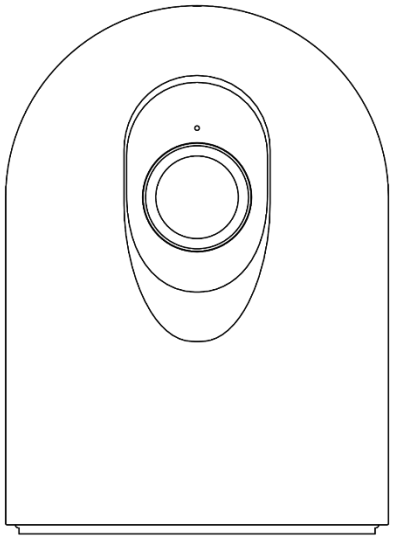
NIGHTWAVE® DIGITAL

User Guide



SIONYX

1 WARNINGS / DISCLAIMERS

By using this product, you acknowledge and agree to follow all product instructions, safety warnings, privacy policies, and documentation referenced in this manual.

GENERAL WARNING

Failure to properly set up, use and maintain this product can increase the risk of serious injury, death, property damage, or damage to the product or accessories. Always be aware of your surroundings when using SIONYX products.

1. Product shall be used in accordance with all manufacturing instructions and limits.
2. Read all the documentation provided and keep it for future reference.
3. Follow all instructions and heed all warnings.
4. Properly install, use, and maintain all cables as per specifications.
5. Only use attachments and accessories specified and/or approved by SIONYX.
6. SIONYX Nightwave is designed to be serviced only by qualified service personnel.

SAFETY WARNING

Failure to take the following precautions can result in serious injury or death from electric shock, fire or damage to your camera or accessories:

1. Do not drop, crush, bend, puncture, disassemble, shred or incinerate the camera or accessories.
2. Do not insert foreign objects into any openings.
3. Do not use the camera if damaged.
4. Do not dry with external heat sources.
5. Keep away from open flame sources.
6. Handle broken lens glass with care.
7. Keep out of reach of children.

ENVIRONMENTAL GUIDANCE

Extreme low or high temperatures may affect camera performance. For example, if the device is covered in ice, or if internal high temperature limits are exceeded, functionality may be limited. Abide by local laws, including privacy regulations and maritime safety rules when using this product.

ENVIRONMENTAL ELECTROMAGNETIC NOTICE

CAUTION: This product may emit radio frequency energy that can interfere with marine radio or navigation equipment. Ensure proper installation and separation distance from such devices. Power off the camera when operation is restricted or when interference may occur.

COMPASS SAFE DISTANCE

SIONYX NIGHTWAVE DIGITAL devices may affect compass readings due to electromagnetic interference. Maintain the minimum distance from your compass as specified in the installation manual.

FCC & IC COMPLIANCE STATEMENTS

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. End users must follow the specific operating instructions to satisfy RF exposure compliance.

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 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.

Class B Digital Device Notice

This equipment has been tested and found to comply with the limits for a Class B digital, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

IC Regulations (Canada)

This device complies with Innovation, Science and Economic Development Canada’s license exempt RSS standards. Operation is subject to the following two conditions: (1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation. This Class B digital apparatus complies with Canadian ICES-003.

Déclaration d’exposition aux RF – Canada

L’équipement est conforme aux limites d’exposition aux RF établies pour un

environnement non contrôlé. L’antenne utilisée pour ce transmetteur ne doit pas être située au même endroit qu’une autre antenne ou utilisée en conjonction avec une autre antenne ou transmetteur.

L’émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d’ISDE Canada applicables.
L’exploitation est autorisée aux deux conditions suivantes :
(1) L’appareil ne doit pas produire de brouillage, et
(2) L’appareil doit accepter tout brouillage, y compris celui pouvant nuire à son fonctionnement.

2 LIMITED WARRANTY

This limited warranty gives you specific legal rights and you may also have other rights, which vary from state to state. For the full details of the limited warranty, navigate to: https://www.sionyx.com/pages/warranty-and-return-policy.

SIONYX, LLC ("SIONYX" or "we") warrants to the original end-user/purchaser ("you") of the product (referred to in this section as the "Goods") that for a period of two (2) years from date of purchase of the Goods ("Warranty Period") such Goods will be free from material defects in material and workmanship. SIONYX warrants to you that accessories included with the Goods and Accessory Kits sold separately from the Goods under a distinct product SKU will be free from material defects in material and workmanship for a period of ninety (90) days from date of purchase.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Other limitations. The limited warranty does not apply to consumable parts, such as batteries or protective coatings that are designed to diminish over time, unless failure has occurred due to a defect in materials or workmanship; (ii) to cosmetic damage, including but not limited to scratches (including to lenses), dents and broken plastic on ports; (iii) to damage caused by use with another product; (iv) to damage caused by accident, abuse, misuse, tampering, liquid (beyond the Good's certification), grit, impact, fire, lack of proper care or maintenance, earthquake, or other external cause; (v) to damage caused by operating the Goods outside SIONYX's published guidelines; (vi) to damage caused by unauthorized parts or by service (including upgrades and expansions) performed by anyone who is not a representative of SIONYX; (vii) to Goods that have been modified to alter functionality or capability without the written permission of SIONYX; (viii) to defects caused by normal wear and tear or otherwise due to the normal aging of the Goods; or (ix) if any serial number has been removed or defaced from the Goods.

WARRANTY CLAIMS

a. All claims under the limited warranty will require a Return Material Authorization (RMA) number. To discuss a warranty claim and acquire an RMA number, please contact SIONYX Customer

Service: support@SIONYX.com. You will be required to furnish a sales receipt/proof of purchase to indicate date of purchase, amount paid and place of purchase.

b. If your warranty claim is received within the Warranty Period, SIONYX Customer Service will conduct a remote evaluation to determine whether the failure is covered under the limited warranty
c. If SIONYX Customer Service determines that the failure is covered under the limited warranty, SIONYX will, at its sole discretion, to either:
    - repair or replace the Goods; or
    - repair or replace the defective parts; or
    - credit or refund the purchase price of the Goods.

RETURNS AND EXCHANGES

30-Day No Questions Asked returns and exchanges. You may return the Goods for a full refund of the product price, or exchange the Goods for another SIONYX product, as long as you obtain an RMA within thirty (30) days of receipt of the Goods. Returns initiated after thirty (30) days of receipt of the Goods are subject to a 15% restocking fee. You are responsible for paying all return shipping fees.

Returns of defective Goods will be processed as a Warranty Claim and subject to SIONYX's Limited Warranty.

You can obtain an RMA number by contacting SIONYX Customer Service support@sionyx.com or phone +1 866-827-8237.

3 CUSTOMER SUPPORT

For full regulatory and safety information and instructions visit SIONYX.com/support.

To submit a ticket to customer support:

SIONYX.com/contact.

To contact support via e-mail:

support@SIONYX.com

To speak directly to customer support, call:

+1 866-827-8237

(Please leave a message outside of Eastern US business hours.)

Support Contact customer support by filling out a support ticket, calling us directly or scheduling a time for us to call you, or to ask a “frequently asked question.” Scan the QR code or go to support.sionyx.com	
Registration Register your device and stay up to date by visiting the URL or scanning the QR code. Sionyx.com/register	
Update To keep your device up to date and download NIGHTWAVE DIGITAL Firmware, scan QR code or go to sionyx.com/pages/nightwave-digital-firmware	

4 Revision History

Revision	Date	Comments
A	6/25/2025	Initial release

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6 Welcome to NIGHTWAVE DIGITAL

6.1 Purpose of Document

The purpose of this document is to provide clear and comprehensive instructions on how to use the NIGHTWAVE DIGITAL device and navigate the system once it is installed properly (please refer to the NIGHTWAVE Digital Installation Guide). This User Guide will provide clear descriptions of the different functions and capabilities of this device and step-by-step instructions on how to operate and use this device.

6.2 Overview

NIGHTWAVE DIGITAL delivers unmatched clarity—even in moonless starlight—thanks to the enhanced IP (PoE) digital connectivity and advanced Black Silicon CMOS sensor, outshining traditional thermal cameras.



Figure 1: Contrast of Night View and MFD Demonstrating NIGHTWAVE DIGITAL Night View

NIGHTWAVE DIGITAL offers higher resolution, greater reliability, and seamless integration with networked MFD systems. With flexible mounting options and an intuitive setup, it’s built for captains who want safety without complexity.

Less guesswork, more peace of mind. Whether cruising, fishing, or docking after dark, NIGHTWAVE DIGITAL helps you stay safe—and enjoy every moment on the water. We are committed to enhancing visibility, safety and performance in low-light environments, empowering professionals and adventurers with cutting-edge digital night vision technology.



Figure 2: (LEFT) NIGHTWAVE DIGITAL low-light view; (RIGHT) NIGHTWAVE DIGITAL thermal view

6.3 Features

The camera is powered by the IP67 PoE injector (PoE output voltage is 48 V DC). The PoE is powered from the boat’s battery, and it has an input range from 9 to 36 V DC.

- Seamless integration with all major brand MFDs.
- Network (PoE) compatibility.
- Engineered for large screens (higher resolution).
- Connectivity with image settings is available via the SIONYX mobile app (Wi-Fi) or web (LAN to a computer or MFD).
- One camera to multiple MFDs or multiple cameras to one MFD.

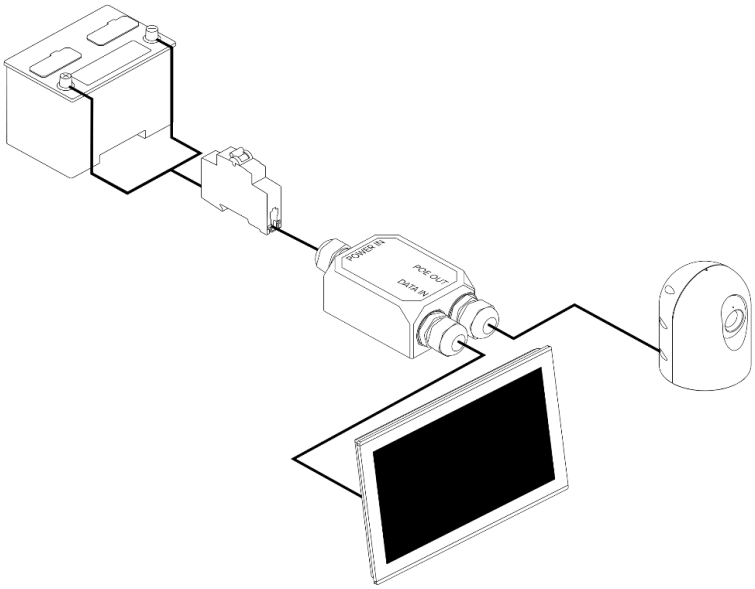


Figure 3: NIGHTWAVE Wiring Diagram

6.4 Cables and Connectors

- Power cable for the PoE injector - suggested 18 AWG/2 duplex DC wire.

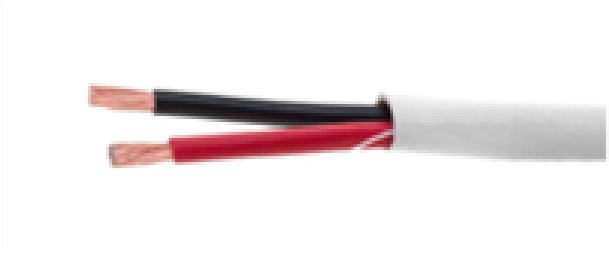


Figure 4: 18 AWG/2 duplex DC wire

- Ethernet is a CAT5e cable Shielded UTP/SFTP.



Figure 5: CAT5e cable shielded UTP/SFTP

6.5 Installation Notes

When installing the PoE injector into its own breaker or a panel switch, use a 2 A fuse.

Check the network and power requirements of your display. A PoE isolation coupler is required with some Garmin and other displays.

6.6 Technical Specifications

Name	Part Number
NIGHTWAVE DIGITAL Black	UPC-A 811251020613 (SKU C018900)
NIGHTWAVE DIGITAL White	UPC-A 811251020606 (SKU C018800)
Detection Range	
Man-sized object detection	300 M / 984 FT
Marine vessel detection	4.02 KM / 2.5 miles
Low-Light Sensor	
Image sensor	COLOR XQE1350 BSI CMOS
Resolution	1280 X 1024
Frame Rate	Up to 30Hz
Minimum Illumination	MOONLESS STARLIGHT (<0.001 LUX)
Focus Range	Fixed 10M to infinity
Horizontal Field of View	44°
Day & Night	Auto Day/Night Filter
Visible Spectrum	400-1200 nm
Lens	16mm F/1.4
System	
Power	PoE [37–57 V DC / TYP 48 V DC]
Consumption	5W NOMINAL
Image Settings	Brightness, Contrast, Sharpness, Saturation, Day & Night, Orientation, Noise Reduction
Mobile App	iOS & Android Wi-Fi + Bluetooth Software Updates Image Settings
IP Video Out	H264 MAIN PROFILE MAIN: 1280 X 1024 / SUB: 640 X 512 30 FPS, 10 GOP

6.7 Mechanical Specifications

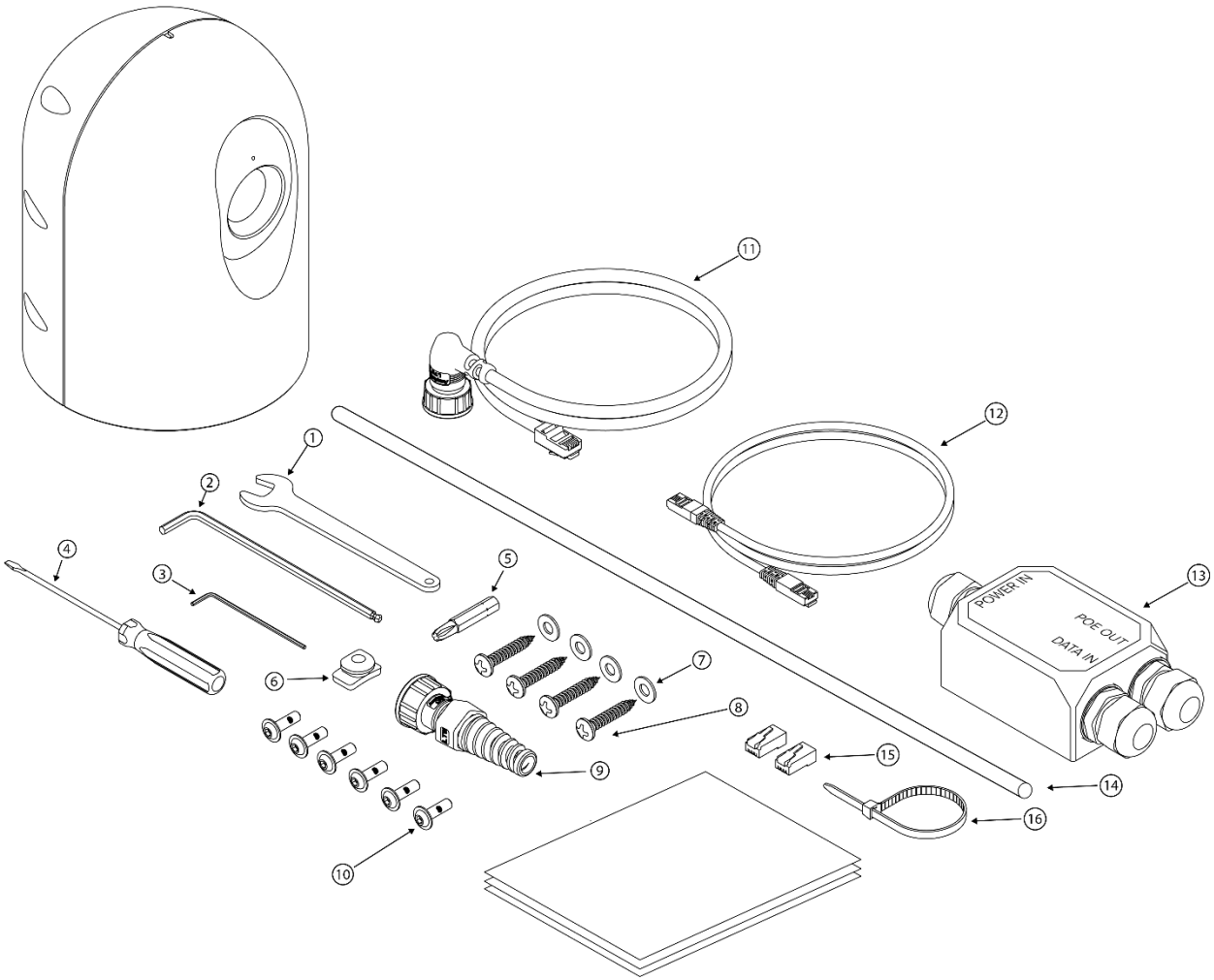
Dimensions	Width: 127 mm / 5 in X Height: 175 mm / 6.9 in
Weight	1 kg (2.2 lbs.)
Material	UV Resistant Polycarbonate
Installation options	Ball upright or Ball down Four bolt pattern into Fiberglass/Wood/Metal

	Four ¼ -20 Pattern into base

6.8 Environmental Specifications

Operating Temperature	-20°C TO +50°C
Storage Temperature	-30°C TO +70°C
Water Ingress	IP67

6.9 What's in the box?



Item	Description	Qty	Notes
1	open end wrench	1	7/16-inch
2	hex key (large)	1	3/16-inch
3	hex key (small)	1	2 mm
4	screwdriver	1	3/32-inch
5	#3 Phillips bit	1	1/4-inch hex shank
6	Ethernet cable grommet (side exit)	1	
7	#12 flat washer	4	#12 Flat Washer, 0.234" ID x 0.50" OD x 0.025–0.055" Thick, 316 SS
8	#12 mounting screw	4	#12 x 1.25" Phillips Pan Head Thread-Forming Screw, Type AB, 316 Stainless Steel
9	RJ45 DIY camera connector	1	AMPHENOL RCP-00AMMA-SLM7001
10	cover screw	6	M3x0.5x10mm cover screw
11	Camera cable	32 ft (10m)	AMPHENOL RCP5SM-SPG06M-SR7B10
12	Network ethernet cable	5 ft (1.5m)	Cat5e Shielded UTP/STP
13	PoE injector	1	IP67 , 9-36 V DC input , 48 V DC output
14	Power cable 18 AWG/2	5 ft (1.5m)	18 AWG Tinned Pure Copper Sheathed Double conductor Marine Wire
15	RJ45 terminals	2	CAT5e Shield
16	Cable zip tie	1	
17	Camera	1	NIGHTWAVE DIGITAL CRV-800D
18	Documentation	1	Mounting template, Safety warning, Quick install guide, lens removal warning

7 How to Connect the Camera

Nightwave Digital is a network camera for boat navigation. It provides video over IP, compatible with most multi-functional display brands (i.e. Garmin, Simrad, Raymarine). For additional settings, the camera offers a web-based “Tool panel”, which is accessible from the display. The camera is also compatible with computers and PC based tablets.

This section explains how to connect to different devices; using a most common example, since there are multiple different network cases that depend on the final boat network infrastructure.

7.1 Connect the power and the network

1. Connect the camera’s cable to the PoE injector (PoE out).
2. Connect the PoE network (DATA IN) to your computer/MFD or to the same physical network the computer/MFD is connected to.
    a. Most Garmin displays require a Garmin PoE isolation coupler between DATA IN and the Garmin MFD.
3. Power up the PoE injector with a power supply from 9 V DC to 36 V DC.

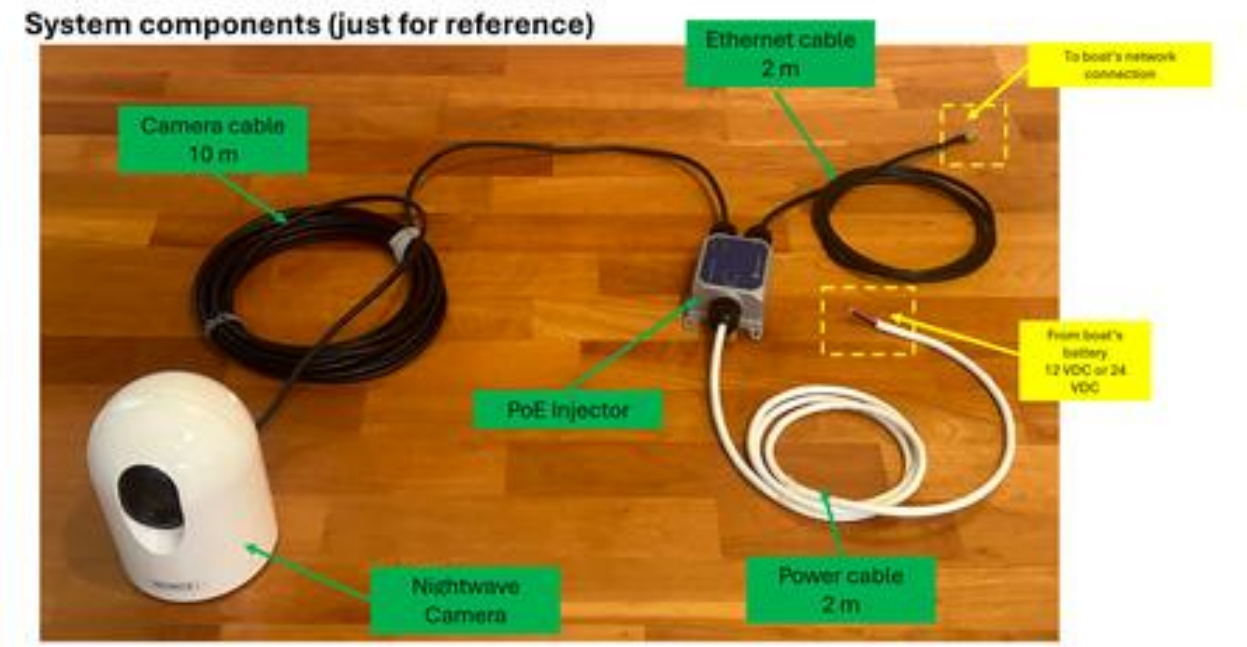


Figure 6: System Components to Connect NIGHTWWAVE to Computer

7.2 Camera Boot Sequence

1. The camera has an illuminated LED. When the camera is booting, the LED will be purple.
2. When the camera has booted up, the LED will start blinking red until it obtains an IP address.
3. As soon as the camera gets an IP address, the LED will stay solid red.
4. NIGHTWAVE DIGITAL is a DHCP camera. If the camera is directly connected to a Windows PC, both devices will handshake to get an IP address and a working network (this is called ZEROCONF).
5. When the camera has an IP address, it is ready to be used.

7.3 Camera Discovery

7.3.1 Using Garmin MFD (example model: GPSMAP 943)

Garmin GPSMAP has a legacy RJ45 network connector in the back. NIGHTWAVE's PoE injector output can be connected to it (*). The GPSMAP includes a built-in DHCP server that assigns an IP address to the camera for proper operation.

GARMIN suggests using a PoE isolation coupler (Garmin part number 010-10580-10) to filter PoE power and to prevent unwanted power reaching the GPSMAP through the network connector.

Once the camera receives an IP address, the status LED will change from blinking red to solid red, indicating the camera is ready.

Use the Garmin video panel to discover the camera, view the video and customize image settings (i.e. orientation, image controls, day/night mode).



Figure 7: GARMIN MFD - Accessing Video Panel

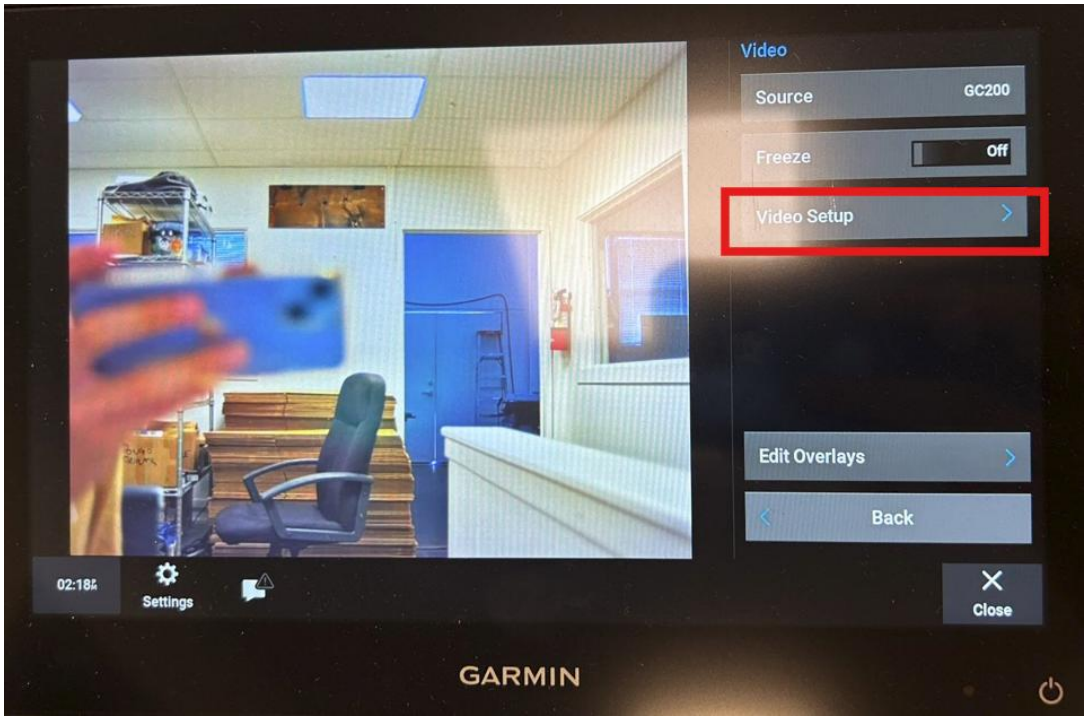


Figure 8: GARMIN MFD- Video Setup in Video Panel

For additional settings, the camera provides a OneHelm panel that displays status information and offers advanced commands not available through the standard video setup interface.



Figure 9: GARMIN MFD- Accessing SIONYX in Toolbar

The camera also integrates with Garmin's toolbar. Use the toolbar menu to select "SIONYX" and access related options (see Figure 8).

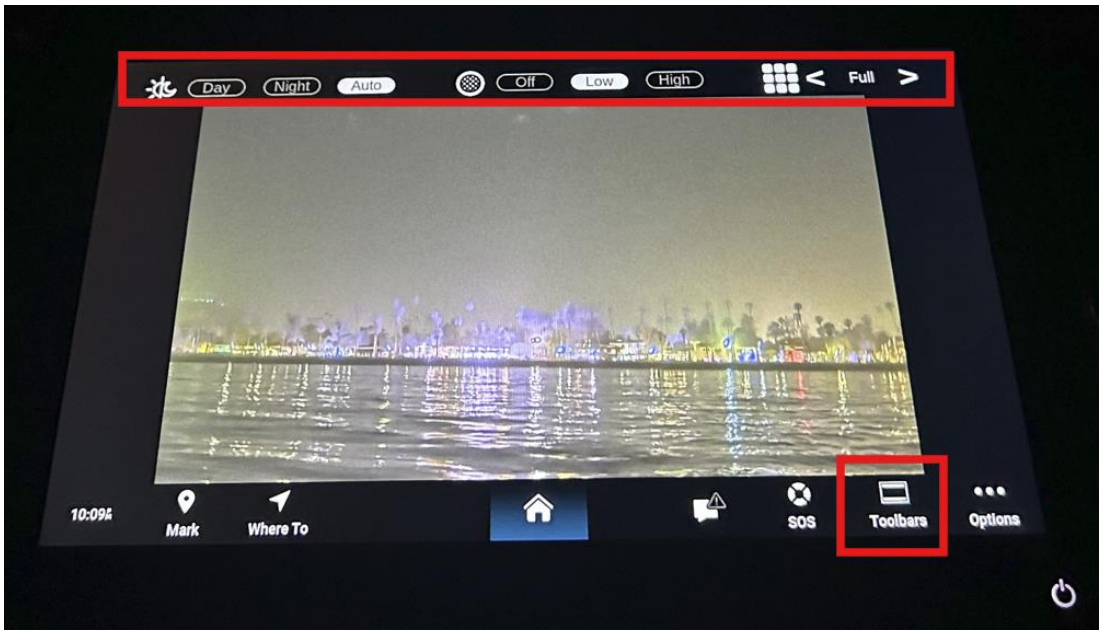


Figure 10: GARMIN MFD: SIONYX in Toolbars

7.3.2 Using SIMRAD (Model EVO NSS)

This model uses a legacy RJ45 network but requires a cable adapter from SIMRAD. It does not include a built-in DHCP server to assign an IP address to the camera, however, this is not an issue. For larger networks, the use of an external switch with DHCP capability is recommended. Even without such a device, NIGHTWAVE DIGITAL will establish a direct connection and function properly. This is made possible through ZeroConf protocol, which assigns an IP address in the 169.x.y.z range.

Once the camera receives an IP address, the status LED will change from blinking red to solid, indicating the camera is ready.

Use the “Settings” menu to discover the video camera via the ONVIF scan. Once the ONVIFscan finds “NIGHTWAVE DIGITAL,” select “Add” this camera. Then go to the Video Source icon.

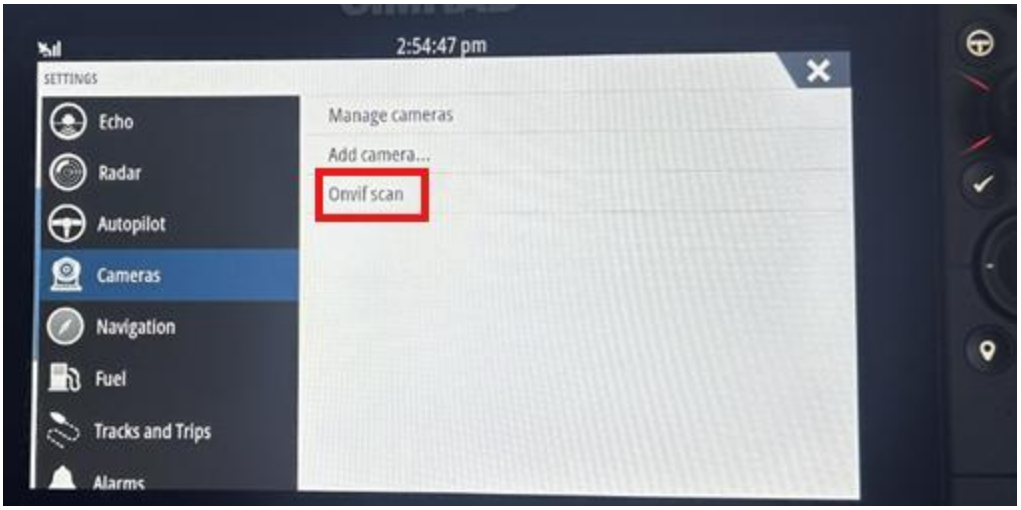


Figure 11: SIMRAD Settings Menu – Locating ONVIF Scan

Use the video panel to open the video stream.



Figure 12: SIMRAD Video Panel for Video Stream

For camera commands and settings, use the built-in web interface. Locate the SIONYX icon in the main SIMRAD menu to access it.



Figure 13: SIMRAD Camera Command and Settings

7.3.3 Using Raymarine (Model: Axiom Plus 9)

This model uses a legacy RJ45 network connector in the back. This device includes a built-in DHCP server that assigns an IP address to the camera for proper operation.

Once the camera receives an IP address, the status LED will change from blinking red to solid red, indicating that the camera is ready.

Use the Raymarine video panel to discover the camera, view the video and manage some image settings (i.e. brightness, contrast, color).



Figure 14: Raymarine MFD- Accessing Video Panel

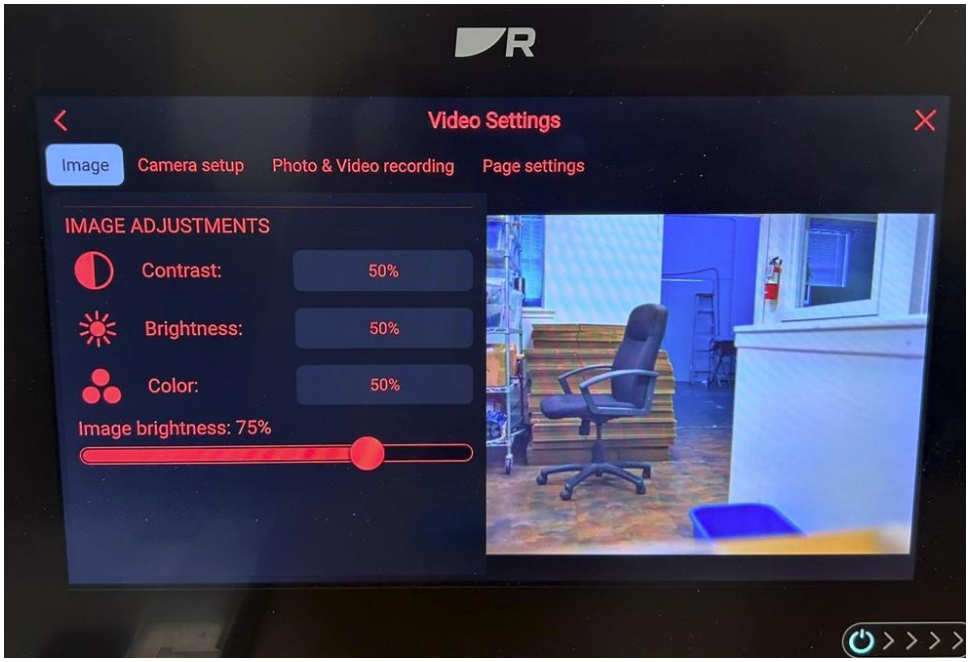


Figure 15: Raymarine MFD- Video and Image Settings

For further customization, the camera provides a Web panel that displays status information and offers advanced commands not available through a standard video setup interface. Access this panel using the SIONYX application under the “Apps” MFD menu (see Figure 16 and Figure 17).

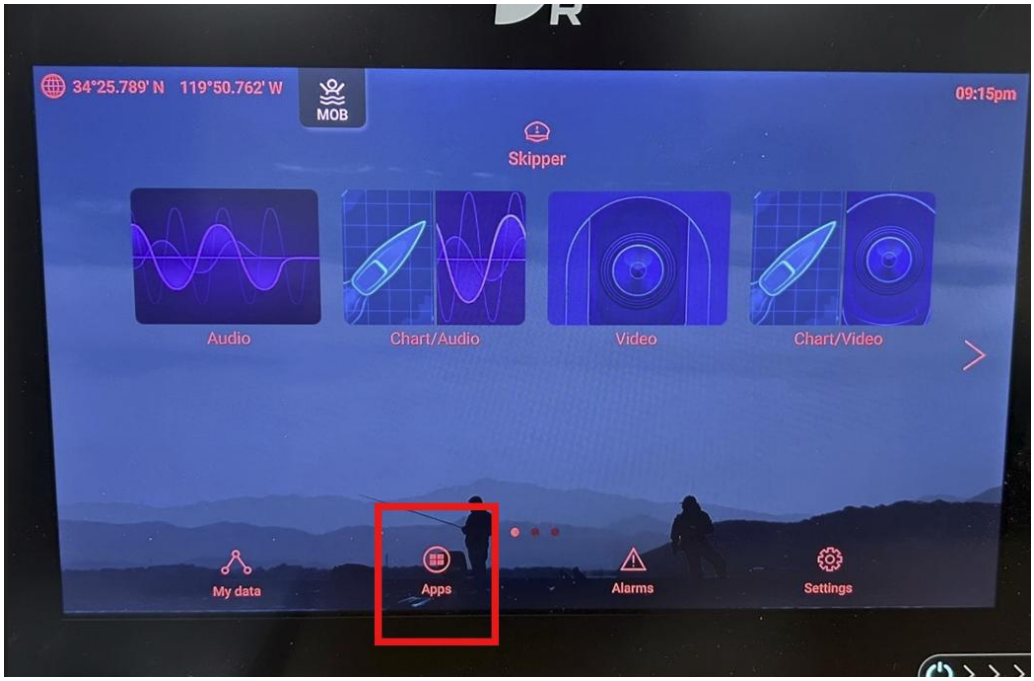


Figure 16: Raymarine MFD- Accessing “Apps” through Main Menu

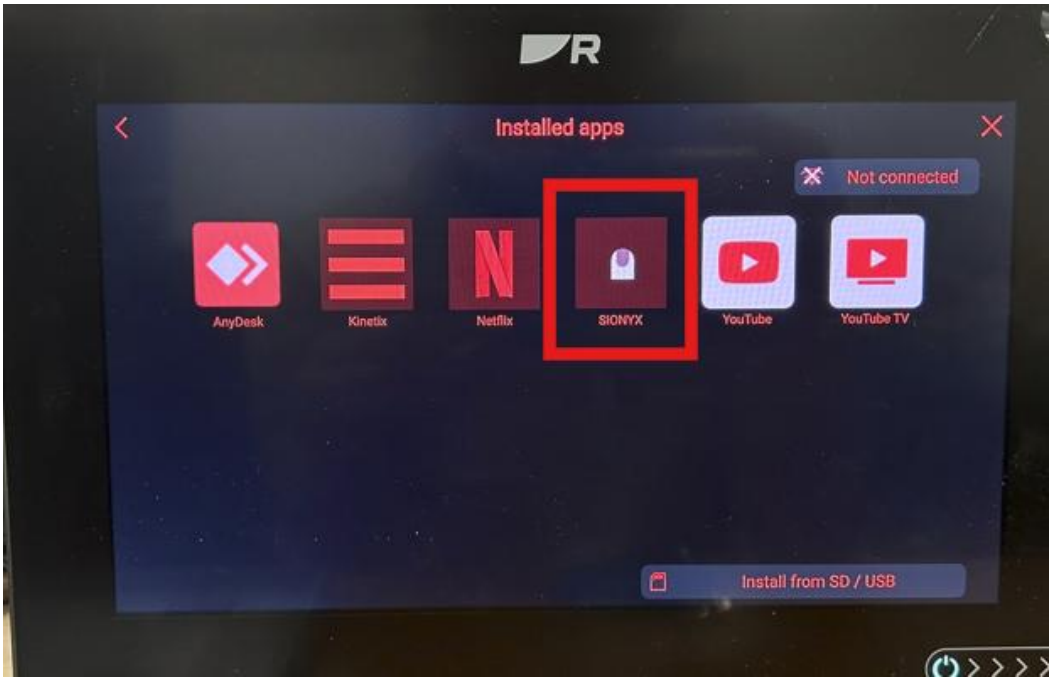


Figure 17: Raymarine MFD- Selecting and Accessing SIONYX app

7.3.4 Using Other MFDs

The three sections above are examples of navigating to and accessing specific information with the SIONYX camera, using different MFDs (sections:7.3.1, 7.3.2, 7.3.3). MFDs are in continuous evolution and further development with new software, updates, features, etc. Refer to our compatibility matrix and specific application notes for other models (see section 11).

7.3.5 Using a computer (Windows OS)

1. Power the NIGHTWAVE DIGITAL using PoE as previously described. Using the supplied Ethernet cable, connect the camera to the physical network your computer is connected to (computer connected via physical network cable or wireless router).
2. NIGHTWAVE DIGITAL implements UPNP. UPNP is a discovery protocol that Windows uses to discover devices connected in the networks (e.g. printers).
3. Depending on your computer setup, you may be required to activate and accept the “discovery mode” for that network interface.
    a. Sometimes there is a popup window asking the user to activate the discovery, if that happens, select “YES.” Otherwise, the UPNP discovery won’t work.
4. Make sure that the camera has a solid red LED.
5. Use your file explorer to discover the camera (see Figure 18 for reference).

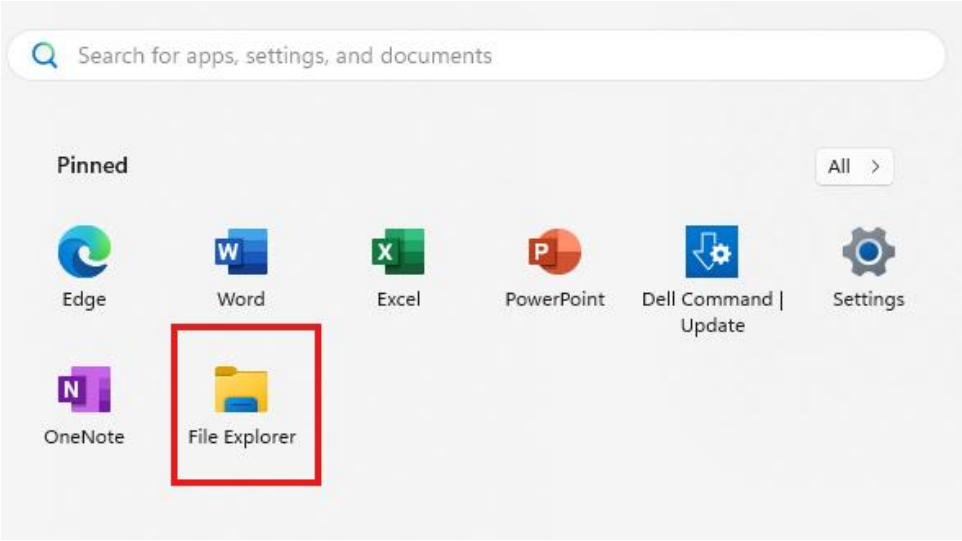


Figure 18: Toolbar 'File Explorer' Icon

6. Once the camera has booted and the camera has a solid red LED, the icon CRV-800D will appear in the “Network” section of Windows file explorer.
7. If this icon doesn’t appear:
    a. Check the “Network” section of the windows file explorer.

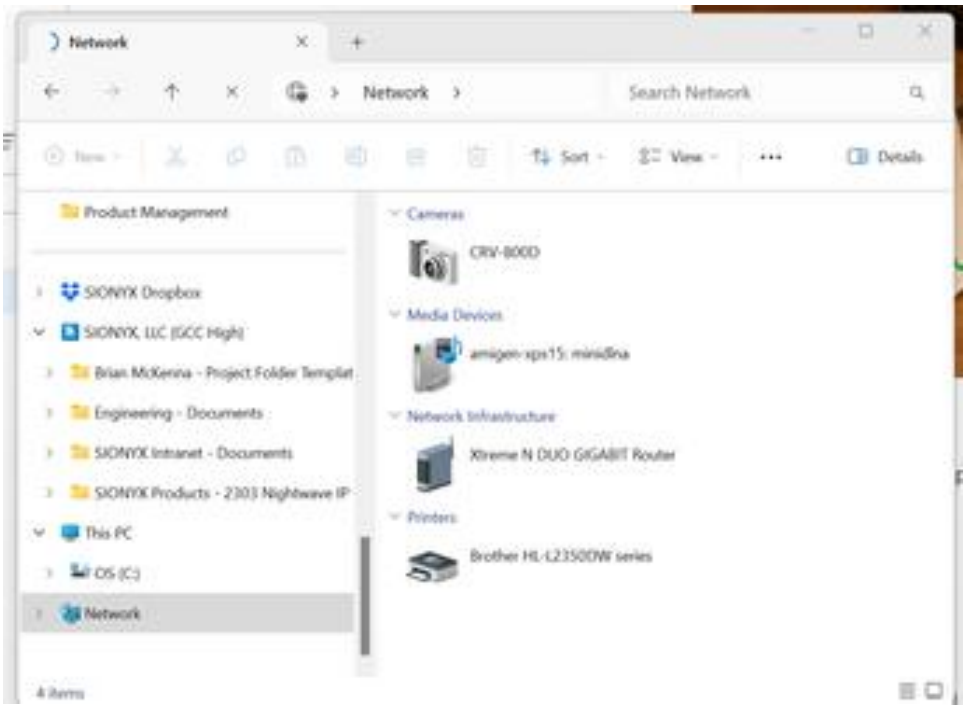


Figure 19: Network in Windows File Explorer

    b. Check the network interface where the camera is connected has the “discovery on.”
8. Right click on the “CRV-800D” device and select “Properties” to access the camera information, including the IP address.

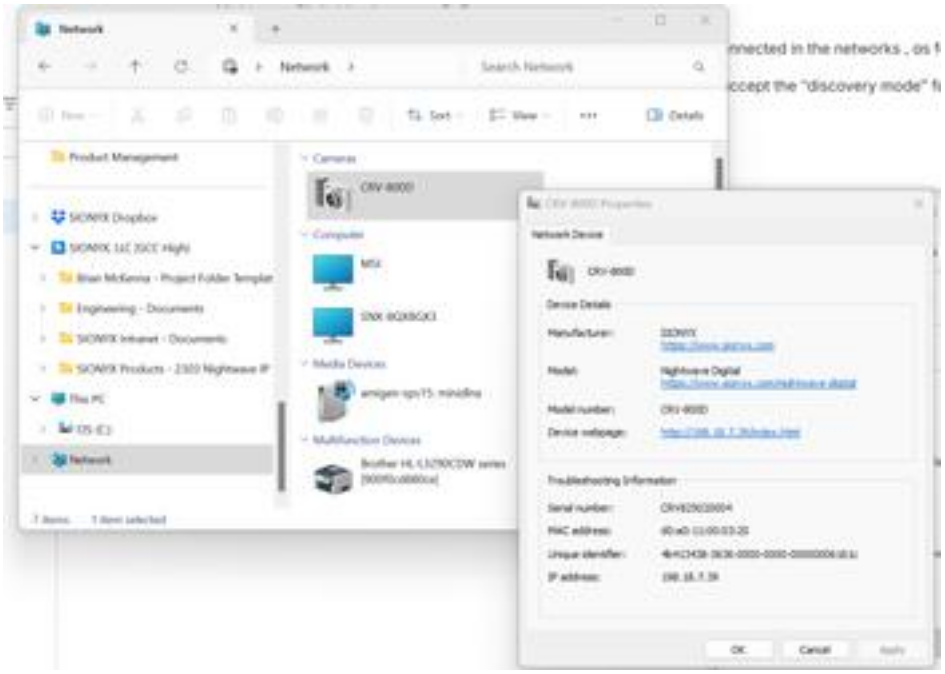


Figure 20: Locating Camera Information

9. Click on the “Device webpage” link (or double click the CRV-800D icon). Refer to Section 8 for detailed information about the web interface

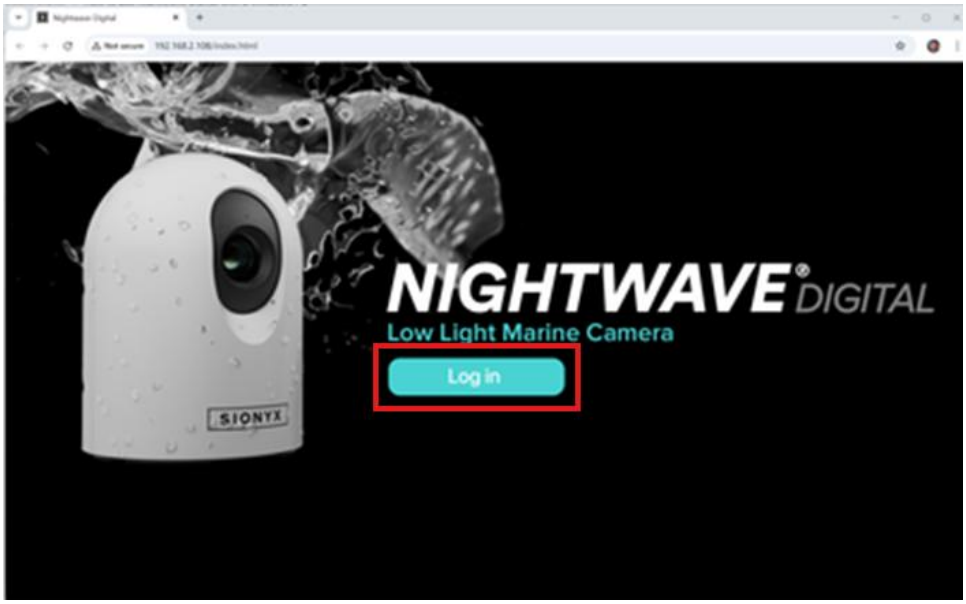


Figure 21: NIGHTWAVE DIGITAL Device Homepage

10. When connecting using a PC, live video can be watched using an RTSP player (VLC, Potplayer, etc.) Refer to section 9.4 for more information.

8 Camera Web Interface

NIGHTWAVE DIGITAL is a network camera, where the video is accessible via RTSP streams, and the camera controls / configuration are accessible through:

- Onvif – limited set of commands provided by the MFD itself.
- Web panels:
    - Main web interface for PC access.
    - Slightly different interfaces between different MFD makes and models.
    - Web panel in the SIONYX mobile application (mobile device).

In this section, we provide an explanation for the main web interface. All the others have a similar selection of controls/functionality.

8.1 Web Map and Navigation

8.1.1 Overview

The camera has multiple functions that have been categorized in groups. Select the main group from the top toolbar, and then select the sub-menu from the left toolbar (see Figure 22).

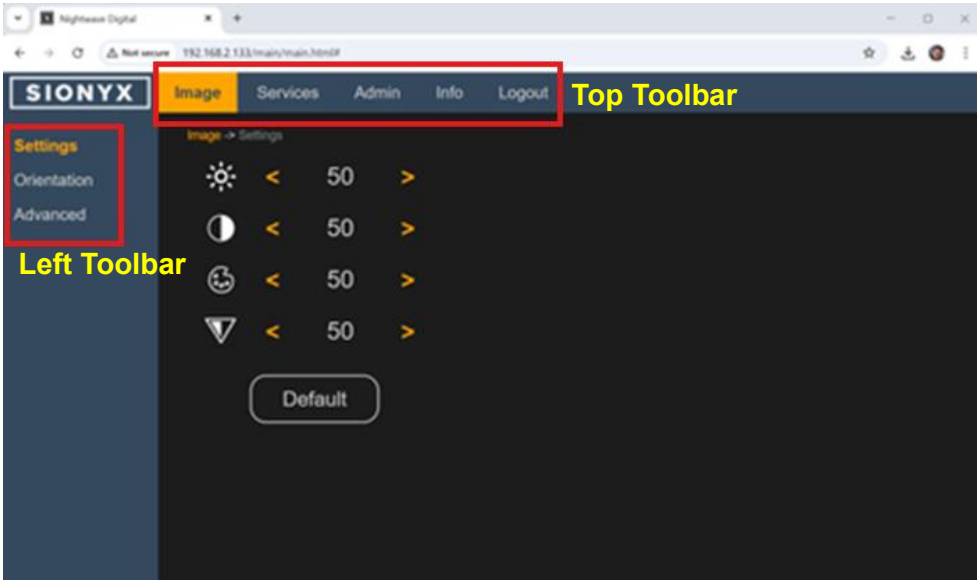


Figure 22: Web Navigation Toolbars

The Top toolbar selects the category:

- Image: Image adjustments.

- Services: Camera’s LED, video streams configuration, compatibility mode.
- Admin: Upgrade, reboot, factory reset.
- Info: Information, help page, resources.

The Left toolbar selects the specific functionality group (e.g. settings, orientation, advanced).

8.1.2 Image

8.1.2.1 Settings

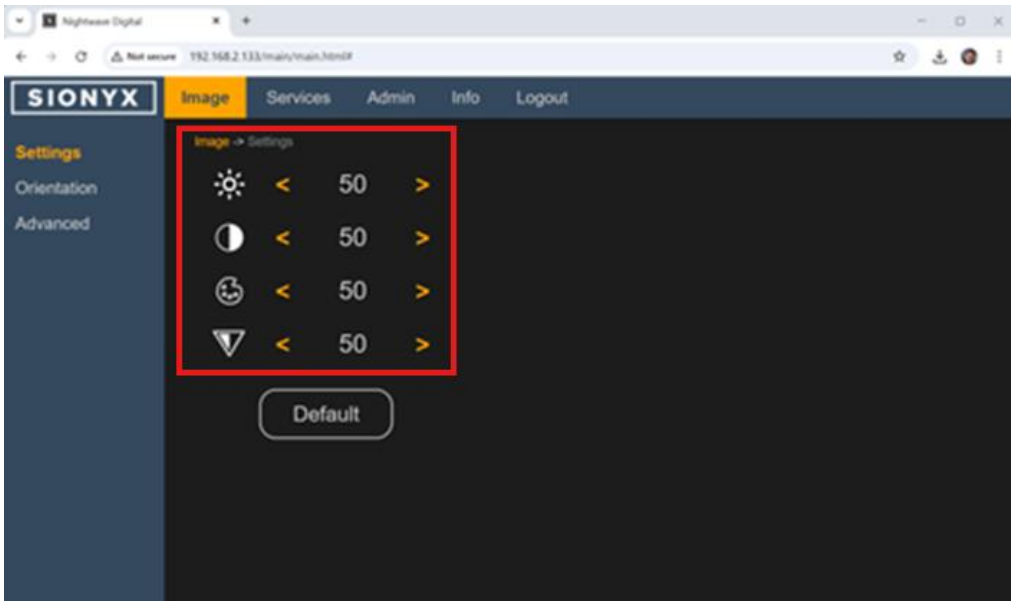


Figure 23: Image Settings for device

Figure 23 references the default image settings but these are adjustable. The icons shown refer to the following categories you can select and configure to your liking:

- Brightness
- Contrast
- Color (Saturation)
- Sharpness

NOTE: Depending upon the network device used for viewing live video, updates to these settings can take several seconds to be applied.

8.1.2.2 Orientation

These settings are for the installer. NIGHTWAVE DIGITAL can be installed upright or upside down. Use these controls to adjust the video orientation presented on your display.

- FLIP video horizontally (Mirror).
- FLIP video vertically (Invert).

8.1.2.3 Advanced

These are the advanced image settings (See

). Each category is as described below:

- Day Mode, Night Mode, Auto: You can manually choose to switch the camera between day and night mode. The default position is Auto, where the camera manages the filter based on light levels. With the other two choices, the user has the option to force the NIGHTWAVE into day or night mode (automatic switching is disabled).
- Noise Reduction: At the lowest light levels, video can display noise artifacts. This filter helps to digitally remove this noise. “Off” means no filter is applied and the default setting is low.
- ROI: Region of Interest selects which area of the screen is used to adjust the gain (exposure) for the whole image. This can be useful at the dock when there is bright artificial light in one region of the image.

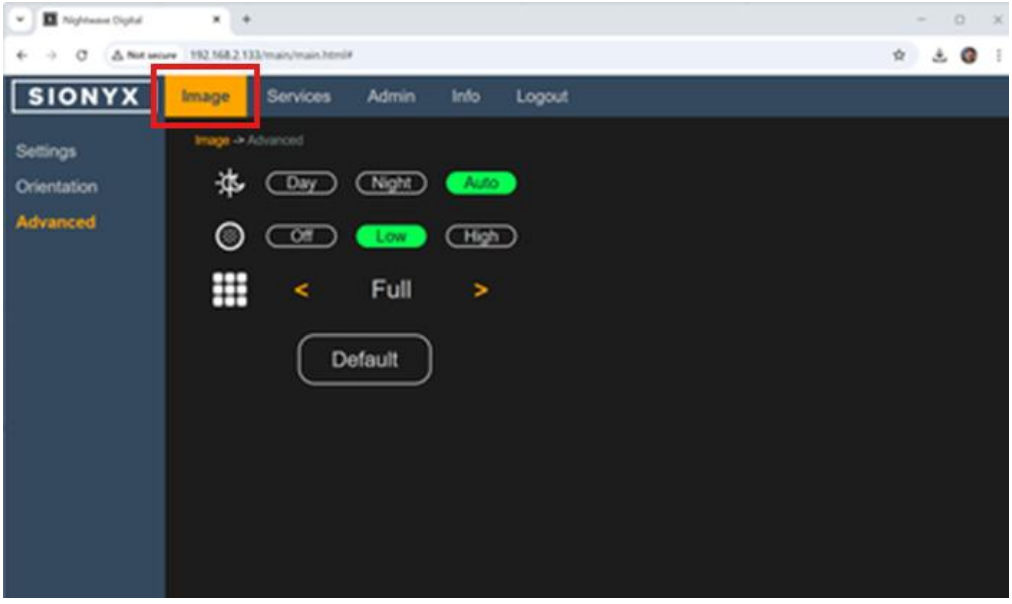


Figure 24: Image – Advanced Settings Section

8.1.3 Services

Under the “Services” section there are three sub-categories: LED Indicator, Video Streams, and Compatibility. The functions and configurations are described below:

8.1.3.1 LED Indicator

- The toggle button activates (ON) or deactivates (OFF) the camera’s status LED.
- On reboot, the camera will illuminate the LED to indicate boot sequence, after the camera has booted, the LED will indicate the selected state.
- If the camera gets into an error state, the LED will blink indicating the error code regardless of the knob position.

Table 1: LED Indicator

LED Color	Camera Status
Purple (Red / blue)	The camera is booting up.
Red (blinking)	The camera has booted up and does not have an IP address yet (not able to connect to MFD).
Red (solid)	The camera has IP address and is ready for use.
Blue (solid)	The camera is streaming video

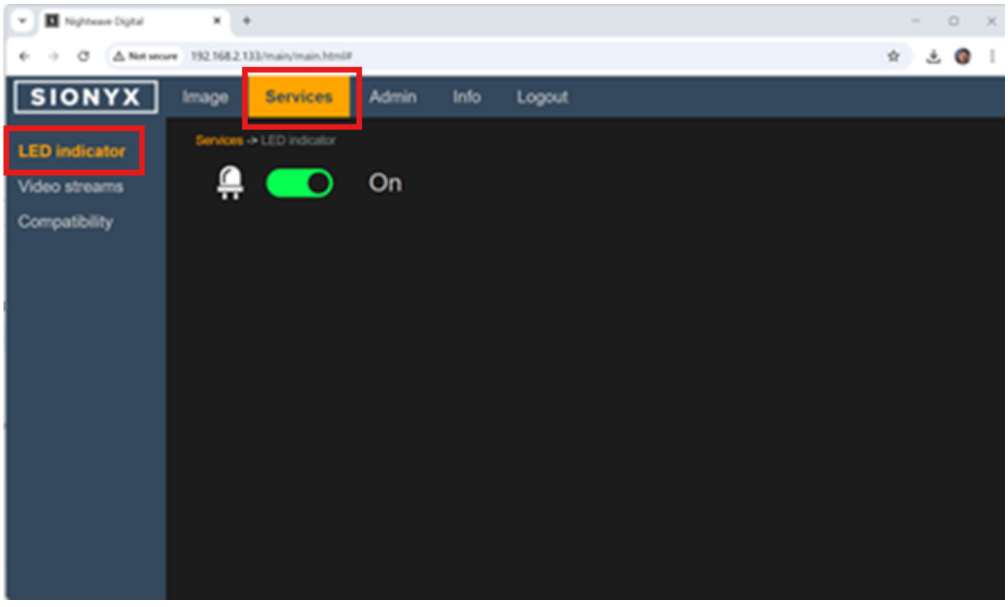


Figure 25: Services- LED Indicator Section

8.1.3.2 Video Streams

This setting allows you to select video resolution size for the High- and Low-resolution modes. Depending on the brand of MFD you choose to connect with your NIGHTWAVE camera, some MFD interfaces will allow you to select the resolution. The NIGHTWAVE DIGITAL has the following options:

High Resolution Video Size	Low Resolution Video Size
1280x1024	640x512
640x512	320x256
1280x720	640x360
960x540	640x360
1280x960	640x480
960x720	640x480

NOTE: Once the resolution is selected, click “Apply” to send this setting to the camera. The new settings will be active after a REBOOT or POWER CYCLE.

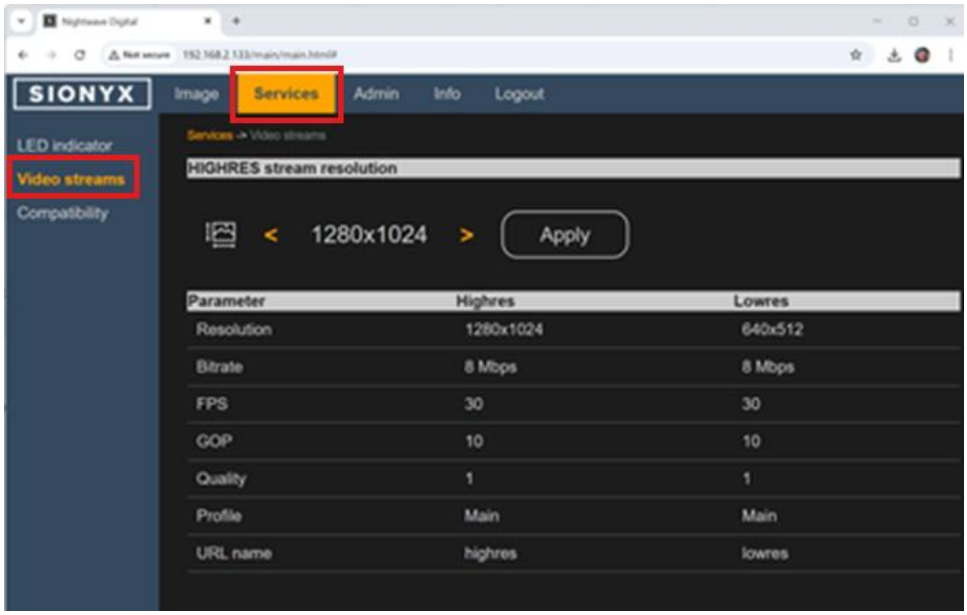


Figure 26: Services - Video Streams Section

8.1.3.3 Compatibility

This is only applicable for GARMIN displays that haven’t been upgraded to the latest firmware version. If NIGHTWAVE DIGITAL doesn’t appear in Garmin’s

video panel, activate this control. Reboot or power cycle the NIGHTWAVE to apply this setting. Then power down the Garmin MFD and power it back on.

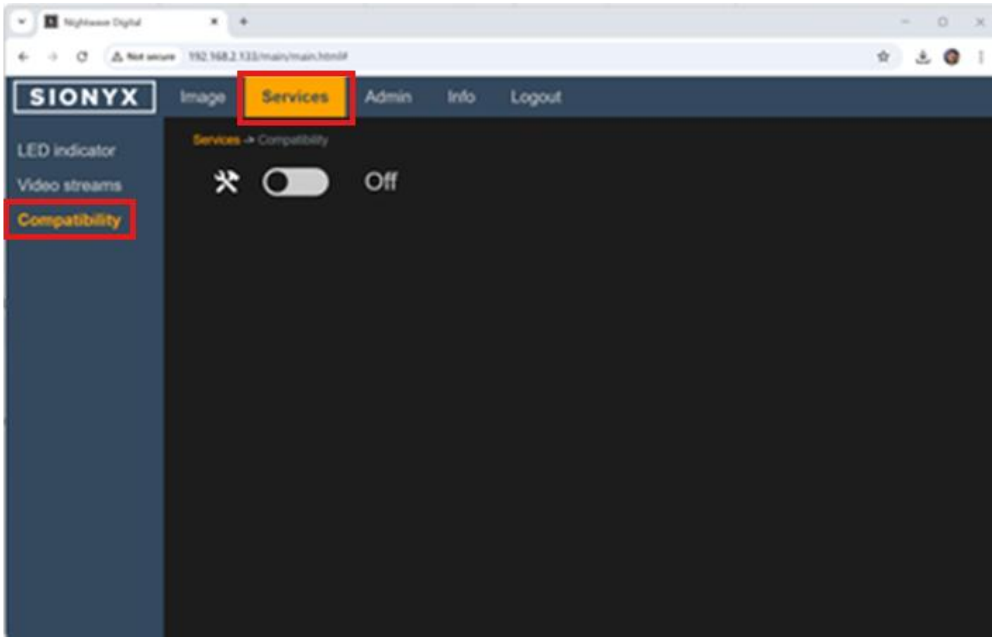


Figure 27: Services - Compatibility Section

8.1.4 Admin

8.1.4.1 Upgrade Firmware

To upgrade firmware over the LAN from a computer, select “Choose File” to open the navigator to be able to select the (previously downloaded) firmware file to upgrade to. Selecting “Update,” will initiate the process. This will transfer the file, enabling the camera to upgrade itself. For a more detailed information on how to upgrade firmware via computer and mobile, see section 10.5.

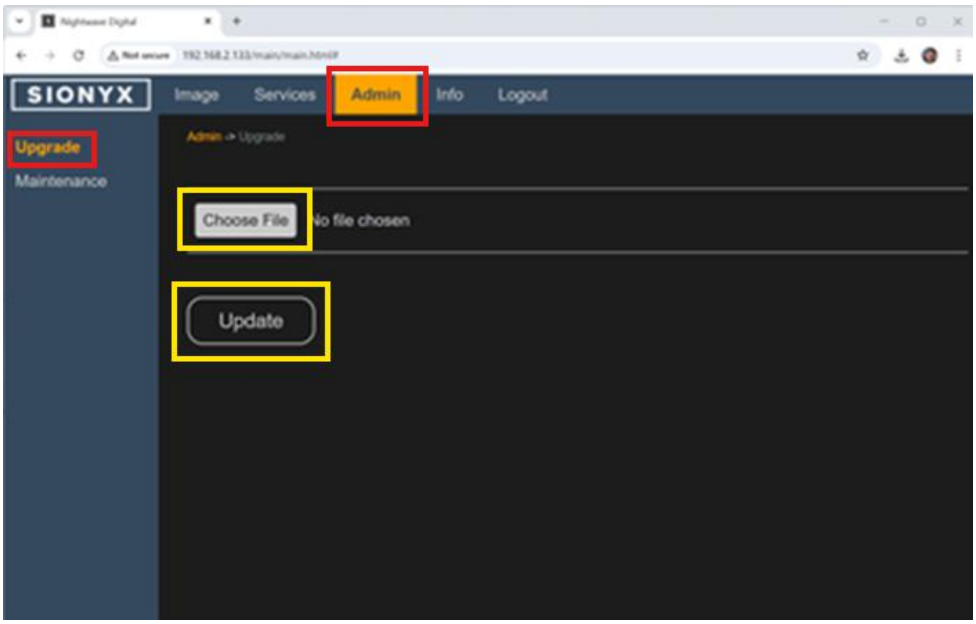


Figure 28: Admin - Upgrade Section

8.1.4.2 Maintenance

There are two options to select from when selecting “Maintenance”: factory and reboot. “Factory” applies default values to the camera and does an auto reboot. “Reboot” initiates a camera reboot and takes approximately 2 minutes.

8.1.4.3 Factory Defaults

Table 2: Factory Default Values

Setting	Default Value
Brightness	50
Sharpness	50
Contrast	50
Saturation	50
FLIP horizontal	OFF
FLIP vertical	OFF
Noise reduction	Low
ROI	Full
LED	On
Compatibility mode	OFF
Video resolution	1280 X 1024 and 640 X 512
Day / Night	AUTO

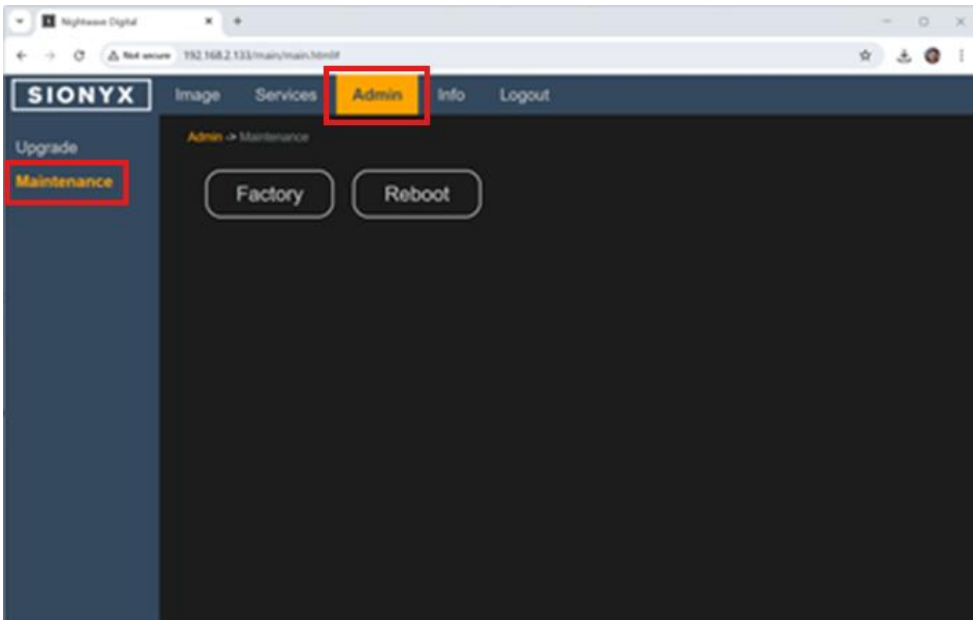


Figure 29: Admin - Maintenance Section

8.1.5 Info

8.1.5.1 Camera Info

The “Camera Info” section under the “Info” tab, shows static information for the NIGHTWAVE – notably the Serial Number and the Firmware version. This information doesn’t change unless there is an upgrade of the system. SIONYX suggests registering the NIGHTWAVE to receive updates on new releases (i.e. improvements, bug fixes). See the Resources section below.

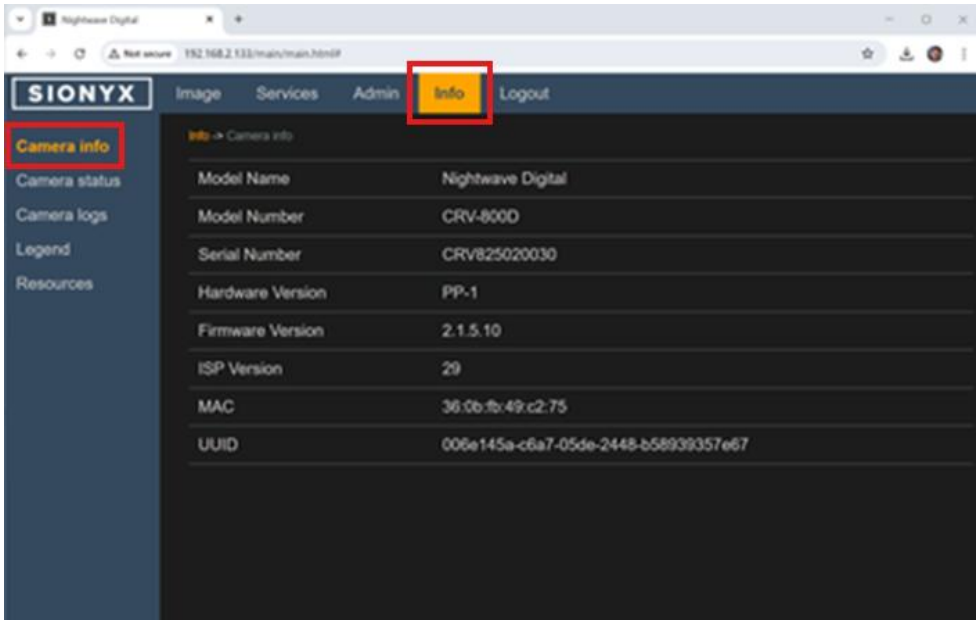


Figure 30: Info - Camera Info Section

8.1.5.2 Camera Status

The “Camera status” section under the “Info” tab shows changeable information about the Nightwave. These values will depend on the network, camera settings, and setup. This information is useful for troubleshooting and connectivity.

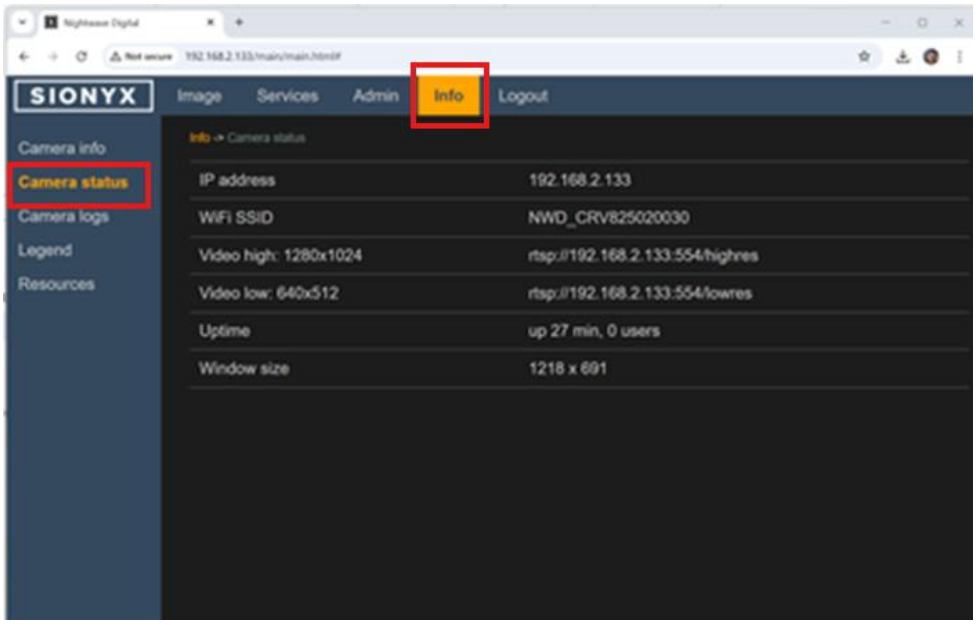


Figure 31: Info - Camera Status Section

8.1.5.3 Camera Logs

In the unlikely event that the camera has a problem and the status LED indicates an error message, this functionality allows you to collect internal information for our Customer Service team to help diagnose and resolve the problem. For more troubleshooting information, see Section **Error! Reference source not found.**.

1. Select “Create.” This will trigger the creation of LOGS. It will take around 10 seconds to create the file.

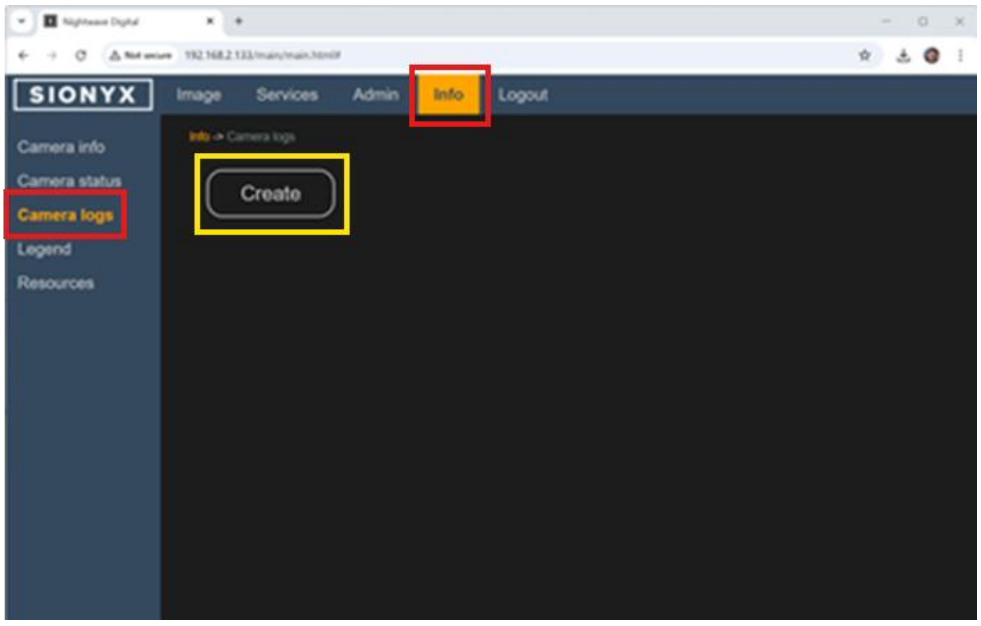


Figure 32: Info - Camera Logs Section

2. When the file is ready, a “Ready to download” button will be displayed. Click on the “OK” button to download the file to your computer. Be aware that some browsers will indicate that the transfer is happening in a non-secure connection, this is not an issue.

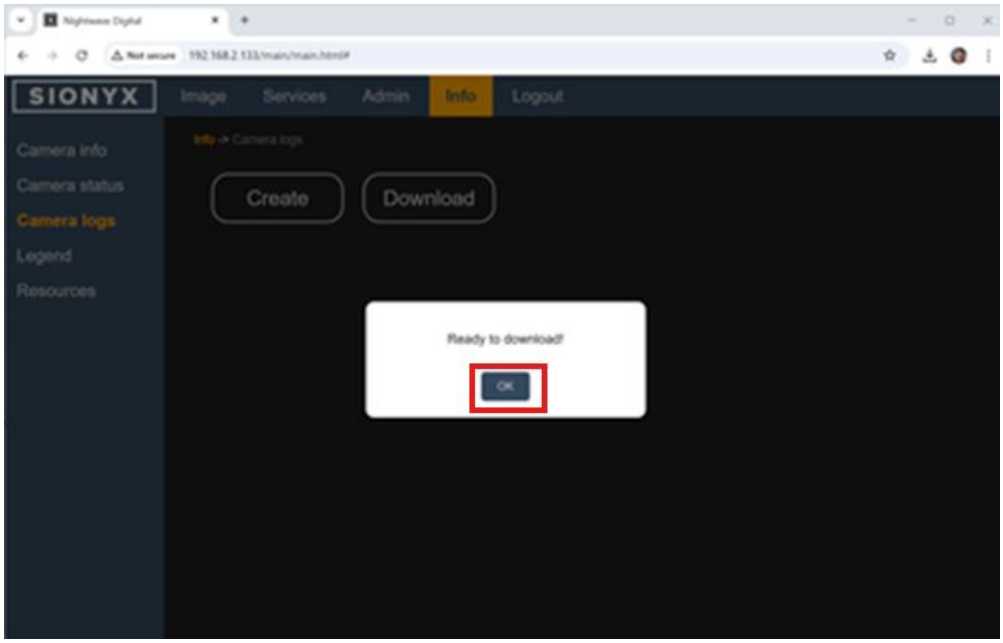


Figure 33: Camera Logs - Downloading Screen

8.1.5.4 Legend

The “Legend” section under the “Info” tab is a HELP page that describes the meaning of the icons used on the other pages.

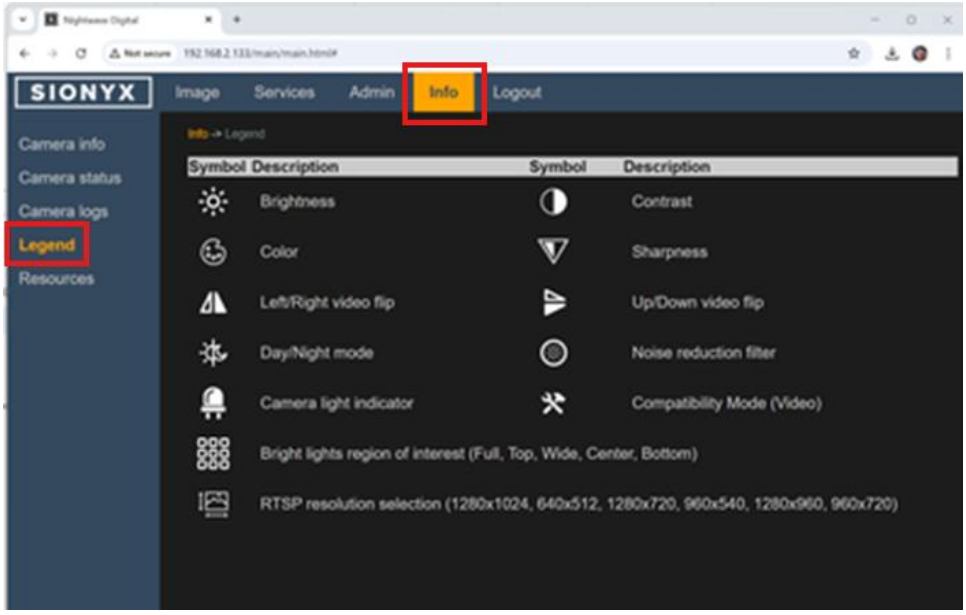


Figure 34: Info - Legend Section

8.1.5.5 Resources

The “Resource” section under the “Info” tab links to the SIONYX website and additional support resources for the NIGHTWAVE DIGITAL. SIONYX strongly suggests that you register your camera to receive notifications about updates.

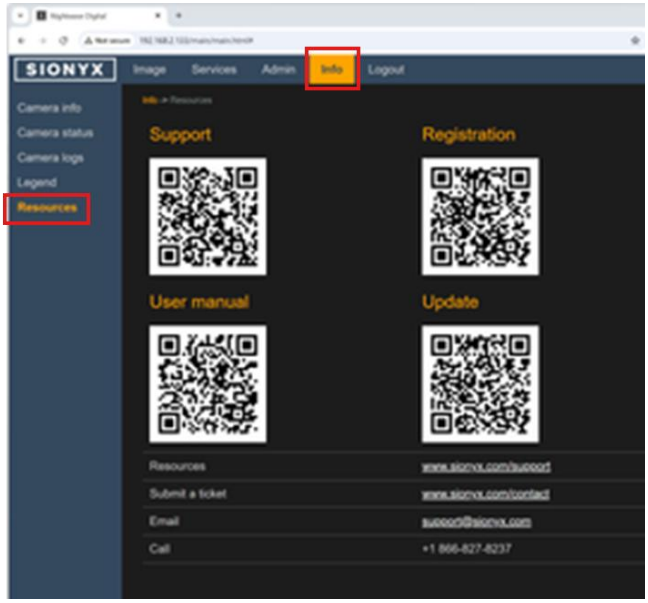


Figure 35: Info - Resources Section

8.1.6 Logout

This function allows you to exit the page and go to the landing page.

9 Accessing NIGHTWAVE DIGITAL Controls via Mobile Application

9.1 Overview

The NIGHTWAVE DIGITAL also operates as an access point (for one client device at a time) – generating its own Wi-Fi signal that the SIONYX Mobile App will connect to. NIGHTWAVE DIGITAL provides a network address for the mobile device, enabling the application to work (no password is needed). When you are connected to the NIGHTWAVE DIGITAL through the SIONYX Mobile App you can access the same camera settings and information described above.

The SIONYX Mobile App will run on most modern phones and tablets using either iOS or Android operating systems. The camera will only connect to one mobile device at a time. However, you can switch between different devices (see below for important information on this). Additionally, there is also capability to show the live video view on this mobile device*, (in addition to the live video on the chosen MFD/s). This SIONYX Mobile App is not designed to run on Amazon Fire OS devices or MFDs.

*** NOTE:** The ability to view live videos through the SIONYX Mobile App will become available via a firmware update sometime after product release.

NOTE: The mobile app can be used as a backup or second set of eyes in addition to the primary video display on the MFD. Note that due to Wi-Fi connection weakness, frame drops or disruption to wireless video feed may be observed. App performance is dependent upon resources and settings of that mobile device and is also susceptible to other wireless networks, and electromagnetic emissions of other devices.

9.2 Instructions for Accessing Mobile Application

1. Search for and download the SIONYX app from Apple store or Google Play store. It’s free and fast to download. The App with the black and white icon is for NIGHTWAVE DIGITAL (also our helmet-mounted OPSIN camera).



Figure 36: SIONYX Application for Download

2. Before you open the SIONYX Mobile app we recommend closing any open applications and if your mobile device has a SIM card, turn off Cellular Data (to prevent a protocol conflict that can sometimes hinder a successful connection).
3. The SIONYX Mobile app uses Bluetooth Low Energy (BLE) to locate the Nightwave Digital device and obtain a network address. It then uses Wi-Fi from the Nightwave Digital to establish a dedicated wireless network connection. Therefore, please grant permission to these services (Join, Allow) when prompted.
4. Power on the Nightwave Digital via the Power over Ethernet (PoE) injector and wait (~90 seconds) for the camera to boot up.
5. You should then open the SIONYX Mobile app to establish a connection to the Nightwave Digital. When doing this, do not try to connect through your phone's native Wi-Fi functions (as though you were joining a new Wi-Fi network) because this will prevent the mobile app from connecting to the single network address generated by the camera.
6. If you would like to use the mobile app to connect NIGHTWAVE to a different mobile device, please close the app (on all devices) and wait

one minute—for the camera to release the network address—before opening the SIONYX app on another mobile device. Otherwise, any existing connection will prevent establishing connection on a second device.

9.3 Adding a New Device

1. Open the SIONYX Mobile App and select “Add Device.”

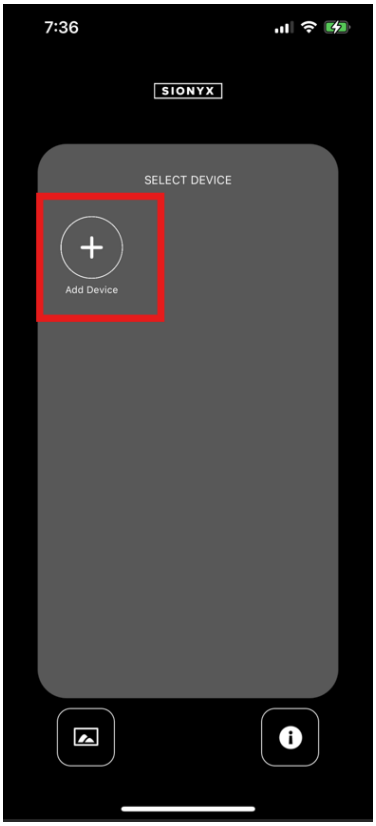


Figure 37: SIONYX App- Selecting Device

2. A list of nearby NIGHTWAVE DIGITAL devices will be shown (see Figure 38).

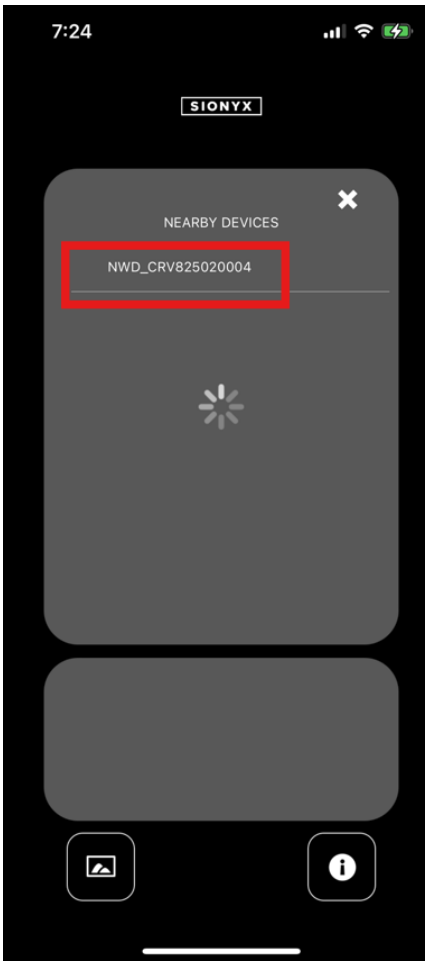


Figure 38: SIONYX app - list of devices to select from

3. Select the desired NIGHTWAVE DIGITAL. It can be identified by the serial number (NWD_CRV8XXXXXXXX).
4. Once selection has been made, the application will return to the main window and the new camera will appear inside a white circle.



Figure 39: Selecting and Adding device in SIONYX App

NOTE: If you have previously connected to your NIGHTWAVE DIGITAL from this mobile device (i.e. the camera has previously been discovered by Bluetooth) but it is not currently connected by BLE, the icon for your camera will be shown as a while outline.

9.4 Connecting to a Device

1. Bluetooth Low Energy (BLE) is used to discover the camera, once this happens the camera icon color will change to white.
2. A brief press over the white icon starts the connection to the camera via Wi-Fi connection.

3. When the icon of the camera changes to (mostly) black you are connected over Wi-Fi.
4. You can also long-press the icon to access additional functions such as Remove Device, by selecting the trash bin icon (see Figure 40).

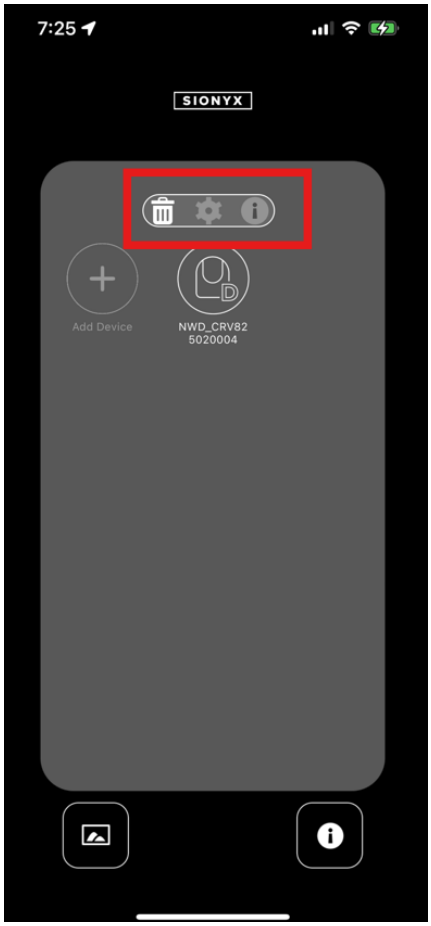


Figure 40: SIONYX App - Toolbar icons - Trash bin is to remove device

5. When connected, a short video will be rendered, followed by the camera control panel

NOTE: The ability to view live videos through the SIONYX Mobile App will become available via a firmware update sometime after the product release.

9.5 Mobile Panel Options

The panel is based on the main web, reviewed in Section 8. The layout is different, having been modified to provide better user experience, but the functions remain the same.

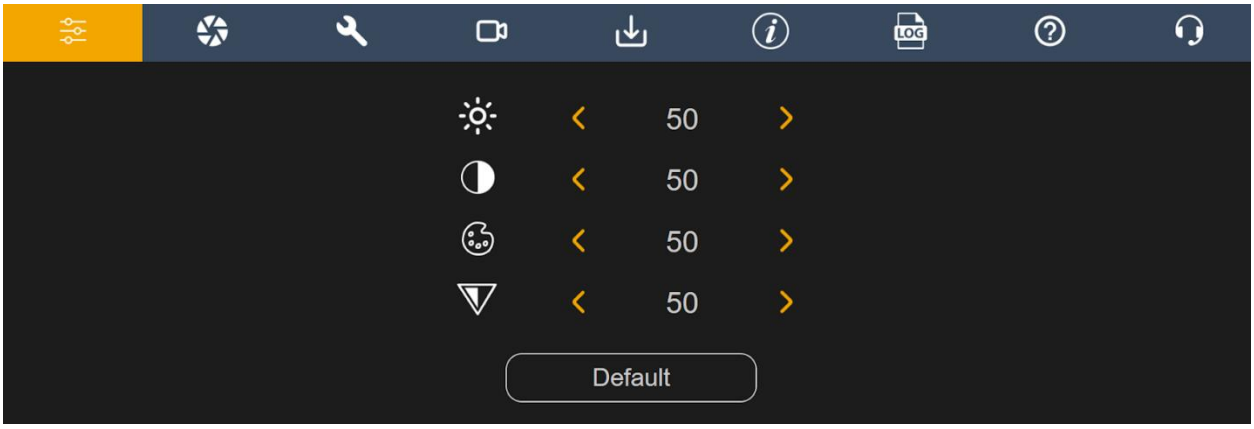


Figure 41: SIONYX Mobile Panel Options

Table 3: Mobile Panel Options- Icon descriptions

Icon	Description
	Image settings panel
	Image advanced settings. Filters and day/night mode.
	Installation settings. Image orientation, LED status, compatibility mode.
	Video streams configuration. Video resolution.
	Firmware upgrade section. Factory reset and Reboot.

	Camera information. Serial number, firmware version, MAC, UUID.
	Camera status. IP address, RTSP URL, Uptime, Window size, SSID.
	Icon legend description.
	Support links. Register, resources, user manual, SIONYX contact.

10 Troubleshooting and FAQs

10.1 Where to Check Versions

1. Using the main web interface:

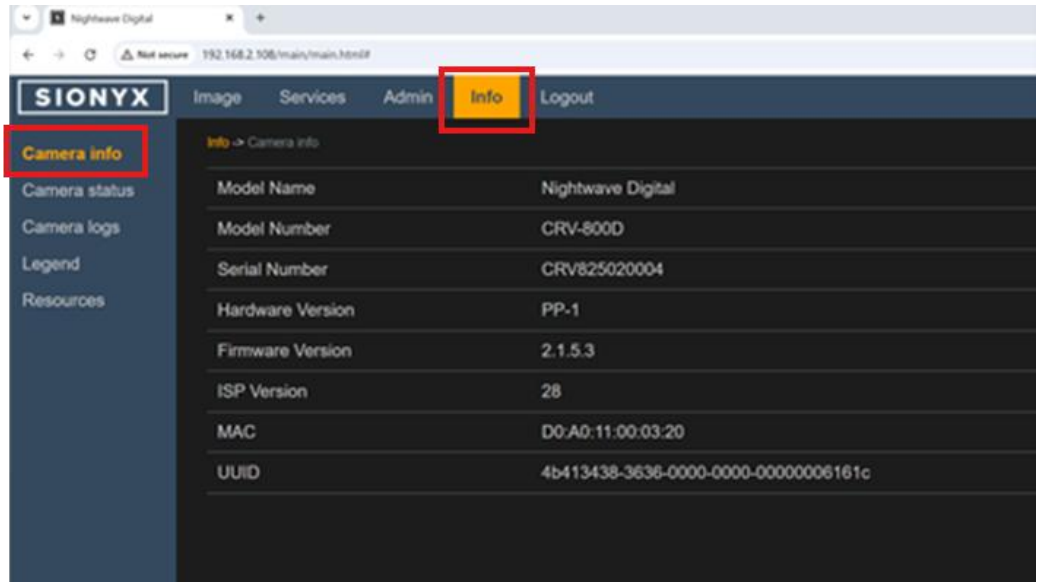


Figure 42: Locating Camera Information via Web

2. Using display (MFD) web interface:

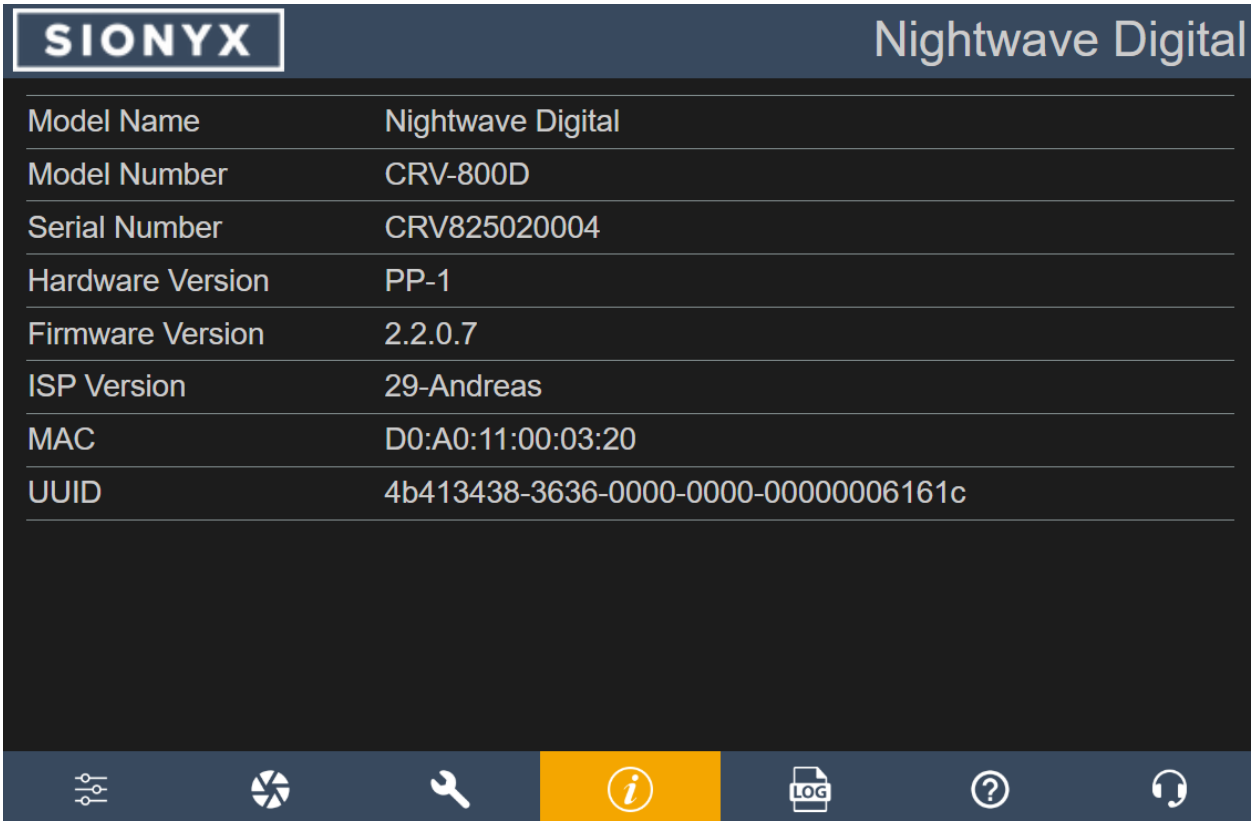


Figure 43: Locating Camera Information via MFD

10.2 How to Check the LED

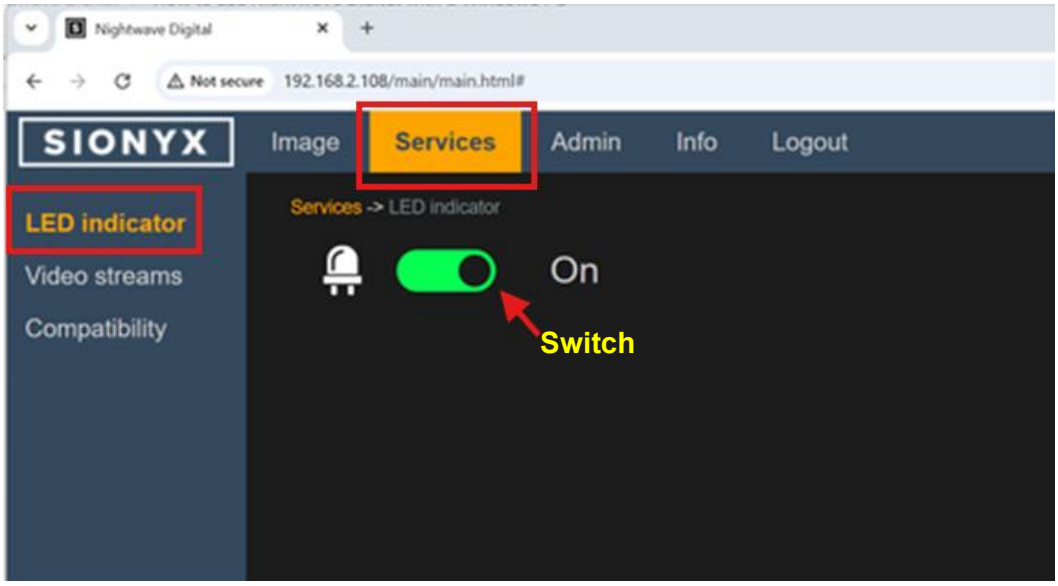


Figure 44: LED Switch ON in "LED indicator" Settings

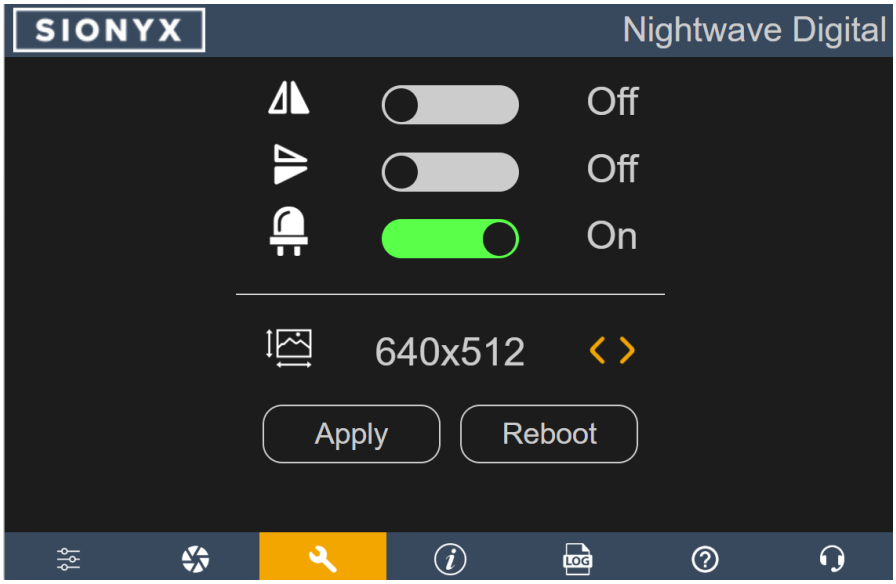


Figure 45: MFD Panel with the LED switch

10.3 How to Test Day and Night Mode (Shutter)

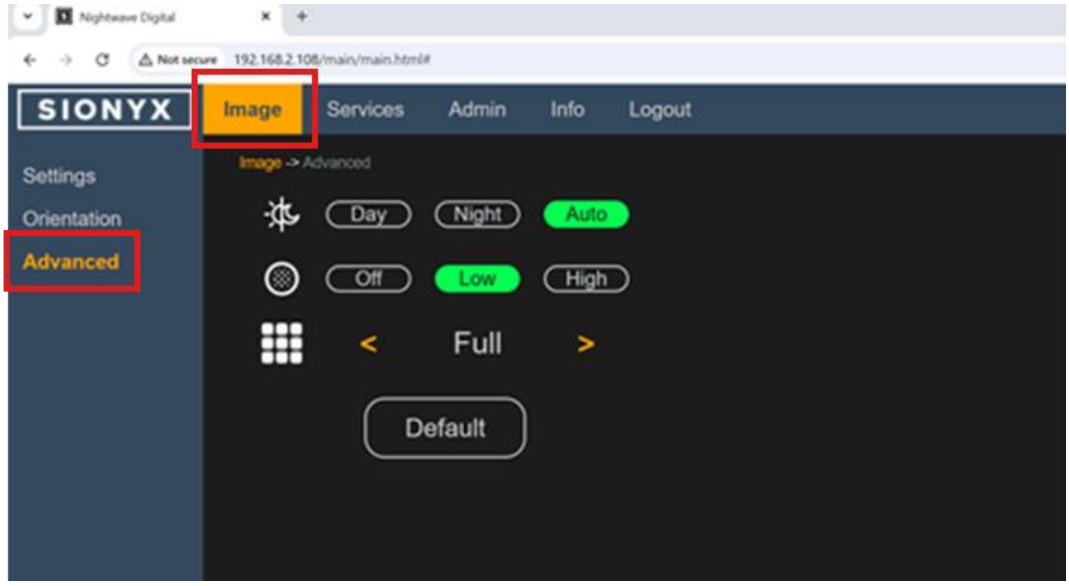


Figure 46: Webpage View: Auto Mode in Advanced Settings

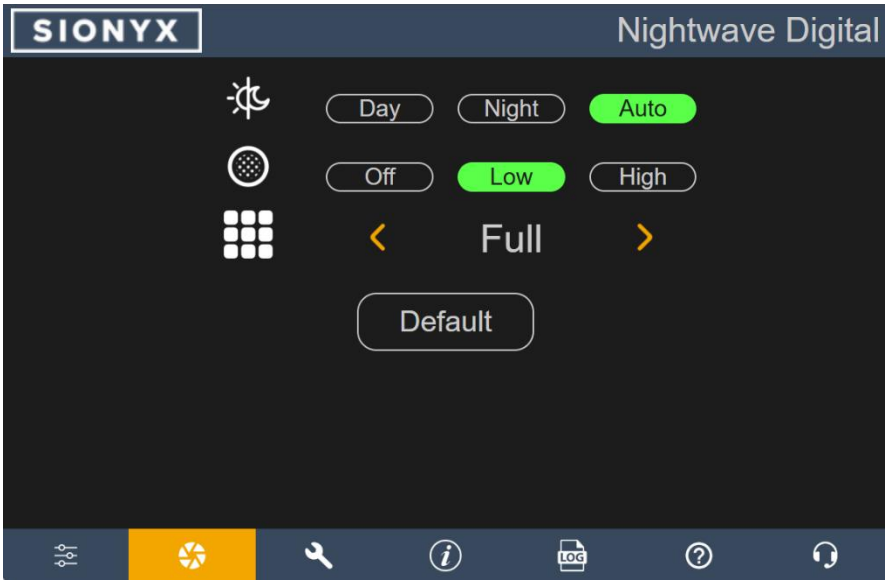


Figure 47: MFD Display: Auto Mode in Advanced Settings

10.4 How to Use the Camera as a WEBCAM

1. Navigate to “Info” in the top toolbar and select “Camera Status” on the left toolbar.
2. Copy the URL of the desired video (High, Low resolution).

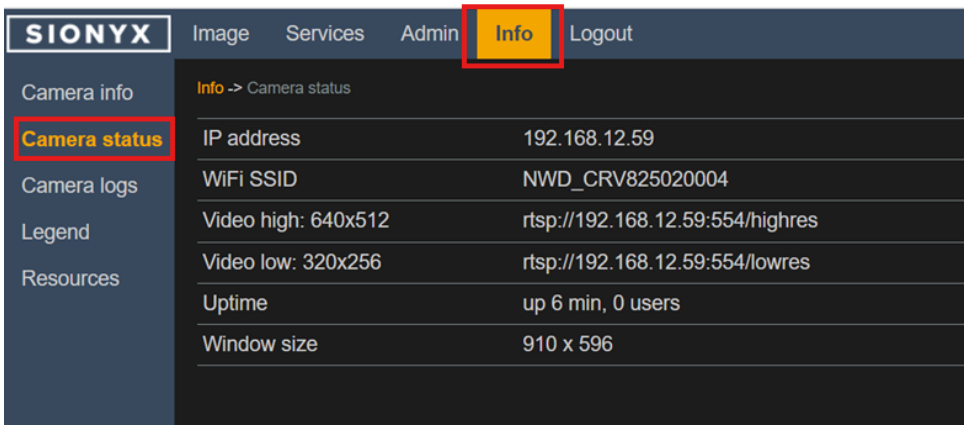


Figure 48: URLs to Watch Videos in Camera Status

3. Refer to the table located in the “Video streams” section (left toolbar) of the “Services” section (top toolbar) for explanation of each (see Figure 49).

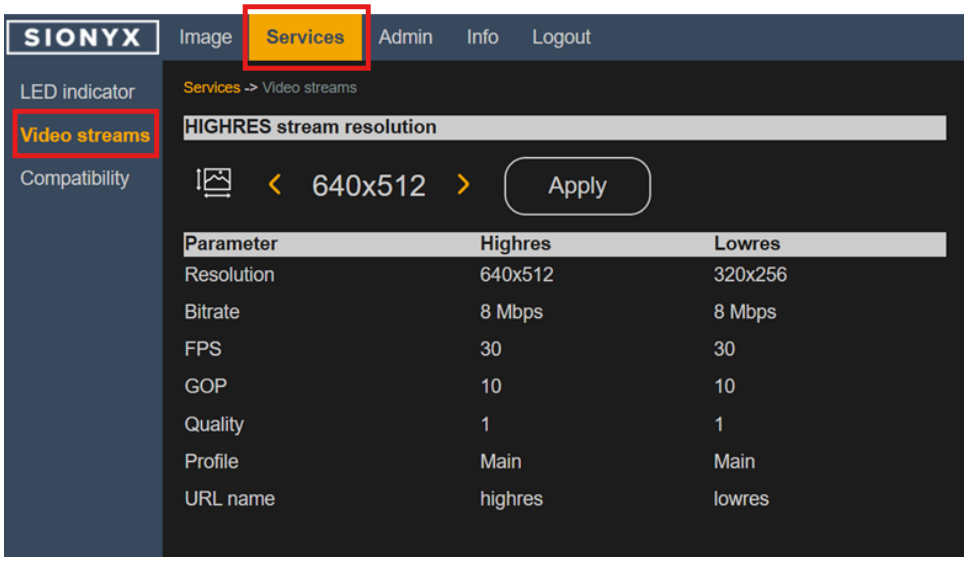


Figure 49: Video Streams Table in Services Section

4. To provide further explanation, if you consider the HIGH-RESOLUTION stream, the URL is selected and in gray, as seen in Figure 50.

5. Select the URL (e.g. **rtsp://192.168.1.2:554/highres**) as shown in Figure 50, right click on the URL and select “Copy” or use the command CTRL+C to copy the URL into the clipboard.

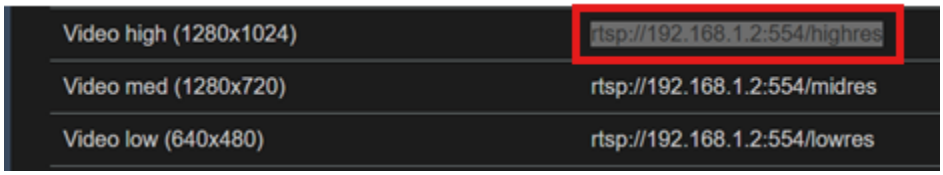


Figure 50: High Resolution URL

6. Open a video viewer on your computer (i.e. VLC, Potplayer, iSpy) and use the viewer application to open this URL.
    a. PotPlayer: Open→ Open URL → Paste URL → OK
    b. VLC media player: Media → Open Network Stream → Paste URL → Play

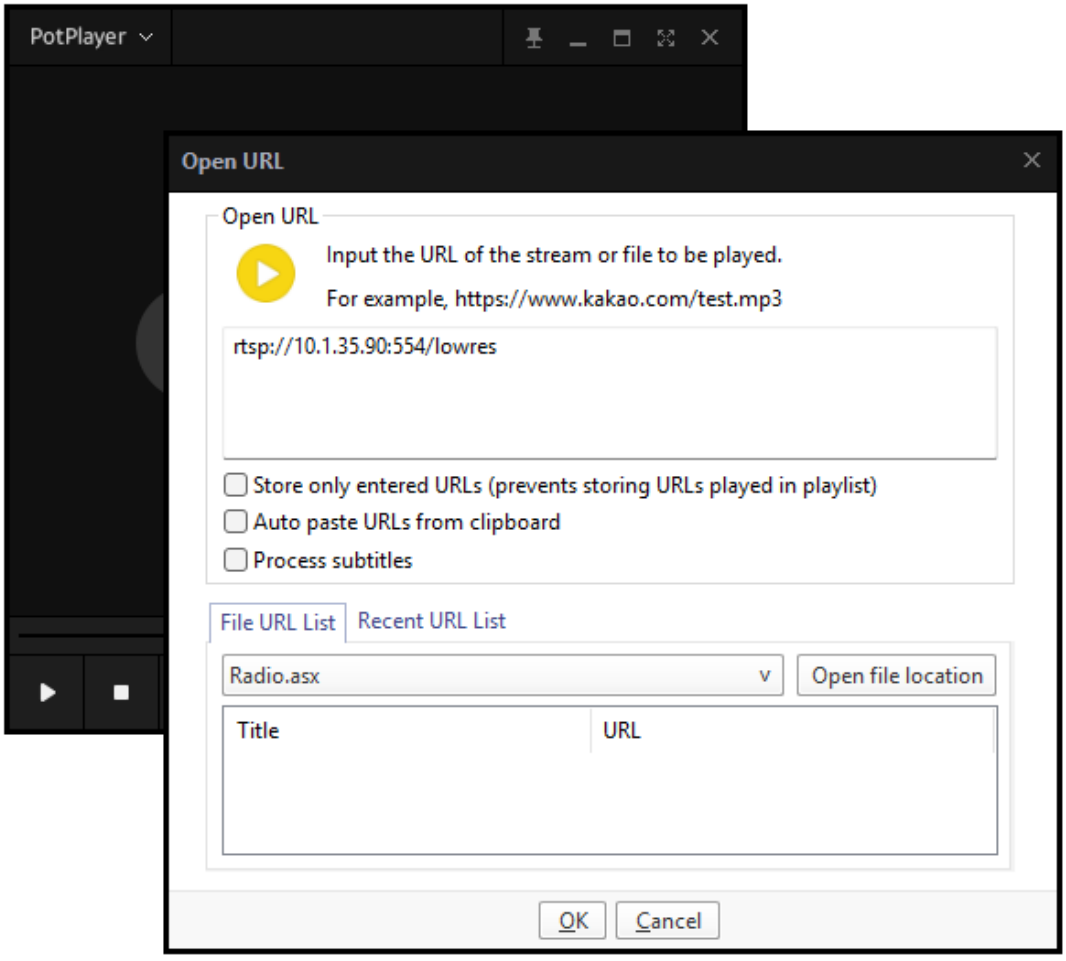


Figure 51: Example of using PotPlayer media player

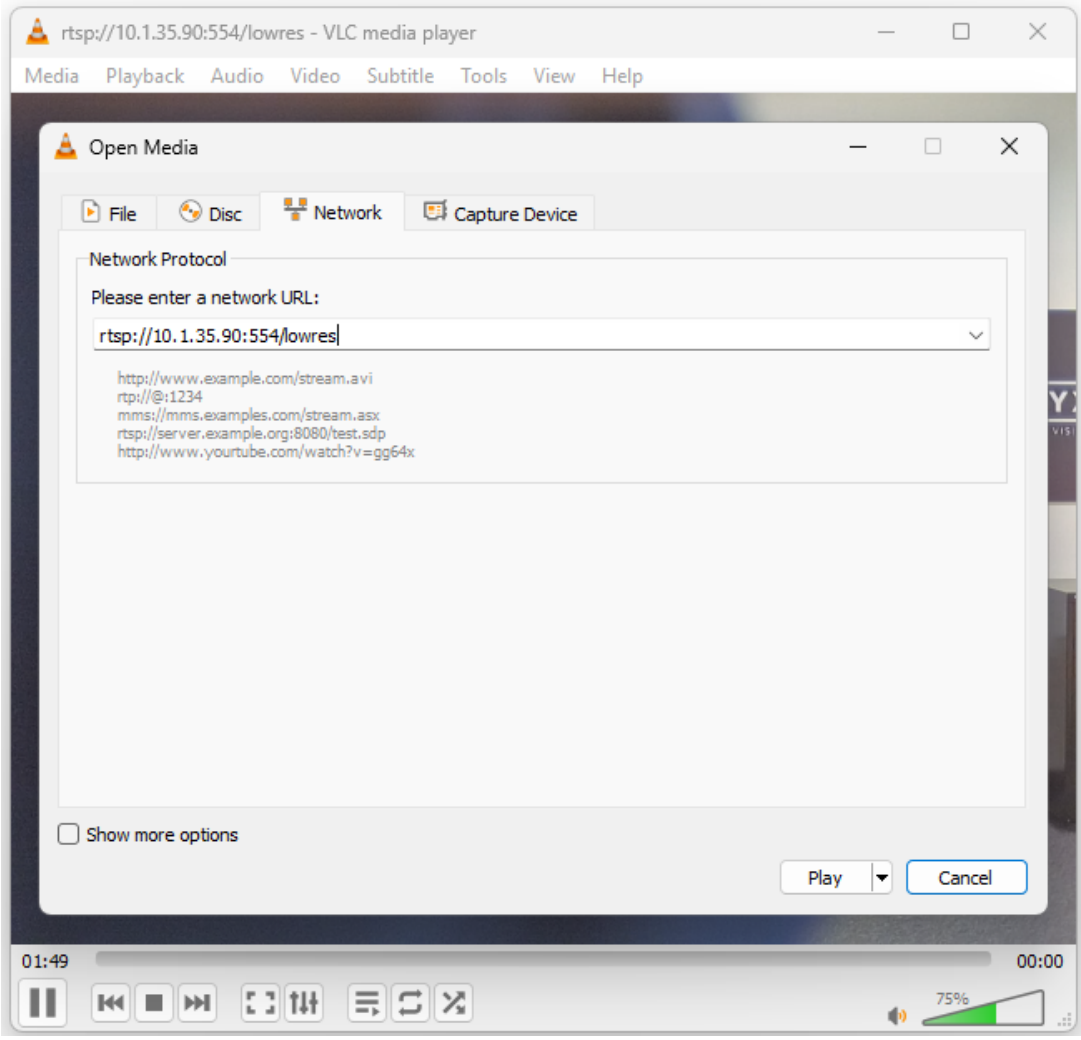


Figure 52: Example of using VLC media player

10.5 How to Upgrade Firmware

New firmware versions will be released on the SIONYX website periodically. Please go to the website (https://www.sionyx.com/pages/nightwave-firmware) and verify you have the latest software for ongoing compatibility, reliability, and performance improvements.

Download firmware file from this page.

10.5.1 Firmware Upgrade via Computer

1. Navigate to “Info” in the top toolbar and select “Camera info” on the left toolbar.

2. Check the version of your camera by locating “Firmware Version” (See Figure 53).

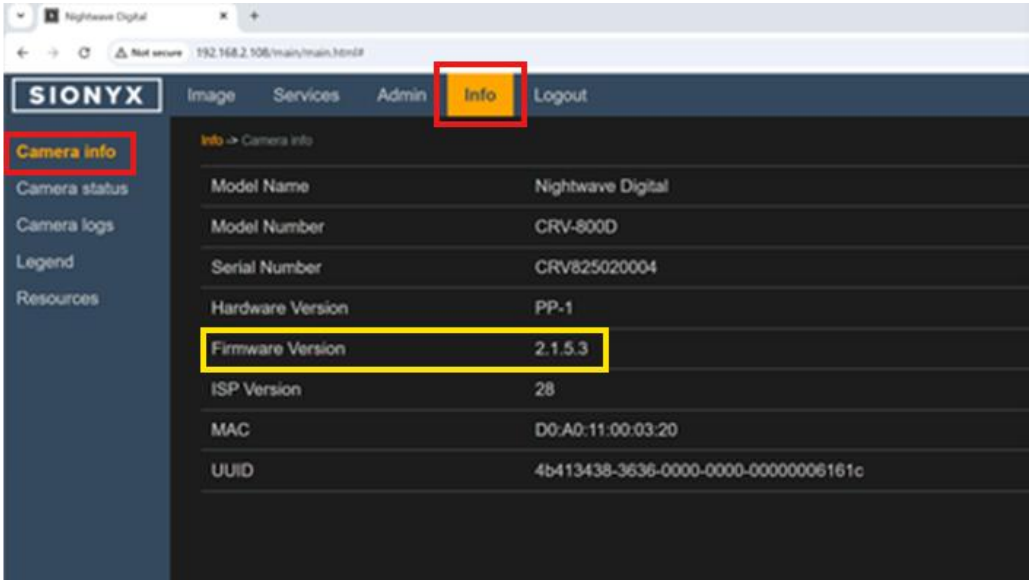


Figure 53: Firmware Version under Camera Info Section

3. Navigate to “Admin” in the top toolbar and select “Upgrade” in the left toolbar.

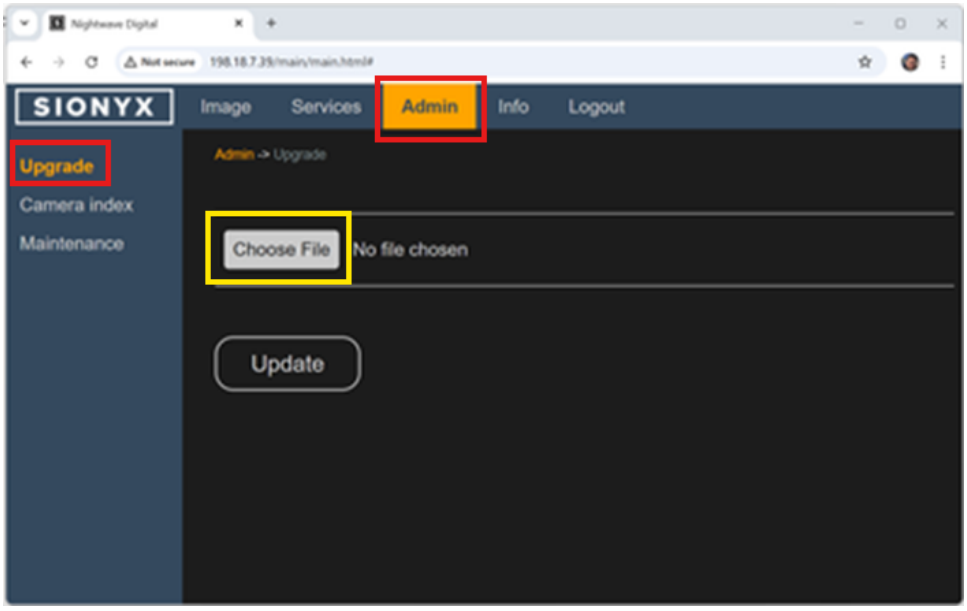


Figure 54: Selecting a File under Upgrade Section

4. Click “choose file” and browse. If the file is accepted, filename will be shown on the Tool Panel page (see Figure 55).

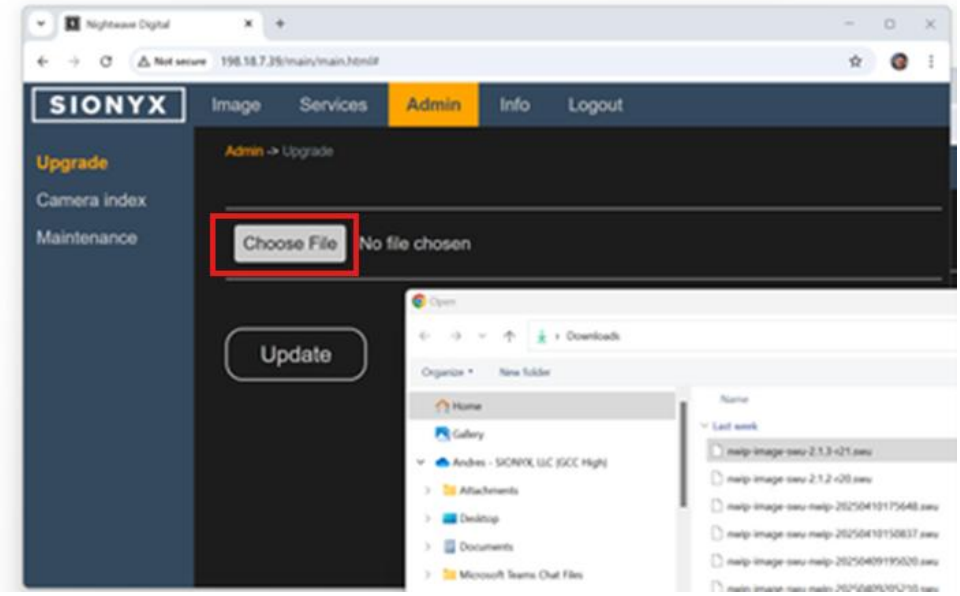


Figure 55: Browsing for File Selection to Upgrade

5. Click “Update” (see Figure 56) and a message will appear with a count (see Figure 57).

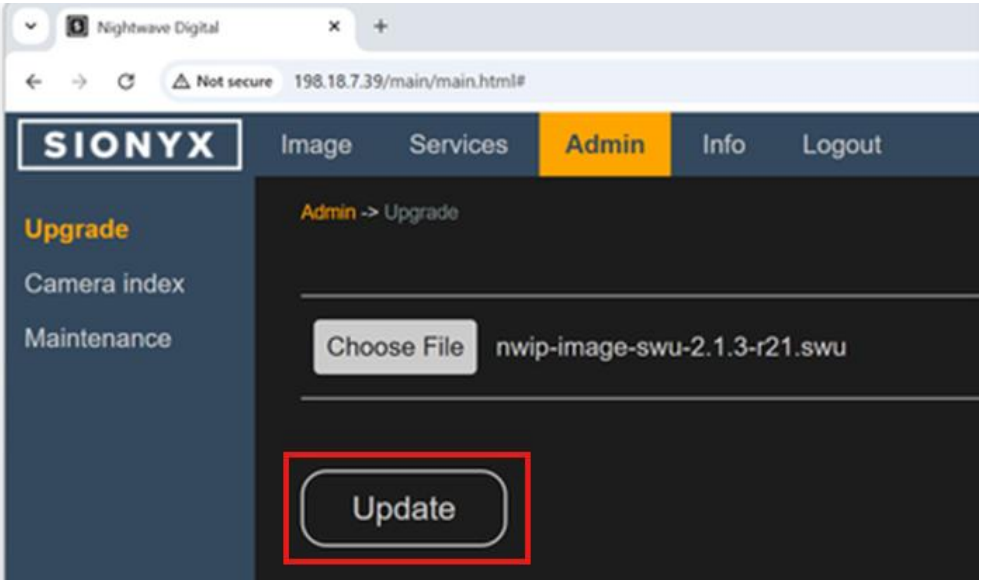


Figure 56: Updating Once File is Selected

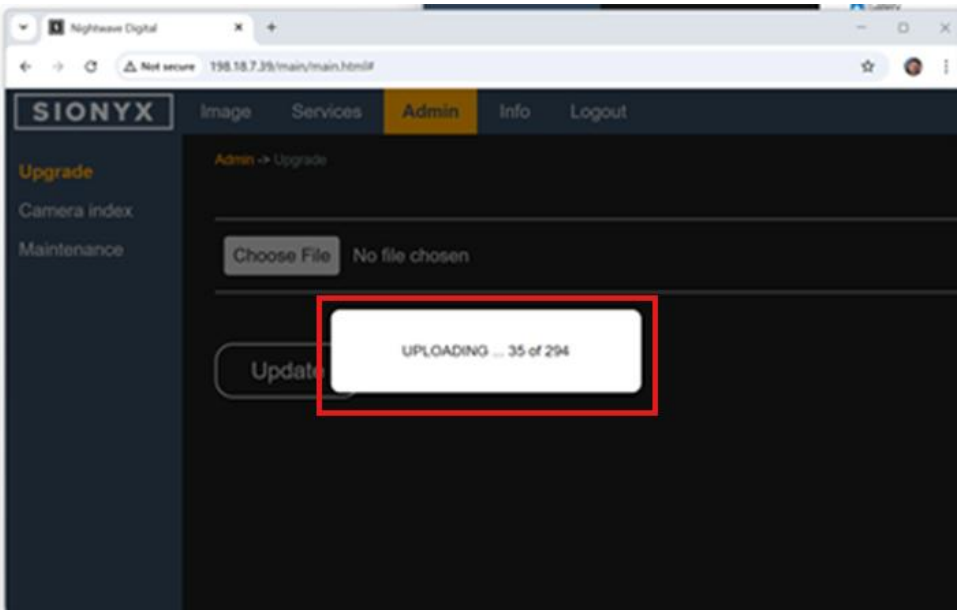


Figure 57: Uploading Window Popup

6. When it is complete, a message will appear, indicating the upload is complete. The camera will reboot itself. Allow up to two minutes to complete.

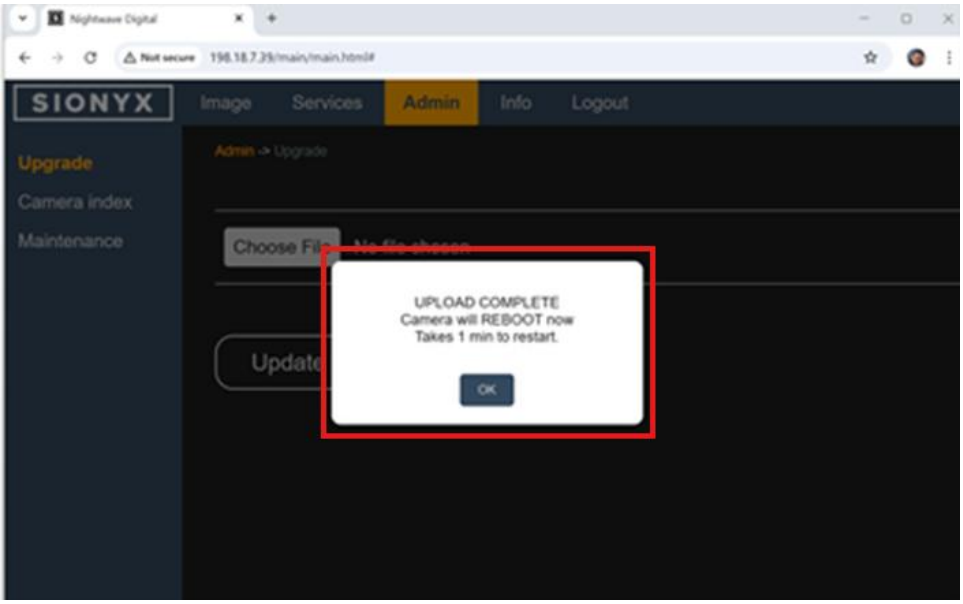


Figure 58: Upload Completion Window Popup

7. Once the camera has completed this process, navigate back to the “Info” section in the top toolbar and confirm new version is shown under “Camera info.”

10.5.2 Firmware Upgrade via Mobile App

The upgrade process consists of two steps:

1. The current version of the mobile application requires that the new FW file is downloaded to the phone previously. Navigate to the SIONYX web page to get the latest firmware by using:

SIONYX URL: https://www.sionyx.com/pages/nightwave-firmware
QR CODE: Accessible from the camera web panels.



Figure 59: Firmware upgrade QR Code

2. Connect to the camera using the mobile application following the steps in section 9.
    a. Open the camera controls and select “upgrade.”



Figure 60: SIONYX Firmware upgrade- Selecting “Upgrade”

b. Click “Choose File” and select from your phone the downloaded file.

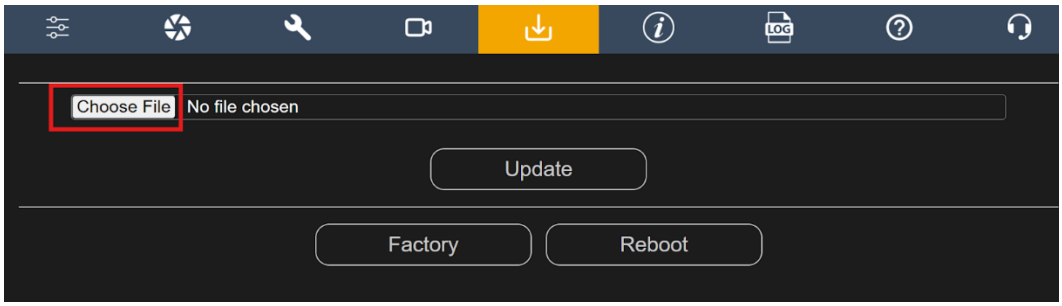


Figure 61: SIONYX Firmware upgrade- Choosing downloaded file

c. Click “Update” to initiate the process.

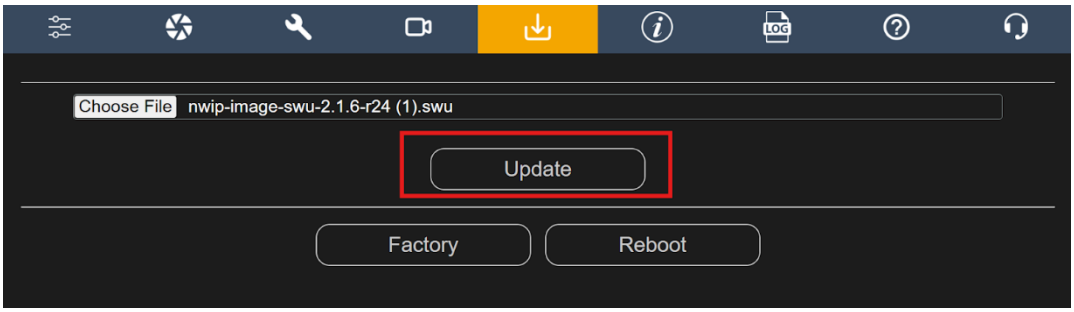


Figure 62: SIONYX Firmware upgrade- Initiating update

d. The upgrade process will transfer the file to the camera first, then there will be a counter to indicate the progress.

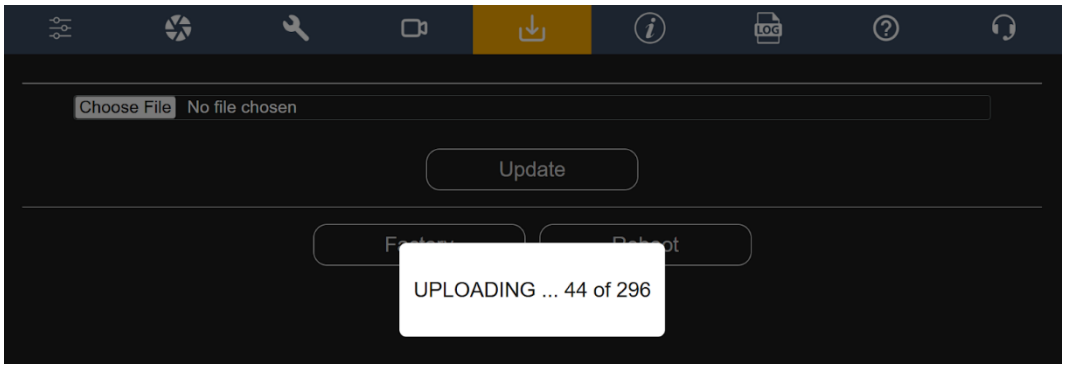


Figure 63: SIONYX Firmware upgrade- Upgrade progress indicator

e. Once transfer is complete, the camera will upgrade and reboot. This takes approximately two minutes. After the reboot the Wi-Fi connection will be lost and the user will then need to reconnect to the camera.

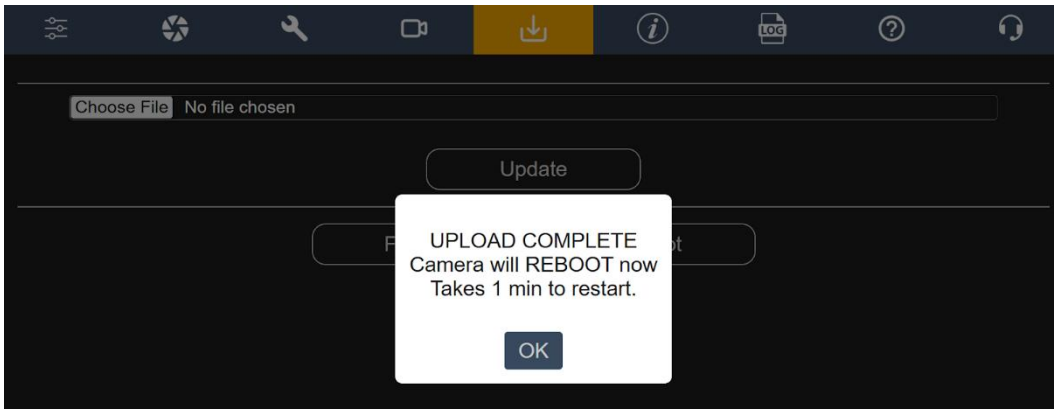


Figure 64: SIONYX Firmware upgrade- Completion screen

f. New FW version can be checked in this section. Click the information icon (highlighted and selected in Figure 65).

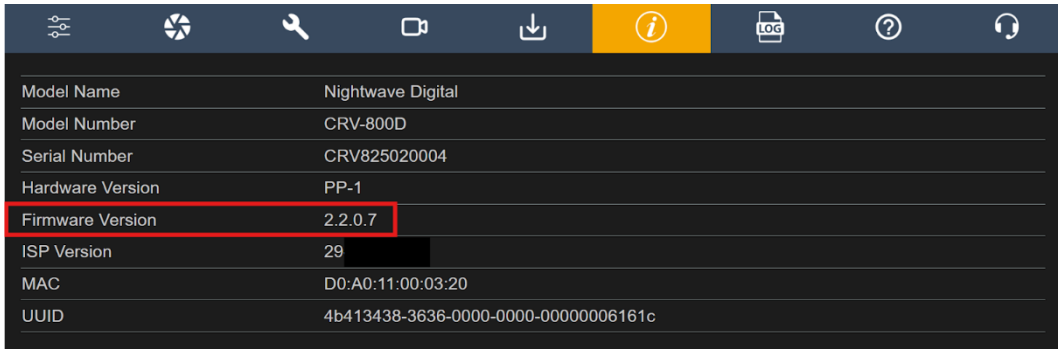


Figure 65: SIONYX Firmware upgrade- Verifying FW version information

g. In the case of a necessary factory reset, select the “Factory” button. Check the firmware’s release notes to see if a factory reset is necessary for you.

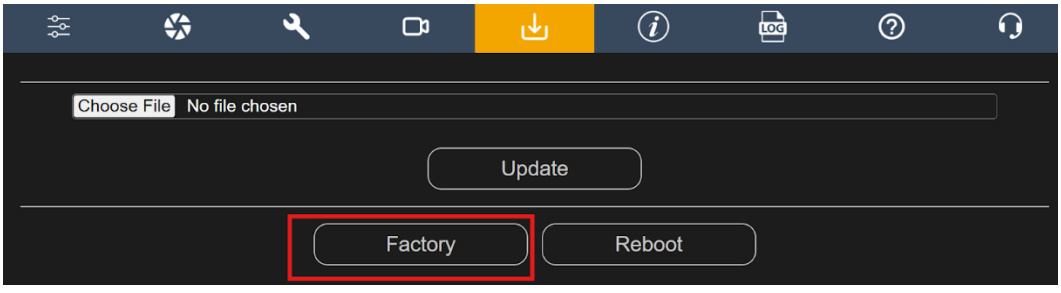


Figure 66: SIONYX Firmware upgrade- Factory reset

11 Multifunctional Display Compatibility Matrix

For detailed information on compatibility between the NIGHTWAVE DIGITAL camera and various multifunction displays (MFDs), please refer to the Compatibility Matrix available on our website:

https://www.sionyx.com/pages/mfd-chartplotter-compatibility-matrix

The following is a list of some the MFDs that were a part of SIONYX testing:

- Garmin GPSMAP 943
- Raymarine Axiom 9
- Simrad EVO NSS 3S