	Version designed for more demanding scenarios, deep-water missions and installations where robustness, reliability, and autonomy are priorities.



3. Installation and Use Modes

GUARD-1[®] can be used in fixed configurations, for example on submerged structures, observatories, landers and mooring lines or other environmental monitoring systems. It can also be adapted to mobile platforms or underwater vehicles, including Autonomous Underwater Vehicles (AUV) and Unmanned Surface Vehicles (USV), Lagrangian vehicles (e.g. Argo Floats, Drifter buoys, Sea Gliders) and ROVs, when it is useful to have an intelligent camera with lighting, streaming, data management and integrated visual analysis.

The configuration may vary depending on the mission: local acquisition with data retrieval at the end of the campaign, periodic communication to the surface, operation with continuous power supply, or use with a dedicated battery for autonomous campaigns.

During installation or maintenance, the local interface also allows relevant operational parameters for system integration to be configured, including camera address, LAN network settings, modem connection mode, local storage size and energy behavior. This allows GUARD-1[®] to be adapted to scenarios with different infrastructures, from isolated installations to configurations with periodic connection to the surface or cloud.

4. Image and Video Acquisition

The primary function of GUARD-1[®] is the acquisition of images and videos in underwater environments. The system can be programmed to perform acquisitions at defined time intervals, record video clips, acquire single images or start live streaming sessions during installation, verification or remote control.

Video recording can also be managed as a scheduled or manual local acquisition, generating video clips saved on the device. Clip duration, frame rate and bitrate can be configured from the interface in order to balance data quality, memory usage and energy consumption. This function allows static images to be complemented with short video sequences useful for observing dynamic phenomena, animal behavior, scene variations or transient events.

Timed acquisition makes it possible to reduce energy consumption and concentrate data collection on the moments that are truly useful for the mission. Acquisitions can be associated with system logs and metadata, helping with subsequent interpretation of the data and reconstruction of operating conditions.

Images and video clips saved locally can be managed separately, filtered by date, viewed through previews and downloaded by the user according to operational needs.

The presence of integrated lighting makes the acquired scene more controllable, improving image repeatability even in low-light conditions or in environments where natural light is absent or highly variable.

5. Live Streaming and Preview

GUARD-1[®] supports live viewing of the video stream via Ethernet connection. This function is particularly useful during installation, orientation, focusing, field-of-view verification and scene status checks.

Streaming is not necessarily intended as an always-active mode, but as an operational function to be used when direct control of the device is required or when the mission requires real-time viewing.

The streaming function is distinct from local video clip recording: streaming is intended for real-time viewing during installation and operational control, while video recording allows clips of configurable duration to be saved on the device for subsequent viewing, download or analysis.

6. Mission Programming

The system allows automatic missions to be configured, in which the device alternates between acquisition, processing, storage, communication and energy-saving phases. Programming may include acquisition time windows, shooting intervals, video sessions, periodic uploads and standby mode management. Video sessions can be enabled or disabled depending on the mission and configured through dedicated parameters, such as clip duration, frame rate and bitrate.



This logic makes GUARD-1® suitable for long-duration missions, where the device must operate for weeks or months without frequent intervention, while maintaining a balance between data quality, energy consumption and availability of information.

Programming can also distinguish between the capture window and the upload window. In this way, the device can acquire data during a specific time slot, store it locally and transfer it later when the connection is available or when the energy profile allows it. The wake capture and sleep duration logic coordinates the wake-up, acquisition and return-to-low-power cycle.



7. Data Processing and AI Functionalities

GUARD-1[®] integrates onboard processing capabilities to support computer vision tasks directly on the device. The planned functions include image pre-processing, identification of relevant subjects, fish detection, segmentation, classification and generation of useful information for scientific or operational interpretation of the data. In some configurations, the detection engine can be based on modern models such as RT-DETR, while maintaining the modular architecture needed to replace or update models over time.

The image detection module can be enabled or disabled from the interface according to operational needs. When enabled, the detector is run on the acquired images and produces summary information, such as the number of detected subjects and inference time, which can be displayed in the dashboard and associated with the acquired data.

Onboard processing reduces the amount of data to be transferred, enables automatic content selection logic and supports scenarios where connectivity is limited or available only during restricted time windows.

Local video clips are instead mainly intended as documentary support and are not necessarily sent to the detector or to the cloud, depending on the adopted software configuration.

The system can also integrate with cloud analysis components, where more complex models can be used for advanced classification, species recognition, contextual analysis or generation of summaries and reports. In this scenario, large language models can support interpretation of the results, generation of descriptions and preparation of consultation outputs based on the visual data and collected metadata.

8. Autotune and Acquisition Quality Control

GUARD-1[®] can include automatic calibration functions for acquisition parameters, with the aim of adapting camera and lighting behavior to the conditions of the scene. This function, referred to as autotune, helps improve image quality and acquisition repeatability.

Autotune is particularly useful in underwater environments, where turbidity, residual light, distance from the subject, orientation and local conditions may vary over time or between missions.

9. Energy Management and Deep Sleep

To support extended missions, GUARD-1[®] provides energy-saving modes between acquisitions. The device can remain in a low-power state and reactivate only when it needs to acquire, process, communicate or perform service activities.

Energy behavior can be adjusted through dedicated parameters, including energy saving enablement, sleep duration and management of the wake capture cycle. The latter allows the device to reactivate to perform an acquisition, complete the scheduled activities and then return to a low-power state according to the configured timing.

Deep sleep mode is one of the key elements for extending autonomy when the system operates on battery power. In configurations with continuous power supply, the same logic still helps reduce heat dissipation, component stress and the overall consumption of the installation.

The interface also includes a controlled device shutdown command, reserved for service operations, which allows the system to be shut down in an orderly manner, reducing the risk of unmanaged interruptions.

10. Storage and Automatic Upload

Images, videos, processed data and logs can be stored locally and subsequently transferred to a server or cloud environment. Upload can be scheduled based on time windows, connection availability or data priority.



Local memory is monitored through the interface by means of an occupancy indicator that reports percentage of use, occupied space, available space and the number of images and videos present. The allocated storage size can be configured within the limits allowed by the device, in order to adapt data management to the installed memory capacity and expected mission duration.

This mode allows the acquisition phase to be separated from the transmission phase, making the system suitable even for scenarios where communication is not always available or must be limited for energy reasons.

To prevent the system from stopping in the event of memory saturation, GUARD-1® can apply circular deletion logic to the oldest local files when a defined occupancy threshold is exceeded. This function keeps the device operational even during long campaigns, prioritizing acquisition continuity over indefinite preservation of local data.

Upload can be configured in several modes: after each acquisition, at any time when the connection is available, or within dedicated time windows. This separation between acquisition, local storage and remote transfer makes it possible to adapt the system behavior to bandwidth constraints, modem availability and energy consumption.

11. Web Dashboard and User Interface

The web dashboard is the main operational access point to the system. It allows mission parameters to be configured, device status to be checked, the camera to be controlled, live streaming to be started, acquired images and videos to be consulted and data upload to be managed. The interface is organized into dedicated tabs, including Camera, Download, Options, Users and Log, in order to separate acquisition, data management, configuration and diagnostics activities. The dashboard also integrates a local memory status indicator, separate image and video management, video recording configuration, control of acquisition and upload windows, LAN network settings, cloud connection configuration and service functions such as camera sensor recognition and controlled device shutdown.

The dashboard can also support diagnostic functions, log consultation, verification of the main subsystem status, storage monitoring and communication parameter configuration. This simplifies maintenance and control during preparation, deployment, operational verification and retrieval phases.

12. Integrated Antifouling

GUARD-1® can integrate an optical-window cleaning system based on a waterproof wiper. The wiper limits the accumulation of incrustations, biofouling or deposits that could progressively degrade image quality during extended missions.

The cleaning system can be controlled from the dashboard and integrated into the automatic mission logic, for example before an acquisition sequence or according to a periodic schedule.

13. Power Supply and Surface Module

GUARD-1® can operate with battery power or through continuous power supply from the surface. The choice depends on mission duration, infrastructure availability, energy profile and the need for remote communication.

In some configurations, a surface module, referred to as ExtBox, can be used. It may integrate a battery, power supply and programmable GSM modem. In this architecture, the underwater device maintains a wired connection to the module, while communication to the mobile network or cloud is managed at surface level.

The presence of the modem can be enabled or disabled from the interface, allowing fully local configurations to be distinguished from configurations with remote transfer. When the modem is used, upload windows allow control over when the locally stored data is transferred to the server, separating acquisition behavior from communication behavior.



14. Diagnostics, Maintenance and Reliability

The system is designed to include diagnostic and service tools useful to technical personnel. Service functions may include access to logs, verification of subsystem status, acquisition control, software updates and maintenance support.

Service information includes the installed software version, local memory status, connection parameters, upload operation results, network configurations and the main events recorded by the system. The availability of this information allows the device configuration to be verified more quickly and helps identify any anomalies related to communication, acquisition, storage or power supply.

Diagnostic information is essential for long-duration campaigns, as it makes it possible to identify anomalies, reconstruct the device operating status and progressively improve reliability and operating procedures.

Local configuration functions for the LAN network, camera address and sensor mode also facilitate installation, component replacement and maintenance on different hardware. Controlled device shutdown is a useful service function for stopping the system in an orderly manner during tests, updates or technical interventions.

15. Summary of Main Functionalities

Functionality	Description
Timed acquisition	Photos programmable according to mission intervals or time windows, with the possibility of adding local recording of configurable video clips.
Live streaming	Real-time visualization for installation, verification and operational control.
Automatic upload	Programmable transfer of acquired data to a server or cloud, configurable in immediate, continuous or time-window mode.
AI processing	Onboard analysis and possibility of integration with cloud models for classification and reporting.
Autotune	Adaptation of acquisition parameters to scene conditions.
Deep Sleep	Reduction of consumption between one operational phase and the next.
Controlled lighting	Support for repeatable acquisitions even in low-light conditions.
Antifouling	Optical-window cleaning through an integrated and controllable wiper.
Web dashboard	Configuration, control, data visualization, image/video management, diagnostics, storage, network, cloud and upload management.
Surface ExtBox	Optional module for power supply, battery and mobile communication from the surface.
Video clip recording	Local acquisition of video clips with configurable duration, frame rate and bitrate.
Local storage management	SD space monitoring, configuration of the allocated size and circular deletion of the oldest files when occupancy thresholds are reached.
Image/video management	Separate consultation of acquired images and videos, with time filters, multiple selection, download and deletion.
Upload windows	Configuration of immediate, continuous or time-window-limited data transfer.
LAN network configuration	Setting of local wired network parameters directly from the web interface.
Controlled shutdown	Orderly shutdown of the device through an administrative command from the dashboard.



16. System Positioning

GUARD-1[®] is positioned as an autonomous and intelligent underwater observation platform, capable of combining image acquisition, lighting, data processing, energy management and connectivity in a single integrated system.

The extension of local configuration, video management, storage control and connectivity administration functions strengthens GUARD-1[®] 's role as an autonomous system, capable not only of acquiring visual data, but also of managing memory, communication, energy cycles and service operations in a structured way.

The distinction between Lite and Deep makes it possible to adapt the product to scenarios with different environmental requirements, while maintaining a common functional base. The main differences concern operational use, enclosure, required robustness and deployment modes, while the user experience and software functions can remain shared as much as possible.

The value of the system lies not only in the underwater camera itself, but in the entire functional chain: mission programming, controlled acquisition of images and video clips, energy saving, intelligent processing, local storage management, data upload, connectivity configuration, dashboard-based consultation and maintenance support.

17. User Interface Guide and Operational Screens

The modular organization of the interface allows the device to be managed, configured and analyzed from a single web application. The GUARD-1® dashboard includes a side navigation bar, from which the Camera, Download, Options, Users and Log tabs can be accessed, in addition to theme change and logout commands.

The following sections contain annotated screenshots: the numbers or letters overlaid on the images correspond to buttons or fields described in the text. The images may be updated separately depending on the graphical version of the interface.

1 Quick Commands

At the top of the Camera page there is a bar with buttons for quickly activating some system functions. The same area also includes the SD Storage panel, which reports the status of the device's local memory.

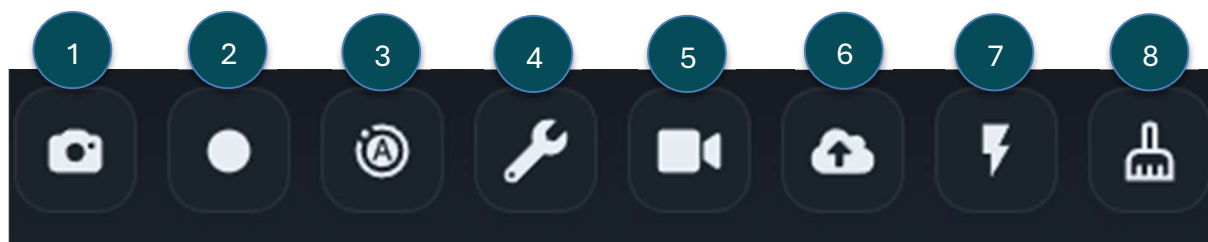


Figure 1 – Quick Commands.

Snapshot – button (1), with the camera icon, takes an instant photo that is saved on the SD card and made available for download.

Record Videoclip – button (2) starts local video clip recording. The clip duration is defined in the Options tab, in the Video Recording section.

Automatic Photos – button (3) starts the continuous acquisition cycle: it takes photos one after another until pressed again to stop the process.

Calibration / Autotune – pressing the wrench icon (4) starts an autotune procedure that adjusts exposure, gain and white balance. Autotune can be performed manually or automatically before each photo.

Streaming – button (5), with the video camera icon, starts real-time video transmission. Streaming parameters can be set in the settings.

Upload – the cloud icon with arrow (6) immediately uploads to the server the images present on the SD card according to the upload settings.

Flash test – the lightning icon (7) briefly turns on the LEDs to verify the lighting status.

Antifouling – the brush icon (8) activates the glass-cleaning system by operating the wiper.



2 Camera Tab

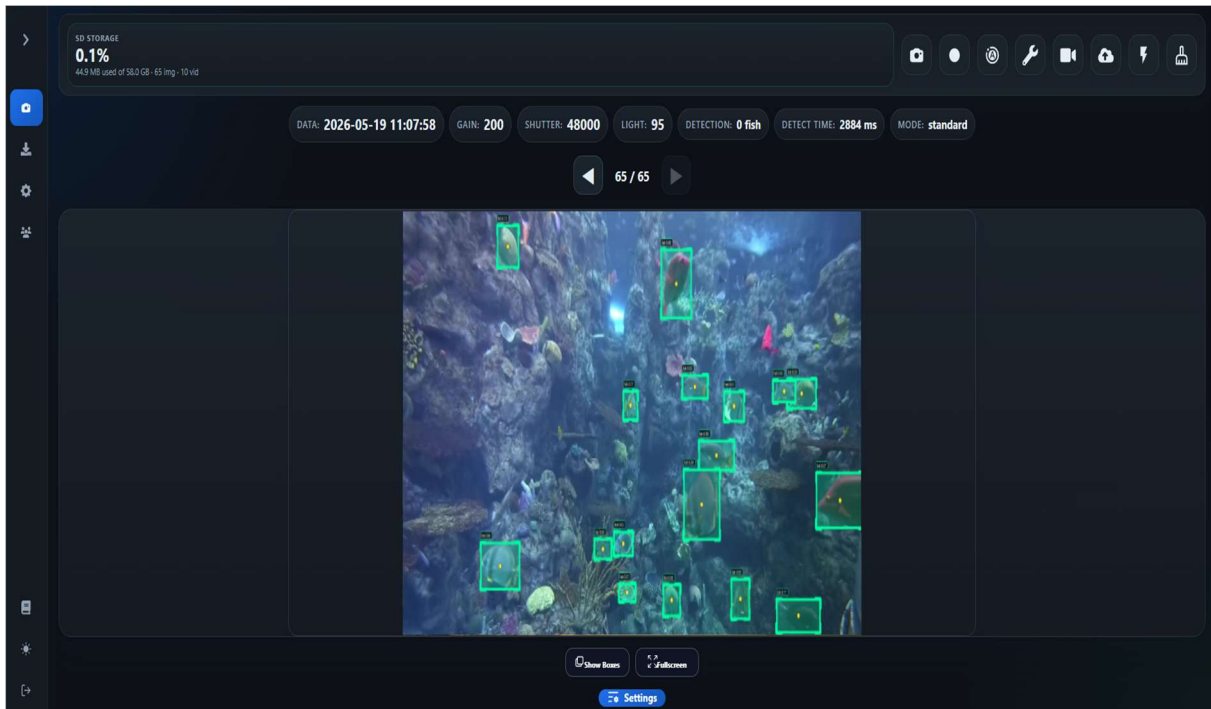


Figure 2 – Camera Tab.

The main “Camera” tab displays the preview of the last acquired image and provides the main operational functions. In the upper left area there is the SD Storage panel, which shows the progressive filling of the local memory: percentage of use, occupied space relative to total allocated space and number of images and videos present on the device.

Below the quick command bar, a status bar displays the parameters of the current photo: (A) shooting date/time, (B) gain, (C) exposure time/shutter, (D) lighting intensity, (E) number of fish detected, (F) detector inference time and (G) active mode. Symbol (H) shows the current position in the sequence and includes arrows for navigating through the stored photos.

At the bottom of the video panel there are three commands: (I) enables/disables display of the detector bounding boxes, (J) activates full-screen mode and (K) opens the settings window.



3 Camera Tab → Settings

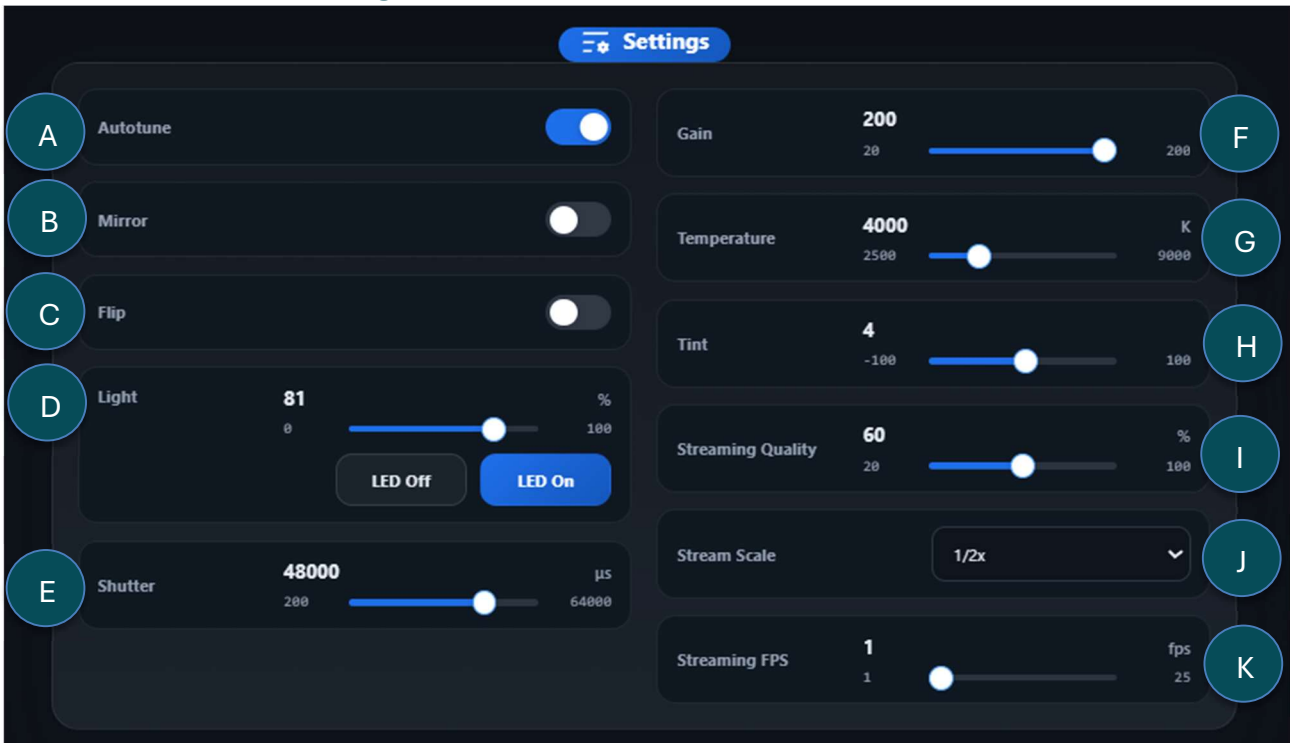


Figure 3 – Camera → Settings.

By accessing the settings menu, acquisition and streaming parameters can be adjusted manually. The panel items are:

- (A) – Autotune – enables/disables auto-calibration. If enabled, the system takes calibration images before each shot to optimize exposure, gain and balance.
- (B) – Mirror and (C) – Flip – allow the image to be flipped horizontally or vertically.
- (D) – LED ON/OFF and intensity adjustment – turns the LEDs on or off and adjusts their intensity using the slider.
- (E) – Shutter – controls exposure time in milliseconds.
- (F) – Gain – adjusts the sensor gain.
- (G) – Temperature – adjusts color temperature.
- (H) – Tint – adjusts the image tint.
- (I) – Quality – defines video streaming quality/bitrate.
- (J) – Stream Scale – allows the stream resolution to be selected, for example 1×, ½×, ¼×.
- (K) – Stream FPS – sets the streaming frame rate, useful for adapting to the available bandwidth.

By modifying these settings, the user can optimize acquisition based on scene lighting and connection speed.



4 Download Tab

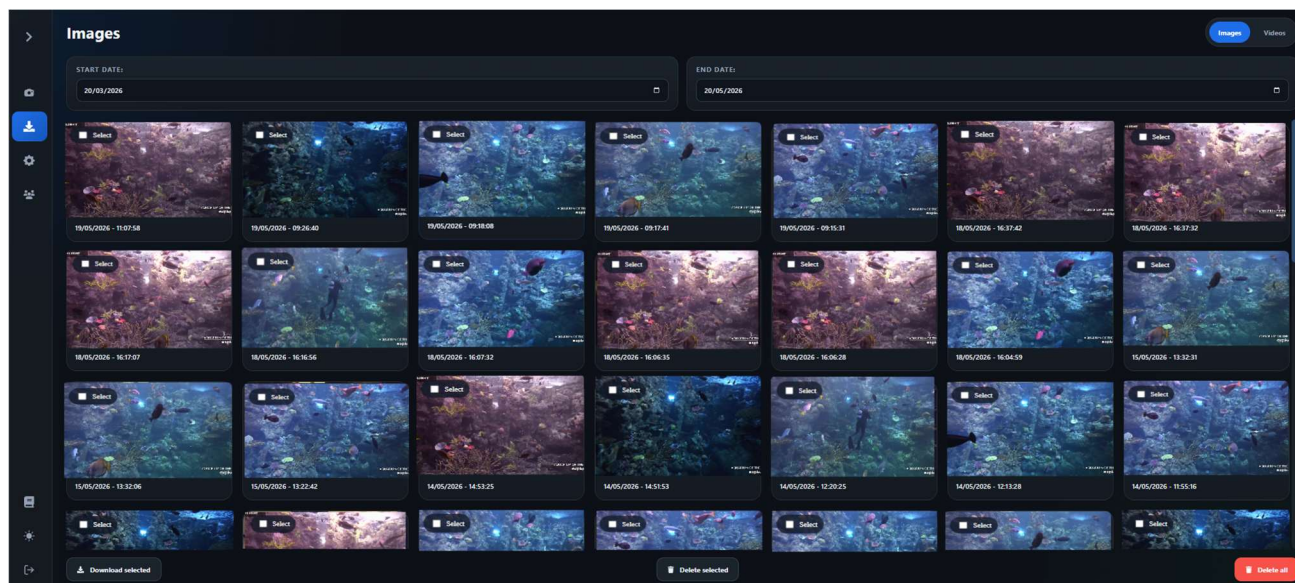


Figure 4 – Download Tab.

This section allows the contents recorded on the SD card to be viewed and managed. In the upper right area there is an Images / Videos selector, which allows switching between image visualization and local video clip visualization.

Date range – fields (A) and (B) allow images or videos to be filtered by start and end date.

Previews – thumbnails (C) show the contents with the timestamp overlaid. They can be selected by clicking the checkbox in the upper left corner.

Download selected – button (D) downloads the selected contents to the computer.

Delete selected – button (E) deletes the selected contents from memory.

Delete all – button (F) deletes all contents in the active view present on the device.

Thanks to the date filter, the Images / Videos selector and multiple selection, the user can quickly download or remove large batches of images or video clips.



5 Log Tab

The screenshot shows a web interface for the 'Log Tab'. At the top right, there is a date filter set to '2024-05-20'. Below the filter is a table with the following columns: timestamp, target, tag, comment, and response. The table contains 20 rows of log entries. On the left side of the interface, there is a vertical sidebar with several icons, including a date selector icon labeled 'Select Log:'.

timestamp	target	tag	comment	response
18:41:27	GUARD-1	SERIAL	modem disabled	OK
18:41:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?
18:41:27	GUARD-1	SERIAL	modem enabled	OK
18:40:27	GUARD-1	SERIAL	modem disabled	OK
18:40:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?
18:40:27	GUARD-1	SERIAL	modem enabled	OK
18:39:27	GUARD-1	SERIAL	modem disabled	OK
18:39:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?
18:39:27	GUARD-1	SERIAL	modem enabled	OK
18:38:27	GUARD-1	SERIAL	modem disabled	OK
18:38:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?
18:38:27	GUARD-1	SERIAL	modem enabled	OK
18:37:27	GUARD-1	SERIAL	modem disabled	OK
18:37:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?
18:37:27	GUARD-1	SERIAL	modem enabled	OK
18:36:27	GUARD-1	SERIAL	modem disabled	OK
18:36:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?
18:36:27	GUARD-1	SERIAL	modem enabled	OK
18:35:27	GUARD-1	SERIAL	modem disabled	OK
18:35:27	GUARD-1	CONFIG	fetchd from server	https://46.224.174.79/api/config/Camera2?

Figure 5 – Log Tab.

The “Log” page records all operations performed by the system, including acquisitions, uploads and system events. The main elements are:

Date filter – the menu on the right (A) allows the date for which logs are displayed to be selected.

Log table – table (B) shows, for each entry, the timestamp, the operation performed, the result and associated comments.

Log analysis helps diagnose any problems and verify the successful outcome of upload operations or cleaning cycles.

6 Theme Change and Logout buttons

In addition to the buttons described above, the dashboard includes a switch for changing between light and dark theme and a logout command to exit the current account.



7 Options Tab

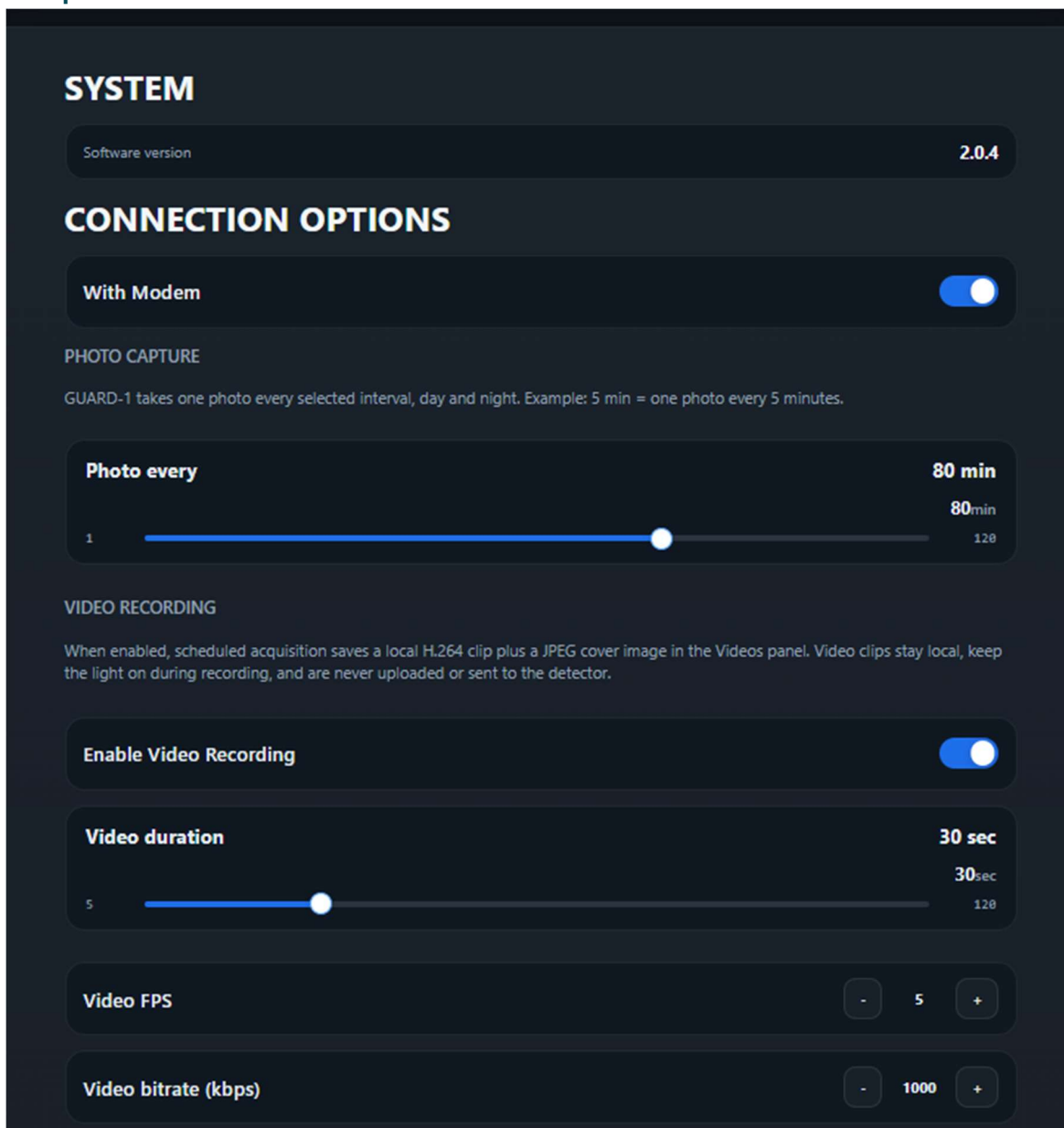


Figure 6 – Options Tab

System – the first section shows the software version installed on the device, useful for quickly verifying the update status of the system.

Connection Options – the With Modem switch indicates whether the device operates with the modem enabled and therefore with surface communication/upload logic.

Photo Capture – the Photo every slider sets the time interval between two scheduled photo acquisitions. The value is expressed in minutes and determines the shooting frequency during the active acquisition window.

Video Recording – the Enable Video Recording switch enables or disables local video recording. When the function is active, the system can save local video clips in addition to images.

Video duration – defines the duration of each recorded video clip. The configured value is also used by the Record Videoclip quick command.

Video FPS – sets the frame rate of the video clips, allowing recording to be adapted to mission requirements and available resources.

Video bitrate (kbps) – sets the video bitrate, influencing visual quality, file size and local memory usage.

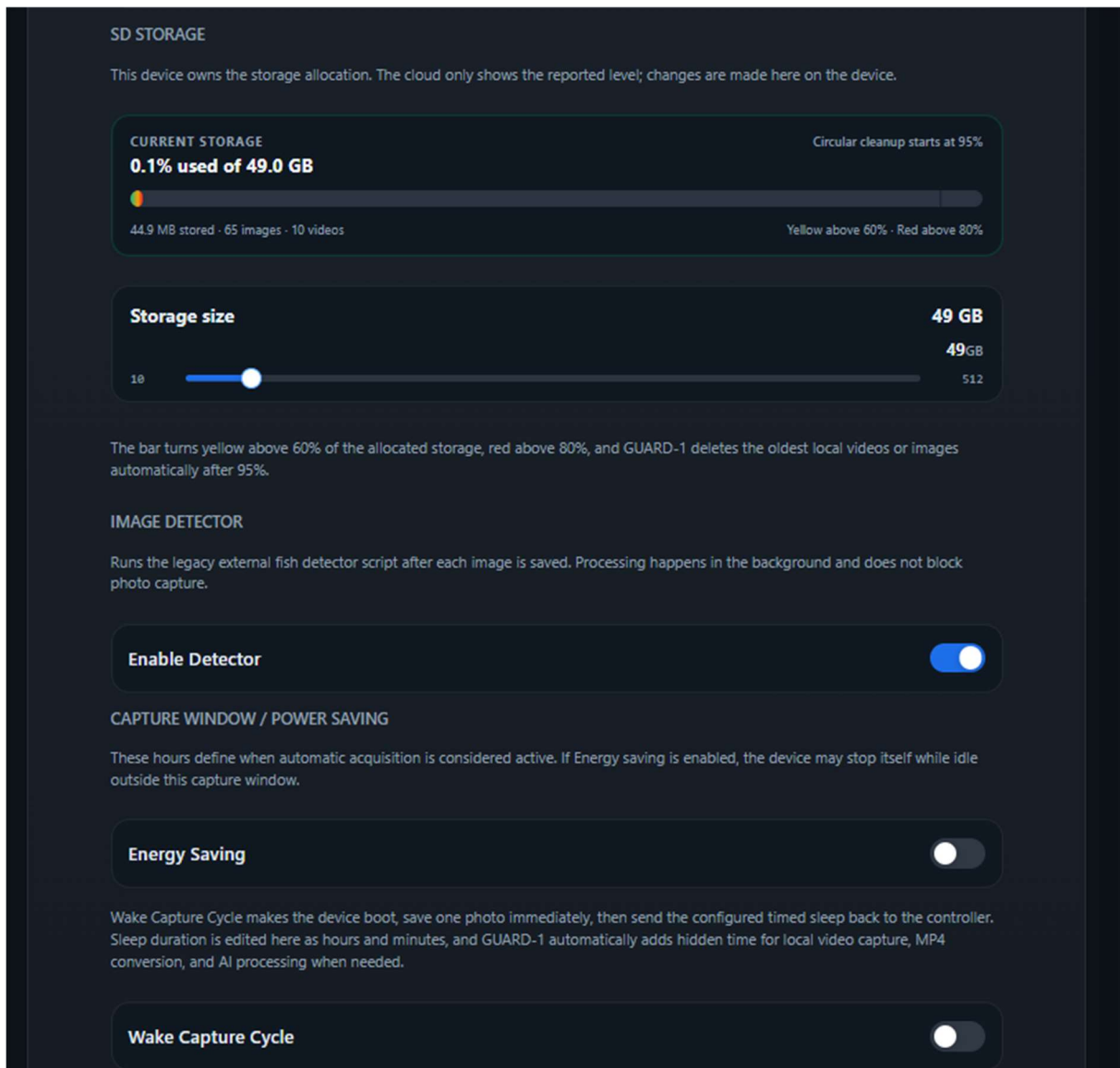


Figure 7 – Options Tab

SD Storage – this section graphically reproduces the status of the local memory, indicating percentage of use, occupied space, number of saved images and videos, and warning thresholds.

The second part of the Options page contains advanced settings related to storage, detector, energy saving, upload, camera, network, cloud and controlled shutdown of the device:

Storage size – allows the size of the local space allocated for images and videos to be set. The status bar turns yellow above 60% and red above 80% of the allocated memory.

Circular cleanup – when the safety threshold of 95% of the allocated storage is reached, Guard-1 automatically deletes the oldest local files through circular deletion, keeping space available for new acquisitions.

Image Detector – the Enable Detector switch enables or disables the fish detection module. If disabled, the system continues to acquire images but does not perform inference.

Capture Window / Power Saving – this section defines automatic acquisition and energy saving conditions. Energy Saving enables low-power mode between one operational phase and the next.

Wake Capture Cycle – enables the wake-up, acquisition and return-to-sleep cycle, allowing the device to start, save a photo and resume the low-power state according to the configured duration.



Sleep duration 0 h 30 min

1800 s sent to the MCU timed sleep command

HOURS: - 0 +

MINUTES: - 30 +

Capture start hour - 11 +

Capture stop hour - 12 +

MODEM / UPLOAD WINDOW

These hours only control when the modem uploads stored photos. They do not stop photo capture.

Upload after each acquisition

Upload any time

Upload window start - 9 +

Upload window stop - 11 +

Upload days loop - 1 +

Sleep duration – indicates the configured sleep duration, expressed in hours and minutes.

Capture start hour and Capture stop hour – define the start and end time of the automatic acquisition window.

Modem / Upload Window – this section controls when the modem uploads stored photos to the cloud. Upload settings do not stop image capture.

Upload after each acquisition – if enabled, it requests automatic upload after each acquisition when the connection is available.

Upload any time – if enabled, it allows upload without time-window constraints. If disabled, the Upload window start, Upload window stop and Upload days loop settings become active.



CAMERA SETTINGS

Address used to reach the camera backend

Camera address

http://127.0.0.1:8080

Save

Camera sensor compatibility

Use Auto when the driver exposes the sensor name correctly. If the device boots with the wrong preset on older hardware, force IMX392 or IMX568 here, save, then restart or power-cycle the unit.

Sensor mode

Auto detect

Save Sensor

Detected sensor: **imx568**

LAN NETWORK

Configure the wired interface without leaving the local UI

Applying LAN changes may briefly disconnect the current session.

Network manager: **NetworkManager**

Interface

eth0

IPv4 mode

Static IPv4

IPv4 address

192.168.0.197

Prefix length

24

Gateway

192.168.0.1

DNS servers

8.8.8.8

Save LAN Settings

Camera Settings – allows the address used to reach the camera backend to be configured and the sensor mode to be selected. Auto detect mode allows the system to automatically recognize the installed sensor; if necessary, a specific preset can be forced.

LAN Network – allows the local Ethernet interface to be configured without leaving the web interface, by setting interface, IPv4 mode, IP address, prefix length, gateway and DNS servers.



CLOUD CONNECTION

Upload photos to the remote cloud server

Server URL

https://46.224.174.79

Device ID

Camera2

Upload Token

05c4d536caca834c6949df2e9353c07845dd34c925d68b94b29f09c585418064

Token Expires

2027-01-01T00:00:00

Save Cloud Settings

DEVICE POWER

Admin-only shutdown

The device will stage the MCU timed wake using the configured sleep duration, then request an orderly system poweroff. Confirm carefully: the current browser session will disconnect.

Shut Down Device

Cloud Connection – contains the parameters for automatic upload to the remote server: Server URL, Device ID, Upload Token and token expiration date. The Save Cloud Settings button saves the cloud connection changes.

Device Power – allows authorized users to perform a controlled shutdown of the device through the Shut Down Device command. The operation must be confirmed, as the browser session is interrupted.

8 Users Tab

The screenshot shows the 'Local Users' management interface. At the top, there is a header 'Local Users' with a sub-header 'Admins can manage access to the GUARD-1 local interface.' Below this, there is a form for creating a new user. The form has three input fields: 'New Username', 'Temporary Password', and 'Role'. To the right of the 'Role' field is a 'Create user' button. Below the form, there is a table with one row for an existing user named 'admin'. The table has columns for 'Username', 'Role', and 'Actions'. The 'Role' column shows 'Admin' and the 'Actions' column shows a 'Cancel' button. Below the table, there is a 'Reset password' field with a sub-label 'Leave blank to keep current'. At the bottom of the form, there is a 'Save' button and a 'Delete' button.

Figure 8 – Users Tab.

In “Users”, an administrator can manage dashboard accounts:

New Username – field (A) for entering the new user name.

Temporary Password – field (B) for setting a temporary password that the user will have to change at first login.

Role – drop-down menu (C) for assigning the role, either admin or viewer.

Create User – button (D) creates the new account.

User list – row (E) shows an existing user, for example admin.

Role, existing user – menu (F) for changing the role of the selected user.

Reset Password – field (G) for entering a new password for the selected user.

Actions – buttons (H) for saving changes or deleting the user.