



SHADOW BREAKER

User guide

This manual describes how to use the camera's web interface: viewing the video stream, choosing the language, network configuration, "Tactical Settings" image adjustments and "Vision+" GPU processing. Every section of the interface is illustrated and each of its settings detailed, with the ranges of adjustable values. No knowledge of the low-level commands is required: everything is controlled from a browser.

Document	User manual
Version	2.1 — July 2026
Product	Shadow Breaker
Audience	User / operator

1. Overview

The camera continuously broadcasts an **RTSP H.264** video stream for your recorders and players, and offers a **web interface** organized into sections: **Video Stream**, **Network Configuration** and **Tactical Settings** (including Vision+ GPU processing).

› Night / low-light vision	› Live adjustments	› Vision+ GPU processing	› Standard RTSP stream
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Getting started

— Étape 1 — Power on the camera

Power the board and connect the network cable. The system starts acquisition, the RTSP stream and the web interface automatically.

Default IP addressing of the three interfaces:

Eth0 -> DHCP (dynamic): the address is assigned by your modem/router.

Eth1 —> static: **192.168.1.100**, gateway **192.168.1.1**.

Eth2 —> static: **192.168.2.10**, gateway **192.168.2.1**, typically the connection to the router's subnet.

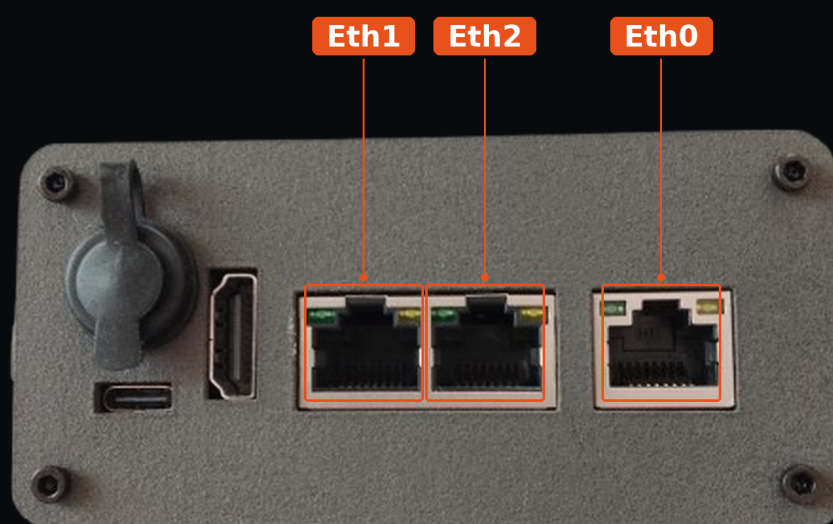
— Étape 2 — Open the web interface

In a browser, go to **http://<ip>:5000** and log in (**admin / nightvector**). The IP address is assigned by your modem via DHCP by default.

— Étape 3 — View the video stream

Open your RTSP player (VLC, fplay, NVR) at the URL shown in the "Video Stream" section of the interface.

Housing connectors



Connector panel — from left to right: Eth1, Eth2 and Eth0

2. Interface language

The interface is available in **five languages**. A **language selector** is shown at the top of the interface, as a bar of flags. Click the flag of the desired language: the entire interface (labels, buttons and messages) is immediately reloaded in that language. The video stream and the camera settings are not affected by this change.



Language selector — bar of flags at the top of the interface

Code	Language	Note
FR	French	Default language on first startup.
EN	English	English.
ES	Spanish	Español.
PT	Portuguese	Português.
ZH	Chinese	Simplified Chinese.

The language choice is saved and automatically reapplied on subsequent connections. It is specific to the web interface. It changes neither the network interface names (Eth0/Eth1/Eth2), nor the technical URLs, nor the content of the RTSP stream.

3. “Video Stream” section

At the top of the interface, this section shows the characteristics of the broadcast stream and its RTSP address. This information is **read-only**: it describes the stream as it is emitted.

VIDEO STREAM

RTSP · H.264 · zerolatency

RESOLUTION
1920×1080

FORMAT
UYVY

BITRATE
4 000 kbps

FRAME RATE
60 fps

rtsp://192.168.1.100:8554/stream

Copy

“Video Stream” section — stream characteristics and RTSP URL

Field	Displayed value	Meaning
Resolution	1920×1080	Definition of the broadcast H.264 stream (Full HD).
Format	UYVY	YUV422 pixel format at the camera ISP output.
Bitrate	4 000 kbps	Bit rate of the hardware H.264 encoding (4 Mbps).
Frame rate	60 fps	Frame rate of the stream.
RTSP URL	rtsp://:8554/stream	Address to open in your player / NVR. The “Copy” button places the URL on the clipboard.

The “RTSP · H.264 · zerolatency” indicator at the top right is a reminder of the protocol, codec and latency profile used. In VLC: Media > Open Network Stream > paste the URL.

4. “Network Configuration” section

This section determines how the camera obtains its IP address. The “Dynamic/Static IP” indicator at the top right is a reminder of the currently active mode.

NETWORK CONFIGURATION

IP Dyn./Static

IP assignment mode: Automatic (DHCP)

APPLY CONFIGURATION

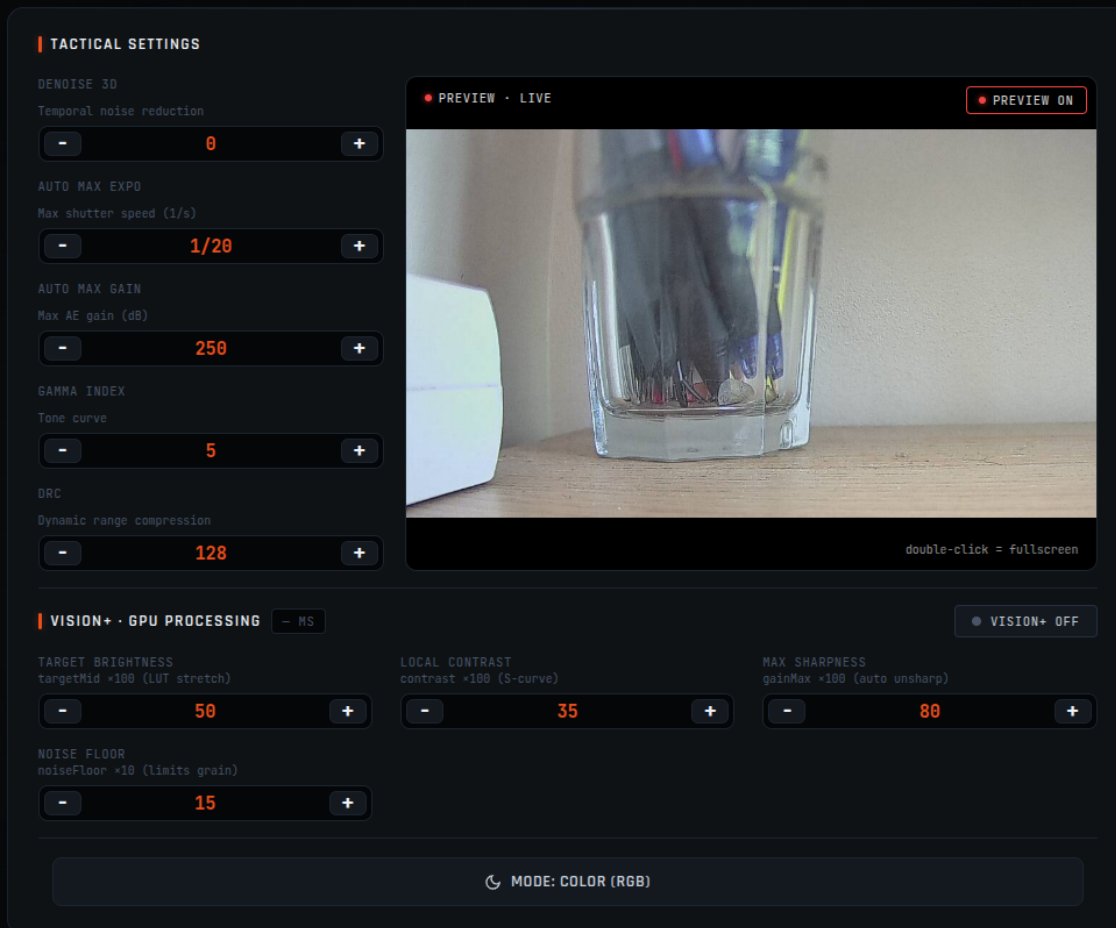
“Network Configuration” section — choice of IP addressing mode

Element	Function
IP acquisition mode	Drop-down list: “Automatic (DHCP)” the address is assigned by your modem/router, or “Static” you enter IP, gateway, prefix and DNS. The entry fields appear when Static mode is selected.
Apply configuration	Sends the new network configuration to the camera. The change takes effect immediately.

After an address change, the connection to the interface drops: reconnect at the new address. If in doubt, stay on DHCP and find the assigned address on your modem/router.

5. “Tactical Settings” section

This is the image adjustment section. On the left, the **numeric controls**: each setting is changed with the - / + buttons or by clicking the value to enter it directly. On the right, the **real-time video preview** to judge immediately the effect of each change. Any modification is sent instantly to the camera, without interrupting the stream.



“Tactical Settings” section with the “Vision+ · GPU Processing” panel and the Day/Night mode button

Camera settings (ISP)

These five settings act on the camera's built-in ISP.

Setting	Range	Role	Tip
Denoise 3D	0 - 255	Temporal noise reduction (between successive frames). Very effective at night, but can leave a trail on fast-moving objects.	Raise at night (≈130), 0 in daytime
Auto Max Expo	1/15 - 1/10000	Maximum shutter speed the automatic exposure can reach, in fractions of a second. Slower (1/15) = brighter image but more motion blur.	1/30 for general use, 1/60+ for fast subjects
Auto Max Gain	0 - 500	Maximum amplification allowed in automatic exposure (ISP units). Higher = brighter image but more grain.	≈80 in daytime, up to 420 at night
Gamma Index	1 - 10	Tone curve: distribution between light and dark areas. A lower index brightens the shadows.	5 in daytime, 3 at night

DRC	0 - 255	Dynamic range compression: rebalances the very light and very dark areas of a single image (backlight).	Raise in daytime (≈ 210), lower at night
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Preview and focus

Element	Function
PREVIEW · LIVE window	Low-latency stream ($\approx 100\text{--}300$ ms), distinct from the RTSP stream. Ideal for adjusting sharpness and the lens's optical zoom.
PREVIEW ON/OFF button	Enables or disables the preview. Disabling it frees up bandwidth; the RTSP stream is never affected.
Double-click on the image	Switches the preview to full screen for precise focusing. A single click returns to the interface.

The preview is for adjustment; it is not intended for recording. To record, always use the RTSP stream.

6. “Vision+ · GPU Processing” panel

Vision+ is an additional image-processing stage, run in real time on the GPU, downstream of the camera. It improves low-light visibility: adaptive brightness stretching, local contrast and detail enhancement with noise control. The **VISION+ ON/OFF** button (top right of the panel) enables or disables the entire processing; the “— **MS**” indicator shows the GPU processing time per frame when Vision+ is active.

Setting	Range	Role	Tip
Target Brightness	10 - 90	Target average brightness after histogram stretching (targetMid ×100). This is the main lever for brightening a dark scene.	≈45 in daytime, 60–70 at night
Local Contrast	0 - 100	Strength of the S-curve applied around the midpoint (contrast ×100). Does not affect average brightness, only the tonal distribution.	≈35 in daytime, lower at night
Max Sharpness	0 - 200	Maximum detail amplification of the adaptive unsharp mask (gainMax ×100). Higher = more sharpness but more grain.	Lower (30–50) in very low light
Noise Floor	0 - 100	Threshold below which detail is not amplified (noiseFloor ×10). Protects dark areas from grain.	Raise (20–30) to limit grain

The values shown in the interface are integer values (×100 or ×10) of the GPU pipeline's internal parameters. Adjust in small steps while watching the preview: raise “Target Brightness” to brighten, then offset the grain with “Noise Floor” and “Max Sharpness”.

7. “Color (RGB) / IR (B&W)” mode button

The large button at the bottom of the interface switches the camera between the two imaging modes. The label always shows the **currently active mode**.

Mode	Behavior
Color (RGB)	Color image for daytime use or a well-lit scene. The IR-CUT filter is in place.
IR (B&W)	Switch to black & white with infrared sensitivity for nighttime use. The IR-CUT filter is removed, low-light sensitivity is maximal.

A mode change is usually accompanied by an adjustment of the settings: when switching to IR (B&W), raise “Auto Max Gain” and “Denoise 3D”, lengthen “Auto Max Expo” (e.g. 1/20) and enable Vision+ with a higher “Target Brightness”.

8. Recommended settings by condition

Camera settings (ISP)

Condition	Mode	Max expo	Max gain	Gamma	Denoise 3D
Day (full sun)	Color	1/60	80	5	0
Indoor / cloudy	Color	1/30	150	5	40
Dusk	Color	1/30	250	4	90
Night (low light)	IR (B&W)	1/20	420	3	130

Vision+ (GPU processing)

Condition	Vision+	Target bright.	Contrast	Sharpness	Floor
Day (full sun)	OFF	—	—	—	—
Indoor / cloudy	ON	45	35	80	15
Dusk	ON	55	28	60	20
Night (low light)	ON	65	20	40	28

Indicative starting points. Adjust while watching the preview: raise gradually to brighten, reduce if the grain or trailing become bothersome.

9. Stream and service access

Service	Address	Use
Web interface	http://:5000	Image & network settings
RTSP stream	rtsp://:8554/stream	Player / NVR (to record)
MJPEG preview	http://:5000/preview.mjpg	Focusing (built into the UI)

10. Troubleshooting

Symptom	What to check
No image / RTSP stream missing	Camera power and MIPI cable; wait ~10 s after power-on; reload the page.
Black preview but RTSP OK	Check that the PREVIEW button is ON; reload the page — the preview reconnects automatically.
Image too dark at night	Switch to IR (B&W) mode; raise “Auto Max Gain” and lengthen “Auto Max Expo”; enable Vision+ and raise “Target Brightness”.
Noisy / grainy image	Lower “Auto Max Gain” and “Max Sharpness”; raise “Denoise 3D” and “Noise Floor”.
Trailing on moving objects	Reduce “Denoise 3D” and shorten “Auto Max Expo” (e.g. 1/60).
High GPU latency (MS indicator)	Reduce “Max Sharpness” or temporarily disable Vision+ to check.
Interface in the wrong language	Click the desired flag in the language selector at the top of the interface (see § 2).

No more access after a network change

Reconnect on the new IP; if lost, revert to DHCP on the modem/router side.