



PLAY



# USER GUIDE

January 2023

NDI

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## Important Information

### Legal Notice

To ensure account security, please change the password after your first log in. You are recommended to set a strong password (no less than eight characters).

The contents of this document are subject to change without prior notice. Updates will be added to the new version of this manual. We will readily improve or update the products or procedures described in the manual.

Best effort has been made to verify the integrity and correctness of the contents in this document, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical errors in this manual.

The product appearance shown in this manual is for reference only and may be different from the actual appearance of your device.

Due to uncertainties such as physical environment, discrepancy may exist between the actual values and reference values provided in this manual.

Use of this document and the subsequent results shall be entirely on the user's own responsibility.

## Regulatory Compliance

### FCC Part 15

This equipment has been tested and found to comply with the limits for digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



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This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

### **LVD/EMC Directive**

This product complies with the European Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC.



## Welcome to BirdDog!

Thank you for purchasing PLAY. If you have any questions regarding the unit, please contact your authorized dealer.

## Using This Manual

PLAY is a sophisticated device, so please read this manual before use and retain for future reference.

### Tip

When viewing the diagrams in this manual, use the zoom controls in your browser or PDF reader to reveal more detail.

## We're Invested in Your Success

We pride ourselves on being approachable and easily contactable. We'd love to hear from you.

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## Welcome to the Future

### What is NDI®?

Your new PLAY has been designed to support the cutting edge NDI® video transmission standard.

NDI® (Network Device Interface) is a high-quality, low-latency, frame-accurate standard that enables compatible devices to communicate, and deliver and receive high definition video over your existing Gigabit Ethernet network.

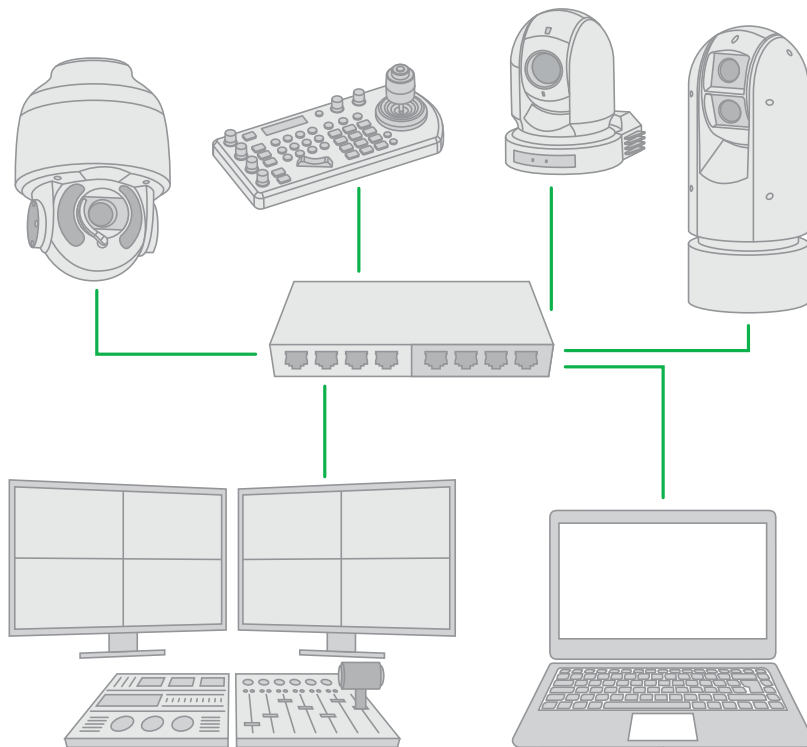
Operating bi-directionally, NDI® devices can be auto-detected, powered and controlled over the same Ethernet cable used to send the video and audio. If you have a Gigabit network, you have the potential for a streamlined, interconnected, video production environment.

With the introduction of NDI® 5, you can now securely share network sources between remote sites anywhere in the world – on a single network port. Even a smartphone can be a NDI® source.

Transitioning to NDI® can also occur gradually. Existing SDI or HDMI signals can easily be converted to an NDI® stream and piped where required on your network and converted back only at the necessary endpoints.

BirdDog has been on the NDI® journey since the very beginning, and PLAY is just one of our products designed to take advantage of the features and potential of NDI®.

For more information on NDI®, please refer to this [page](#) on our website.





## Key Features

PLAY is a simple and effective way to convert NDI streams to HDMI for display on a variety of screens.

Setup is simple:

- Connect PLAY to USB power.
- Connect PLAY to your TV via the HDMI port.
- Connect PLAY to your network via the Ethernet port.

### NDI® 5

PLAY supports new NDI® 5 functions including high bandwidth NDI®, NDI® HX2 and HX3.

### 4K UHD

Receive NDI® in resolutions up to 4Kp60.

### Tiny footprint.

Play measures just 85mm x 85mm x 19mm, and weighs 97 grams.

### USB Power

PLAY is powered by standard USB-C for maximum flexibility.

### CEC control

The built-in CEC control lets you use your own remote to browse and play NDI® sources.

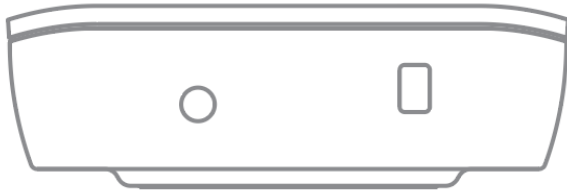
### Comprehensive API support

RESTful API, Crestron control module, Zoom API, Q-SYS API.



## Getting to Know PLAY

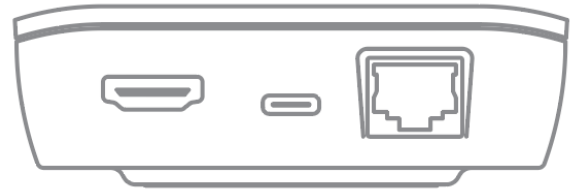
### Physical Layout



On/Off

Remote Sensor

USB Power



HDMI

Ethernet

### Powering PLAY

Located at the side of the PLAY is a USB-C connection port. This power input accepts 5V DC, 1.2A power.





# Getting Started with PLAY

## Make Your Connections

- Connect PLAY to USB power.
- Connect PLAY to your TV via the HDMI port.
- Connect PLAY to your network via the Ethernet port.

## Logging In

1. Once you've made your connections, the TV will display the BirdDog splash-screen. The PLAY IP address will be displayed in the top left corner of the TV screen. You can scan the displayed QR code which will open the PLAY Quickstart Guide on your device.
2. On your browser enabled device connected to the same network, type this IP address into the browser address bar and press enter. The BirdDog web interface (BirdUI) will display.
3. Type the default password (**birddog**, all lower case) into the password field and press the OK button. You can change the password later in the BirdUI.

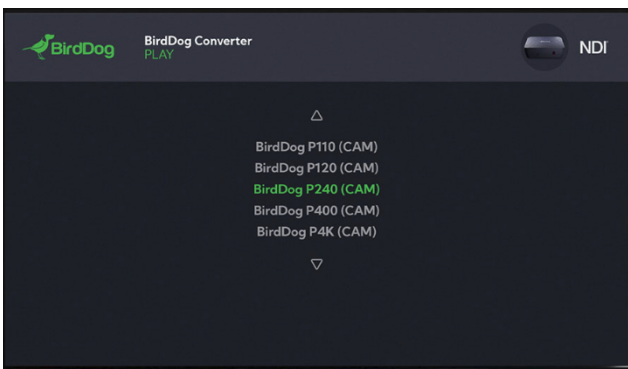
## Selecting Your Source

There are two ways to select a source to display.

### Option 1

#### Using a CEC compatible TV and remote

1. Using a CEC enabled TV screen and remote, you can scroll through sources using the up and down buttons on the TV remote. Select a source then press Enter on the remote to play the source.



2. If this does not work, then it is likely that your TV either does not support CEC, or does not have CEC enabled. To check for CEC support, please consult your TV manual or search the TV menu settings. Typically, CEC options will be found in the Advanced Settings of your TV. Once CEC is enabled, exit the TV menu and press use up or down buttons on the remote – if you see a scrolling menu on the TV, then you can use the remote to select a source.

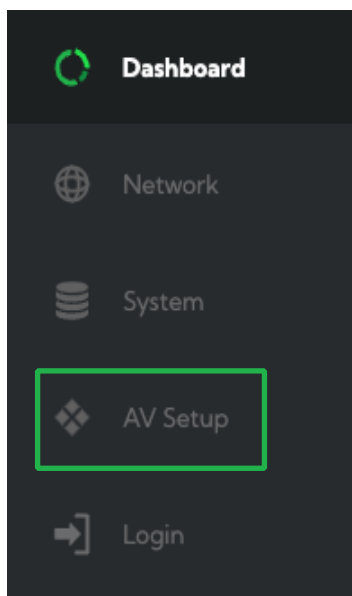
**NOTE:** There is often more than one CEC mode so you may need to try all CEC modes. If you cannot find a suitable mode, then move on to option 2.



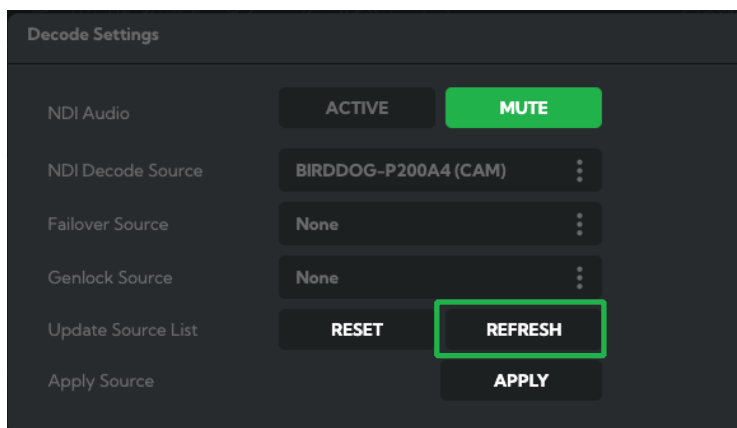
## Option 2

### Selecting a source via the BirdUI.

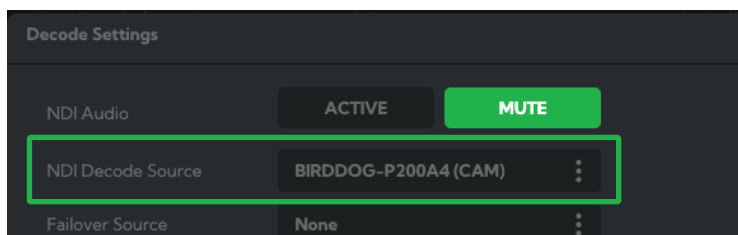
1. Login into the BirdUI as described above.
2. Select AV Setup.



3. Click the Update Source List REFRESH button.



4. Click on the NDI Decode Source dropdown list and select your desired source. In a few seconds, your chosen source should display on the TV screen.





## Web Configuration Panel

The web configuration panel (BirdUI) allows you to alter key settings of PLAY specifically A/V settings, and video frame rates, restarting the video processing engine, changing networking parameters and applying firmware updates.

### Password Management

Once you direct your web browser to the BirdUI, you will need to log in to change any settings.

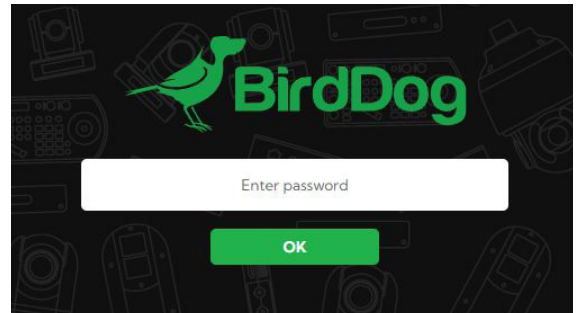
#### Default Password

The web configuration panel is secured by a user-selectable password. The default password is:

**birddog** (one word, lower case).

To change the password simply log in using the default password, navigate to the network tab in the web interface, and select change password.

It is recommended to change this password in a network environment where your device is shared with other users (e.g. not private), since this password grants full access to the configuration settings and could interrupt a live program.



### BirdUI Layout

The BirdUI is organized into the following panels:

#### 5. Dashboard

Overall view of important information such as the network connection type and video stream format and resolution.

#### 6. Network

General network settings such as DHCP IP Address details, timeout fallback address and network name, as well as NDI® specific network settings

#### 7. System

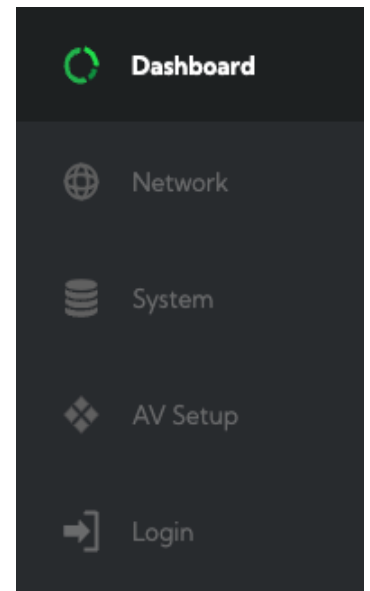
System admin functions such as updates, password change, designation of group access and reboot.

#### 8. AV Setup

Full NDI® encode management and audio settings.

#### 9. Login/Logout

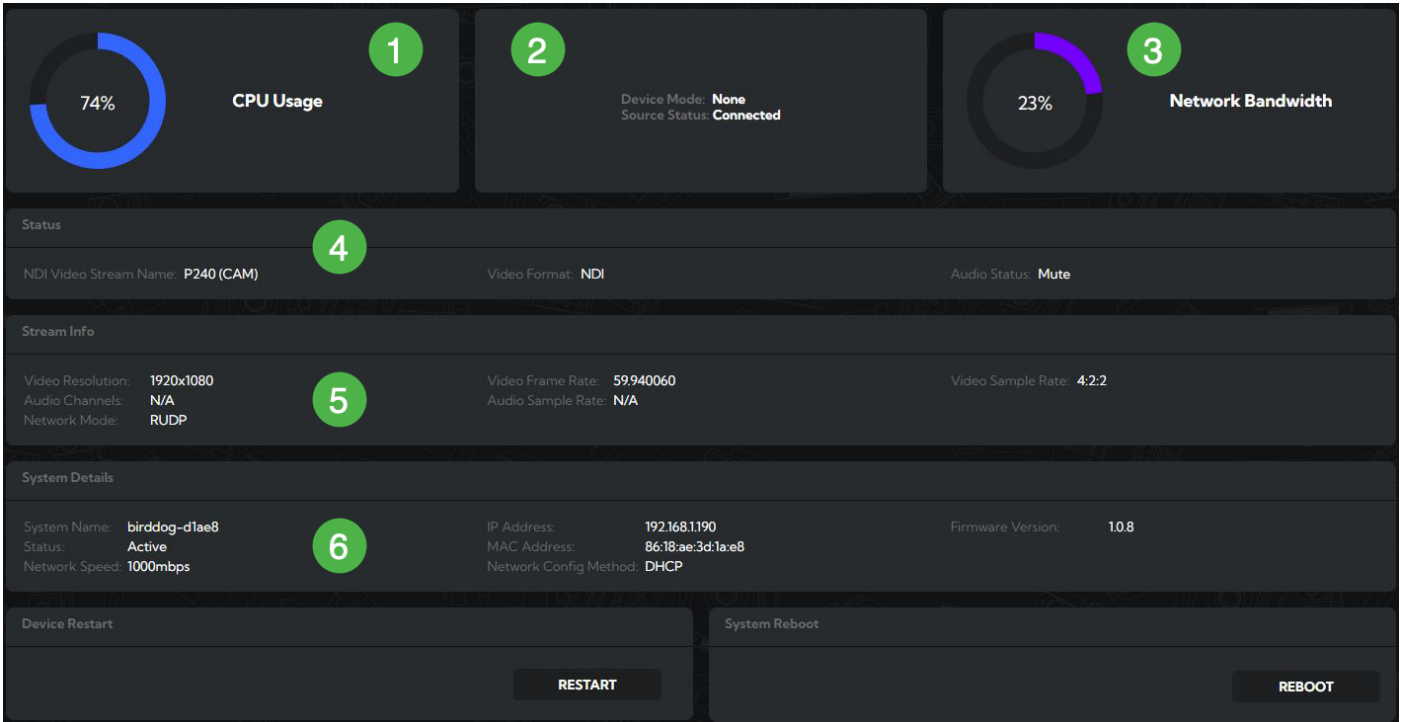
BirdUI login/logout.





## Dashboard

The Dashboard summarizes important settings and system information in one convenient location.



### 1. CPU Usage

Current computer system CPU utilization.

### 2. Device mode

PLAY is always in Decode mode. Source Status indicates whether the selected source is available

### 3. Network Bandwidth

Total network bandwidth consumption of the current device NDI® output.

### 4. Status

- NDI Video stream name.
- Selected video format.
- NDI® audio status, as configured.

### 5. Stream Info

Source stream information.

- Video resolution.
- Video frame rate.

c. Video sample rate.

d. Number of audio channels.

e. Audio sample rate.

f. Network mode.

### 6. System Details.

a. PLAY DNS name.

b. IP Address.

c. Current PLAY firmware version.

d. Status of the PLAY operating system.

e. MAC address.

f. Network speed.

g. Preferred network configuration method.



## Network

### Network Details

Configuration Method	<input type="radio"/> STATIC <input checked="" type="radio"/> DHCP	DHCP Timeout	<input type="text" value="20"/>
IP Address	<input type="text" value="192.168.1.153"/>	DHCP Fallback IP Address	<input type="text" value="192.168.100.100"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>	DHCP Fallback Subnet Mask	<input type="text" value="255.255.255.0"/>
Gateway Address	<input type="text" value="-"/>	BirdDog Name	<input type="text" value="birddog-1e5fe"/> .local

Most computer networks provide for both automatic and manual configuration of network devices and PLAY can accommodate both.

### Configuration Method

Here you can set the network configuration to either DHCP (default) or Static. DHCP simplifies the management of IP addresses on networks. No two hosts can have the same IP address, so assigning them manually can potentially lead to errors. If your network is set up for DHCP, this is generally the best configuration to choose.

If you do choose to go with a Static IP address, you'll need to add the IP Address, Subnet Mask and Gateway Address information according to the requirements of your network.

### DHCP Timeout, Fallback IP address, Fallback Subnet Mask

You can set the timeout period during which PLAY will look for a DHCP IP address. After this period, PLAY will default to the designated fallback IP address.

This can be useful if you use PLAY in other network environments. For example, if a DHCP server is available in your normal office or studio application, PLAY will use the DHCP supplied IP address. If you then use the device in another application without a DHCP server, it will always default to the known fallback IP address.

**NOTE:** Do not set the fallback IP address the same as the device IP address. It is recommended to keep the default fallback IP address.

### BirdDog Name

You can give your device a meaningful name to make identification easier when viewing NDI® sources on a receiver such as a TriCaster, vMix or Studio Monitor. Be sure to make the name unique, as no two devices on the network should have the same name. The name can be any combination of a-z, 0-9, and -.

After renaming your device, navigate back to the System menu and click the REBOOT button. PLAY will re-initialize and you'll be good to go.



## NDI Network Settings

PLAY operates with the latest NDI® Libraries. There are several options to configure its behavior in an NDI® network. Each configuration has its benefits, however it is recommended to utilize the default TCP transmit method unless you have reason to change.

### Receive Preferred Method

#### TCP

TCP is the default method of transmission for NDI®. It operates well within local networks with predictable latency and limited jitter. BirdDog recommends that TCP be used for typical applications, and only using alternative transports for specific reasons.

#### UDP

UDP is recommended for networks where there is extended latency from one end to the other. The nature of UDP means that it does not receive a confirmation of each packet being successfully received – vastly improving performance on busy networks. UDP can have some consequences if there are other issues on the network such as jitter or lost packets as it will not inherently re-sent a lost packet.

#### R-UDP (Reliable UDP)

This protocol bridges the performance of TCP and UDP. Compared to TCP, it reduces overall network load (allowing more NDI® streams) by not requiring every packet to be 'acknowledged' by every receiver – has error correction built in for smoothness and reliability.

#### Multicast

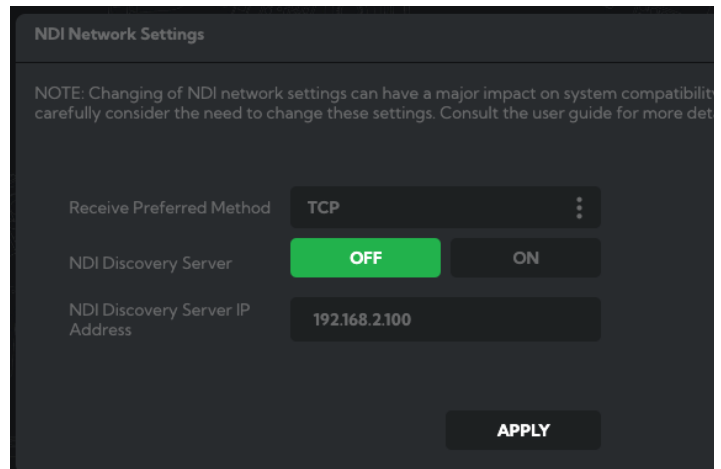
Multicast is especially useful for use-cases that require a single source to be received on multiple receivers simultaneously. Utilizing Multicast offloads the distribution of the NDI® A/V packets to the network infrastructure. You should take care to ensure your network is specifically configured to support Multicast as using it on an ill-prepared network can create unintended network problems.

### NDI® Discovery

If you choose to use an NDI® Discovery Server, you can configure it in this tab. By default, NDI® utilizes mDNS (multicast Domain Name System) to create the zero configuration environment for discovery. Unless the network is specifically configured to not allow mDNS, NDI® sources will be discovered.

The NDI® discovery service is designed to replace the automatic discovery NDI® uses with a server that operates as an efficient centralized registry of NDI® sources that requires much less bandwidth. Multiple servers can be specified for failover redundancy. NDI® discovery server also helps with location of devices that reside on different subnets. The NDI® Discovery Server is available in the NDI 5.5 version of the free [NDI Tools](#) (C:\Program Files\NDI\NDI 5 Tools\Discovery\NDI Discovery Service.exe).

1. If you are using one or more NDI® Discovery Servers, click the ON button.
2. Enter a comma delimited list of the IP address(es) of your NDI® Discovery Server(s).
3. Click the APPLY button to save your changes.





## System

### Password Settings

Password Settings

Current Password

New Password

Confirm Password

APPLY

The BirdUI is secured by a user-selectable password. To make changes to any settings, you'll need to log in. The default password is **birddog** (one word, lower case). It is recommended that the default password be changed, since the BirdUI grants full access to the PLAY configuration settings.

You can change the password in the Password Settings tab.

1. Enter the current password.
2. Enter the new password. It is recommended that you change this password to prevent unauthorized changes in a network environment where the device is shared with other users (e.g. not private). Confirm the new password and click the APPLY button.

### System Update

System Update

CHOOSE FILE...

UPLOAD

We are always adding new features and improving the performance of our products, so installing the latest firmware will provide you with the best user experience.

To upgrade the firmware, [download the firmware](#) and follow the **Firmware Upgrade Instructions** located in the download folder.

### System Reboot

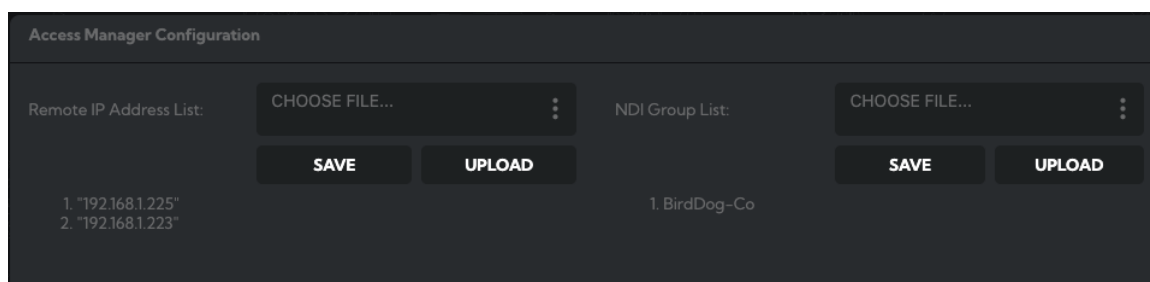
System Reboot

REBOOT

Click this button to reboot the unit after changing key network settings or the BirdDog name.



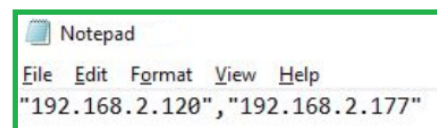
## Configuration Update



### Remote IP List

By default, NDI® devices are visible to each other only when they're on the same subnet. If you want visibility or control of a device on a different subnet, you can add it's address manually as a Remote IP. You can upload and download Remote IP Lists for sharing with other devices. To upload a list:

1. Click the CHOOSE FILE button to load your Remote IP List in UTF-8 encoded string format.
2. Click the UPDATE button. Do not upload a blank list.

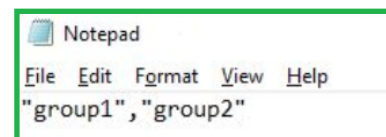


### NDI Group List

Set the NDI Group list. NDI® Groups allow you to restrict communication to only devices that belong to the same NDI® Group. NDI® Groups can be very useful to control visibility and access in larger environments. You can upload and download Group lists for sharing with other devices. Groups also need setting up in NDI Access Manager, available in [NDI Tools](#).

To upload a list:

1. Click the CHOOSE FILE button to load your NDI® Group List in UTF-8 encoded string format.
2. Click the UPDATE button. Do not upload a blank list.



## AV Setup

### Device Settings

#### OSD

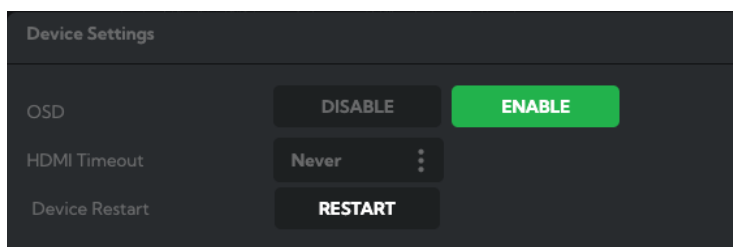
You can choose to disable the On Screen Display (OSD) to help avoid setting changes by unauthorised persons.

#### HDMI Timeout

You can set the HDMI signal timeout to match your source device such as a laptop. The timeout can be chosen from 1 second to 45 minutes.

#### Device Restart

Click this button to restart the decode engine. This may be necessary after changing key image settings e.g., resolution.







## Decode Settings

### NDI Audio

Click the Mute button to disable the incoming NDI® stream audio.

### NDI Decode Source

Select an available NDI® source from the Available NDI Sources dropdown list and Click the Apply button to apply the change. You can update this list by clicking the Refresh button.

### Failover Source

If the generated NDI® stream is interrupted for any reason the receiver can automatically switch to a nominated alternative NDI® stream. This is particularly useful for live productions where there can be no risk of black being broadcast should any source no longer be available. Select an available NDI® source for the failover function from the Available NDI Sources dropdown list.

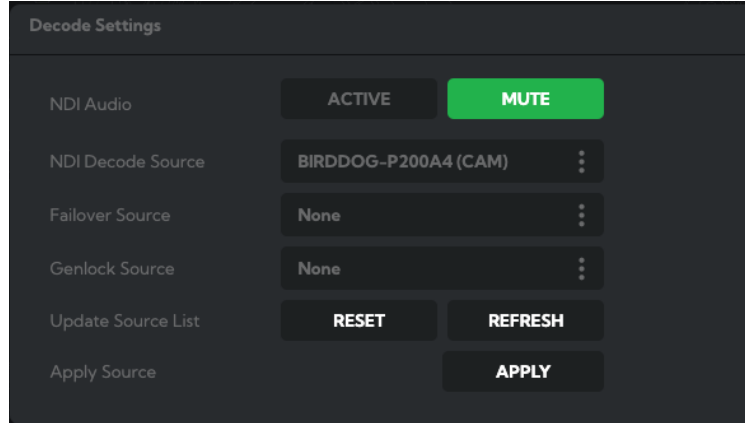
Click the Reset button to reset this list to display only active streams, or click the Refresh button to add new streams to the current list.

### Genlock Source

Click the dropdown to choose your genlock source.

### Apply Source

Click the Apply button to save your changes.





## Key Specifications

### 1. SUPPORTED VIDEO FORMATS

- UHD 2160p – 25, 29.97, 30, 50, 59.94, 60
- HD 1080p – 25, 29.97, 30, 50, 59.94, 60
- HD 720p – 50, 59.94, 60

### 2. VIDEO I/O CONNECTIVITY

- 1x HDMI 2.0 – Full size connector

### 3. AUDIO I/O CONNECTIVITY

- HDMI 2.0 – Audio output (Stereo); Analog audio output is not supported.

### 4. VIDEO CODEC SUPPORT

- NDI® – High Bandwidth i-frame, low latency
- NDI® HX2 and HX3 – H.264/HEVC long-GOP

### 5. NETWORK CONNECTIVITY

- Ethernet RJ45 1000baseT

### 6. WEIGHTS AND DIMENSIONS

- Dimensions – 85mm x 85mm x 19mm
- Weight – 97g

### 7. POWER

- Power Input – USB-C
- Voltage – 5V DC
- Current – 1.2A

For full specs, please visit the [webpage](#).



## Glossary

### Domain

A domain contains a group of computers that can be accessed and administered with a common set of rules. Domain can also refer to the IP address of a website on the Internet.

### DNS

DNS (Domain Name System) is a system used by the Internet and private networks to translate domain names into IP addresses.

### mDNS

mDNS (Multicast DNS) refers to the use of IP multicast with DNS to translate domain names into IP addresses and provide service discovery in a network that does not have access to a DNS server.

### Ethernet

Ethernet, standardized as IEEE 802.3, refers to a series of technologies used to connect computers and other devices to a LAN (Local Area Network) or wide area network (WAN).

### Firmware

Firmware is a class of software held in non-volatile memory that provides the low-level control for a device's hardware.

### Gigabit Ethernet (GigE)

An Ethernet capable of transmitting frames at a rate of a gigabit per second. A Gigabit capable Ethernet network is recommended for NDI® production workflows.

### IP

IP (Internet Protocol) is the communications protocol for the Internet, many wide area networks (WANs), and most local area networks (LANs) that defines the rules, formats, and address scheme for exchanging datagrams or packets between a source computer or device and a destination computer or device.

### LAN

LAN (Local Area Network) is a network that connects computers and devices in a room, building, or group of buildings. A system of LANs can also be connected to form a WAN (Wide Area Network).

### Mbps

Mbps (Megabits per second) is a unit of measurement for data transfer speed, with one megabit equal to one million bits. Network transmissions are commonly measured in Mbps.

### NDI®

NDI® (Network Device Interface) is a standard allowing for transmission of video using standard LAN networking. NDI® comes in two flavours, NDI® and NDI|HX. NDI® is a variable bit rate, I-Frame codec that reaches rates of around 140Mbps at 1080p60 and is visually lossless. NDI|HX is a compressed, long-GOP, H.264 variant that achieves rates around 12Mbps at 1080p60.

### Packet (Frame)

A packet is a unit of data transmitted over a packet-switched network, such as a LAN, WAN, or the Internet.



## PELCO

PELCO is a camera control protocol used with PTZ cameras. See also VISCA.

## PoE

Power over Ethernet

## Port

A port is a communications channel for data transmission to and from a computer on a network. Each port is identified by a 16-bit number between 0 and 65535, with each process, application, or service using a specific port (or multiple ports) for data transmission. Port can also refer to a hardware socket used to physically connect a device or device cable to your computer or network.

## PTZ

Pan, tilt and zoom.

## RJ45

A form of standard interface commonly used to connect computers onto Ethernet-based local area networks (LAN).

## RS422, RS485, RS232

Physical layer, serial communication protocols.

## Subnet

Subnet or subnetwork is a segmented piece of a larger network.

## Tally

A system that indicates the on-air status of video signals usually by the use of a red illuminated lamp.

## TCP

TCP (Transmission Control Protocol) is a network communications protocol.

## UDP

UDP (User Datagram Protocol) is an alternative protocol to TCP that is used when reliable delivery of data packets is not required.

## VISCA

VISCA is a camera control protocol used with PTZ cameras. See also PELCO.

## WAN

WAN (Wide Area Network) is a network that spans a relatively broad geographical area, such as a state, region, or nation.

## White Balance

White balance (WB) is the process of ensuring that white objects and by extension, all colour, in your video are rendered accurately. Without correct white balance, objects in your video display unrealistic color casts.



WELCOME TO THE FUTURE.

[birddog.tv](http://birddog.tv)  
hello@birddog.tv