epiphan video

User Guide

Epiphan EC20 PTZ Camera

Release 4.25.0
November 27, 2025

UGEC20

Thank you for choosing Epiphan!

At Epiphan Video (“Epiphan”), building reliable video systems with pro features that perform above your expectations is our mission.

We value your feedback! Email us your suggestions and let us know how you think we're doing and where you'd like to see our products improve: info@epiphan.com

Warranty

All Epiphan Video systems have a 100% return to depot warranty for one year from the date of purchase. Systems purchased in the EU extend this warranty to two years.

Technical support

Epiphan’s products are backed by our professional support team. You can reach our team several ways:

- Email support@epiphan.com
- Live chat from our support site https://www.epiphan.com/support/
- Phone toll free at 1-877-599-6581 or call +1-613-599-6581

Gather as much information about your problem as you can before you contact us so we can help you better, including:

- A description of the problem
- Details about your video or audio source (type, connection, resolution, refresh rate, etc.)
- Product serial number
- Product firmware version (using the admin interface)
- Product LED lights

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Get Started With the Epiphan EC20 PTZ Camera

Welcome to your new Epiphan EC20, a high performance PTZ camera built to deliver outstanding video quality and seamless integration with your Epiphan gear.

You can find some quick start instructions below:

1. Power on your camera, there are two options:
    - DC power – Plug in the DC power cable and flip the power switch
    - Power Over Ethernet Plus (PoE+) – Just connect a PoE+ cable to provide power and network access to the camera in one cable, and don't forget to flip the power switch
2. Connect to your network (optional but recommended):
    - Network access unlocks the full feature set of the EC20 through its web interface.
    - Plug in an Ethernet cable from your network to the EC20. The camera uses DHCP by default, so most networks will automatically assign it an IP address.
3. Reboot the camera to apply changes
4. The updated IP address will appear on the front LCD screen. The default static IP is 192.168.100.88.
    - The default username is **admin**
    - The default password is **admin**

Next, choose how to control your camera, using the remote control and a connected monitor or through the web interface:

A. Remote control
    1. Insert AAA batteries (not included)
    2. Point the remote at the camera to pan, tilt, zoom, set presets, and more

B. Connected monitor
    1. Connect a monitor to the camera's HDMI port
    2. Once connected, you'll see the camera image on the monitor
    3. Use the remote to open the on-screen display (OSD) menu
    4. Navigate the menu with the remote to adjust settings

C. Use the Web UI
    1. Make sure the camera is connected to the same network as your computer
    2. Open a browser and enter the camera's IP address (See previous section "Connect to your network")
    3. Log in using:
        - Username: **admin**
        - Password: **admin** (or your updated credentials)

Finally, connect to your video system (e.g. an Epiphan Pearl device)

A. Use hardwired connections:
    - SDI
    - HDMI
    - USB
B. Stream video over the network using a number of different protocols:
    - NDI
    - SRT
    - RTSP
    - and more!

What's in the Box?

When you receive your EC20 PTZ Camera you should find the following in the box:

1 x Epiphan EC20 PTZ Camera

1 x Remote Control

1 x Power Adapter

4 x Power Cables (AUS/EU/UK/US)

1 x Setup Guide

1 x Ceiling mount bracket and required screws

1 x Wall mount bracket and required screws

If there's something missing please contact us at support@epiphan.com.

Installation

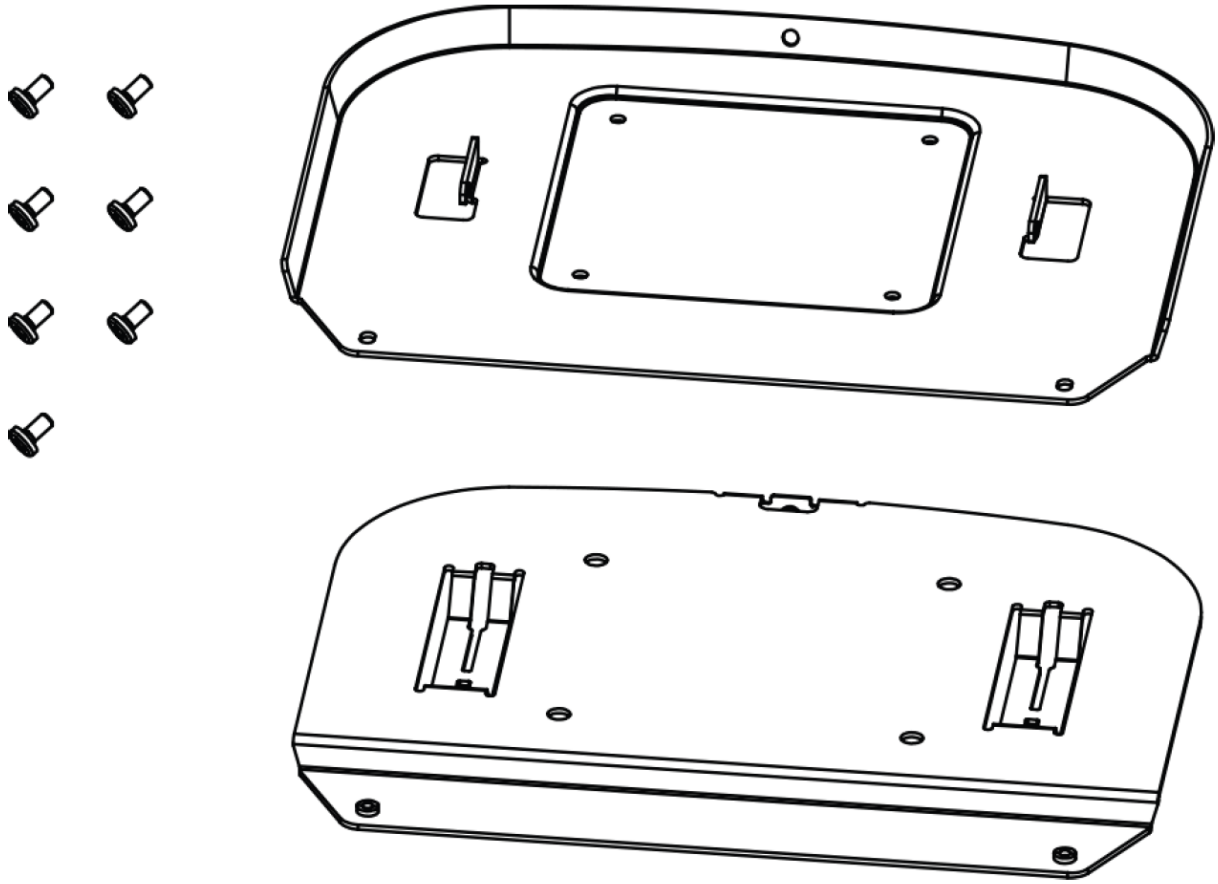
Here you can find instructions for installing the EC20 on a ceiling, wall, or other location.

Ceiling Mount Installation

You should have received the following in the box for the EC20:

1 × Ceiling mount

7 × M3×6 pan head self-tapping screws



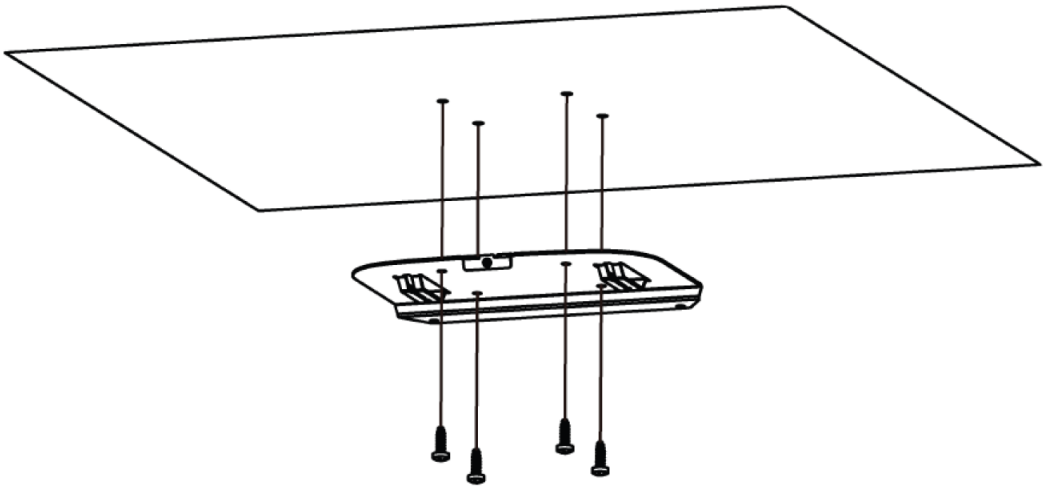
You will also need 4 × M5 expansion screws, choose a type and length for the ceiling to which you're mounting the camera.

These expansion screws are not included.

Important: Installer must ensure the mount and camera are securely fastened with proper anchors for the ceiling type.

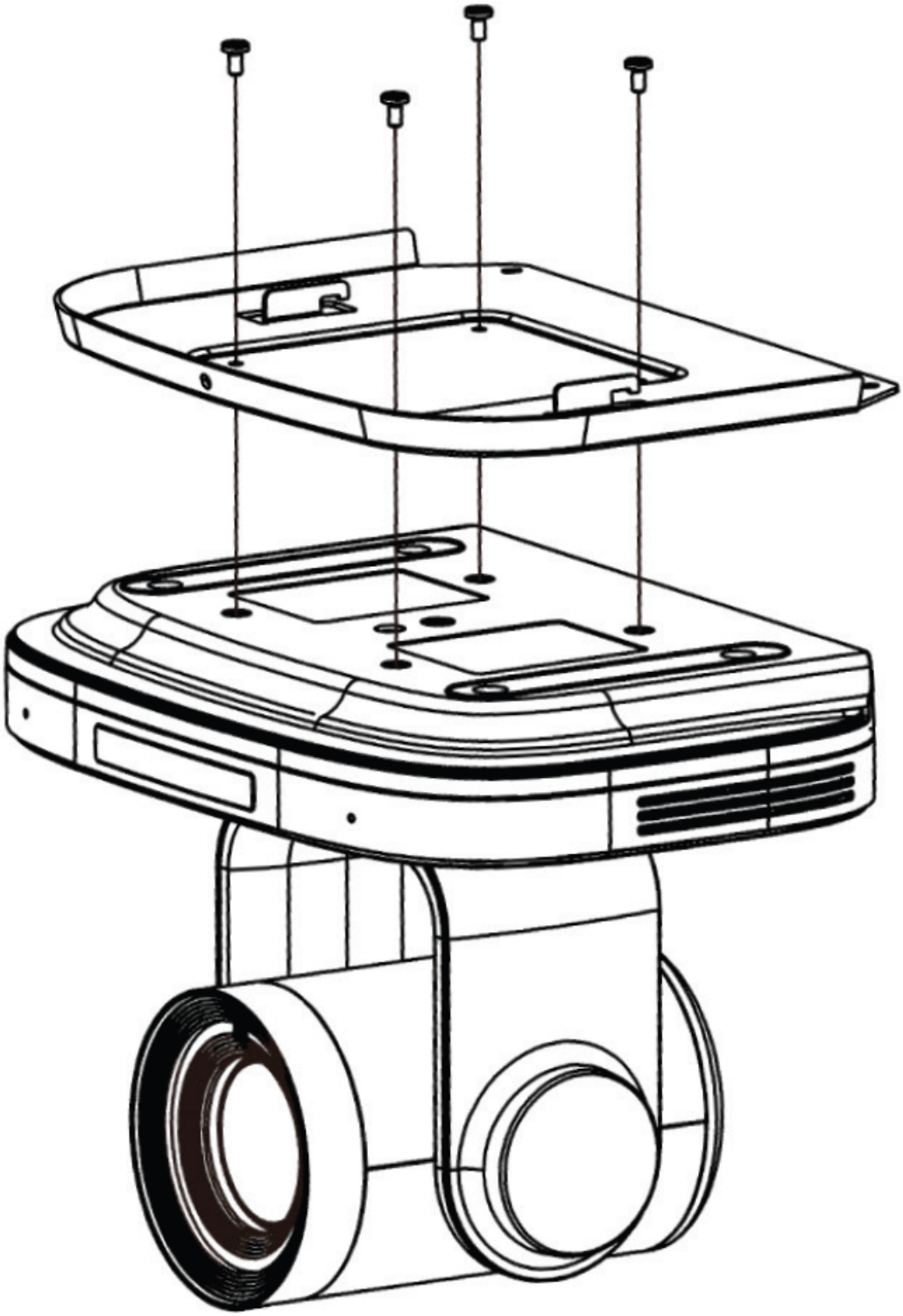
Installation Steps

1. Mark and Drill
    - Hold the top plate of the mount to the ceiling and mark the hole.
    - Drill holes. Check the depth, you can use a toothpick or straw to match your screws.
2. Attach top plate
    - Align the top plate with your marks.
    - Secure using 4 × M5 expansion screws (not included).

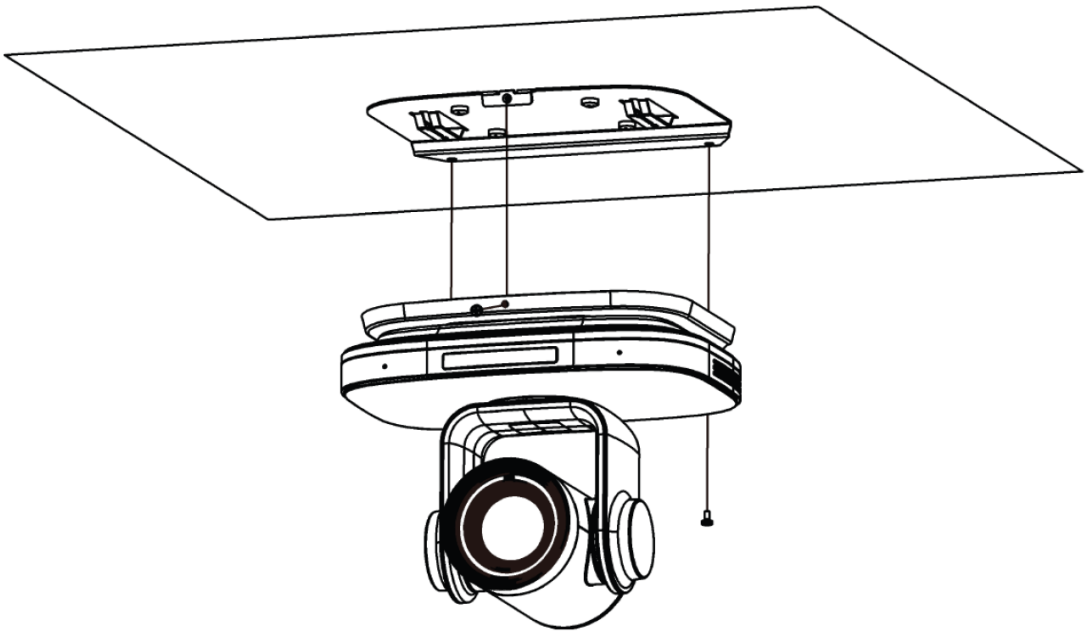


3. Prepare camera

- Attach the lower mount plate to the camera with the included M3×6 screws.



4. Mount camera
    - Lift camera with plate into the ceiling mount.
    - Secure with M3×6 screws.



    - You're done!

The above installation diagram is for reference only, please refer to actual product for the installation accessories.

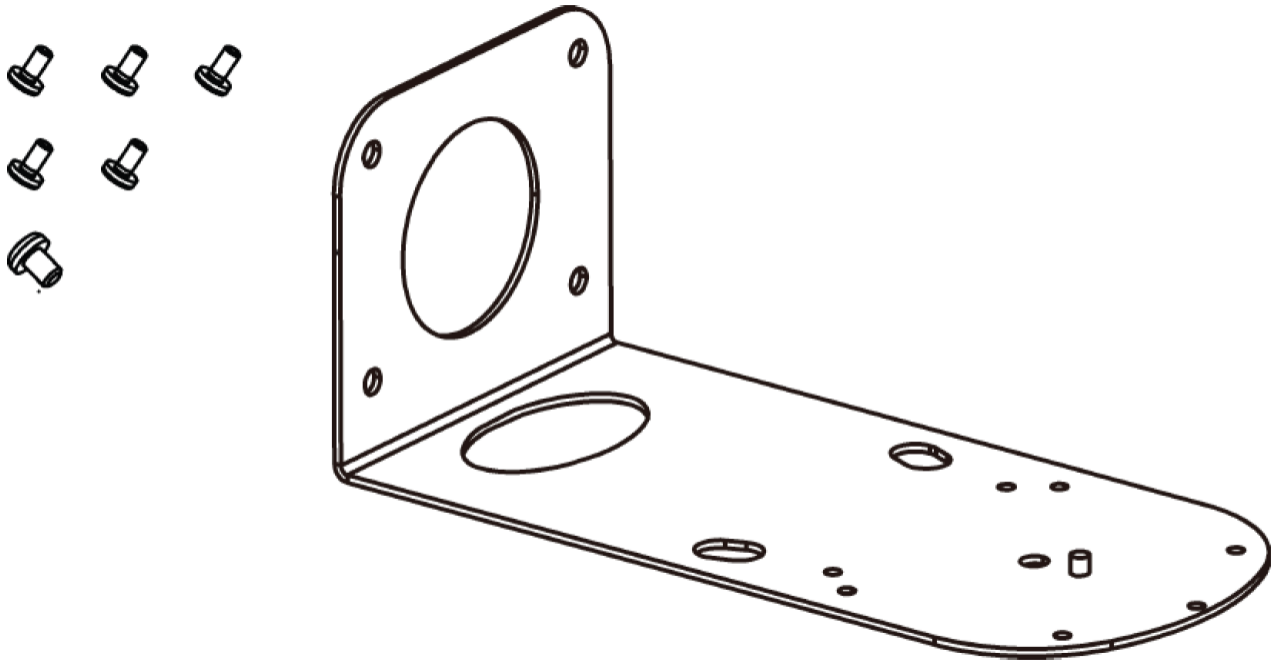
Wall Mount Installation

You should have received the following in the box for the EC20:

1 × Wall mount

1 × UNC 1/4”-20×8 screw (for camera attachment)

5 × M3×6 pan head screws



You will also need 4 × M5 expansion screws, choose a type and length for the wall to which you're mounting the camera.

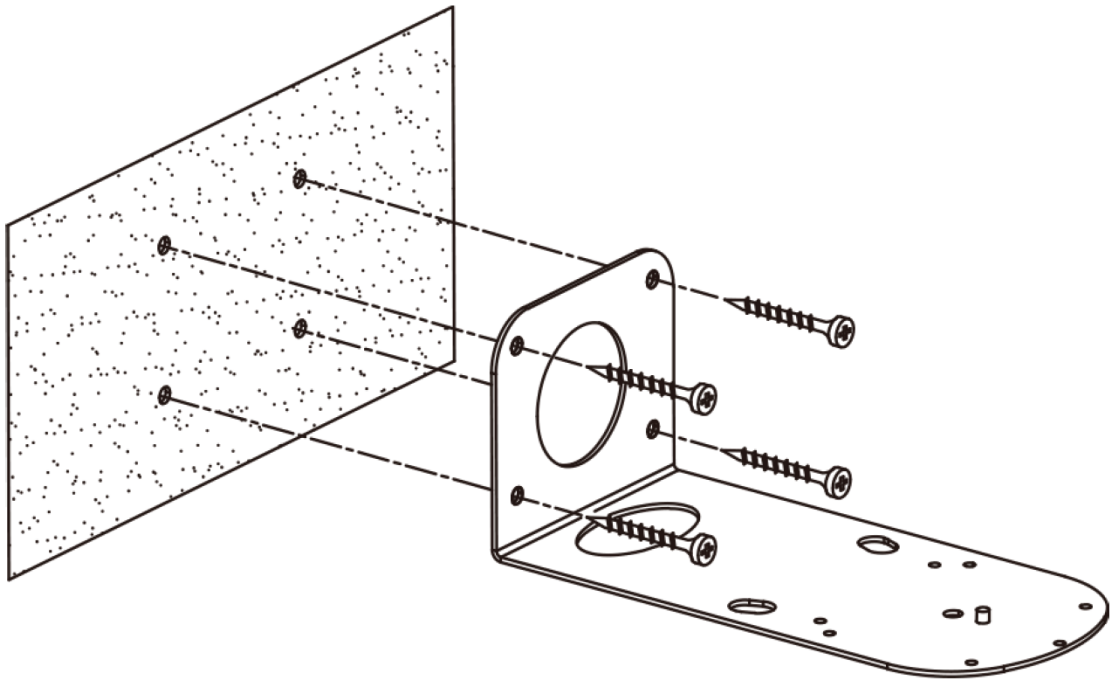
These expansion screws are not included.

Important: Installer must ensure the mount and camera are securely fastened with proper anchors for the ceiling type.

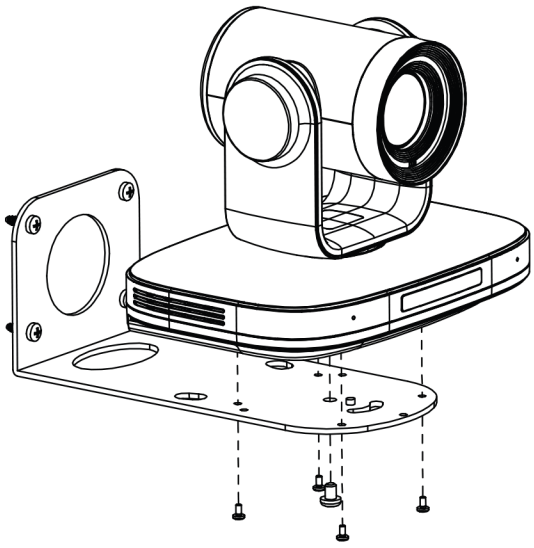
Installation Steps

1. Mark and Drill
    - Hold the bracket against the wall and mark the hole positions.
    - Drill holes. Check the depth, you can use a toothpick or straw to match your screws.

- Secure the bracket with 4 × M5 expansion screws (not included).



2. Attach camera
    - Fix the camera to the bracket using the included screws: (UNC M3×6 and UNC 1/4”-20×8).



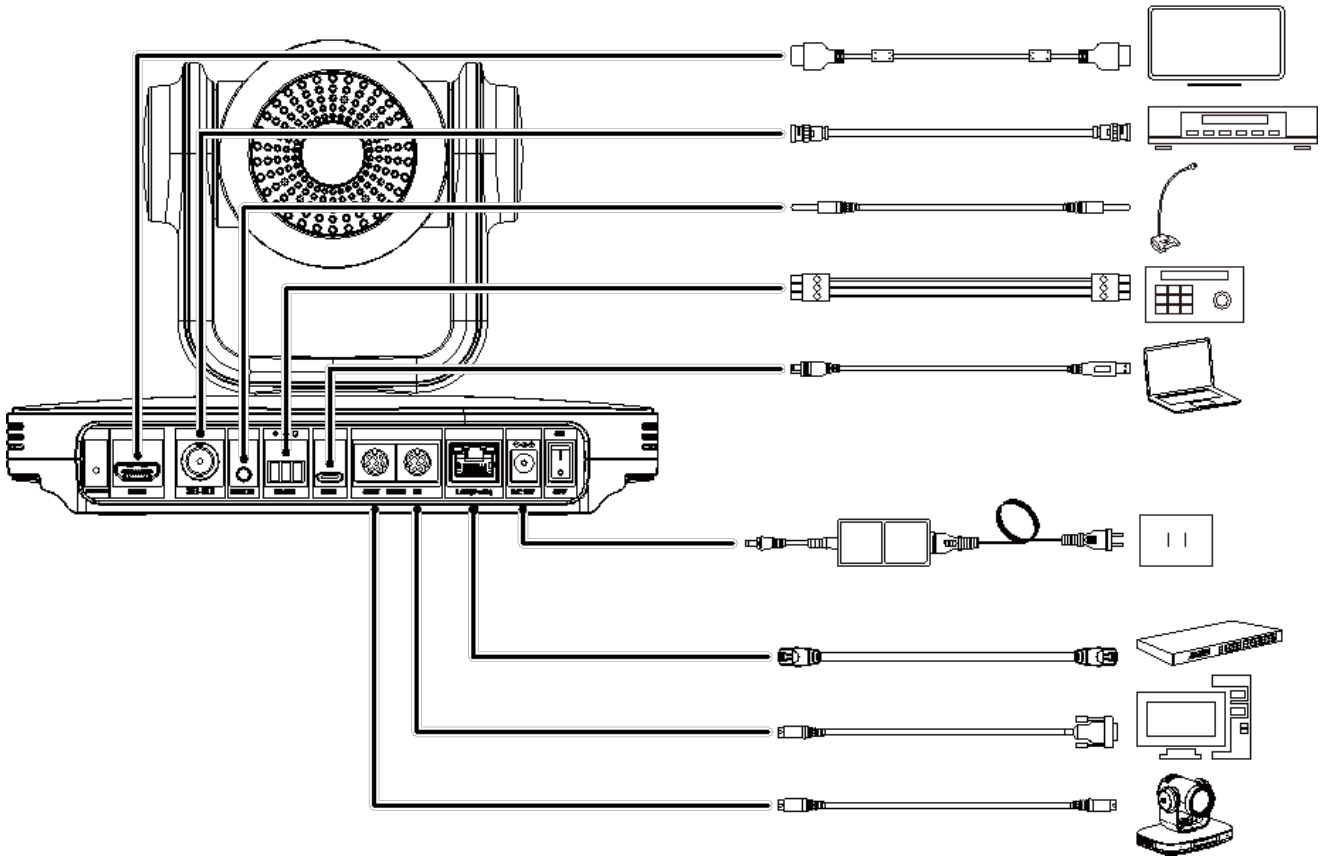
- You're done!

Check Connections

When setting up your EC20 in your workflow please check all your connections.

The diagram below is for reference only. Please refer to the actual application scenario for how your devices should be connected.

After the camera is powered on it will initialize, it will go up to the limit position, and then it will go to the middle position both horizontally and vertically, the motor will stops running, and the initialization will be complete.
(Note: If preset 0 is saved, PTZ will be moved to preset 0)



About the EC20

This section of the guide covers information about your EC20.

Topics:

Release Notes

Below is a list of product release notes, both past and current.

Current Version:

Version: 2.0.16

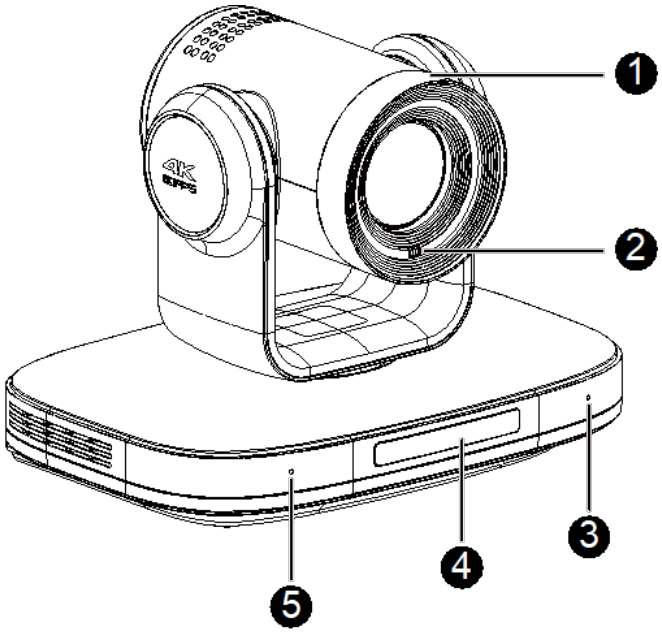
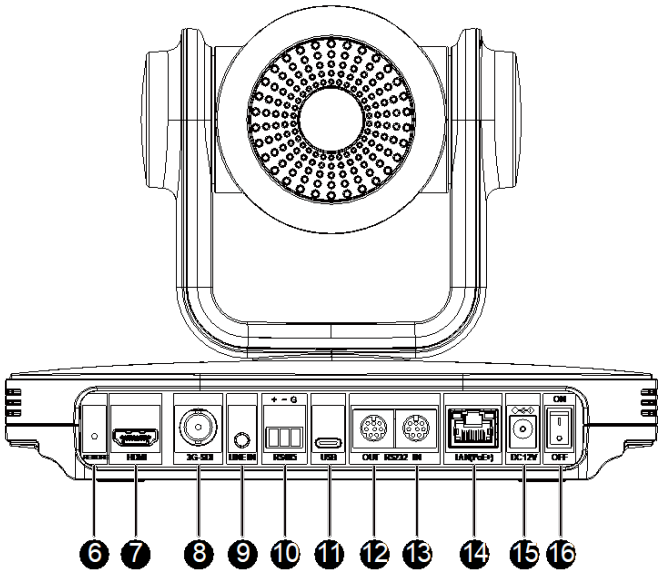
Feature List

Below you'll find a brief overview of the various features of the Epiphan EC20 PTZ Camera. For more information on a particular feature please follow the links to the relevant section of the user guide.

- AI Tracking
    - The EC20 camera is equipped with a powerful AI computing chip, it uses advanced AI algorithms to realize monocular humanoid tracking, with this you can perform automatic tracking of scenes such as education, conferences and live broadcasts. See: Tracking Configuration.
- NDI|HX3
    - NDI|HX3 video signals generally have low delay and are easy to set up, allowing for more convenient project implementation and deployment. It has wide compatibility and supports the simultaneous transmission of audio, video, and control commands. It's a new generation of network video transmission! See: NDI® Settings.
- 4K UHD
    - The EC20 uses a 1/1.8-inch high-quality UHD CMOS sensor with a maximum of 8.42 million pixels and can capture 4K (3840x2160) ultra-high-resolution high-quality images. It's also compatible with 1080p, 720p, and many other lower resolutions. See: .
- 20x Optical Zoom
    - Using its 4K ultra long focal lens with high quality and 8 million ultra-high resolution, the EC20 is capable of up to 20x optical zoom with a maximum field angle of 60°.
- HDMI 2. 0
    - The EC20 uses an HDMI 2.0 interface, which can directly output uncompressed digital video up to 4KP60!
- Low Light
    - Through the use of a 3D noise reduction algorithm the EC20 greatly reduces image noise. Even under ultra-low light conditions, it keeps the picture clean and clear! The Signal to Noise Ratio (SNR) of the image is as high as 55dB. See. Image and Video Settings:
- Multiple Interfaces
    - With HDMI 2.0, 3G-SDI HD, USB, and network outputs the EC20 can simultaneously output up to three HD digital signals. See: Configure Outgoing Video.
- Multiple Control Methods
    - The EC20 can be controlled using a variety of control systems, including RS232, RS485, network, and USB. See: Controlling Your EC20.
- Gravity Sensor
    - It supports automatic image flipping function based on gravity sensor detection.

Interface and Switches

This page provides an overview of the physical switches and features of the EC20. The EC20 supports both RS-485 and RS-232. See: Controlling Your EC20.

Name	Diagram
• 1. LED Ring Light • 2. ToF • 3. Built-in Microphone • 4. Display Screen • 5. Built-in Microphone	
• 6. RESTORE Key • 7. HDMI Interface • 8. 3G-SDI Interface • 9. LINE IN Interface • 10. RS485 Interface • 11. USB Interface • 12. RS232 OUT Interface • 13. RS232 IN Interface • 14. LAN(PoE+) Interface • 15. DC 12V Interface • 16. Power Switch	

Technical Specifications

Below you can find a table outlining the technical specifications of the EC20.

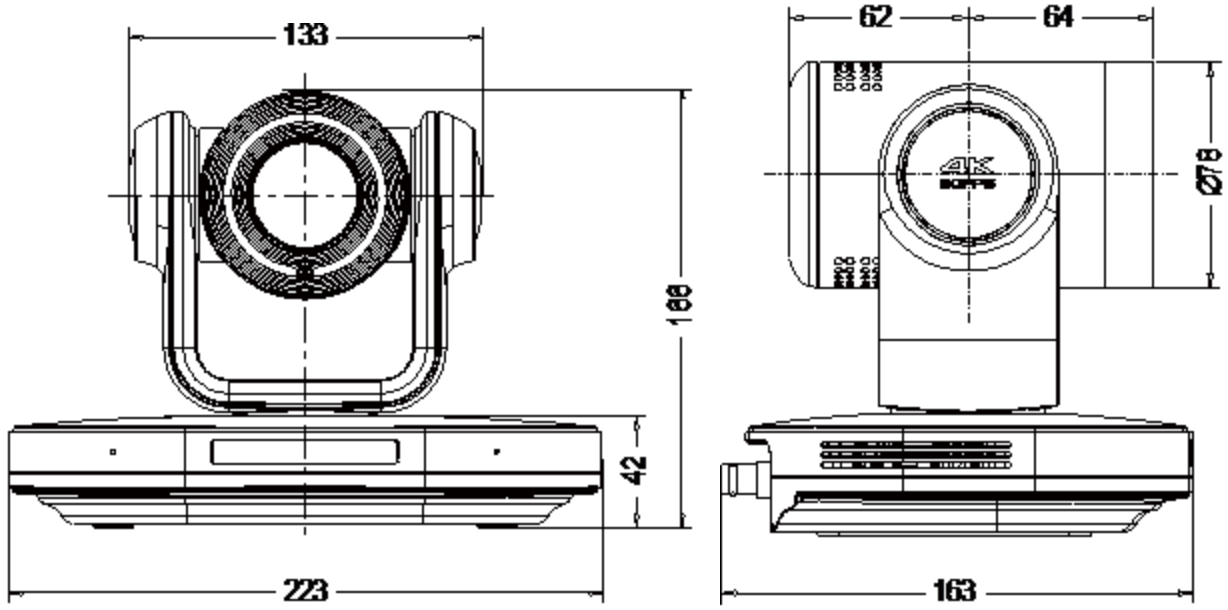
Image sensor and lens		
Video sensor		1/1.8 inches, CMOS, effective pixels: 8.42 Megapixels
Lens		20x, f = 6.25mm ~ 125mm, F1.58 ~ F3.95
Minimum illumination (Lux)		0.5 Lux @ (F1.8, AGC ON)
Field of view	Horizontal	60° ~ 3.5°
Field of view	Vertical	35.7° ~ 2.0°
Shutter		1/30s ~ 1/10000s
White balance		Auto, Indoor, Outdoor, One push, Manual, VAR
Signal to noise ratio (SNR)		≥55 dB
Physical Video Output		
Resolution and framerate	HDMI	3840×2160p @ 60, 59.94, 50, 30, 29.97, 25; 1920×1080p @ 60, 59.94, 50, 30, 29.97, 25; 1920×1080i @ 60, 59.94, 50; 1280×720p @ 60, 59.94, 50
Resolution and framerate	SDI	1920×1080p @ 60, 59.94, 50, 30, 29.97, 25; 1920×1080i @ 60, 59.94, 50; 1280×720p @ 60, 50
Resolution and framerate	USB	YUY2: Max 1920×1080p @ 30 (USB3.0); YUY2: Max 1920×1080p @ 5 (USB2.0); H.264: Max 3840×2160p @ 30; H.265 HEVC: Max 3840×2160p @ 30; MJPEG: Max 3840×2160p @ 30
Network Video Output		
Protocols		NDI®|HX3, SRT, TCP/IP, HTTP, RTSP, RTMP(s), Onvif, DHCP, Multicast
Video encoding		H.265 / H.264 / MJPEG
Max streams		(2) 1 high quality, 1 preview
High quality stream res-		3840×2160, 1920×1080, 1280×720, 1024×576, 720×480,

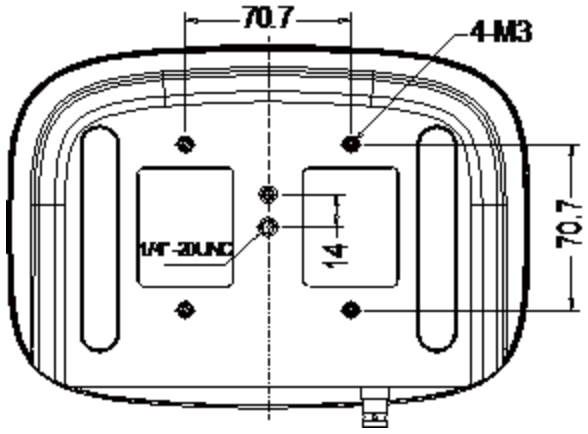
olution		720×408, 640×480, 640×360
Preview stream resolution		720×480, 720×408, 640×480, 640×360, 480×320, 320×240
Frame rate		50 Hz: 1 fps~50 fps, 60 Hz:1 fps~60 fps
Bitrate control method		CBR, VBR
Video bitrate	HQ stream	32 Kbps~51200 Kbps
Video bitrate	Preview stream	32 Kbps~20480 Kbps
Audio encoding		AAC
Audio bitrate		96 Kbps,128 Kbps
Pan/tilt/zoom (PTZ)		
Pan movement angle		±162.5°
Pan speed		1.8°~80°/S
Tilt movement angle		~30° ~ +90°
Tilt speed		1.5°~49°/S
Zoom	Optical	20x (Max.)
Zoom	Digital	16x (Max.)
Presets max		255
Preset accuracy		0.1°
Special Features		
AI tracking	Modes	Presenter, Zone
AI tracking	Figure size	Full, half, close up, custom
Image flip	Modes	Automatic via gravity sensor, Manual
Image freeze		Supported
Image mirror		Supported
Digital noise reduction (DNR)		3D digital noise reduction
Backlight compensation		Supported
PoE+		Supported
Front LED display		View IP Address, Resolution
Built-in microphones		2 × Beam forming, range: 6m

LED ring light		Configurable, tally light
Physical features		
Video interface	1 × HDMI	Version 2.0
Video interface	1 ×SDI	BNC , 800mVp-p, 75Ω, as per SMPTE 424M standard
USB Interface	1 × USB	USB 3.0 Type-C
Audio Interface	1 × LINE IN	3.5mm Jack
Network Interface	1 × RJ45	10M/100M/1000M adaptive, PoE+ support
Control Interface	Remote control	Remote control (included)
Control Interface	Network based control	REST API, VISCA over IP, NDI®, ONVIF, Browser interface
Control Interface	1 × RS485	3pin phoenix contact port, max distance: 1200m, protocol: VISCA/Pelco-D/Pelco-P
Control Interface	1 × RS232 IN	8pin Mini DIN, max distance: 30m, protocol: VISCA/Pelco-D/Pelco-P
Control Interface	1 × RS232 OUT	8pin Mini DIN, max distance: 30m, protocol: VISCA only
Power Interface		1x EIAJ type (DC IN 12V)
Material		Plastic, metal, electronics
Color		Black, green
Dimensions (W × D × H)		223 mm × 154.8 mm × 165 mm
Weight		1.8 kg
Power specifications	Interface	EIAJ type (DC IN 12V), RJ45: PoE+ (802.3at)
Power specifications	Input Voltage	DC 12V/PoE+(802.3at)
Power specifications	Input Current	Max. 2A
Power specifications	Consumption	Max. 18 W
Environmental	Working Environment	Indoors
Environmental	Operating Temperature	0 ~ 40°C
Environmental	Storage Temperature	-40 ~ 60°C

Product Dimensions

Below are diagrams of the EC20. Unit measurements are in millimeters.





Safety Information

Below you can find important safety information for your EC20, please read this before operating!

- During the installation and use of the equipment, all electrical safety regulations of the country and region of use must be strictly observed.
- Please use the power adapter that comes standard with this product.
- Please do not connect multiple devices to the same power adapter (exceeding the capacity of the adapter may generate excessive heat or cause a fire).
- Do not rotate the head of the camera by hand, this can cause a mechanical failure.
- When installing this product on a wall or ceiling, make sure the device is secure. When installing, make sure that there are no obstacles within the rotation range of the gimbal; do not turn on the power until all installations are completed.
- To avoid heat build-up, make sure there is adequate ventilation around the device.
- If the device emits smoke, smells, or makes noises, please turn off the power immediately, unplug the power cord, and contact the dealer.
- This device is not waterproof, please keep the device dry.
- This product has no user serviceable parts, damage caused by disassembly by the user is not covered by the warranty.

Specific electromagnetic frequencies may affect the image of the camera.

Controlling Your EC20

You can control the EC20 through a number of different methods.
Using the web interface. See: Web Interface Overview.
Using the Remote Control. See: Using the Remote Control .
Using a number of different external control protocols:

- See: Controlling the EC20 using NDI®.
- See: Using ONVIF with the EC20.

Web Interface Overview

This section of the guide provides an overview of the EC20's web interface. The web interface is accessible using a browser on the same local network as the EC20, simply enter the IP address of the camera into the address bar. The default login credentials are:

username: admin

password: admin

Once you're logged in you should see a video player showing what the camera is seeing, this is the **Live View** page. On the left is a navigation bar for accessing other sections of the interface. For information on certain interfaces please check the relevant user guide section.

Live View

- This shows the current shot of the camera, you can make the image full screen, mute the audio, or pause the video stream.

Device Info

- This page shows some system information about your EC20.
  - Device ID: This is the name the camera will display in other applications. You can modify this.
  - Hardware Type: This is the internal hardware name.
  - Software Version: This is the current firmware version
  - Webware Version: This is the current version of the web interface, this is set via firmware updates.
  - Serial NO.: The serial number of this EC20.

Video

- Modify various settings related to the visual appearance of the video signal. See: Image and Video Settings.

Audio

- Modify the different audio settings. See: Audio Configuration.

Output

- Modify different aspects of the physical and network based video outputs. See: Configure Outgoing Video.

Tracking

- Modify settings related to the automatic tracking feature. See: Tracking Configuration.

System

- Access system settings, such as firmware update and user passwords. See: System Configuration.

Network

- Modify different network configuration settings, such as NTP or network ports used. See: Network Settings.

NDI®

- Modify certain settings and get other information relating to NDI®. See: NDI® Settings.

Overlays

- Modify settings related to the title and timestamp video overlays for your video streams. See: Overlay Settings.

Below the navigation tabs you'll find some controls. The small house surrounded by arrows allows you to control the pan and tilt functions of the camera, while the magnifying glasses control the zoom. Note that while tracking is enabled these controls will be disabled.

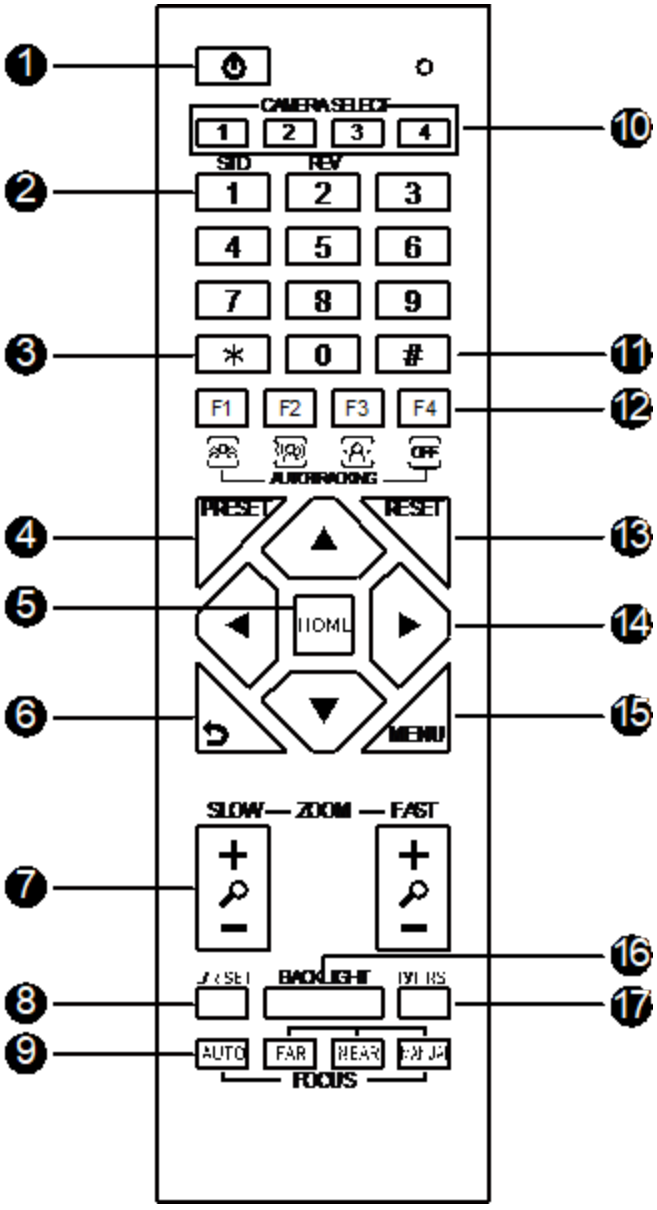
Below the PTZ controls you can also find the **Preset** settings. These allow you to set and recall specific positions for the camera. Move the camera where you want, type the number of the preset and click Set to set it. Once you've set some preset type the number and click Call to recall the preset.

Further down at the bottom are the Tracking settings. You can toggle tracking on and off, toggle the "tracking hint" that displays in the output to show when tracking is enabled or disabled, as well as set the Mode. See: Tracking Configuration.

Using the Remote Control

You can control a number of different features using the included remote control. See below for a diagram outlining what each button does.

1. (Standby) Key: Enter standby mode
2. Number Keys: To set preset or call preset
3. * Key: Use with other keys
4. PRESET Key: Set preset: [PRESET] + Number key (0-9)
5. HOME Key: Confirm selection or turn PTZ back to the middle position
6. (Return) Key: Return to the previous menu
7. ZOOM Keys:
    - SLOW: Zoom In [+] or Zoom Out [-] slowly
    - FAST: Zoom In [+] or Zoom Out [-] fast
8. L/R SET Key:
    - Standard: [L/R SET] + [1]
    - Reverse: [L/R SET] + [2]
9. FOCUS Keys: Auto/Manual/Far-end/Near-end focus
10. CAMERA SELECT Keys: Select and control the camera
11. # Key: Use with other keys
12. Auto Tracking Keys:
    - [F1]: Disable
    - [F2]: Disable
    - [F3]: Enable AI Tracking
    - [F4]: Disable AI Tracking
13. RESET Key: Clear preset position: Successively press [RESET] + Number key (0-9)
14. PTZ Control Keys: PTZ moved according to the arrow direction
15. MENU Key: Enter OSD menu or back to previous menu
16. BACKLIGHT Key: Backlight ON/OFF: Toggle backlight
    - Only supported in auto exposure mode
17. P/T RST (PTZ Reset) Key: Reset Pan/Tilt self-test



Shortcut Set: Press these key combinations to apply certain settings quickly. Press the keys one at a time in the sequence below.

[#] + [*] + [F4]: Enable or disable the Image Freeze

[*] + [#] + [1]: OSD menu language to English

[*] + [#] + [3]: OSD menu language to Chinese

[*] + [#] + [4]: Display current IP address

[*] + [#] + [6]: Quickly recover the default (Factory reset?)

[*] + [#] + [8]: Check the camera version

[*] + [#] + [9]: Enable vertical image flip

[*] + [#] + [MANUAL]: Restore to default IP address

Controlling the EC20 using NDI®

The EC20 supports control and monitoring through the use of the NDI protocol. NDI stands for Network Device interface and is a software specification developed by NewTek. You can learn more about NDI here: https://en.wikipedia.org/wiki/Network_Device_Interface, and here: https://ndi.video/.

One way to control the EC20 using NDI is through the suite of NDI Tools provided by NewTek on their site. After installing their tools you can use the NDI Studio Monitor tool to monitor the video stream from the EC20, as well as control various aspects, such as the P/T/Z functions.

It's important to note that when monitoring the camera via NDI the image seen is from the **First Stream**. See: Configure Output Video Settings. Viewing the stream via NDI when the **Encode Codec** is set to **MJPEG** is not supported and an all black image or a frozen image will be seen. The controls should still function.

Using ONVIF with the EC20

The EC20 supports monitoring and control through the ONVIF protocol. ONVIF stands for Open Network Video Interface Forum and is an open industry forum that provides standardization for IP-based video products, generally security products. You can read more about ONVIF here: https://en.wikipedia.org/wiki/ONVIF, and here: https://www.onvif.org/.

To use ONVIF with the EC20 you'll need software that uses the ONVIF protocol to communicate with the EC20. The functionality, commands available, and the look of the interface will depend on the software used. Since it is an open protocol there are a number of free and open source programs available on the internet. Epiphan Video has no official recommendations for ONVIF software, and urges caution when downloading or using third-party software and cannot be held responsible for any damages incurred from using third-party software.

Image and Video Settings

This section of the user guide covers the settings found in the web interface in the Video section. This part of the interface is for changing the visual appearance of the image captured by the EC20. It is divided into tabs, **Exposure**, **Color**, **Image**, **P/T/Z**, and **Noise**.

Exposure

This tab has various options for modifying the Exposure settings of the camera. Exposure is how much light is reaching the camera's sensor and determine how bright or dark the image will be.

Exposure Mode: **Auto**, **Manual**, **SAE (Shutter Automatic Exposure)**, **AAE (Aperture Automatic Exposure)**, or **Bright**. Depending on which mode is chosen different options will be available below.

Exposure Composition Mode: Toggle the Exposure Composition mode on or off. Enabling this activates the Exposure Compensation slider, which determines how much the camera should try to adjust for the current exposure. Lower values produce a darker image. Available in the **Auto** Exposure Mode.

Backlight: Turns on or off a physical light on the camera that provides backlight. Available in the **Auto** Exposure Mode.

Bright: Modifies the amount of brightness applied to the image. Available in the **Bright** Exposure Mode.

Anti-Flicker: Setting to help reduce flickering within the image. Available in the **Auto**, **AAE**, and **Bright** Exposure Modes.

Gain Limit: Determines the maximum amount of gain the exposure mode can apply to the image. Available in the **Auto**, **AAE**, and **Bright** Exposure Modes.

Meter: Available in the **Auto**, **AAE**, and **Bright** Exposure Modes.

Iris: Modifies the iris aperture. Sometimes called F Stop. Available in the **Manual** and **AAE** Exposure Modes.

Shutter: Modifies the shutter speed. Available in the **Manual** and **SAE** Exposure Modes.

Gain: Modifies the amount of gain applied to the image. Available in the **Manual** Exposure Mode.

DRC (Dynamic Range Compression): Determines that strength of the dynamic range compression. Available in all Exposure Modes.

Color

This tab controls various settings for adjusting the color balance of the image.

White Balance Mode: **Auto**, **Indoor**, **Outdoor**, **Manual**, **OnePush**, **VAR**. Depending on which mode is chosen different options will be available below

OnePush Calculate Button: Tries to automatically calculate the white balance of the image based on what is currently seen by the camera. Available in the **OnePush** White Balance Mode.

Color Temp: Modifies the temperature of the image. Available in the **VAR** White Balance Mode.

Red/Green Tuning: Modifies how much the mode balances between Red versus Green, higher values are more Red. Available in the **Auto**, **OnePush**, and **VAR** White Balance Modes.

Blue/Green Tuning: Modifies how much the mode balances between Blue versus Green, higher values are more Blue. Available in the **Auto**, **OnePush**, and **VAR** White Balance Modes.

Red/Green Gain: Modifies the balance of Red versus Green, higher values are more Red. Available in the **Manual** White Balance Mode.

Blue/Green Gain: Modifies the balance of Blue versus Green, higher values are more Blue. Available in the **Manual** White Balance Mode.

Saturation: Modifies the saturation percentage of the image, higher values result in more vibrant colors. Available in all White Balance Modes.

Hue: Modifies the hue of the image. Default value is 7. Available in all White Balance Modes.

Image

This tab contains settings that affect the visual fidelity of the image.

Luminance: Modifies the brightness of the image.

Contrast: Modifies the contrast of the image.

Sharpness: Modifies the sharpness of the image.

Flip: Toggle on or off inverting the image vertically.

Mirror: Toggle on or off mirroring the image horizontally.

Black and White Mode: Toggle on or off rendering the image in black and white.

Gamma: Choose from different Gamma profiles, **0.45**, **0.48**, **0.50**, **0.56**, **PC**, and **HLG (Hybrid-Log Gamma)**.

Style: Choose from different Image profiles, **Default**, **Norm**, **Bright**, **PC**, **Screen**.

P/T/Z

This tab contains settings for adjusting certain aspects of the P/T/Z functionality.

Auto Focus Zone: Choose where the Auto Focus Zone is located.

Auto Focus Sense: Modify the sensitivity of the Auto Focus feature.

Image Freeze: Toggle on or off the Image freeze feature, locks the image while the camera is moving.

Noise

3D Noise Reduction: This setting modifies the strength of the 3D Noise Reduction feature.

Audio Configuration

This section of the guide covers the audio configuration for the EC20.

Once you've accessed the web-based user interface of the EC20 you would navigate to the **Audio** section to modify the below settings.

Audio Settings

Audio Switch: Toggle the audio on or off.

Audio Type: See the audio type, AAC.

Sample Rate: Set the sample rate to 44.1K or 48K

Bit Rate: Set the audio bit rate to 96K or 128K.

Input Type: Select the audio input, either the Line In or built-in Microphones.

Input Volume: Modify the volume of the audio source.

ADTS (Audio Data Includes Timestamp): Toggle whether the audio data includes a timestamp or not.

Configure Outgoing Video

The EC20 can output video in a number of different ways, including through both physical output ports as well as network based outputs. You can find more information on the different types in the relevant sections below.

Configure Output Video Settings: This section covers selecting the physical output, choosing the resolution, encoding profiles, modifying the First and Second streams, and more.

Network Settings: This section covers network specific aspects of some of the outputs, such as enabling and configuring the SRT output.

NDI® Settings: This section covers various aspects of the NDI features on the camera.

Overlay Settings: This section covers the Overlays feature, which allows you to add a timestamp and title to your video streams.

Configure Output Video Settings

This section of the guide covers configuration of the outgoing video on the EC20. This includes setting the physical outputs and modifying certain settings for outgoing network video streams.

Once you've accessed the web-based user interface of the EC20 you would navigate to the **Output** section to modify the below settings.

Video Settings

HDMI/SDI Output: Choose which physical output you would like to use, HDMI or SDI.

Video Format: Choose the resolution of the physical output selected in the above option.

Encode Level: Select which Encoding Profile to use, main or high.

Video Template: Choose a specific NDI|HX template.

Super Zoom: Toggle Super Zoom on or off.

First Stream and Second Stream

These settings apply to the high quality stream and the preview stream, also known as the First and Second stream respectively.

Encode Codec: Select the codec to use for your stream, H.264, H.265, or MPEG.

Resolution: Select the resolution of your streams, the second stream is limited in what can be chosen.

Bit Rate: Set a bit rate for the outgoing stream, this is the amount of network data required to send the stream over the network.

Frame Rate: Select the frame rate of your streams.

I-Key Frame Interval: Select the key frame interval for your streams.

Bit Rate Control: Choose the method of bit rate control, either Variable (VBR) or Constant (CBR).

Overlay Settings

The EC20 allows you to embed a title and a timestamp in your outgoing video streams.

Once you've accessed the web interface click on the **Overlays** option in the left hand navigation section.

On the **Overlays** page you'll be able to enable or disable the timestamp and the title, as well as adjust the positions of each. Make sure to select the video stream that you want to modify in the **Stream** setting.

Network Settings

This section covers various network based settings for the EC20. This includes modifying the settings for any network based streams, or configuring NTP date and time settings. In the web interface of the EC20 most of these settings are found in the Network section, where each tab controls settings for the relevant feature, the NDI settings have their own dedicated section.

LAN

This tab displays information about the camera and the network to which it is connected. If using Dynamic IP Address none of the fields can be modified, switch the IP Configuration Type to change the settings. It's generally best to contact your network administrator or ISP (Internet Service Provider) if you have network specific questions.

IP Configuration Type: This can either be Dynamic or Fixed IP Address.

IP Address: The current IP address of the camera.

Subnet Mask: The current subnet mask of the camera.

Gateway: The default gateway the camera is using.

DNS Address: IP address of the DNS server the camera is using for domain name resolution.

MAC Address: Hard coded physical address of the camera, unique to each specific device.

DHCP Timeout: If the camera is unable to obtain an IP address from the network through DHCP this is the time in seconds it will try before using the static fallback address instead.

Static Fallback Address: The IP address the camera will use if it is unable to obtain a DHCP address within the DHCP timeout window.

Static Fallback Subnet Mask: The subnet mask that is tied to the Static Fallback Address.

Port

This tab is where you can configure which networks ports the camera uses for certain types of communication. The ports can range from 1025 to 65535, or use their default values.

HTTP Port: Default value 80.

RTSP Port: Default value 554.

TCP Port: Default value 5678.

UDP Port: Default value 1259.

Sony Visca: Uses port 52381, cannot be changed.

RTMP(S)

This tab contains information about the First and Second RTMP(S) streams. On this tab you can toggle them on or off, choose whether they contain video, audio, or both, as well as find their RTMP URLs.

SRT

This tab contains the settings for the outgoing SRT stream, the stream must be toggled on to edit any of the settings.

SRT: Toggle the SRT stream on or off.

SRT Mode: Select the SRT Mode to use for the SRT stream, **Listener** or **Caller**. The best option is going to depend on network configuration between the camera and the target destination.

SRT Server: The target SRT destination when using the **Caller** SRT Mode.

SRT Port: Network port used for the SRT stream, the default value is 4578.

SRT Encryption: The type of Encryption to use for the SRT stream, **AES-128**, **AES-192**, or **AES-256**. This must match at both the camera and the target destination.

SRT Password: The password used to secure the SRT stream. This must match at both the camera and the target destination.

SRT Bandwidth Overhead: Percentage of bandwidth to dedicate to recovery overhead.

SRT Variable Latency: Modify the latency of the stream, this must match at both the camera and the target destination. Determine the recommended latency

SRT StreamId: Set a custom ID for the stream, this must match at both the camera and the target destination.

RTSP

On this tab you can toggle whether the RTSP stream requires authentication.

ONVIF:

On this tab you can toggle whether ONVIF functionality is enabled, and whether ONVIF authentication is required.

Multicast

On this tab you can make changes to the outgoing Multicast stream, you must first turn the stream on before you can edit the values.

Multicast: Toggles the multicast stream on or off:

Address: The address of the multicast destination

Port: The network port used for the multicast stream, the default value is 6688.

FreeD

This tab contains settings for the beta FreeD data output feature. You must toggle it on before you can edit the destination IP.

FreeD Data Output (Beta): Toggles the FreeD Data Output on or off.

Destination IP: IP address of the target destination.

Control Port: Network port used for control, the default value is 19147.

Data Port: Network port used for data transmission, the default value is 19148.

NTP

This tab contains settings for time sync using NTP (Network Time Protocol). You must enable NTP time sync to edit the values.

NTP Time Sync: Toggle time sync on or off:

Time Zone: Select the timezone you wish to use.

Server Address: The IP address of a specific NTP server. The default value is time.windows.com.

Time Interval (min): The amount of time, in minutes, between sync checks with the NTP server. The default value is 1440.

NDI®

NDI® configuration has a dedicated section in the web interface. See: NDI® Settings.

Tracking Configuration

This section of the user guide covers configuring the automatic tracking feature of the EC20 camera.

Using the web interface you can modify different settings for tracking. See: Tracking in the Web Interface.

You can also set different tracking parameters using the remote control. See: Control Tracking using the Remote Control.

Tracking in the Web Interface

Once you've accessed the web interface you'll be able to configure the different types of automatic tracking. To access the tracking controls click on the **Tracking** section in the left navigation. The two modes are **Presenter** and **Zone**. The default mode is **Presenter**, which is sometimes referred to as **Human Tracking**.

On the lower left of the screen are additional tracking controls. These controls allow you to enable or disable tracking, toggle the different modes, activate a debug mode, or a visual tracking hint you can see in the video output. These are available regardless of which section you're viewing.

Presenter

When you click on the **Presenter** tab you'll be presented with a number of different settings:

- **Auto Zoom:** This will toggle this feature on or off, if it's off the camera will not automatically zoom in or out on the presenter. The lens can still move, but can only maintain the current magnification and cannot zoom.
- **Auto Tilt:** This will toggle this feature on or off, if it's off the camera will only pan horizontally, it will not tilt vertically.
- **Target Retention Time:** This is how long the camera will wait before returning to its starting position if it loses sight of the presenter. The default is six seconds with a maximum of 10 seconds.
- **Figure Size:**This setting determines how much of the presenter you want in the frame:
    - Full: This will try to keep the presenter's entire body in the frame.
    - Half Body: This will try to keep the presenter in the frame, starting from the knees.
    - Close Up: This will try to keep the presenter in the frame, starting from the waist.
    - Custom: This modifies what proportion of the frame the presenter should take up, set via the slider. When this is set high if the presenter moves quickly, the camera may have difficulty keeping them in frame.
- **Tracking Start Position:**This determines where the tracking should begin, and where it will return if tracking stops. You can choose either the Current Location or the first Preset.
    - Current Location: This is the camera's current position when tracking is turned on. The camera will also stop at its current position if tracking stops.

- Preset 1: When tracking is turned on, the camera will first move to Preset 1. If someone enters the video screen at this time, the camera will automatically track them. When the tracking target is lost (exceeding the timeout), the camera will automatically move to Preset 1.
- Figure Position: Determines where the presenter should be located in the frame: Left, Middle, or Right, defaults to Middle.

Zone

This tracking method divides the frequently active areas of the tracking target into several sections (A, B, C, D) as needed, and sets corresponding preset positions and saves them. When the tracking target enters this area, the camera will automatically call the preset position corresponding to the area to achieve tracking.

When configuring the Zone tracking options temporarily disable tracking. Once you have them configured and saved you can turn tracking back on. Configure them like this:

1. Select the zone you want to configure in the Zone Setting section.
2. Use the camera PTZ controls to adjust the position, click save when you've reached the desired position.
3. Select and configure other zones as needed.

Currently the maximum number of Zone presets is four. If you make a mistake with the settings you can delete them and then recreate them.

- **Tracking Start Area:** You can select any Zone position as the tracking start or end position. When tracking is turned on, the camera will first move to this Zone position. If someone enters the video screen at this time, the camera will automatically track them. When the tracking target is lost, the camera will automatically move to this Zone position.

Debug Mode

The EC20 also has a Debug mode to help configure Presenter tracking. You can set this mode to **Default**, **Debug**, or **Off**.

- **Default:** After turning on tracking, if there are multiple people in front of the camera and pressing the direction key to select the tracking target, this box will automatically appear. After pressing the HOME key to confirm tracking, this box will disappear and the camera will start tracking.
- **Debug:** Turn on tracking, and the presenter box will always appear on the tracking target. This feature is generally only applicable for debugging or demonstration.
- **Off:** When selecting a tracking target, the preseneter box is not displayed at all. This feature is great for live streaming scenarios.

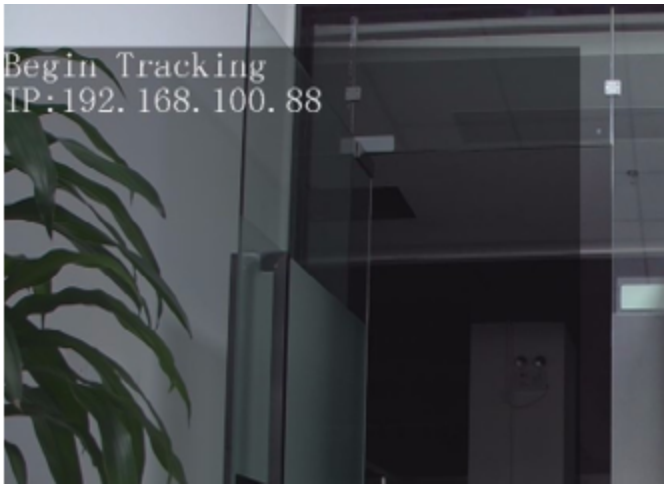
Control Tracking using the Remote Control

It's possible to enable and disable automatic tracking using the included remote control. The default mode is Presenter Tracking, you can check the current settings in the web interface.

Tracking a single person:

Press the F3 key on the remote control to start tracking, and the camera will lock on the target for direct tracking. With the tracking hint enabled you can see when tracking has successfully started, see example below. Press the F4 key to exit tracking mode.

Tracking Hint:



Tracking With Multiple People

1. If there are multiple people in the scene:
2. First press the F3 key on the remote control to start tracking
3. Press the left or right key on the remote control to select the target to track, and then press the HOME key to confirm.
4. The camera will start tracking.
5. Press F4 key to exit tracking mode.

System Configuration

Once you've logged in to the web interface of the EC20 you can click on the System section on the left. The System section of the web interface is divided into three tabs, **Initialize**, **User**, and **Firmware Update**.

Initialize

On this tab you can click the Reboot button to reboot the camera. You can also click Factory Default to return all of the settings to the factory defaults.

User

On this tab you can set the passwords for the **admin** and **guest** accounts. You can also enable or disable **SSH** functionality.

Firmware update

Occasionally there will be firmware updates for your EC20, these updates can resolve bugs, add new features, and more. It's generally always recommended to make sure your device is on the most recent firmware version.

1. On the **Firmware Update** tab you can upload the firmware update **.IMG** file.
    - Firmware files can be downloaded from the EC20 support page. See: https://www.epiphan.com/support/ec20-software-documentation/#firmware-software.
2. After uploading the file and clicking Update the EC20 will go through a reboot. **Do not interrupt, manually reboot or power off, the camera during this process.**
3. Once the update is finished you can try accessing the web interface to confirm the update as completed. You can see the new version on the **Device Info** page.

Troubleshooting

This section of the guide covers general troubleshooting, known issues, and how you can contact Epiphan's Customer Success team for product support.

Known Issues

List of known issues for the EC20 and workarounds where available.

When sending interlaced video from the EC20 to any Pearl device No Signal is seen.: Currently only workaround is switching to a progressive signal.

Artifacts in OSD Setup Menu after changing settings with remote: In some cases after making changes with the remote control visual artifacts will appear on the screen. Current workaround is pressing the **Menu** button on the remote and then selecting the **[Menu] Exit** option.

Time of Flight (ToF) is not currently enabled: No workaround currently.

Troubleshooting Quick Reference

Here you can find some general troubleshooting steps if you're running into issues with your EC20 camera. If none of the below steps resolve the issue please contact our support. See: Contact Epiphan Support.

Seeing no image on your monitor

1. Check that the camera power supply is connected, the voltage is normal, and the power indicator is steady.
2. Turn off the power switch to check to see if the camera reacts with its self-check.
3. Check that the cable from the camera and the monitor are securely connected with a supported cable.

Image jitters after the camera is properly connected

1. Make sure that the camera has been installed securely and is stable during operation.
2. Check to see if there is any vibrating machinery or other objects near the camera.

There is no video image in browser-based web interface video player

The web interface video player does not support the Internet Explorer browser or the Internet Explorer core browser. We recommend that you use Google Chrome, Mozilla Firefox, or Microsoft Edge. Even without access to the web interface the cameras output should be displayed normally.

Unable to access camera through the browser over the network

1. Use a computer to access the network and test to see if you can ping the camera's IP address, this can help rule out a faulty network cable or interference from a virus.
2. Disconnect the camera from the network and connect the camera directly to the computer. In some cases you may need to modify the IP address of the computer to access the camera.
3. Confirm that the IP address, subnet mask, and gateway settings for the camera are correct.
4. Check the network to see if the IP address of the camera is conflicting with another device. IP addresses are often assigned by MAC address of a device.
5. Check to see if the port the web interface uses has been modified, the default port is 80.

Forgot the IP address or login password

If you need to factory reset the camera you can use the defaults below to access it:

- The default IP address is: **192.168.100.88**
- The default username and password are both: **admin**

Remote control does not work

1. Check the batteries and replace with new if needed.
2. Check that the camera is in the correct mode, certain tracking modes disable manual control.
3. Check that the address key of the remote control matches the camera.

Serial port control issues

1. Ensure that the protocol, address, and bit rate of the camera are compatible with your control device.
2. Ensure that the control cable is properly connected to the camera and the control device.

Contact Epiphan Support

Technical support

Epiphan's products are backed by our professional support team. You can reach our team several ways:

- Email support@epiphan.com
- Live chat from our support site https://www.epiphan.com/support/
- Phone toll free at 1-877-599-6581 or call +1-613-599-6581

Gather as much information about your problem as you can before you contact us so we can help you better, including:

- A description of the problem
- Details about your video or audio source (type, connection, resolution, refresh rate, etc.)
- Product serial number
- Product firmware version (using the admin interface)
- Product LED lights

Copyright

Notice

Product specifications and information which were referred to in this document are for reference only. We may change, delete, or update any content at any time and without prior notice.

FCC NOTICE (Class A)

This product complies with Part 15 of the FCC Rules. The operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Class A ITE

Class A ITE is a category of all other ITE which satisfies the class A ITE limits but not the class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instructions for use:

Operating this equipment in a residential environment may cause radio interference.

European Community Compliance Statement (Class A)

This product is herewith confirmed to comply with the requirements set out in the Council Directives on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive 2014/30/EU.