

CAMERA DIRECTOR

USER GUIDE

NDI®

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



Welcome to BirdDog

Thank you for using Camera Director. We hope you enjoy the total camera control offered by this application.

Using This Guide

Camera Director is powerful and sophisticated software, so please read this guide before use and retain for future reference.

We're Invested In Your Success

At BirdDog, 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®?

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

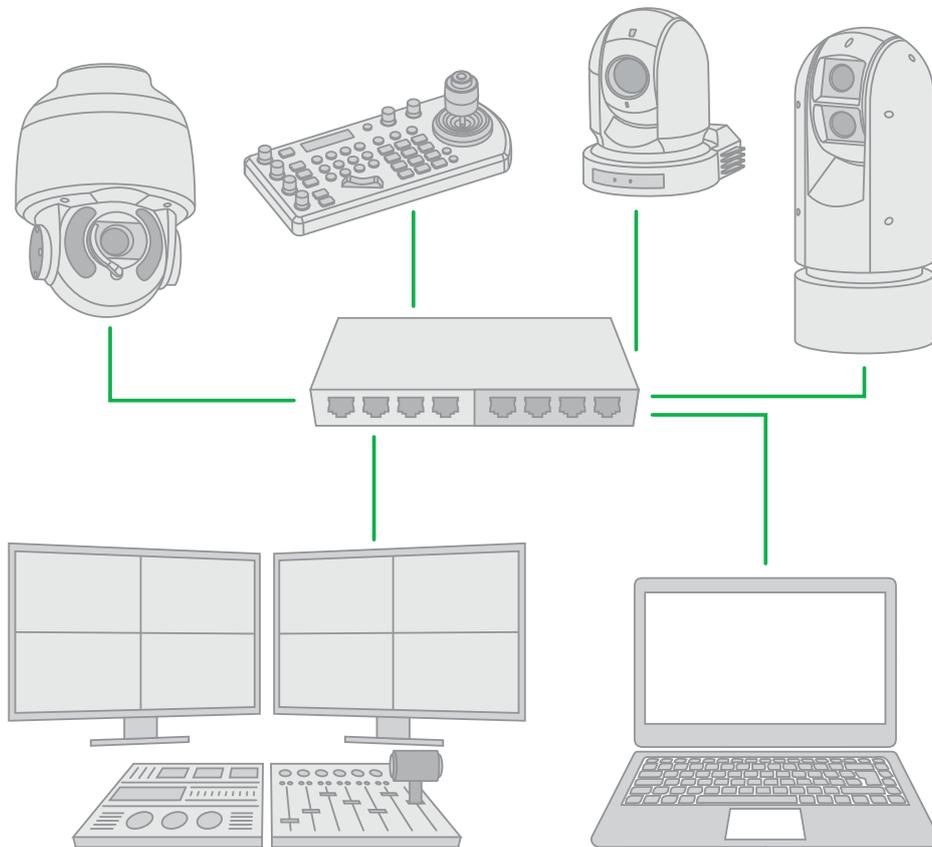
Operating bi-directionally, NDI devices can be auto-detected, powered and controlled over the same Ethernet cable used to send the video and audio. Even fill and key alpha channel information, as well as Tally, can be sent over this same cable. If you have a Gigabit network, you have the potential for 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 then converted back only at the necessary endpoints.

BirdDog has been on the NDI® journey since the very beginning, and Camera Director 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.





BirdDog Camera Director Overview

Camera Director is an application that allows control of multiple BirdDog PTZ cameras in repetitive movement productions. Operation is straightforward – add cameras, create and save individual pan, tilt, and zoom waypoint paths for each camera, and run.

Camera Director is perfect for any production where you have a repetitive set of movements, such as Horse Racing, Cricket, Awards Ceremonies, Presentations, Car Racing, and more.

Features

Individual PTZ camera paths

Each camera in the group can have its own unique pan, tilt, and zoom settings for each waypoint.

Speed control

When recalling a sequence, Camera Director gives real time speed control access so you can adjust the speed on the fly.

Save and load sessions

Save production set up time by loading a session that includes camera groups, waypoints and settings.

No software limit

Camera Director can support as many cameras as your PC processor can accommodate.

System Requirements

Ensure that your installation machine satisfies the following requirements.

- BirdDog NDI PTZ Cameras must be running on LTS firmware
- Windows 10 and above
- Intel Core i5 series processor and above recommended
- Minimum screen resolution 1920x1080 px
- NDI Tools must be installed

Installation

1. Download BirdDog Camera Director from [here](#).
2. Double click the executable.
3. Follow the prompts and perform a standard Windows install. This is a public beta release and will be operational until 31 January, 2023.



Camera Director Interface

The screenshot displays the BirdDog Camera Director interface for a race at Flemington Racecourse. The interface is organized into several key sections:

- Top Bar:** Includes the BirdDog logo, 'CAMERA DIRECTOR', and 'NDI' status.
- Control Buttons:** A row of buttons for 'GO TO START', 'GO TO END', a speed slider, 'RESET', and 'START'.
- Waypoint Sequence (a):** A vertical list of waypoints 1 through 13. Waypoints 3 and 4 are highlighted, indicating a transition.
- Camera Slots (g):** Four camera control panels. Each panel shows video resolution (1080p59.94), version (P240 or EYES P4K), and PTZ settings (Pan, Tilt, Zoom). Below each panel is a 'Way Point' selector (set to 4) and 'STORE'/'RESET' buttons. A central '+' icon allows adding more slots.
- PTZ Controls (h):** A central control area with a joystick for PTZ movement and 'Zoom' and 'Focus' sliders.
- Waypoint Parameters Table (i):** A table listing PTZ settings for each of the four cameras across waypoints 1-4.
- Global Settings (k):** A bottom panel for race configuration, including 'Total Races' (30), 'Setup Waypoint' (7/13), 'Start Waypoint' (1/13), 'Race Length' (7:00 m), 'Total Waypoint' (13), 'Current Race' (1/30), 'End Waypoint' (7/13), and 'Loop Count' (1). It features 'SAVE' and 'LOAD' buttons.
- AutoBy Sources (j):** A list of cameras with programmed waypoints.

- a. Displays the current waypoint transition during a race (waypoint sequence). For example, waypoint 3 and 4 illuminated means the transition from waypoint 3 to 4 is in progress.
- b. Sets all cameras to waypoint 1.
- c. Sets all cameras to the last waypoint.
- d. Sets the race speed.
- e. Global waypoint reset for all cameras. Use with caution!
- f. Starts the current race.
- g. Selects the camera for each slot. The interface defaults to 5 camera slots; however, you can add as many as your machine processor can accommodate. Simply click the empty slot + symbol to add another slot.
- h. Controls for programming the camera PTZ settings for each waypoint.
- i. Stored waypoint parameters are displayed in this list.
- j. Cameras that have programmed waypoints are displayed here. You can deselect a camera to remove it from a race.
- k. Global waypoint navigation. You can also set the number of races, race length and waypoint loop count for that session.
- l. Save a complete setup as a session for later recall.



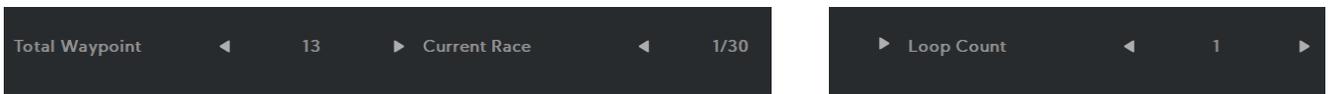
Using Camera Director

Programming a Race

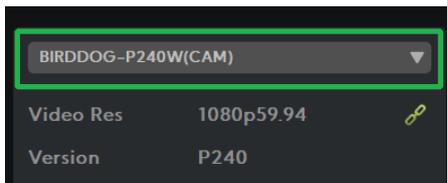
A race consists of a number of waypoints that are sequentially cycled at a user-defined rate. For each waypoint, you can program the desired pan, tilt and zoom parameters for each of the cameras.

When the race is started, each successive waypoint recalls and sends the pan, tilt and zoom settings to the cameras, allowing them to follow the race action.

1. Use the **Current Race** buttons to set the race that you wish to configure and set the total number of waypoints for that race using the **Total Waypoints** buttons. If the total waypoints constitute a lap, you can set the number of times the waypoints will loop using the **Loop Count** buttons.



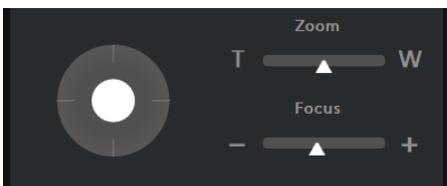
2. For each camera slot:
 - a. Select the camera from the dropdown. All currently active cameras on the network are displayed. You can access the BirdUI for the selected camera by clicking on the link icon.



- b. Click the **Go To Start** button to set all cameras to waypoint 1.



- c. Program the desired camera parameters for the waypoint using the joystick, zoom and focus controls.



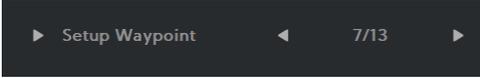
- d. Click the **Store** button to save settings for the waypoint. Saved waypoint settings are displayed in the list. Hover your mouse cursor above the list and use the scroll wheel to move through the list. Click the **Reset** button to reset **all waypoints** for that camera. Use with caution!



WayPt	Pan	Tilt	Zoom
1	15° Left	18° Down	0x0
2	37° Left	19° Down	0x0



3. Use the **Setup Waypoint** navigation buttons to move all cameras to the next waypoint and continue to program your cameras.



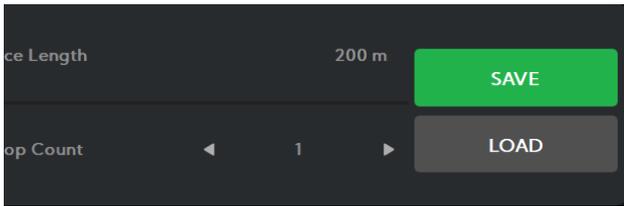
4. When all waypoints have been programmed for all cameras, click the **Go To Start** button to set all cameras to waypoint 1 and click the **Start** button to start the race.
5. Set the **Race Speed** slider to achieve a suitable waypoint cycle speed.



Saving and Loading Sessions

You can save all settings as a session for later recall.

1. Click the **Save** button to save a session or the **Load** button to recall a session. An Explorer window will allow you to navigate to the desired location.





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.



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.