AIDA IMAGING

# 12G-SDI / High Bandwidth NDI® Pan-Tilt-Zoom Broadcast Camera

## PTZ4K12G-FNDI-X30 B/W

Operation Guide
Version 1.1

Please thoroughly read through this manual before operating the unit. Please retain this manual for future reference.

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### Camera Physical Overview



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**This manual is for reference only. Future updates and changes may be different then the information provided in this guide in the future. We reserve the right to modify this manual or information contained herein anytime without notice.**

## Overview

### Safety Guides

⚠ The camera power voltage is 12V DC, rated at 5A. We suggest you use the original power supply adapter supplied by the factory.

⚠ Please ensure all cables and connections are safe from moisture, corrosive liquid and hazardous conditions.

⚠ Operation temperature range should be from 0°C to 40°C (32°F to 104°F) up to 80% humidity.

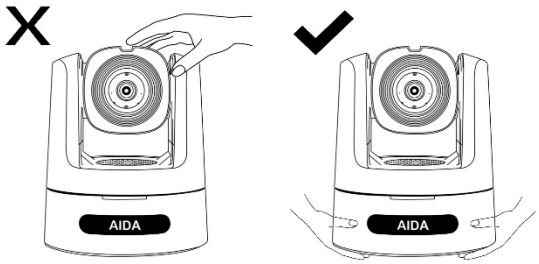
⚠ Avoid stress, strong vibrations, and high humidity environments when transporting, storing, or installing. We recommend using the packaging foam, and taping the PT head when transporting to stop any unnecessary damage to the camera.

⚠ Do not unscrew, remove, or attempt to open the camera housing or cover. Doing so will result in a breach of warranty contract. Please contact our support team or authorized technicians to deal with problems.

⚠ Do not direct the camera lens towards intensive lights such as the sun. Doing so will damage the imaging sensor on board.

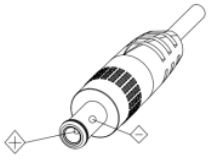
⚠ Use a dry, soft cloth to clean the housing. You may use neutral cleaning agents for the camera housing. Please use microfiber lens cleaner to wipe the camera lens.

⚠ Do not physically carry or move the PT head of the camera. If you are moving the camera, please hold the bottom to avoid motor mechanism damage.




⚠ Please install the camera on a smooth, fixed surface free from vibrations. Avoid placing on slanted or leaning platforms. Optional ceiling mount (CM-PTZ12G-B/W) and optional wall mount (WM-PTZ12G-B/W) are recommended and sold separately.

⚠ Power supply polarity is as shown.



*Video quality of the camera may be effected by specific electromagnetic frequencies, please adjust the anti-flicker and electronic shutter speed accordingly.

## Box Contents

Please confirm the packing list below of all items provided with (1) purchase of the PTZ4K12G-FNDI-X30B/W.

PTZ4K12G-FNDI-X30B/W Camera. . . . . .1
Power Adapter . . . . . .1
Power Cable + Intl. Conversions. . . . . .1
RS232 Cable. . . . . .1
USB Type-C Cable. . . . . .1
IR Remote Controller . . . . . .1
Mini-XLR to XLR adapter. . . . . .1
Safety Carabiner. . . . . .1
Thank you card . . . . . .1

**NOTE:**
If you are missing any items, please contact our rma@aidaimaging.com team to assist in getting additional parts. Serial number and invoice will need to be provided to this.

If you would like to purchase additional accessories, please visit our ecommerce site at:

aidaimaging.shop

to purchase any spare parts.

## Additional Purchasable Accessories for the PTZ4K12G-FNDI-X30:

CM-PTZ12G-B/W – Ceiling mount accessory to mount the PTZ4K12G-FNDI-X30 above. Optional color of black and white.

WM-PTZ12G-B/W – Wall mount accessory to mount the PTZ4K12G-FNDI-X30 upright on a wall. Optional color of black and white.

You can purchase these at any AIDA authorized reseller / distributor. You can find your nearest reseller at:

aidaimaging.com/where-to-buy

Alternatively, they will be available for purchase directly from us at a later date:

aidaimaging.shop

Ex: WM-PTZ12G-W installed on a wall with camera

## Features & Product Highlights

The PTZ4K12G-FNDI-X30 is a pan/tilt/zoom CMOS video camera intended for broadcast and proAV use.

- The camera features a 1/1.8" Sony CMOS 9MP sensor.
- The pan tilt head allows for 340° pan rotation and 180° tilt rotation.
- Pan tilt speeds can go as slow as 0.1°~ 80°/s, and 0.1° ~ 60/s respectively.

## Zoom Performance

The camera comes with a 4K 30X optical zoom, capable of capturing up to 150ft effortlessly. The camera also features a 8X digital zoom on top of the 30X optical zoom for a capable zoom up to 240X zoom.

## Video Performance

The camera is capable of outputting up to UHD 60fps video simultaneously through many outputs. The main physical output connections are 12G-SDI, SFP+ (module sold separately,) HDMI, USB-C, RJ45, and ROI*. RJ45 consists of pre-installed NDI® outputs, RTSP, RTMP, and SRT.

## Audio Input

The camera is capable of embedding audio over its physical and RJ45 outputs. The two inputs are 3.5mm unbalanced TRS IN, and a mini-XLR input w/ phantom power. A mini-XLR to XLR adapter comes-with each camera purchase for a more desirable connection.

## PTZ Functions

The camera is capable of saving camera settings, focus settings, and positional settings through presets. The camera can hold up to 100+ presets through its webUI and VISCA commands. The option to freeze video (freeze preset) is also available, as well as preset speed adjustment to slow or speed up the transition between presets.

## Controlling the PTZ

The PTZ has a plethora of options for control. Physically it includes a RS422, RS232, RJ45, and IR Remote Controller. The PTZ can utilize our physical controllers such as the CCU-IP and CCU-MINI, as well as our software controllers the CCS-USB, and IPC Software.

## PoE++ Capable

The PTZ natively supports both PoE++ (recommended) and **PoE+ (requires up to 40W upon startup, but less during operation.)

## Mohawk Tally Light

The PTZ comes equipped with 2 tally lights, on the Pan-Tilt head, as well as on the front of the base of the camera. Settings to increase brightness or turn off tally light can be found in the settings.

## Genlock Capable

The PTZ has a tri-level genlock reference-in connector to enable video sync between multiple cameras. The PTZ works well with our TGEN-6P, allowing up to 1080p sync amongst 6 cameras per TGEN-6P.

## FreeD Capable

The PTZ has a built-in FreeD protocol support, tracking XYZ positional coordinates to be used in FreeD related softwares.

## Full Video Parameter Control

The camera has multiple controllable features from exposure, white balance, and image settings to maintain and fine-tune for any broadcast production.

## Multi-Camera Profiles

The camera is capable of exporting its own settings config file, which can be uploaded to other PTZ's to save the setup time. This also helps with multi-camera installations in similar environments.

## Direct SD Card Recording

The camera has a dedicated micro-SD slot for direct SD recording from PTZ to card. This setting can be enabled once, scheduled, or always. The camera encodes said video into .mp4 videos only.

## A.I. Based Auto-tracking

This camera features our A.I. based autotracking, utilizing the head of the talent to easily and effortlessly track the target as long as its in frame. There are multiple features to adjust. Learn more.

*ROI is recommended to be used while the camera is operating in 4K mode, as it takes an position adjustable 1080p video output via SDI.
**Some PoE+ switches don't support enough power to boot – please use PoE++ or DC12V if this is the case.

## Camera Specs

### Camera:

| | |
|---|---|
| Sensor | 1/1.8-inch 9MP Sony CMOS Sensor |
| S/N Ratio | ≥50dB |
| Min. Lux | 0.5Lux (50 IRE Max AGC,1/30, F1.8) |

### Zoom Module:

| | |
|---|---|
| Zoom Capability | 30X Optical zoom, with 8X digital zoom. Combined 240X zoom |
| Focal Length (wide/tele) | f= 6.87mm ~ 212.48mm |
| F-Stop (w/t) | F1.4~F4.6 |
| Horizontal Viewing Angle (w/t) | 60° ~ 2° |
| Vertical Viewing Angle (w/t) | 34~1.1° |
| Diagonal Viewing Angle (w/t) | 67°~2.3° |
| Minimum Focus Distance (w/t) | 12" / 60" (30cm / 150cm) |
| Focus Modes | Manual / Auto |

### Pan/Tilt Head Specs

| | |
|---|---|
| Presets | IR Controller = 10<br>IP/Serial = 250+/- |
| Preset Accuracy | 0.1° |
| Pan Rotation Angle | -170°~+170°<br>Eff. 340° rotation |
| Pan Rotation Speed | 0.1° ~ 80°/s |
| Tilt Rotation Angle | -90°~+90°<br>Eff. 180° rotation |
| Tilt Rotation Speed | 0.1° ~ 60°/s |

## General Specs

| | |
|---|---|
| Input Voltage | DC12V, PoE++ (IEEE802.BT standard) |
| Operating Temperature | 32°F~108°F<br>0°C~42°C<br>(+/- 10%) |
| Operating Humidity | <80% |
| Camera Dimensions | 8.3"/10.44"/10.32"<br>21cm/26.5cm/26.2cm |
| Camera Net Weight | 10.12lb (4.59kg) |
| PTZ Shell Colors | Black/White |

## Network Streaming

| | |
|---|---|
| Video Encoding Protocols | H.264/H.265 |
| Bitrate | VBR / CBR |
| Bitrate Range | Adjustable: 1mb~32mb<br>Potential: 1mb~200mb |
| Network Port Speed | 1gb |
| Streaming Protocols | NDI® High Bandwidth, NDI® HX2, NDI® HX3, SRT, RTSP, RTMP, HTTP, webRTC |
| Control Protocols | ONVIF, VISCA over IP (UDP), NDI®, HTTP API* |

*For HTTP API, please contact our support@aidaimaging.com email.

## **Video Formats** (res/fps)

| | |
|---|---|
| 12G-SDI | 3840x2160p (UHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080p (FHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080i (FHD-i): 60/59.94/50<br>1280x720p (HD): 60/59.94/50/30/29.97/25 |
| SFP+ | 3840x2160p (UHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080p (FHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080i (FHD-i): 60/59.94/50<br>1280x720p (HD): 60/59.94/50/30/29.97/25 |
| ROI [3G-SDI] | 1920x1080p (FHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080i (FHD-i): 60/59.94/50<br>1280x720p (HD): 60/59.94/50/30/29.97/25 |
| HDMI | 3840x2160p (UHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080p (FHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080i (FHD-i): 60/59.94/50<br>1280x720p (HD): 60/59.94/50/30/29.97/25 |
| NDI® High Bandwidth* | 3840x2160p (UHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080p (FHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080i (FHD-i): 60/59.94/50<br>1280x720p (HD): 60/59.94/50/30/29.97/25 |
| NDI® HX2, RTSP, RTMP & SRT | 3840x2160p (UHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080p (FHD): 60/59.94/50/30/29.97/25/24/23.98<br>1920x1080i (FHD-i): 60/59.94/50<br>1280x720p (HD): 60/59.94/50/30/29.97/25 |
| NDI® HX3* | 1920x1080p (FHD): 60/50 |
| USB | UHD/FHD/HD: 60/30 |

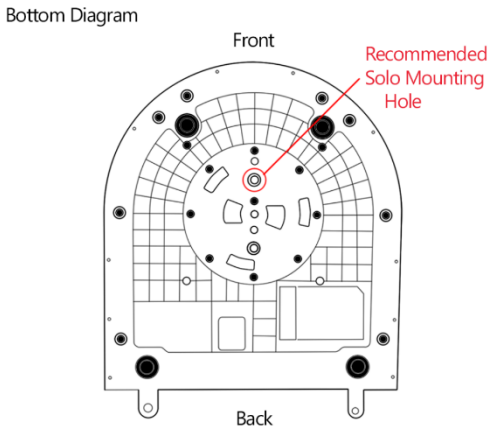
## Installing the Camera

### Installing the camera on a flat surface

You can easily place the PTZ on a flat surface such as a table or desk with less than 10° inclination to prevent the camera from slipping or falling.


### Installing the camera on a Tripod

The PTZ comes with 2 1/4" 20 holes. To ensure perfect connections, we recommend a tripod mount that can cover both holes such as a T-Bar. If that is not possible, using the 1/4" 20 near the front of the camera is recommended.



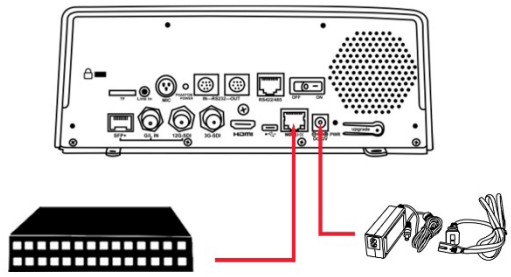

### CM or WM PTZ wall mount accessory

Please visit out download page for installation instructions per model.

## Quick Start

### Physical Port Output (HDMI, SDI, USB, SFP+)

To get the PTZ4K12G-FNDI-X30 running, please provide power using the recommended power supply or PoE++ rated network switch to power the camera.



PoE++ Certified Switch

Factory Power Supply

Allow the PTZ a 1-3 minutes to properly boot up after receiving power. This wait should also be done if the PTZ power was removed, reset, or changed.

Next, securely connect a HDMI, SDI, USB, or SFP cage (sold separately) to the PTZ. From there, you should immediately get an image into your ingest.

Default resolution of these outputs is 1080p 60fps. If your ingest does not support that, please connect to the web UI or use the IR remote to change the resolution to match your ingest.

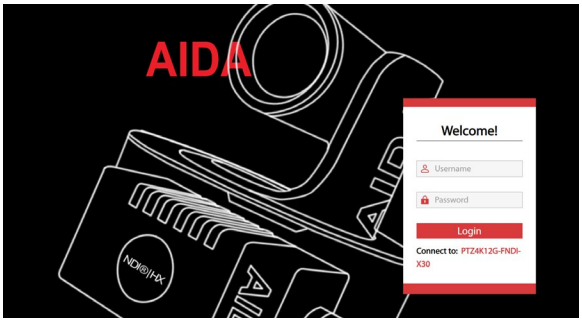
### Digital Port Output (NDI®, RTSP, RTMP, SRT)

To get the PTZ4K12G-FNDI-X30 running, please provide power using the recommended power supply or PoE++ rated network switch to power the camera.

Allow the PTZ a 1-3 minutes to properly boot up after receiving power. This wait should also be done if the PTZ power was removed, reset, or changed.

Next, connect a network cable (if using recommended factory power supply) to the PTZ, and connect it to your main network. The default IP address of the PTZ is:

Factory IP Address: 192.168.1.188




◊ NOTE: You can change this via the physical port output, or using our engineering tool found on our website.

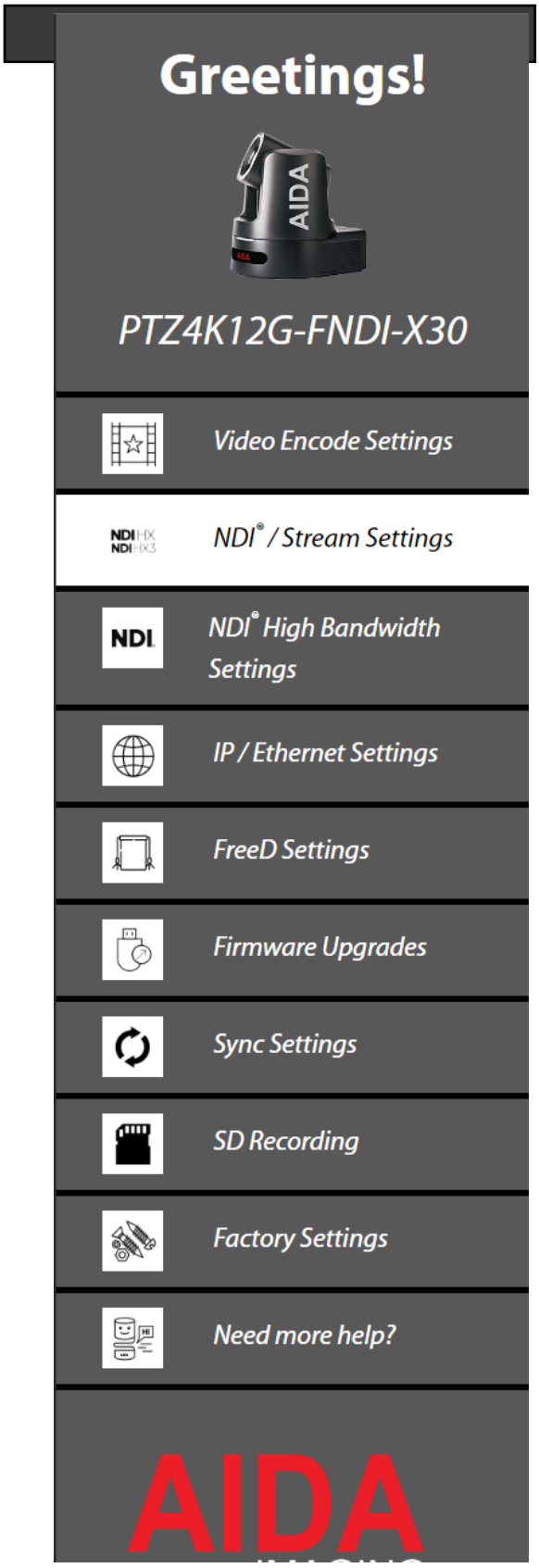
Once set up, you can head to the IP address of the camera and log in with the following credentials:

Username: admin
Password: admin
Once on the web UI, all the IP streaming tools are at your disposal. Natively, NDI® HX2 should already be running (can hint you the IP address if you have Studio Monitor installed)

To modify any of these settings, click the settings tab on the right and find all the stream settings adjustable in the menu bar.

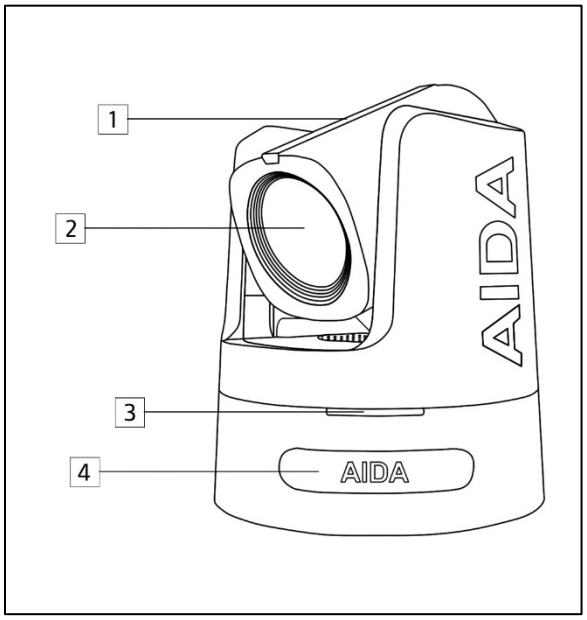
Here you can turn on High Bandwidth NDI®, apply SRT functionality, or find the RTSP / RTMP stream fields to input or adjust according to your workflow.

◊ NOTE: Any settings you set will be saved onto the camera, and will not turn off until changed / the camera is powered off. A good example is streaming to social media sites – if you set up a direct RTMP stream to it, the camera will continue to stream to the web as long as power, internet, and settings are good.



## Camera Parts

**Front**




### 1. Mohawk Tally Light

Tally lights up red when camera receives tally program command (either VISCA or NDI®). The brightness on the tally can be turned HIGH | MIDDLE | LOW | OFF in the web UI menu.

### 2. 30X Lens Module

The PTZ4K12G-FNDI-X30's zoom module. Please make sure to use a neutral lens cleaner to clean the glass if any obstructions or dirt get on it.

### 3. Operation Light

The PTZ4K12G-FNDI-X30 operational light lights blue, red, green, and occasionally yellow. Here are the color indicators:

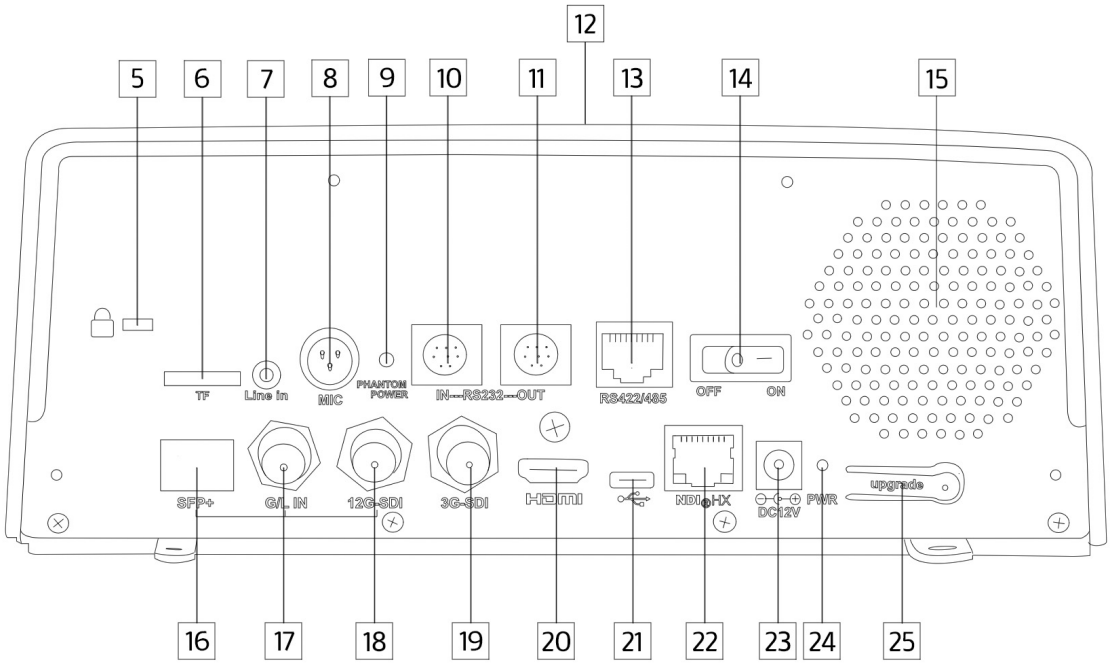
Blue – Normal Operation
Red – Command cannot be done
Green – Confirming command
Yellow – Will only flash with red – confirms insufficient amount of power given to the camera.

◊ NOTE: These operation lights are different than the Mohawk Tally light. The only time the operation and Mohawk Tally light match are during boot up phase.

### 4. Front IR Sensor

For the factory IR remote, please ensure this portion of the camera remains unobstructed and in clear line of sight to ensure the IR remote works perfectly fine.

**Back**




## 5. Locking Mechanism

Kensington Locking slot for securing purposes.

## 6. TF Micro SD Slot

Has dual functionality – insert a micro SD card into this slot for recording direct H.264 .mp4 video onto the card. Not enabled initially, needs to be set up in the web UI. Second function is for potential upgrades.

## 7. 3.5mm TRS Stereo Input

3.5mm input line in from mixers to automatically embed audio over HDMI, SDI, or IP streaming. Audio settings and embedment options available in the web UI.

## 8. XLR Mini Input

XLR mini input capable of providing phantom power to mics. Adapter from mini XLR to XLR is included. Adjustable settings just like 3.5mm jack in web UI.

## 9. Phantom Power Indicator

Light that lets user know if Phantom power is properly being supplied.

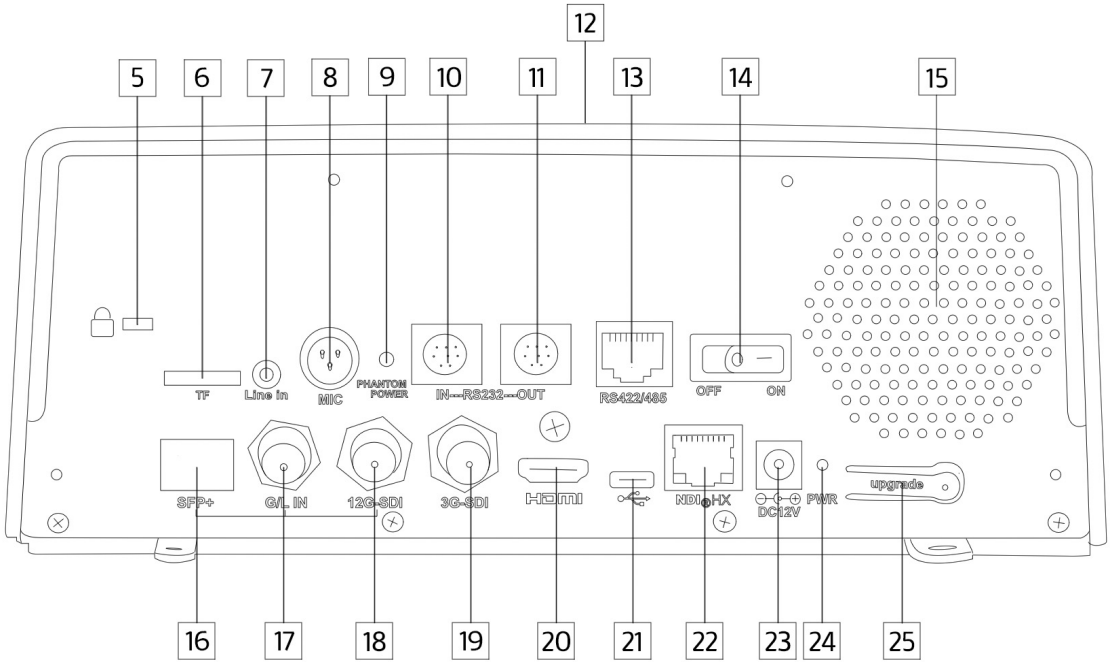
## 10. RS232 IN

To control over VISCA Serial, insert RS232 IN from controller or subsequent PTZ.

## 11. RS232 OUT

To continue the RS232 VISCA Serial daisy chain, connect this to next RS232 PTZ.

Cont.




## 12. Back IR Sensor

Located on the top of the backplate is the back IR sensor for IR remote control. Make sure its free from obstruction.

## 13. RS422/485 Input

Utilizing the RJ45 connection type, you can directly control the PTZ via RS422 or RS485 from a RJ45 type Visca controller.

## 14. Power Switch

Manual power switch to turn OFF/ON the PTZ camera.

## 15. PTZ Fan

Located here is the PTZ's internal fan. Please make sure this area is properly ventilated and free from blockages.

## 16. SFP+ Cage

Insert a SFP+ module to enable fiber connections. Connected to 12G-SDI settings.

## 17. G/L Reference Input

The reference input for the PTZ4K12G-FNDI-X30. Connect to any tri-level source for proper genlock in any workflow.

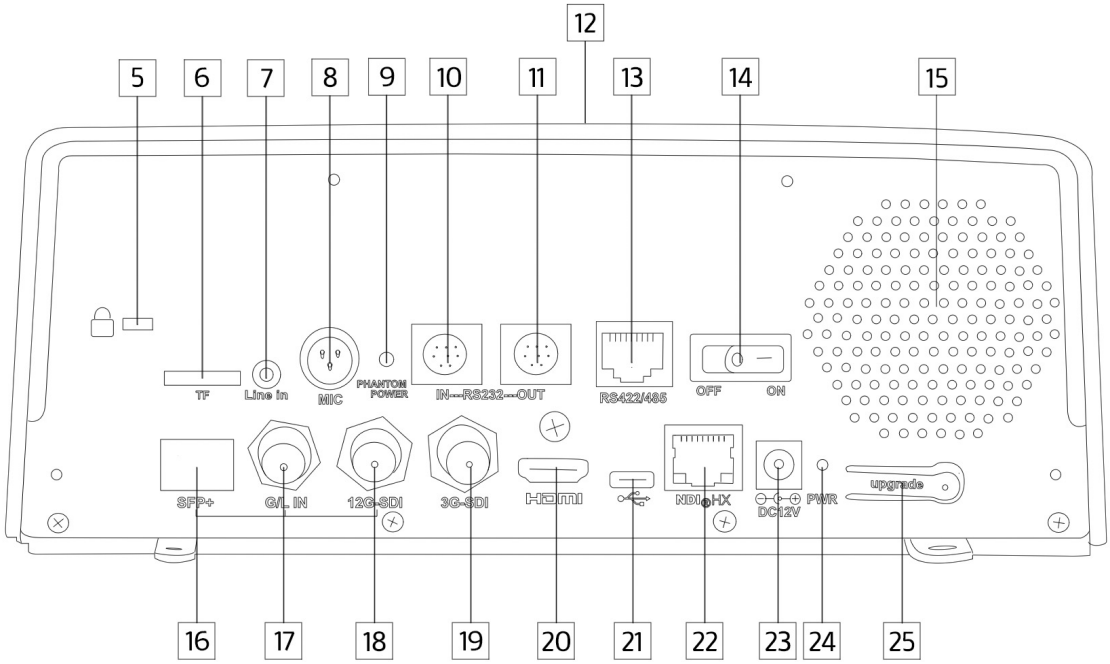
## 18. 12G-SDI Output

12G-SDI connection port to obtain video over SDI.

## 19. 3G-SDI (ROI port) Output

Meant to be utilized when camera is in 4K mode – the Region of Interest port is used for a cropped SDI video output.

Cont.




## 20. HDMI Output

HDMI connector to get HDMI video out of the PTZ.

## 21. USB-C Output

Used to get up to 4K30 video out the USB port for webcam purposes. Also can be used during firmware upgrades.

## 22. RJ45 Port (IP Streams Output)

The main source of all IP streams from the camera. Capable of sending out NDI®, RTSP, RTMP, and SRT simultaneously.

## 23. DC12V Input

Input port for the factory DC12V power supply that comes with the PTZ.

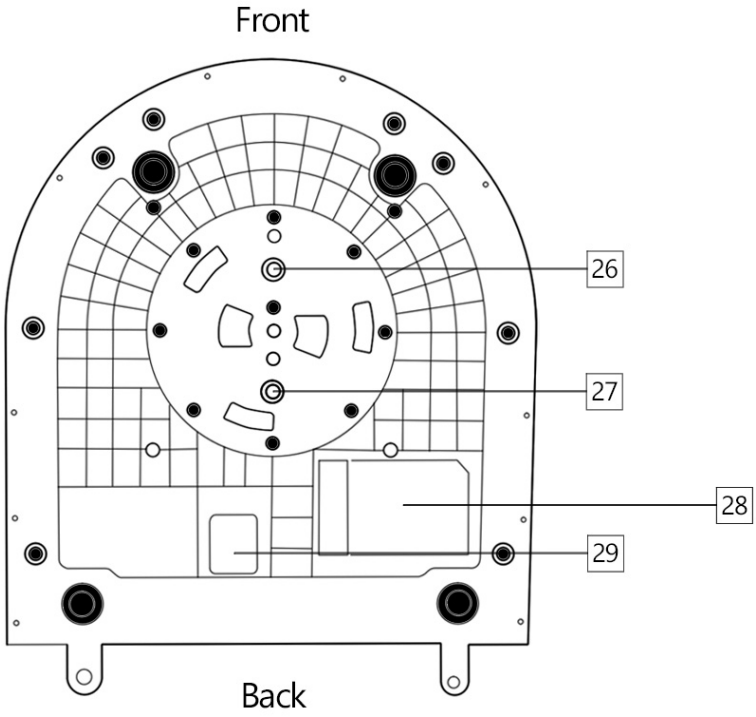
## 24. PWR Indicator

Power indicator light letting the user know the PTZ is ON or OFF.

## 25. Upgrade Tab

Currently / has no intended use.

**Bottom**




## 26. ¼" 20 Mount 1

The **recommended** tripod mount if you using a singular tripod mount.

## 27. ¼" 20 Mount 2

Optional tripod mount for additional stability.

⚠ Do **NOT** mount the camera with this hole only.

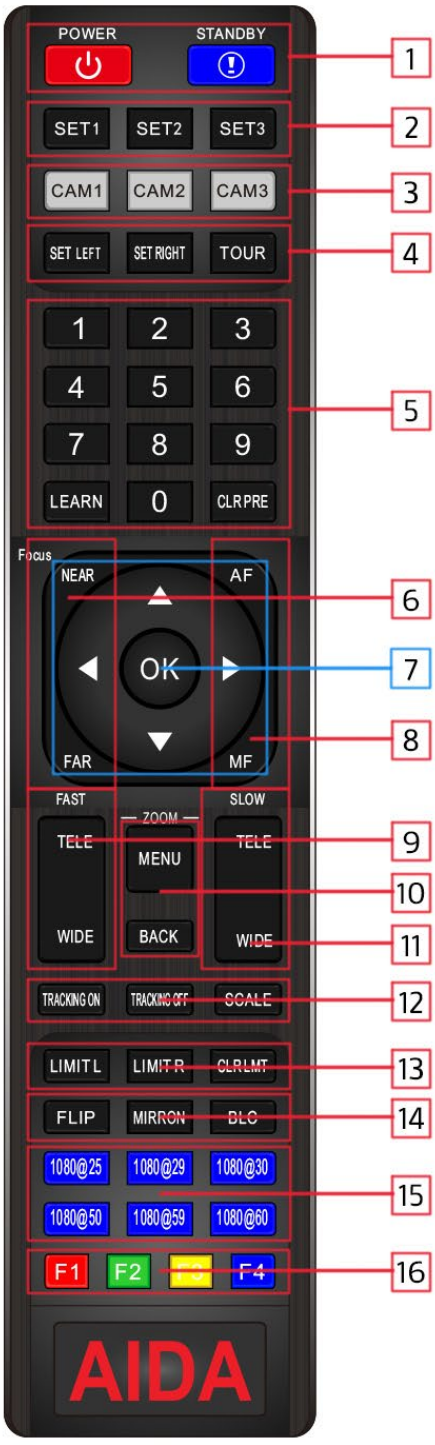
## 28. Camera Information

Located here is the serial number, default credentials, and recommended DC12V amperage. Important to jot down when contacting our support team for questions or RMA's.

## 29. Dial / Dipswitch Area

Used for debugging and upgrading. Recommended not to touch unless instructed in a firmware.

## IR Supplied Remote and IR Location




### 1. Power / Standby

These buttons power ON and STANDBY the camera. Standby turns off the video output on the camera, but power may still be drawn.

### 2. SET IR Address

Hold down for 3 seconds while point at the camera to set the corresponding Address ID. Good for multiple cameras sharing the same IR address.

### 3. Select CAM Address

Press once to change the remote's IR frequency to the corresponding address.

### 4. PTZ Tour (Future Update)

Sets the corresponding LEFT and RIGHT limits of the PTZ for tour mode. In tour mode, the PTZ will go in between set points without stopping.

### 5. Preset Buttons

Each number 0-9 correspond to 1 preset save. Press learn + (0-9) to save the designated preset. Press CLR PRE + (0-9) to clear the designated spot. Some shortcuts are:

Press (0-9) **ONCE** – Goes to preset

**HOLD** for 3 seconds (0-9) – Set preset

## 6. Focus Near/Far

Press NEAR or FAR to automatically focus the cameras image. Doing so automatically places the camera in MANUAL focus mode, and will remain so until AF is pressed again.

## 7. Pan/Tilt/OSD Movement

PRESS or HOLD corresponding arrow to pan/tilt the PTZ camera accordingly. This will also be the selection keys in the menu, with using them to navigate through the OSD menu.

## 8. AF / MF

AF sets the PTZ in autofocus mode, immediately focusing on the estimated center of the video. MF sets the PTZ to manual focus, making the PTZ not adjust automatically.

## 9. TELE / WIDE Fast

Zoom In/Out with FAST speed using the corresponding buttons.

## 10. Menu / Back

Press Menu to enter the OSD screen of the menu.

◊ NOTE: OSD menu will only be visible via HDMI, SDI and SFP+ outputs.

## 11. TELE / WIDE Slow

Zoom In/Out with SLOW speed using the corresponding buttons.

## 12. A.I. Autotracking Options

Tracking ON effectively turns on the AI autotracking. Any commands with the pan tilt movement on controller will be ignored.

Tracking OFF turns off tracking, restoring pan tilt movement controls on the controller.

SCALE effectively toggles through the scaling options available through the autotracking feature, increasing or decreasing the overall targets size in video.

## 13. Pan Tilt Limit Settings

Limit L – Limits the motor from going past the LEFT of the designated point.

Limit R – Limits the motor from going past the RIGHT of the designated point.

CLR LMT + Limit L or R: Erases the limit set on the PTZ.

◊ NOTE: Limits can be great to avoid unwanted capture of areas outside the target zone.

◊ NOTE: These limits are for manual pan/tilt actions only. Autotracking will continue past these limits, and will require web UI set limits to ensure it doesn't go past.

## 14. PTZ Settings

Flip – Invert the camera's image via Y axis

Mirror - Invert the camera's image via X axis

BLC – Turn ON or OFF backlight comp.

## 15. Quick Format Buttons

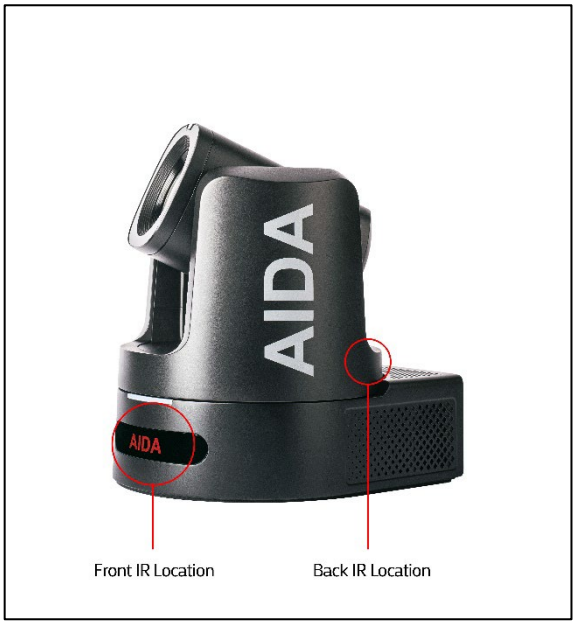
In case video is lost, hold the desired format resolution and frame rate button towards the camera for 5 seconds. The camera will then reset to that designated resolution and framerate.

◊ NOTE: This option is keen for situations where a resolution may not be supported from the ingest. 1080 60fps is widely accepted on most modern day monitors and TV's.

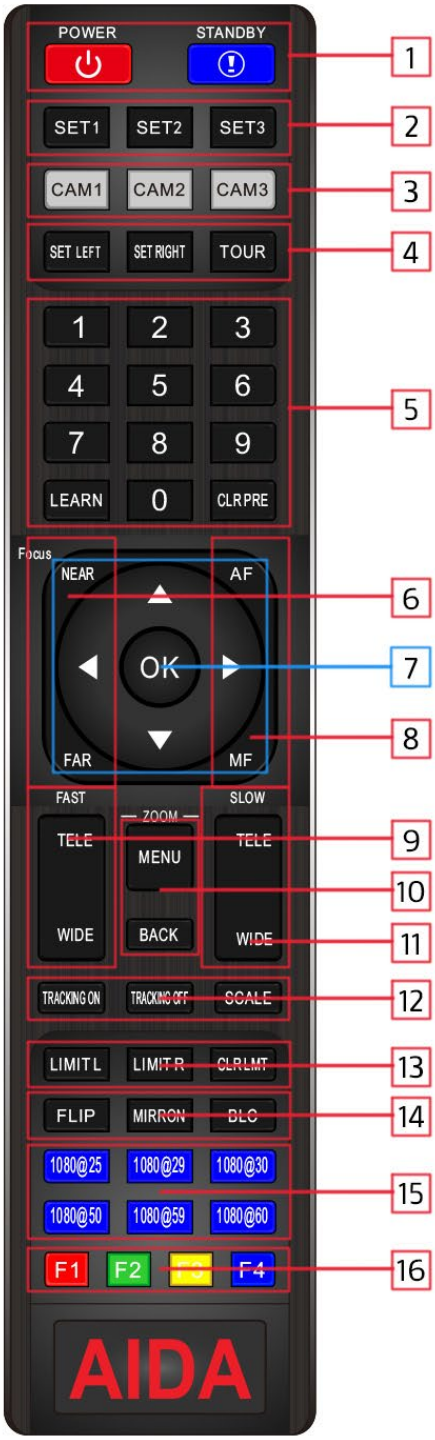
## 16. Function Buttons

These buttons are reserved for AIDA / Authorized dealer's to run tests on the PTZ. These have no other functions.

### IR Locations




Provides almost 360° IR acceptance. With multiple PTZs, we recommend using the set IR address to avoid simultaneous control of other IR devices.

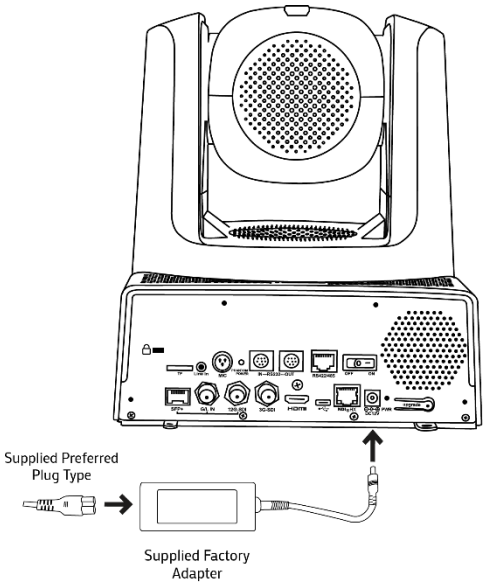



◊ NOTE: Batteries are not included with the remote. Please add triple A batteries to use the IR remote.

## Powering the Camera

### Connecting to the supplied DC12V power supply

Use the supplied factory adapter and preferred plug type to sufficiently supply power top the PTZ.



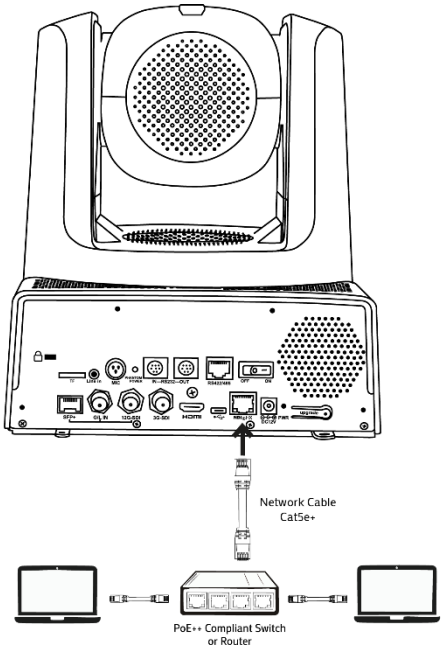

**1** Pick your preferred plug type out of the adapters securely fasten the end with the supplied factory adapter.

**2** Fasten the barrel portion of the supplied factory adapter into the back of the PTZ into the DC12V spot.

⚠ We highly recommend using the supplied factory adapter, and not a third party adapter. Doing so may cause internal damage to the camera. If you are missing the adapter, please visit aidaimaging.shop to purchase a replacement.

### Connecting the camera via PoE++ (Power over Ethernet Plus Plus / IEEE802.3bt standard)

The PTZ requires PoE++(IEEE802.3bt standard) switches or routers to properly power over ethernet cables. Please refer to the power supply of the switch you use for more info on how to power.




**1** Use a Cat5e or better patch cable to connect to a PoE++ compliant switch or router.

**2** Ensure power is powering the PTZ by checking the front LED of the camera – if it is going through its regular boot up sufficient PoE++ power is being supplied.

⚠ If the camera keeps infinitely booting (rotating colors, PTZ turning, then repeating actions without end) then insufficient power is being supplied to the PTZ. Please ensure the router or switch is PoE++ compliant.

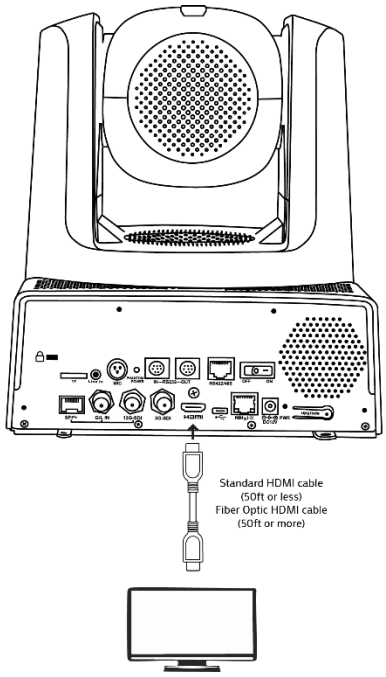
⚠ If the camera cycles through the yellow and red color on the front, then insufficient power is being supplied to the PTZ. Please ensure the router or switch is PoE++ compliant.

◊ NOTE: In some cases, PoE+ can be known to power the camera (if the wattage exceeds the 32+ initial draw.) Pluggin in DC12V along with PoE+, and then removing DC12V is known to keep the camera running. However once the camera goes out or runs out of power, PoE+ may not be enough to repower the camera.

## Connecting to a Ingest

### Connecting to a HDMI Ingest

Easily connect to any monitor, TV or broadcast equipment that accepts HDMI directly.



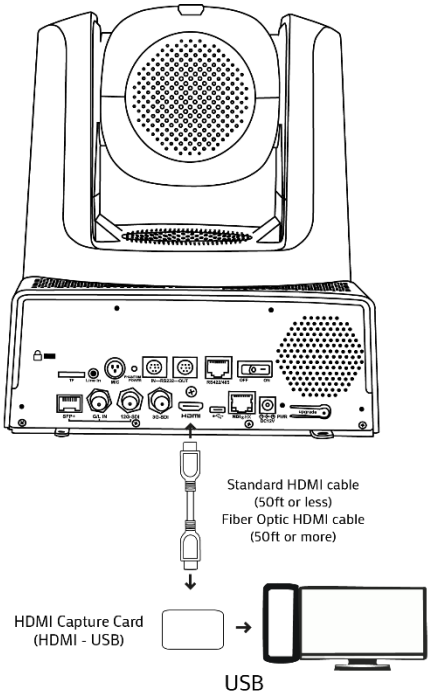

**1** Connect HDMI cable to the output of the PTZ camera, and into your HDMI ingest. Video should appear after a slight delay.

◊ NOTE: Some HDMI monitors don't accept all resolutions. To get an image, ensure the ingest accepts 1080p 60fps, as it's the default resolution the camera outputs.

◊ NOTE: Some broadcast equipment requires a specific resolution. Its best to use the specific resolution buttons on the IR remote to match your ingest. You can also head to the web UI of the camera to change the digital output as if you don't have access to the IR remote.

## Connecting to a Computer or Laptop via HDMI

Laptops and Computers don't directly ingest video. You will need an HDMI to USB adapter. (sold separately)



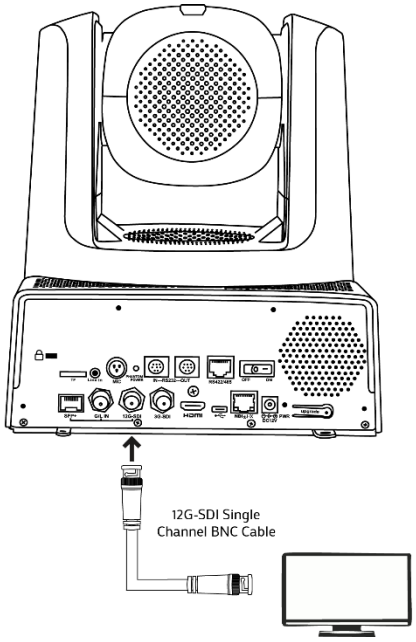

**1** Connect HDMI cable to the output of the PTZ camera, and into your HDMI capture card.

**2** Follow the instructions from your HDMI capture card and plug into your computer / laptop.

◊ NOTE: Not all HDMI capture cards are built the same. Please ensure you have a capture card that matches your production needs, such as 4K, 60fps, etc.

## Connecting to a Ingest via SDI

Easily connect to any broadcast equipment that accepts SDI directly.



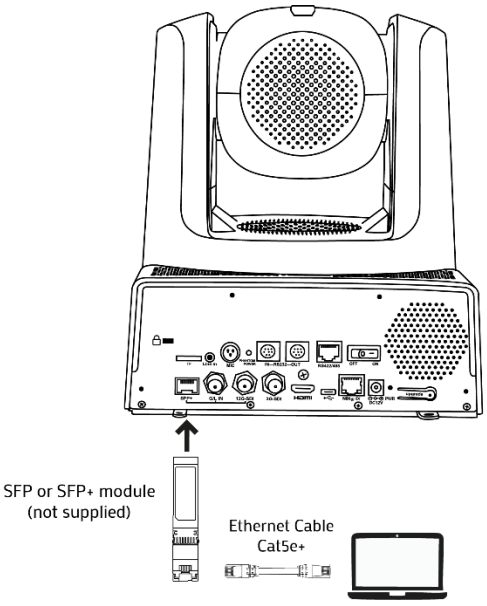

**1** Connect the BNC SDI cable to the 12G-SDI output slot. Connect the other end of said BNC SDI cable to your SDI ingest.

◊ NOTE: Some SDI monitors don't accept all resolutions. To get an image, ensure the ingest accepts 1080p 60fps, as it's the default resolution the camera outputs.

◊ NOTE: Some broadcast equipment requires a specific resolution. Its best to use the specific resolution buttons on the IR remote to match your ingest. You can also head to the web UI of the camera to change the digital output as if you don't have access to the IR remote.

## Connecting to a Ingest via SFP+

The PTZ4K12G-FNDI-X30 has a SFP+ cage for a SFP+ module to be inserted. From there you can get video out of the SFP module that matches the 12G-SDI output.



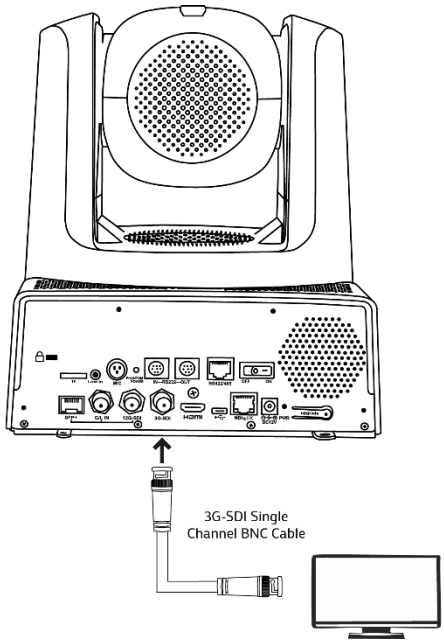

**1** Place the SFP or SFP+ module (not supplied) into the SFP+ cage on the back of the PTZ. Securely place it until an audible *click* is heard.

**2** Once connected, connect the SFP or SFP+ module port with a ethernet adapter, and connect that to your ingest network or computer.

◊ NOTE: The SFP+ port requires good contact in order to work, please ensure everything is properly fastened. The SFP port shares video resolution of the 12G-SDI output.

## Connecting the 3G-SDI Output

A Full-HD output (R.O.I) can be outputted using the 3G-SDI output on the camera. This output has its own controllable output.

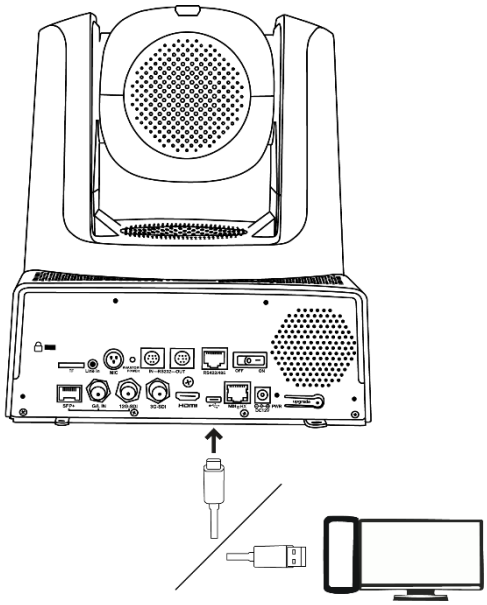



**1** Connect a 3G-SDI BNC cable to the 3G-SDI port on the back of the PTZ. Connect the other end of said BNC SDI cable to your SDI ingest.

◊ NOTE: The ROI feature is default on at 1080 60fps. To change that, please visit the web UI or IR remote menu to change the settings.

## Connecting to a Ingest via USB Type-C

The PTZ4K12G-FNDI-X30 has a plug-and-play USB Type C output on the back of the camera that can utilize webcam-like resolutions directly to a computer.



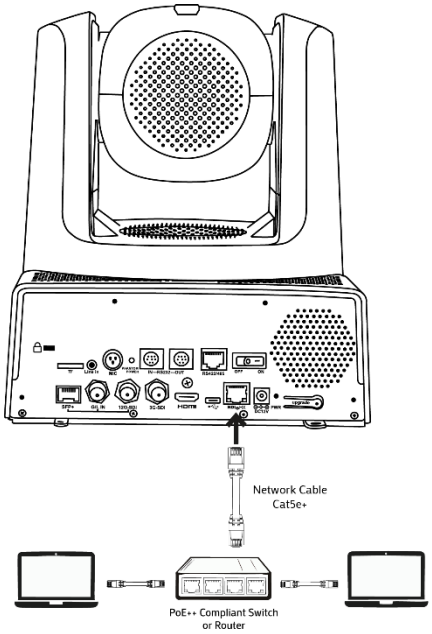
1 Use the supplied USB-C type cable, or identical USB-C type cable to connect directly to a PC. The PC should show up as a webcam.

◊ NOTE: The best way to test this connection would be via your operating system webcam. Cycle through the options until you see the PC.

◊ NOTE: Sometimes the PTZ may not populate correctly without the correct drivers. Ensure its properly installed by going to your system's device manager, and updating the drivers for the PTZ connection.

## Connecting to a Ingest via RJ45 (Ethernet)

The final video output of the camera are the Ethernet streams, such as IP, SRT, NDI®, and Dante Ready Video (license required)




1 Connect a ethernet cable (cat5e or better recommended) cable to the back of the "NDI® HX" port. Connect said cable to your local network switch.

◊ NOTE: The default IP address of the PTZ will be 192.168.1.188. If the camera is not set up with DHCP – it will automatically fallback to that address as well.

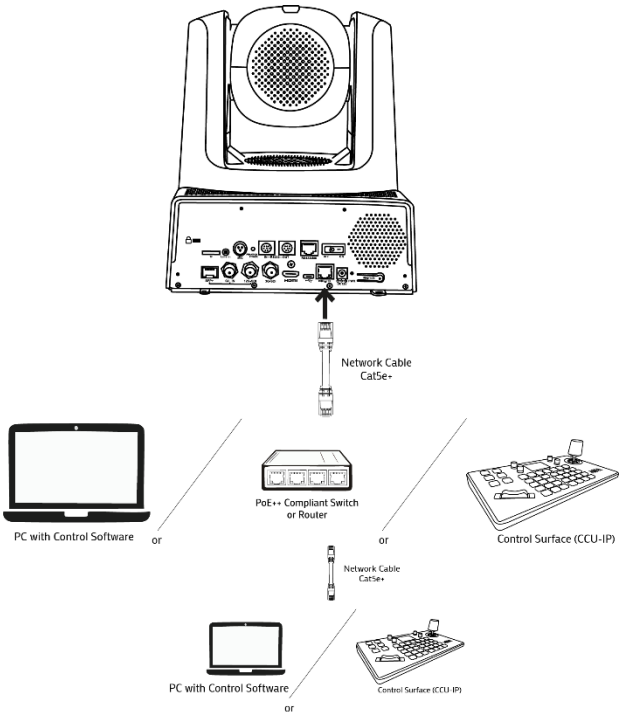
## Connecting to a Controller

### Overview

The PTZ4K12G-FNDI-X30 can be controlled via the RS232, RS422, and RJ45 port on the PTZ. The camera supports both VISCA Serial, and VISCA over IP (UDP).

### Connecting to a VISCA over IP device

The PTZ4K12G-FNDI-X30 can be controlled through VISCA over IP using the Ethernet port.




**1** You can either directly connect to the PTZ4K12G-FNDI-X30 by using a network cable to connecting to a PC, switch, or control surface. If you do plan on using a switch, you can then connect another device to enable to connect through the network.

**2** Once you are connected, ensure that the PTZ4K12G-FNDI-X30 is on the same network as the device. The camera is default DHCP on, so if no DHCP is detected the fallback IP address of the camera will be 192.168.1.188. Ensure that the device on the network is within the DHCP range, or fallback IP.

**3** When connecting for control, the following settings usually work:

Communication / Type: VISCA UDP, SONY VISCA
IP Address – IP Address of your camera.
VISCA port Number: 52381

You can change any of these settings in the web UI of the camera.

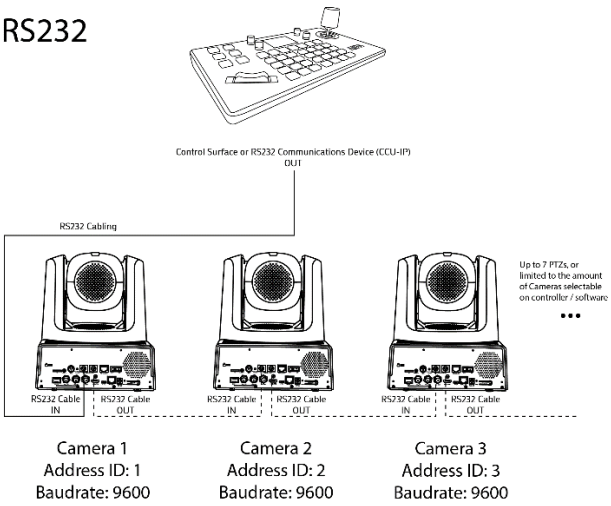
◊ NOTE: Majority of the time, errors in connection are usually because the IP of the devices are not in the same range. Ensure that the first 3 triplets match the PTZ, with the last triplet being a different number to make a unique network ID.

Ex:
PTZ – **192.168.1.**188
Controller / PC – **192.168.1.**(2-254)

## Connecting to a RS232 device

The PTZ4K12G-FNDI-X30 can be controlled using the RS232 IN and OUT portion of the camera.

RS232




*Settings can be adjusted via the IR remote control menu

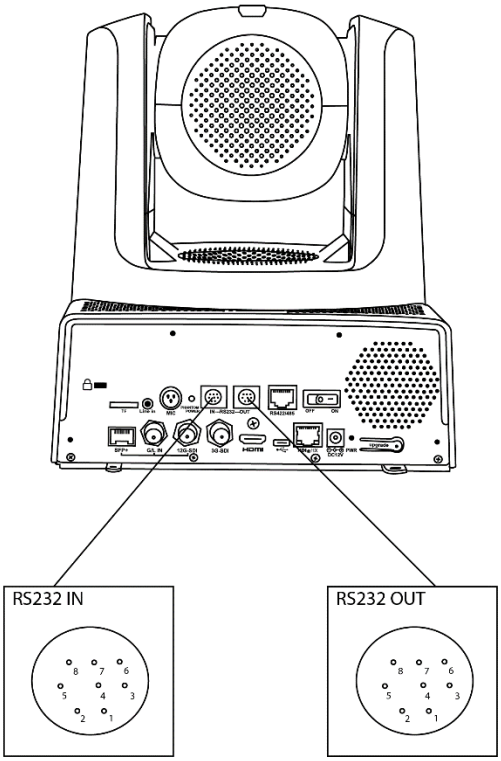
**1** For RS232 control, ensure that the PTZ's are daisy chained via the following configuration above. Using your control surface, connect the RS232 out into the RS232 IN port of the first camera.

◊ NOTE: If you are adding on more cameras in the daisy chain, please utilize the OUT of the first camera, and into the IN of the next. Continue this until you reach the last cameras IN port. For VISCA this can go up to 7 cameras max.

**2** Lastly, you need to match the Serial VISCA command settings in the HDMI or SDI menu using the IR remote control.

There you will find the Protocol, Address, and Baudrate.

## Camera RS232 Port Information




RS232 IN / Out Guide

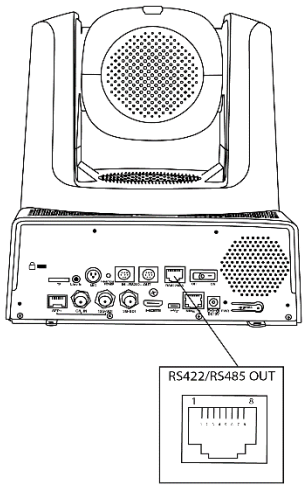
| NO. | V_IN | V_OUT |
|---|---|---|
| 1 | DTR | DTR |
| 2 | DSR | DSR |
| 3 | TXD | TXD |
| 4 | GND | GND |
| 5 | RXD | RXD |
| 6 | A | |
| 7 | IR OUT | |
| 8 | B | |

RS232 VISCA IN & MINI DIN Connection

| RS232 IN | | Mini DIN CBL | |
|---|---|---|---|
| 1 | DTR | 1 | DSR |
| 2 | DSR | 2 | DTR |
| 3 | TXD | 5 | RXD |
| 4 | GND | 4 | GND |
| 5 | RXD | 3 | TXD |
| 6 | A(+) | 6 | NC |
| 7 | IR OUT | 7 | NC |
| 8 | B(-) | 8 | NC |

RS232 VISCA IN & DB9 Connection

| RS232 IN | | DB9 CBL | |
|---|---|---|---|
| 1 | DTR | 6 | DSR |
| 2 | DSR | 4 | DTR |
| 3 | TXD | 2 | RXD |
| 4 | GND | 5 | GND |
| 5 | RXD | 3 | TXD |
| 6 | A(+) | | |
| 7 | IR OUT | | |
| 8 | B(-) | | |



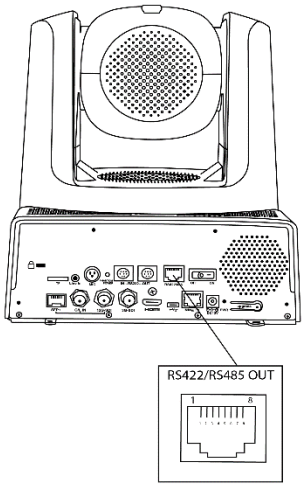

| NO. | RJ45 OUT |
|---|---|
| 1 | GND |
| 2 | N/A |
| 3 | RX- |
| 4 | TX- |
| 5 | TX+ |
| 6 | RX+ |
| 7 | N/A |
| 8 | N/A |

## Connecting to a RS422 Device

The PTZ4K12G-FNDI-X30 can be conveniently connected to a RS422 device using the RJ45 connection type on the back. This is useful for devices that already utilize the RJ45 port for RS422 connecitons..

## Connecting to a RS485 Device

The camera can also be controlled via the pelco-P or pelco-D protocol, up to 255 cameras in total. Although this connection is quite limited in features, it still a useful way to connect to multiple cameras.




| NO. | RJ45 OUT |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | TX-/485-B |
| 5 | TX+/485-A |
| 6 | |
| 7 | |
| 8 | |

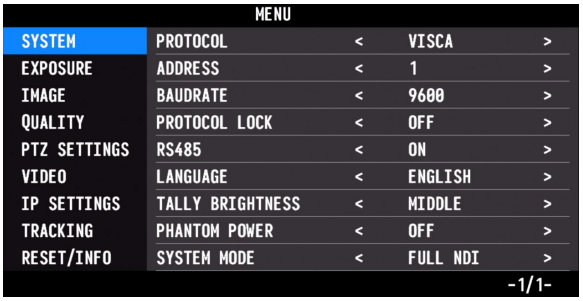
◊ NOTE: Make sure you change the protocol in the HDMI/SDI menu to Pelco, and RS485 option is turned on.

## OSD Menu Operation

The OSD menu operation can only be viewed on the HDMI, SDI, and SFP video feeds. You will not be able to view this menu feed via the NDI feed.

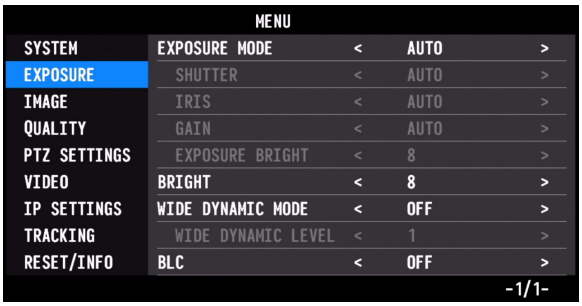
If you have any questions or need more info on any of these settings, please feel free to message our support team.

### System




- **PROTOCOL**: allows you to change the control protocol of the camera.
- **ADDRESS**: this changes the address ID of the camera.
- **BAUDRATE**: allows you to change the baudrate of the camera.
- **PROTOCOL LOCK**: Lock the VISCA protocol.
- **RS485:** Determine if RS485 should be ON or OFF.
- **LANGUAGE:** Change the menu language such as Spanish and others.
- **TALLY BRIGHTNESS:** Determine the brightness of the mohawk tally light.
- **PHANTOM POWER**: Determine if phantom power should be supplied.
- **SYSTEM MODE:** Select between High Bandwidth NDI® Priority, or Digital (ROI).

### Exposure

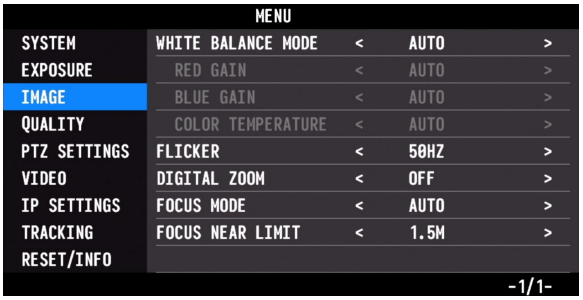



◊ NOTE: Not all settings will be available per exposure mode. Cycling between them will allow you to change certain items, but sometimes never all.

- **EXPOSURE MODE:** Select between 5 exposure modes
- **SHUTTER:** Adjust the rate of the electronic shutter speed – 1/30~1/10000.
- **IRIS:** Adjust the IRIS of the camera.
- **GAIN:** Adjust the GAIN of the image here.
- **EXPOSURE BRIGHT:** Adjust the overall brightness based off the setting.
- **BRIGHT:** Adjust the brightness of the overall image.

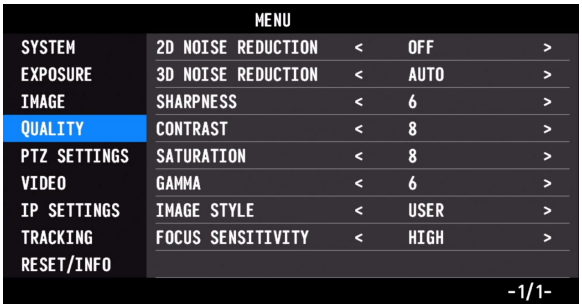
- **WIDE DYNAMIC MODE:** Enables WDR, which helps with brightening darker areas compared to lighter areas.
- **WIDE DYNAMIC LEVEL:** Determines level of WDR. (higher is stronger)
- **BLC:** Backlight compensation setting that helps tame brighter lights in the image.

## Image




- **WHITE BALANCE MODE:** Choose between a selection of white balancing settings.
- **RED GAIN:** When set to manual white balance, red gain will adjust red seen on the image.
- **BLUE GAIN:** When set to manual white balance, blue gain will adjust blue seen on the image.
- **COLOR TEMPERATURE:** When set to temperature white balance, adjust the WB on the K scale.
- **FLICKER:** Adjust the anti-flicker settings of the camera. Try to match with the power source of the country in use.
- **DIGITAL ZOOM:** Allow for more zoom after 30X, allowing for up to 5X more zoom. (the more you crop, the less pixel density / resolution you get)
- **FOCUS MODE:** Allows you the PTZ to focus automatically or not.
- **FOCUS NEAR LIMIT:** Sets a limit on how close the PTZ will try to focus on. If this is set high, then the PTZ will try to focus on defining areas at the specific range.

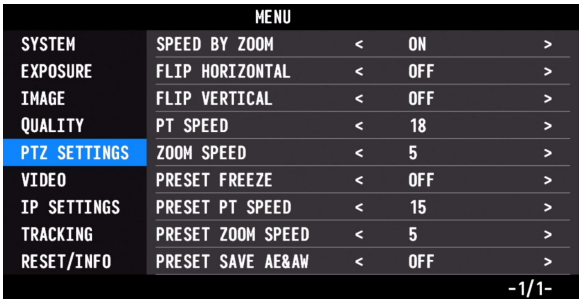
## Quality




- **2D NOISE REDUCTION:** Allows for some noise reduction on a frame-by-frame basis, good for still or little motion videos. The higher it is, the less noise in the image but resolution may be affected.
- **3D NOISE REDUCTION:** Allows for noise reduction both frame-by-frame and temporally – it detects the difference between noise and movement, limiting the amount of noise on frame.
- **SHARPNESS:** Allows for overall sharpness / edge enhance on the image.
- **CONTRAST:** Change the contrast of the cameras image.

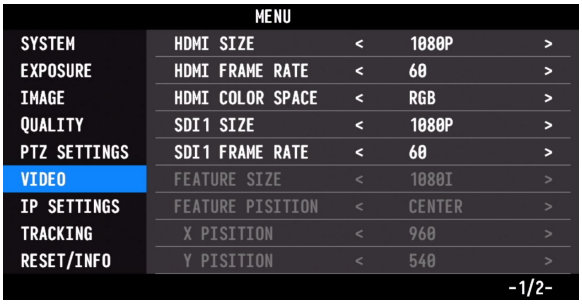
- **SATURATION:** Change the saturation of the image with this setting
- **GAMMA:** Allow for the overall brightness of the image in respect to the darker areas of the image.
- **IMAGE STYLE:** Cycle through a small selection of presets for IMAGE settings.
- **FOCUS SENSITIVITY:** Change how sensitive the camera should try to focus if movement is detected via the PTZ.

## PTZ SETTINGS



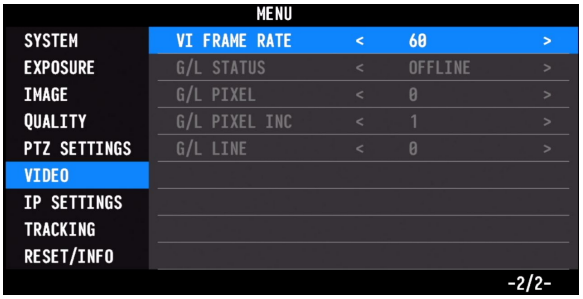

- **SPEED BY ZOOM:** Allows for a more dynamic ZOOM control, where speed is slightly variable at different zoom levels. This is good to stop fast jerky movements at higher zoom levels.
- **FLIP HORIZONTAL:** Flip the image on the Y Axis.
- **FLIP VERTICAL:** Flip the image on the X axis.
- **PT SPEED:** Change the camera's pan-tilt speed via the IR controller.
- **ZOOM SPEED:** Change the cameras zoom speed via the IR controller.
- **PRESET FREEZE:** Allows an image freeze when moving in between presets – makes a smoother transition then a jerky video movement.
- **PRESET PT SPEED:** Changes how fast the camera will switch in-between presets, with higher numbers being faster.
- **PRESET ZOOM SPEED:** Independently control how fast the Zoom will reach the preset destination with this number.
- **PRESET SAVE AE&AW:** If certain presets require different lighting conditions, use this option to make sure that each preset has an independent exposure and white balance setting.

## VIDEO



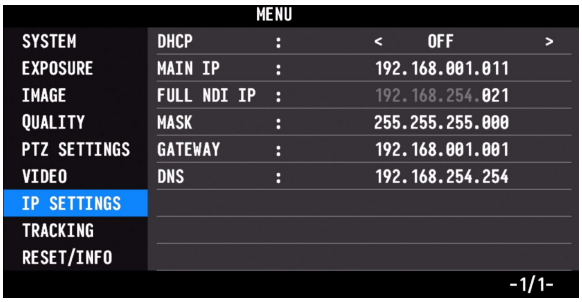

- **HDMI SIZE:** Independently change the HDMI resolution here.
- **HDMI FRAME RATE:** Change the framerate of the HDMI output here.
- **HDMI COLOR SPACE:** In case of compatibility errors, change the color spacing of the camera here.
- **SDI1 SIZE:** Independently change the SDI/SFP+ resolution here.

- **SDI1 FRAME RATE:** Change the framerate of the SDI/SFP+ resolution here.
- **FEATURE SIZE:** Depending on the system mode, the feature sizing is the alternative 3G-SDI output on the camera. This setting determines the resolution of said feature.
- **FEATURE POSITION:** Determine the video position cropping over the 4K sensor. This will capture the cropped image of the video, depending on the position chosen.
- **X/Y POSITION:** In custom mode, you can change the X / Y position of the cropped image.




- **VI FRAME RATE:** An important setting used to delegate PTZ resources to that specific framerate. This setting should match the framerate of the main output you plan to use.
- **G/L STATUS:** If a genlock source is detected, this option will determine the status of it.
- **G/L PIXEL:** Pixel allows you to change the pixel step (x coordinate) of the camera's genlock.
- **G/L PIXEL INC:** Pixel INC allows you to change the amount of steps in multiple of said increments.
- **G/L LINE:** Line allows you to change the line step (y coordinate) of the camera's genlock.

## IP SETTINGS



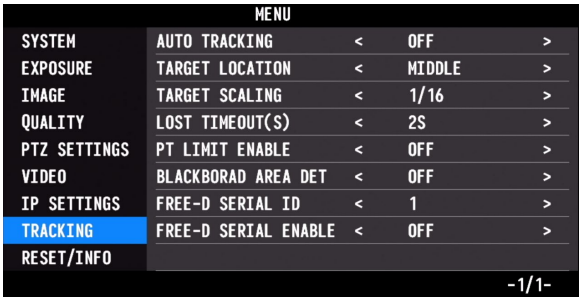

- **DHCP:** Change the cameras setting to automatically obtain a IP address from a managed switch / router, or to stay in static mode.

◊ NOTE: If DHCP is unable to obtain a IP address, it will fallback to the default static IP entered, or the original 192.168.1.188 factory default IP addresss.

- **MAIN IP:** Change or view the cameras static IP address. This is the IP address you will use to connect to the web UI, as well as get IP video out of.
- **FULL NDI IP:** This IP address is assigned ONLY to the High Bandwidth NDI® stream. You cannot connect to the web UI with this address.
- **MASK:** Change the subnet mask of the camera here.
- **GATEWAY:** Change the gateway address of the camera here.

- **DNS:** Change the camera's DNS IP address here.

## TRACKING

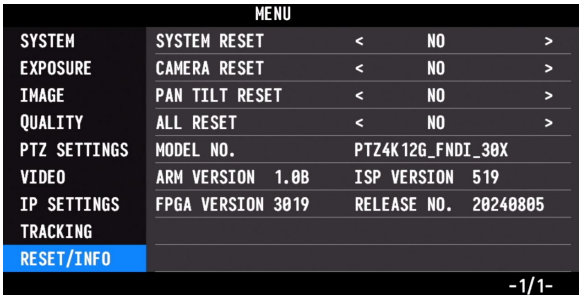



- **AUTO TRACKING:** Enable the camera's A.I. autotracking function. It will automatically attempt to track the image near the middle of the screen.

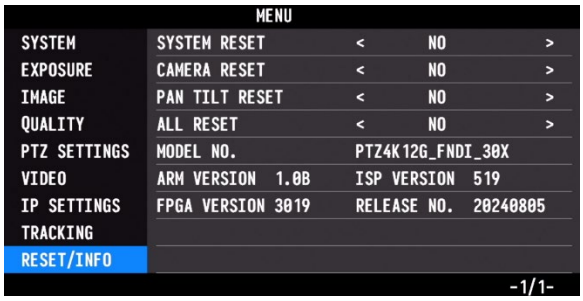
◊ NOTE: Try to turn on this setting when only the talent is on screen, or less amount of people are on. You can switch between targets via the web UI if needed.

- **TARGET LOCATION:** Change the position of the camera's autotracking framing. This can be adjust to the center, left or right.
- **TARGET SCALING:** Change how large the talent should appear using the autotracking. The higher the number (1/6) the higher up the body it zooms in on. The lower the number (BODY) allows for more body shown.
- **LOST TIMEOUT(S):** Change how fast the autotracking will default back to home if the PTZ cannot find the target.
- **PT LIMIT ENABLE:** Turn ON or OFF the left and right movement limits set in the web UI of the camera.
- **BLACKBOARD AREA DET:** In zone mode, the PTZ will remain in frame as the talent moves around it. Once the talent starts to leave said frame, then the PTZ will resume autotracking. This minimizes the amount of movement the PTZ should do, and only accounts for movement outside the frame. More settings can be set via the IP.
- **FREE-D SERIAL ID:** Changes the FREE-D device ID of the camera.
- **FREE-D SERIAL ENABLE**: Enable or disable communications with FREE-D devices.

## RESET/INFO




- **SYSTEM RESET:** Resets all communications (VISCA & FREE-D) back to default.
- **CAMERA RESET:** Resets all image parameters back to default.
- **PAN TILT RESET:** Resets all pan/tilt parameters back to default.
-
-




- **ALL RESET:** Considered a factory default. All settings will be defaulted to factory state.
- **MODEL/ARM/ISP/FPGA/RELEASE:** Important info on the camera. Will be useful if you need help with support.

## Web Menu Operations

The WebUI is a important tool to help harness the true power of this camera! Get familiar with it, as it's a great way to change settings when needed.

If you have any questions or need more info on any of these settings, please feel free to message our support team.

## Connecting to the Camera's Web UI

In order to connect to the web UI, you will need a RJ45 (ethernet) connection to the NDI® | HX port of the PTZ into a PC, or router that is then connected to a PC.

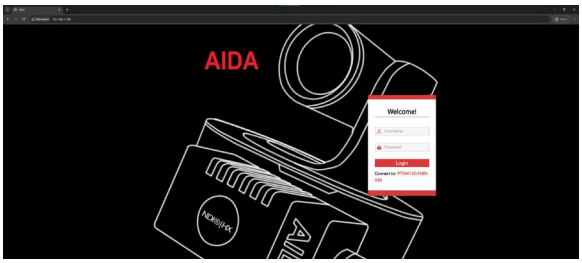
You can control the settings on the webUI as long as the connecting device (PC, MAC, IPAD, TABLET, PHONE) is on the same network of the camera.

◊ NOTE: Unfortunately, not all devices will get the same features. Do note that some features or options may be disabled depending on your viewing device, so its best to operate from a PC or MAC web browser.

**1** To connect to the web UI, use a web browser such as Microsoft Edge, Google Chrome, or Safari. Once open, type in the IP address of the camera. You should be brought to the login page.

◊ NOTE: The default IP address of the PTZ will be 192.168.1.188. If the camera is not set up with DHCP – it will automatically fallback to that address as well.

◊ NOTE: If the web browser does not open the link, that means your device is not within the same IP range of the camera. This error is caused by the IP addresses on the PTZ and computer/device not being in the same range despite being physically connected. For more help on this issue, please view our tutorial on how to fix this.

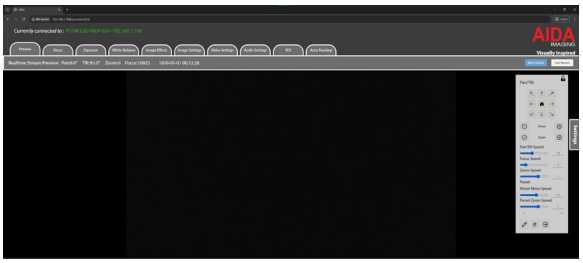



**2** Upon being greeted by the login page, please enter the following credentials for first time use:

Username: admin
Password: admin

You can change these credentials later.

## Main Preview Screen



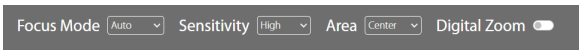
The main preview screen after login serves as a live web-rtc preview you can use to view the stream. The top bars are the image parameter settings, while the right houses the pan tilt mechanics and settings.


The top bar indicates the camera that is currently connected, as well as the IP address.

You can also see the pan, tilt, zoom, focus, and NTP data on the lower bracket.

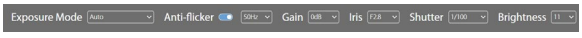

By clicking on each tab like this, it will dynamically change the menu displayed underneath the bar. This is one of the best ways to adjust the cameras settings on the fly due to its ease.

## Focus




- **Focus Mode:** Changes the camera's focus mode here.
- **Sensitivity:** Change how sensitive the camera should try to focus if movement is detected via the PTZ.
- **Area:** Change the area in which the PTZ autofocus algorithm will be based off (relative to the current image)
- **Digital Zoom:** Enable more zoom after 30X optically by digitally cropping the sensor. Quality may be lost, and image may appear shaky depending on zoom.

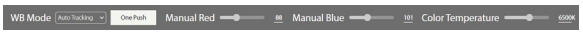
## Exposure




- **Exposure Mode:** Select between 5 exposure modes
- **Anti-Flicker:** Adjust the anti-flicker settings of the camera. Try to match with the power source of the country in use.
- **Gain:** Adjust the GAIN of the image here.
- **Iris:** Adjust the IRIS of the camera.
- **Shutter:** Adjust the rate of the electronic shutter speed – 1/30~1/10000.

- **Brightness:** Adjust the brightness of the overall image.

## White Balance




- **WB Mode:** Choose between a selection of white balancing settings.
- **One Push:** A calibration setting for One Push mode. Hold a blank white piece of paper in front of the lens (within focus distance) and click this button. Best option for shading multi-cameras.
- **Manual Red:** When set to manual white balance, red gain will adjust red seen on the image.
- **Manual Blue:** When set to manual white balance, blue gain will adjust blue seen on the image.
- **Color Temperature:** When set to temperature white balance, adjust the WB on the K scale.

## Image Effects


- **Miror:** Flip the image on the Y Axis.
- **Flip:** Flip the image on the X axis.
- **BLC:** Backlight compensation setting that helps tame brighter lights in the image.
- **D-WDR:** Enables WDR, which helps with brightening darker areas compared to lighter areas on screen.
- **D-WDR Number:** Determines level of WDR. (higher is stronger)
- **GAMMA:** Allow for the overall brightness of the image in respect to the darker areas of the image.

## Image Settings


- **Brightness:** Adjust the overall brightness of the image.
- **Sharpness:** Allows for overall sharpness / edge enhance on the image.
- **Saturation:** Change the saturation of the image with this setting
- **Contrast:** Change the contrast of the cameras image.

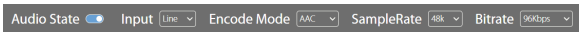

- **2D Noise Reduction:** Allows for some noise reduction on a frame-by-frame basis, good for still or little motion videos. The higher it is, the less noise in the image but resolution may be affected.
- **3D Noise Reduction:** Allows for noise reduction both frame-by-frame and temporally – it detects the difference between noise and movement, limiting the amount of noise on frame.

- **TALLY BRIGHTNESS:** Determine the brightness of the mohawk tally light.

## Video Settings


- **VI Framerate:** An important setting used to delegate PTZ resources to that specific framerate. This setting should match the framerate of the main output you plan to use.
- **Digital Output:** Resolution of the HDMI and USB resolution can be changed here.
- **SDI1/SFP+ Output:** Resolution of the 12G-SDI slot and SFP+ outputs can be changed here.

## Audio Settings

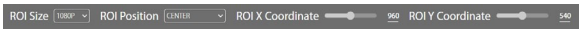



- **Audio State:** Enable or disable audio embedment over the PTZ's outputs.
- **Input:** Choose whether the input or output of the audio is line or mic level.
- **Encode Mode:** Choose between different codecs to improve audio embedment over the outputs.
    - **LCPM** – Mono output
    - **AAC** – Standard TRS Stereo Output
    - **OPUS** – Best latency audio, however at high bitrates may sound distorted
- **Bitrate:** Adjust the bitrate to increase or decrease the quality of audio.


- **Volume:** Increase the gain of the audio. Increasing too high may cause a lot of unwarranted noise, so try to keep to a minimum.
- **HDMI Audio:** Allow for audio Embedment over HDMI.
- **NDI® Audio:** Allow for audio embedment over NDI®.
- **Phantom Power:** Enable or disable the phantom power coming from the MINI-XLR port on the camera.

## ROI (Region Of Interest)

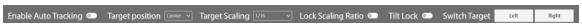
◊ NOTE: This mode is only available if the camera is not in NDI® High Bandwidth Mode.




- **ROI Size:** Depending on the system mode, the feature sizing is the alternative 3G-SDI output on the camera. This setting determines the resolution of said feature.
- **ROI Position:** Determine the video position cropping over the 4K sensor. This will capture the cropped image of the video, depending on the position chosen.

- **ROI X/Y Coordinate:** In custom mode, you can change the X / Y position of the cropped image.

## Auto Tracking

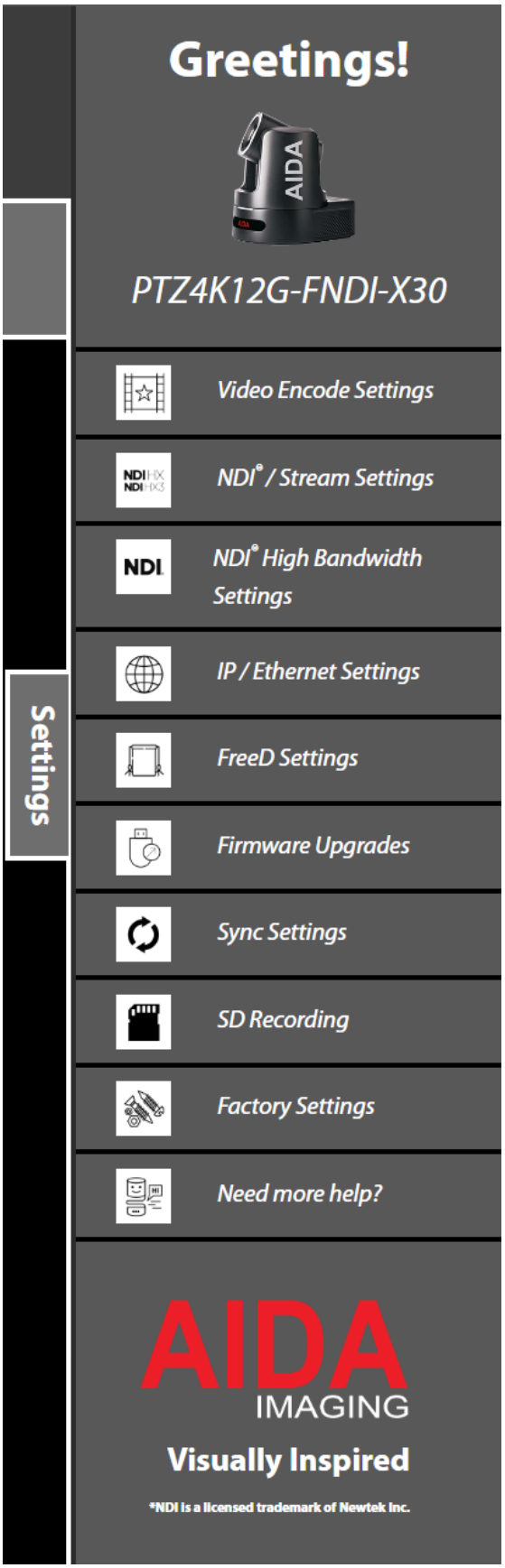



- **Enable Auto Tracking:** Turn on or off the auto tracking feature.
- **Target Position:** Determine the position of the target relative to the camera horizontal position.
- **Target Scaling:** Determine the sizing of the target in correlation to the videos vertical positioning. Whole body is tallest, 1/20 is the smallest.

◊ NOTE: When using target scaling, please keep into account the distance from the target to the target is. If the target is too close to the camera (less than 12ft / 4M) then the camera will not be able to effectively meet the requirements set for scaling. Always leave more room for an easier, stressless installation!

- **Lock Scaling Ratio:** Disable the automatic resizing of the target regardless if the target is moving away from the camera.
- **Tilt Lock:** Disable the vertical movements when the target automatically resizes the target.
- **Switch Target:** Switch between targets by using the left or right buttons respectively


- **Enable Pan/Tilt Limit Settings:** Enable or disable the pan tilt limit settings.
- **Set Top Left:** Set the upper left limit you want the camera to go. The camera in auto tracking will not exceed this limit.
- **Set Bottom Right:** Set the lower right limit you want the camera to go. The camera in auto tracking will not exceed this limit.
- **Set Home Position:** When out of auto tracking mode, set the camera to the exact location you want the camera to reset to if the target is loss when auto tracking.
- **Enable Zone Setting:** Enable or disable the zone setting.
- **Set Zone:** When out of auto tracking mode, set the camera to the exact location you the camera to be stationary, regardless if the target is found in the center. This is great for purposes like chalkboards, podiums, etc, where the target moves around a lot, but the camera shouldn't move until they leave this area. (zone)
- **Loss Target Timeout:** In a scenario where the target is lost, choose the amount of seconds it takes before the camera resets back to the set home position location.




## Settings

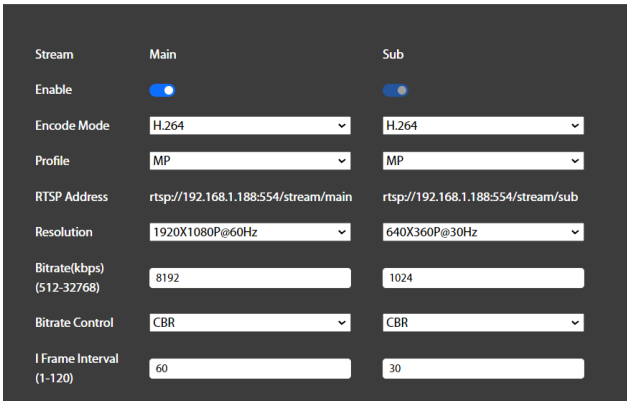
By clicking the settings tab on the right of the screen, you will be presented with a list of options.

At the top is a greetings message with your camera model and picture of the camera.

Through the menu you will have a list of the stream settings, FW upgrades, and account settings of the camera.

Lastly, you will have a “need more help” button which will lead to our support page.

## Video Encode Settings

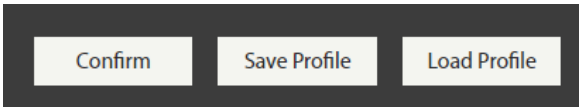



Here you have access to the Main and Sub streams of the camera. Sub stream is unable to be turned off due to NDI® requirements, once you turn off all NDI® related streams in the camera, then the option to turn sub field will become available.

◊ NOTE: Video encode is the main properties of the NDI®, RTSP, RTMP, SRT, and all other functional streams out the RJ45 port. They all share the same properties and cannot be individualized unfortunately.

- **Enable:** Enables the Main or sub stream
- **Encode Mode:** Choose between H.264 or H.265 encoding. H.264 has slightly better quality than H.265, while H.265 has slightly better latency than H.264. (under ideal conditions)

- **Profile:** Under profile are the MP and HP options. Main profile is the most universal encode profile that will 99% work well with other softwares / hardware. High Profile is a higher quality profile, however it isn't as universal as MP.
- **RTSP address:** You can copy and paste the RTSP address of the camera from here.
- **Resolution:** Change the cameras streaming resolution here. Note that changing some settings may cause certain resolutions to disappear, like when NDI HX3 is enabled.
- **Bitrate:** Choose the bitrate in kbps output from the RJ45 port. The higher the bitrate, the better quality the stream. Ensure your switch / router has enough headroom if you enable max bitrate with multiple items on the network.
- **Bitrate Control:** CBR and VBR options are available. CBR is constant bitrate, and the most stable. VBR is variable bitrate, which is will automatically raise or lower the bitrate, but not quite as stable as CBR.
- **I Frame Interval:** This determines how many increments before an I-frame is taken. If the increments are high, than less bandwidth is consumed resulting in lower picture quality. Lower increments increases quality, but it costs higher bandwidth and potential quality drop during movements on video.




Once you have chosen you desired settings, please press confirm to save those settings.

Alternatively, you can click save profile to save the settings in a config.txt file that you can then upload to other AIDA cameras with the same config settings, that way you can simplify setup easily!

Load profile will then accept the saved .txt file from the previous step.

## Video Encode Settings

Under Video Encoding Settings, you will see options related to NDI®, RTMP, and SRT.

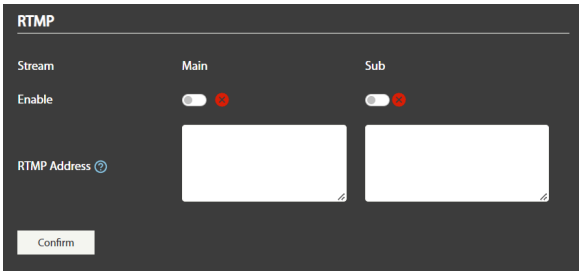

- **Enable NDI®:** This is a generalized setting for NDI HX and NDI HX3 streaming. Enable or disable it here.
- **Device Name:** Change the device name that pops up when accessing the NDI stream.
- **Channels:** Change the channel name that pops up when accessing the NDI stream.
- **Group:** Change the group name that the camera should belong in.

◊ NOTE: Changing this setting without knowledge of NDI® groups may cause your stream to not appear on your device! Just change it back to Public if you are unsure. You have been warned!

- **Enable HX3:** Change the NDI HX stream to a HX3 stream. HX3 provides higher bandwidth, lower i-frame settings, and overall higher quality/latency than the standard HX formula.

◊ NOTE: HX3 is under strict guidance of NDI® themselves. Currently there aren't a lot of options for HX3 accessibility, but we are working with NDI® in increasing the amount of formats allowed over HX3.

- **Discovery:** Enable and enter the discovery server if you are planning on using NDI network discovery.
- **Multicast:** Enable the NDI® multicast function here.




RTMP also has a main and sub field. They are off by default.

- **Enable:** Enables the Main or sub RTMP stream
- **RTMP Address:** Input the RTMP address you are trying to stream to. These can directly stream to live streaming platforms like Youtube, Facebook, and others.

### Streaming RTMP examples

1、rtmp://192.168.6.188:1935/app/rtmpstream0

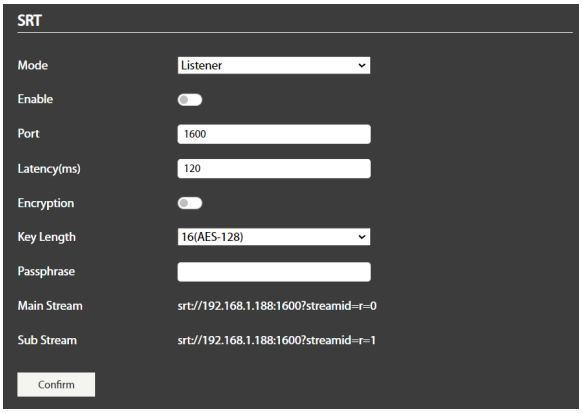
2、rtmp://a.rtmp.youtube.com/live2/f1e5-4a42-81e7-dwqv

3、rtmps://live-api-s.facebook.com:443/rtmp/159001718833947?s_bl=1&s_sml=3&s_sw=0&s_vt=api-s&a=AbwTqU3PuEvtzAdn

Once your settings are complete, you will see a X or ✓ depending on if the camera is successfully sending a RTMP stream. Once you are done, click submit to start the stream.

◊ NOTE: RTMP streams continue to run until turned off, or connection to the host site is gone. If you do not plan on streaming anymore, make sure you turn off the stream.

◊ NOTE: If you are unable to connect directly to certain streaming sites, ensure that DHCP or the proper port forwarding is enabled for the camera to reach the internet. If the camera is unable to connect to the internet, RTMP streaming service will not work. Here is a guide on how to set that up:



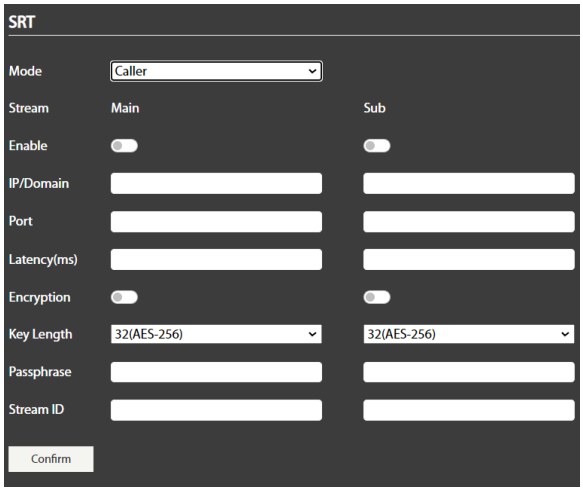

Under SRT, you are able to send a stream via listener, caller, or rendezvous. To learn more about them, please visit the official Haivision documentation here.

- **Mode:** choose the camera's SRT mode by selecting caller, listener, or rendezvous.

### Listener Mode:

- **Enable:** Enable the SRT function to stream. This will remain on until turned off.

- **Port:** Enter the desired port you want to send or receive SRT from.
- **Latency:** Adjust the desired latency of the stream. Setting it too low may decrease stream quality.
- **Encryption:** If you want to add a passkey to access the stream, you can enable that here. If this is not on, SRT will still stream, but it will be public to others on the network if they have the camera data.
- **Key Length:** Choose the length of the passkey and available lettering.
- **Passphrase:** Enter the password here.
- **Main / Sub stream:** Copy this stream code and paste it into the software accepting the SRT stream in caller mode.



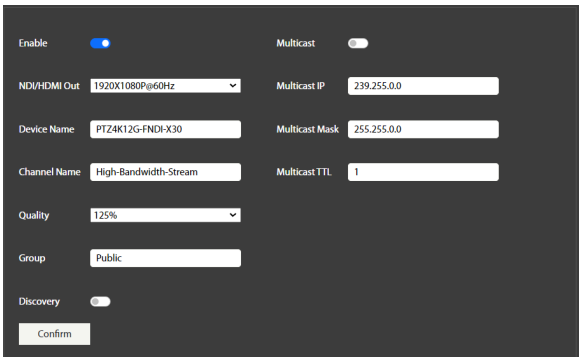

**Caller/Rendezvous Mode:**

- **Enable:** Enable the SRT function to stream. This will remain on until turned off.
- **IP/Domain:** enter the domain or IP of the device you want to send the stream to.
- **Port:** Enter the desired port you want to send or receive SRT from.
- **Latency:** Adjust the desired latency of the stream. Setting it too low may decrease stream quality.
- **Encryption:** If you want to add a passkey to access the stream, you can enable that here. If this is not on, SRT will still stream, but it will be public to others on the network if they have the camera data.
- **Key Length:** Choose the length of the passkey and available lettering.
- **Passphrase:** Enter the password here.
- **Stream ID:** The unique indicator when entering the stream into your listener software. Equivalent to the r=0 found in listener mode.

## NDI® High Bandwidth Settings

By Default, NDI® High Bandwidth is on. You will need to enable it via this web UI option, where it will show a disclaimer saying ROI will be disabled, and NDI HB mode will be activated. Give the camera some time to reboot, and try to connect using a fresh non-cached browser to avoid errors when reconnecting.

Once enabled, you will see the NDI® High Bandwidth Settings below:




- **Enable:** Enable or disable the NDI® High Bandwidth stream.
- **Multicast:** Enable NDI® Multicast by toggling this feature.
- **NDI/HDMI Out:** Choose the resolution of both the NDI and HDMI stream. These two streams are locked, and need to match in order to function properly.
- **Device Name:** Change the NDI® HB stream name here.
- **Channel Name:** Change the channel name of the NDI® HB stream here.
- **Quality:** Choose the amount of quality being sent out via NDI® HB. 75% at the lowest will enable 75% of the quality sent, slightly lowering the quality of the stream, as well as lowering the streaming bitrate footprint on the network. Choosing 150% at the highest will enable the best quality sent over stream, but require the most bitrate (sometimes exceeding over 200mb/s) over the network.
- **Group:** Type in the desired group name here.
- **Discovery:** Enable and enter the discovery server if you are planning on using NDI network discovery.

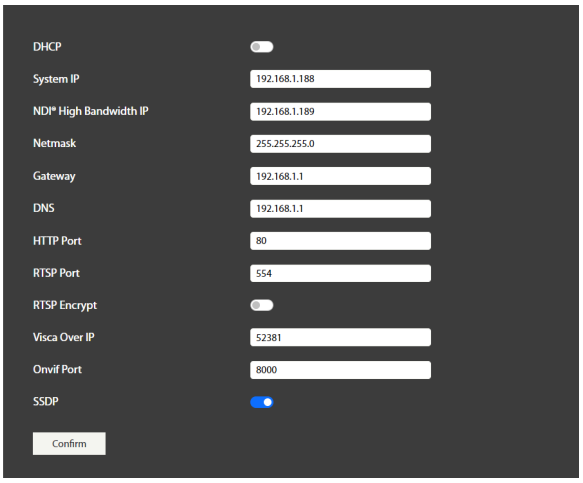
You will need to hit confirm to save your settings. You will be met with a success message if done correctly.

◊ NOTE: If information on this page is not loading, or settings don't seem to save, please clear your browser cache, or open a incognito tab. You can also try factory resetting your PTZ if problems persist. Contact our support team if you require more assistance.

## IP Settings

In this tab, you will find all the IP settings of the camera.

⚠ Do not attempt to change any options you are unsure of. Changing any options can temporarily make access to your PTZ harder or not possible. Only change settings that you know about, or ask our support team for more info.




- **DHCP:** Enable or disable the cameras DHCP protocol.
- **System IP:** This is the main system IP, and the IP you will use to connect to the web UI.
- **NDI® HB IP:** This address is used for the NDI® High Bandwidth stream.
- **Netmask:** You can adjust the netmask settings here.
- **Gateway:** You can adjust the gateway settings here.
- **DNS:** You can adjust the DNS settings here.
- **HTTP Port:** You can adjust the HTTP port here (leave this at 80 for your standard webUI connection support.)
- **RTSP Port:** Change the RTSP port number here.
- **RTSP Encrypt:** Enable RTSP encryption by toggling this option on.
- **VISCA over IP:** Change the VISCA over IP port number here. 52381 is a standard in the industry, and we recommend not changing it.
- **ONVIF Port:** Change the ONVIF port number here.
- **SSDP:** Enable or disable simple service discovery protocol here.

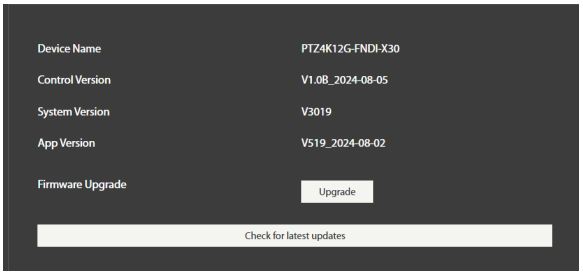
## FreeD Settings

The PTZ4K12G-FNDI-X30 is capable of supporting programs or softwares that use FreeD protocol. By enabling this option, you can easily change the Camera ID, status and frequency of the cameras changes. You can then add the IP address of the device you are trying to connect to using FreeD.


More on this option will be expanded upon on our Youtube channel, @aidaimaging. Please stay tuned for that!

## Firmware Upgrades

This tab allows you to check the control / system / app version of the PTZ. Note that the most important things to look for are the numbers, not dates! Some FW will release later than others, but have a earlier completion date.



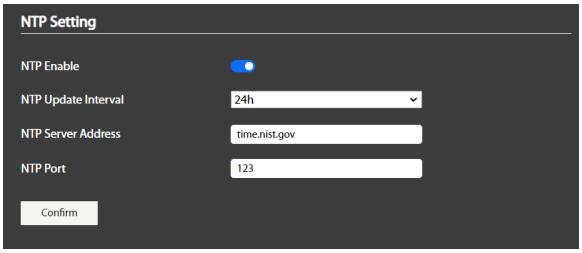

For firmware upgrades, the download from our site will accompany instructions on how to install the firmware. You can click the “check for latest updates” button at the bottom to automatically lead you to our website where you can see if a new update is available for your camera.

## Sync Settings

Under the sync tab you will find Genlock, NTP and time zone settings.

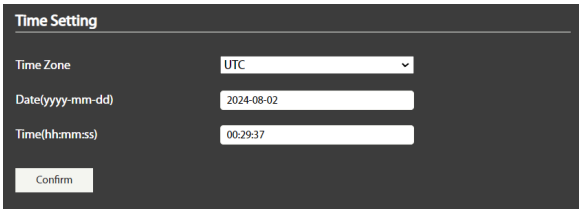

By default, if a genlock source is not detected than genlock status will remain offline. If the status is detected, you will be given a couple options.


- **Genlock Status:** This option cannot be changed, but it will display what framerate the genlock will be locked at. In this case, resolution doesn’t matter with a tri-level sync generator, just the framerate.
- **Genlock Pixel:** Pixel allows you to change the pixel step (x coordinate) of the camera’s genlock.
- **Genlock Pixel Increment:** Pixel INC allows you to change the amount of steps in multiple of said increments.
- **Genlock Line:** Line allows you to change the line step (y coordinate) of the camera’s genlock.




The cameras are automatically set to sync to the time.nist.gov setting. If the camera has access to the internet (with correct port forwarding for static or DHCP) then it will automatically sync to

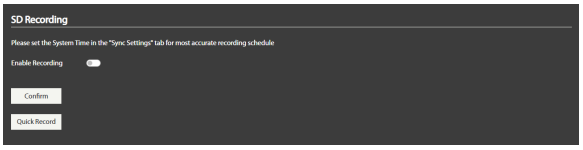
said website in increments of 24h. You are able to change these settings as you like.




If you are unable to have it automatically synced up via NTP, then you can adjust those settings here. These settings must be adjusted before using the SD recording function, or recording timestamp issues may occur.

## SD Recording

On the PTZ4K12G-FNDI-X30, you have the ability to directly record .mp4 video to a microSD card (sold separately) through the TF port on the back of the camera.

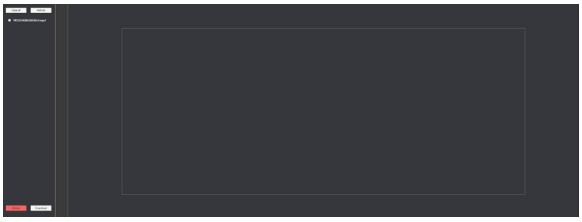



To enable accurate recording data, please make sure either NTP is successfully synced up, or the correct time and date have been adjusted.

Before selecting the top 2 options, its important to make sure your SD card is formatted and ready to be recorded on.

At the bottom, there is a SD card setting section.


Here, it will read if you SD card is recorded. If it is detected, you can access the saved video files there. You can also reformat the SD card by using the two buttons at the bottom. (Format as FAT32, Format as NTFS) There will be a pop-up confirming your format before it goes through.

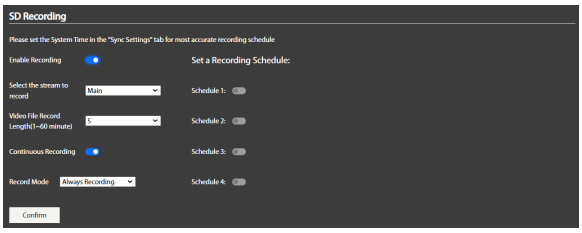


When accessing your saved videos on the memory card, you can find the files on the left. When clicking on a saved file, it will give you a slight preview of the video, with the option to delete, or download said video. That way, you don't have to disconnect the SD card.

Now that the microSD card is formatted and confirmed, you have two options to choose from in the top menu – Enable Recording, or Quick Record.

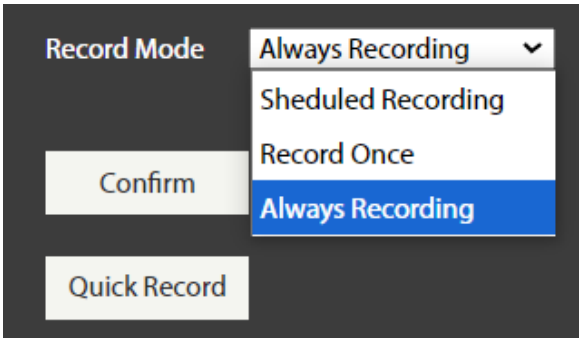

Quick Record is the most straight forward. At that given time, you can click quick record to have the PTZ start recording at that moment. The PTZ will continue to record until “stop record” has been selected. There the PTZ will stop recording, and the file can be found through the access saved video files button.

◊ NOTE: The PTZ will continue to record even when the browser has been closed. If the PTZ reaches its microSD card limit, then it will stop all recording functions.




If you are looking for a more controlled recording experience, you can use the enable recording schedule to have more control over recordings.

- **Enable Recording:** Enables the recording mode settings.
- **Select the stream to record:** Choose between recording the main or sub stream of the camera.
- **Video File Record Length:** Choose the exact length of video clips you want to record. You can choose from 1~60 minutes.
- **Continuous Recording:** If this option is enabled, after 1 file has been recorded (from the Video File Record Length setting) it will go on to create another file, continuously going until shut off, or running out of microSD space. If this option is off, then only 1 video file guided by the Video File Record Length will be taken.




- **Record Mode:** Here you can choose to do scheduled recording, record once, or always recording.
    - **Schedule Recording:** Scheduled recording allows the user to set the times they want to stream. This is based off the system clock. You can make up to 4 schedules with this option.

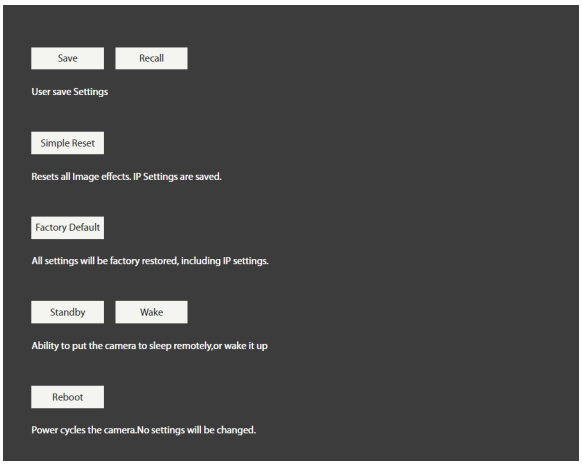
- **Record once:** When record once is chosen, only one file will be created based off the Video File Record Length. Continuous Recording should be ignored in this case.
- **Always Recording:** When the camera is in this mode, it will continuously record until “enable recording” is shut off, or the MicroSD card runs out of space.

- **Confirm:** Confirm the settings chosen above.

## Factory Settings

In these options, you can change the account credentials of the camera.


◊ NOTE: If you accidentally lock yourself out, or can’t remember your account credentials, please contact our support team for more help.




- **Save Recall User Settings:** Saving user settings allows you to save the camera state onto a config file, and upload via the recall tab. Perfect for multi-camera installations.
- **Simple Reset:** Use this button to reset all image effects. IP settings will not be changed.
- **Factory Default:** Return the camera to its factory state.

◊ NOTE: Factory resets can help deal with bugs and memory leaks. If you are having issues connecting or settings not saving, try giving the camera a factory reset.

- **Standby / Wakeup:** Put the camera to sleep, or wake it with these options. (power may still be consumed when on standby.)
- **Reboot:** Power-cycle the PTZ with this option.

# Protocols and Appendix

## VISCA Protocol

For the full extensive VISCA protocol list, please download the file found here, or our download page at aidaimaging.com/download.

## NDI® Protocol

NDI, a fast-growing tech company, is removing the limits of video connectivity. NDI – Network Device Interface – is used by millions of customers worldwide and has been adopted by more media organizations than any other IP standard, creating the industry's largest IP ecosystem of products.

NDI allows multiple video systems to identify and communicate with one another over IP; it can encode, transmit, and receive many streams of high-quality, low-latency, frame-accurate video and audio in real time. The growth of NDI is backed by a growing community of installers, developers, AV professionals, and users who are deeply engaged with the company through community events and initiatives. NDI is a part of Vizrt. For more information: https://ndi.video/

## HTTP Protocol

If you want to create your own scripts or program to connect to our PTZ, please email our support team for the HTTP access document.

## Troubleshooting

### My PTZ is in an endless cycle of rebooting?

If the PTZ is being powered over PoE or PoE+, it may not be adequate enough power to boot up the device. Please ensure a proper PoE++ or the supplied DC12V source is connected to the camera to power it.

### I'm not getting any video out of the SDI, HDMI or USB ports?

Since the camera comes default at 1080p 60fps, some monitors or devices that are set to a different resolution / framerate will not display the video. You can try using the quick resolution buttons on the bottom of the supplied IR remote controller to change the resolution to match with your switcher / ingest. If your resolution is not on the remote, you can connect the PTZ to an interim monitor or smart TV that accepts 1080p 60fps, go into the menu and change it to your desired resolution. From there, you can now plug the camera into your initial ingest with no problem.

### I can't connect my PTZ to my PTZ controller?

Out of the box, the PTZ4K12G-FNDI-X30 supports VISCA over IP, RS232, and RS422 right away. IF you are running into issues with these protocols, please check your IP, VISCA over IP port number, camera ID and protocol in the respective settings.

If you are trying to use pelco, you need to change the protocol through the supplied IR remote OSD menu to pelco, where you may then use RS485 to control the camera.

### I can't connect to the IP of the camera?

The PTZ4K12G-FNDI-X30 comes at the IP address of 192.168.1.188. To connect to that, you must have a computer on that same physical network have the same IP range as 192.168.1.xxx. From there you should easily be able to connect. If you are having issues with connecting, we have a short 2 minute tutorial on how to connect them.

## My PTZ won't pan or tilt past a certain point (not exceeding the limits of the camera)?

If your PTZ is being limited past a certain degree, there may have been a limit set on the PTZ. You can remove it by using the supplied IR remote, hitting learn, and CLR LMT to get rid of the boundaries.

If this does not solve your issue, please give the camera a factory reset and see if it resolves it. If it continues to be an issue, please contact our support team for more help.

## Is this PTZ weatherproof?

Unfortunately not. Please try to keep the PTZ in dry conditions for the best experience when using the camera.

## The PTZ seems to lock up after turning on NDI® High Bandwidth Mode?

If your web UI is freezing up after turning on NDI® High Bandwidth mode, its highly recommended to delete the cache of your browser, or open a private / new browser when reopening the camera's IP. That is because your computer most likely cached the page as it was, and won't properly display the new settings when its available.

If issues still persist, please give the PTZ some time to restart. Although it may log in earlier sometimes, waiting the full minute before being on the web UI can help with the reliability in command changes / saves. You can always factory reset your PTZ to help with any memory leaks / slowness that the PTZ may encounter being on.

## Can this PTZ be powered on forever?

The PTZ's are aged in our factory for a good amount of time, powered nonstop without issue. Our recommendation is that these electronics can be on as long as power is supplied, but do keep in mind its always a good idea to power cycle the camera after a week or two of usage.

Some reliable ways to do this would be managed switches with PoE++ that can automatically switch on / off the power supplied, smart plugs, and regular power cycles through the intended power.

## Warranty and Support

### Warranty:

AIDA Imaging warrants its cameras and items to be free from defects under normal use. With that in mind, we fulfill 2 years of warranty from the date of purchase unless otherwise noted. Please refer to our website for more information at: aidaimaging.com/support

### Support:

If you would like additional support or explanation on anything on this manual, please feel free to go to our FAQ page on our website at aidaimaging.com/support.

If you are in need of additional help, or have any
general questions, please feel free to contact us in these various ways:

Telephone: 909.333.7421

Email: Support@aidaimaging.com

Website: aidaimaging.com/support

We are open yearly, Mon-Fri 8A.M. to 5P.M. PST, excluding major U.S.A holidays and events.

Also, keep up to date with firmwares and new releases from AIDA Imaging by signing up for our newsletter, found on our website.

We do showcases on how our customers use our products on our Linkedin. If you are interested in submitting your case, we will happily extend the warranty of your product for another year if all criteria is met for your use case. For more info, please reach out to our marketing team at marketing@aidaimaging.com