



BG-B20SHA

HD Integrated Camera

User Manual



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1. Precautions

- **Electronic**

- The electrical safety standards of the country and region must be strictly observed in the installation and use of this product.

There is no power switch in the body of this product. If there is an equipment failure immediately disconnect the power supply. The video cable and control cable should be shielded and wired independently and cannot be mixed with other cables.

- **Transportation**

During transportation, storage, and installation it is necessary to prevent damage caused by heavy pressure, severe vibration, immersion, etc.

- **Installation**

Please refer to the user installation manual carefully during installation. Handle the camera components gently to avoid damage to the camera. The camera lens is an advanced optical product - protect the lens from contact to avoid scratching and affecting image quality..

- **Maintenance**

All installation and maintenance work on this unit should be performed by a qualified service technician or system installer.

- **Disassembly**

Do not disassemble the camera or protective cover. There are no user-serviceable parts in the product. It should be repaired by professional maintenance personnel.

- **Working Environment**

Environment Temperature : $-10\text{ }^{\circ}\text{C} \sim +50\text{ }^{\circ}\text{C}$ Humidity : $<95\%$ Input

Voltage: $\text{DC}12\text{V} \pm 2\text{V}$ Max Power consumption: 12W

- **Don't aim the camera directly at bright objects.**

- Do not aim the camera at a bright object. Whether powered on or not, never aim at the sun or other bright objects as this can damage the sensors and cause blurred or haloed images.

2. Functions

2.1 Technical Parameters

Electronics		Communication	
Constant Voltage	DC12V	Baud rate	4800/9600/19200/38400bps
Power Consumption	12W	Protocol	VISCA /Pelco - D/Pelco - P/ONVIF
Encoding	Built-in	ID	1 ~255
Operation Environment	-10°~+50°		
Humidity	0~95%		
Installation	Desk, Top-down		
Presets	255	N.W	1.2kg

2.2 Camera Parameters

Model	20X
Spec	
Sensor	1/2.8" Progressive CMOS
Effect Pixel	2.3 Megapixel
Zoom	20X Optical Zoom, 12X Digital Zoom
Lens	f=4.7mm-94.0mm
Iris	F1.6(W)-F3.5(T)
Horizontal of view	3.2° (T) ~ 57.4° (W)
Min. Distance	30CM
Min. Illumination	0.5Lux (Day), 0.1Lux (Night), 0.005Lux (DSS)
Gain	Auto/Manual
Focus	Auto/Manual
S/N Ratio	≥50dB
Shutter	1/25 (1/30)js - 1/ 30000s
Presets	255 presets
Communication	RS-232/RS-485/ ONVIF
Protocol	VISCA, PELCO-D, PELCO-P, ONVIF
Video Format	1080P60/59.94/50/30/29.97/25, 1080I 60/59.94/50/30/25, 720P 60/59.94/50/30/29.97
Video Output	3G- SDI HDMI IP Streaming (RTMP/RTSP/RTMPS)

2.3 Technical Specification

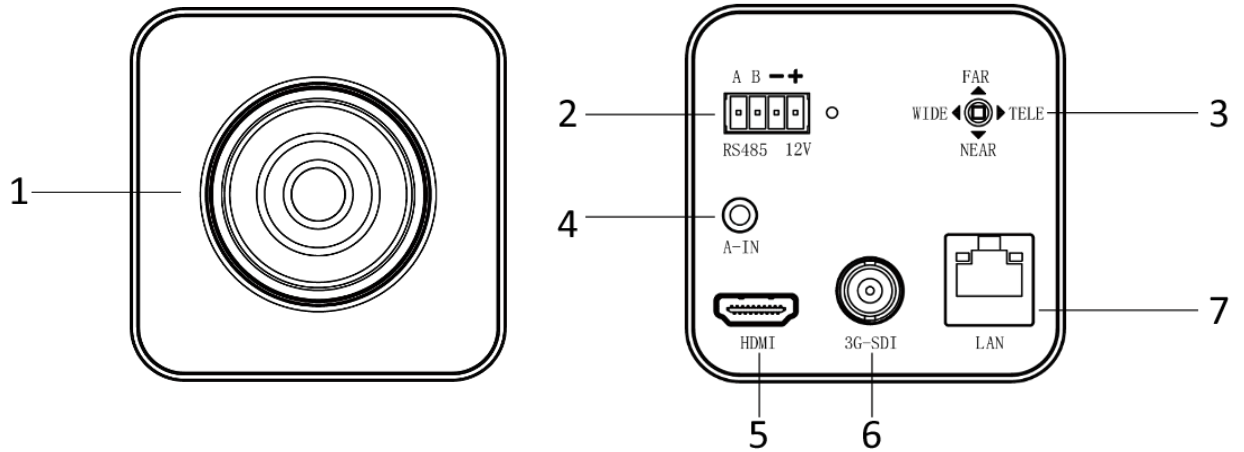
➤ Input/Output Interface

- Video Output: 3G-SDI / HDMI / IP Streaming
- Audio Input: 3.5mm Audio Input
- Input/Output Control Interface: 2PIN Terminal, 3.50mm
- Power Interface: 2PIN Terminal, 3.50mm or POE+

➤ Features

- Supports RS232C or RS485 protocols, allowing a PTZ Controller or PC to control the camera.
- Improved image quality from the newly developed digital signal processor (DSP).
- Built-in attenuation filter that physically removes IR (infrared). This filter can be turned on or off automatically, providing high quality images for shooting environments of different brightness.
- The five-direction button on the back of the camera allows users to quickly and easily change any parameters of the camera.
- Default IP Address: 192.168.1.162
- Built-in Audio Input, Audio encode standard support G.711,G.722,G.722.1, G.728,G.722.1C, ACC
- Supports multiple interface SDI/HDMI/IP Streaming simultaneous video output
- Supports POE

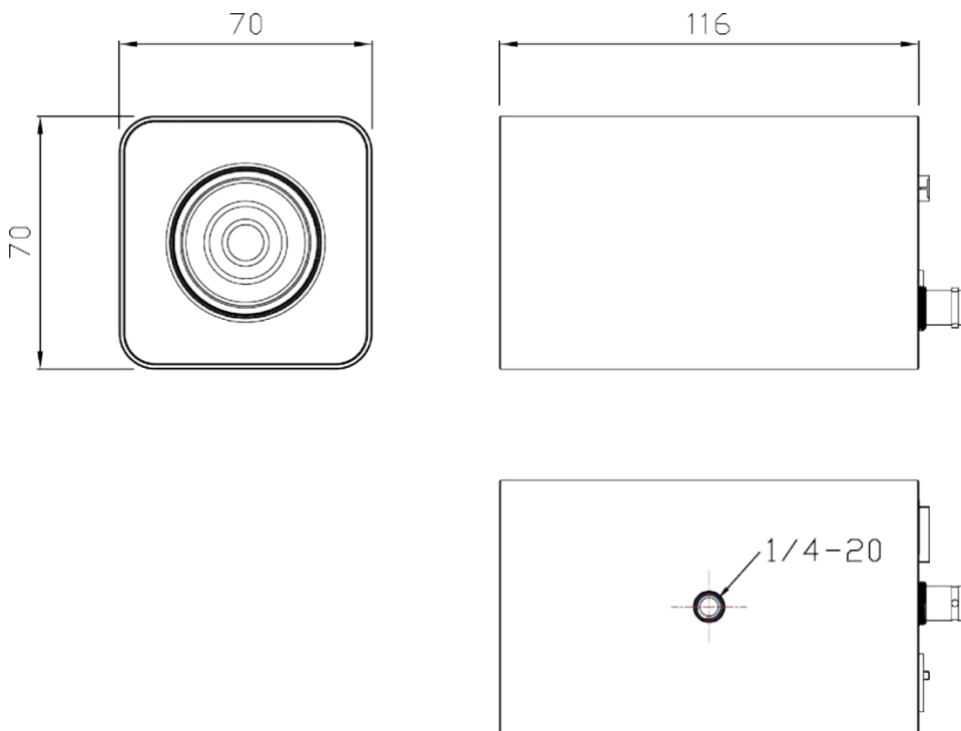
3.1 Camera Interface instruction



- 1. Lens
- 2. Terminal Pin Interface
- A: RS485+
- B: RS485-
- /+: DC12V Power Interface

- 3. Five-direction Button
- 4. Audio-IN
- 5. HDMI
- 6. 3G-SDI
- 7. LAN

3.2 Dimensions (mm)



4. Camera Menu Settings

1. Press and hold the center button for 3 seconds to enter the Main Menu
2. Use the directional keys to navigate the menu and settings.

MAIN MENU	
EXPOSURE	
COLOR	
PICTURE	
ADVANCED	
PRIVACY	
SYSTEM	
EXIT	

4.1 EXPOSURE

- Enter the main menu and navigate to **【EXPOSURE】** . Press right to enter the sub-menu.

- **【AE MODE】**

Options: AUTO/SHUTTER/IRIS/BRIGHT

- **【SHUTTER/IRIS/BRIGHT】**

Different auto exposure parameters can be modified depending on the selected mode. The range of settings are as follows:

Shutter: 1/1-1/10000

IRIS: F1.6-F14

Bright: F14/0DB-F1.6/28DB

- **【EXCOMP】** ON/OFF
- **【BACKLIGHT】** Backlight Compensation ON/OFF
- **【HLC】** Highlight Compensation 0 - 15
- **【FLICKER】** Anti-Flicker 50Hz/60Hz/OFF
- **【GAMMA】** Gamma Adjustment 0 – 9

EXPOSURE	
AE MODE:	AUTO
AE LEVEL:	N/A
EXCOMP:	OFF
BACKLIGHT:	OFF
HLC:	8
FLICKER:	OFF
GAMMA:	6
BACK	
EXIT	

4.2 COLOR

Enter Main Menu, navigate to **【COLOR】** , press right to enter sub-menu.

- **【WB MODE】**

Options: AUTO, INDOOR, OUTDOOR, ATW, OPW, MANUAL

- **【R GAIN/B GAIN】**

COLOR	
WB MODE:	AUTO
R GAIN:	N/A
B GAIN:	N/A
COLOR GAIN	100
COLOR HUE	0
BACK	
EXIT	

When the WB MODE is set to MANUAL the R Gain\B Gain values can be independently adjusted.

- **【COLOR GAIN】** Setting Valued range: 60 - 200

- **【COLOR HUE】** Setting Valued range: -14 - 14

4.3 PICTURE

Enter Main Menu, navigate to **【PICTURE】** , press Right Button to enter sub-menu.

- **【FREEZE】** Setting: ON/OFF

- **【APERTURE】** Setting Value range: 0-15

- **【2D NR】** Setting Value range: 0-5

- **【FLIP】** Setting: ON/OFF

- **【ICR】** Setting: AUTO, B&W, COLOR

- **【GAMMA】** Setting Value range: 0-4

- **【BLC】** Setting: ON/OFF

PICTURE	
FREEZE:	OFF
APERTURE:	5
2D NR:	OFF
FLIP:	OFF
ICR:	AUTO
GAMMA:	NORMAL
BLC:	OFF
BACK	
EXIT	

4.4 P/T/Z

Press the [MENU] button to display the OSD menu, then press the arrow keys to highlight [P/T/Z] and press right to enter the sub-menu.

- [FILP]: ON/OFF
- [L/R DIRECTION]: ON/OFF
- [AF MODE]: AUTO/MANUAL/ZOOM
- [AF SENS]: HIGH/NORMAL/LOW
- [PRESET FREEZE]: ON/OFF
- [D ZOOM]: ON/OFF

P / T / Z	
FLIP:	OFF
L/R DIRECTION:AF	OFF
MODE:	AUTO
AF SENS:	NORMAL
PRESET FREEZE:	OFF
D ZOOM:	ON
BACK	
EXIT	

4.5 Noise Reduction

Press the [MENU] button to display the OSD menu, press the arrow keys to highlight [NOISE REDUCTION], then press right to enter the sub-menu.

- [2D NR]: 0-5 / OFF
- [3D NR]: 0-5 / OFF
- [DYN HOT PIXEL]: ON/OFF

NOISE REDUCE	
2D NR:	2
3D NR:	3
DYN HOT PIXEL:	OFF
BACK	
EXIT	

4.6 Video Format

Press the [MENU] button to display the OSD menu, press the arrow keys to highlight [VIDEO OUT], then press right to enter the sub-menu.

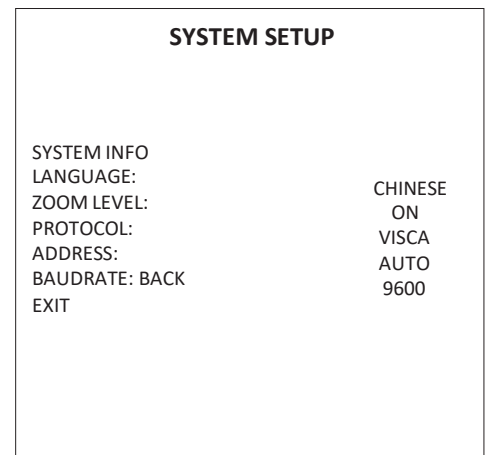
- [VIDEO OUT]:
1080P60/59.94/50/30/29.97/25
1080I60/59.94/50/30/25
720P/60/50

VIDEO OUT	
VIDEO OUT:	720P50
	720P60
	1080I25
	1080I30
	1080I50
	1080I59.94
	1080I60
	1080P25
	1080P29.97
	1080P30
	1080P50
	1080P59.94
	1080P60
BACK	

4.7 SYSTEM

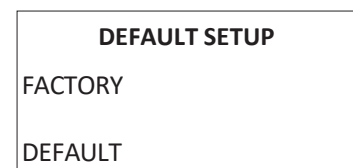
Press the [MENU] button to display the OSD menu, press the arrow keys to highlight [SYSTEM SETTING], then press right to enter the sub-menu.

- [SYSTEM INFO]: press right button to enter the submenu
- [LANGUAGE]: CHINESE/ENGLISH
- [ZOOM LEVEL]: ON/OFF
- [PROTOCOL]: VISCA/PELCO-D/PELCO-P
- [ADDRESS]: 1-255
- [BAUDRATE]:2400/4800/9600/19200/38400



4.8 Restore Default

Press the [MENU] button to display the OSD menu, press the arrow keys to move to [DEFAULT], press right button to make the OSD parameters return to default.



5. Network Connection

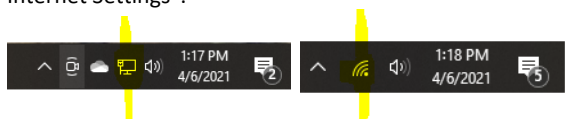
To successfully complete this process, you will need several pieces of information. The first is the IP address of your computer. You will also need to select an unused IP address on your local network (This is the address you will set the camera to). The third piece is the default IP address of your camera. Finally, you will need the IP address of your Default Gateway/Router.

All versions of the BZBGear VPTZ Series cameras have the following default IP address:

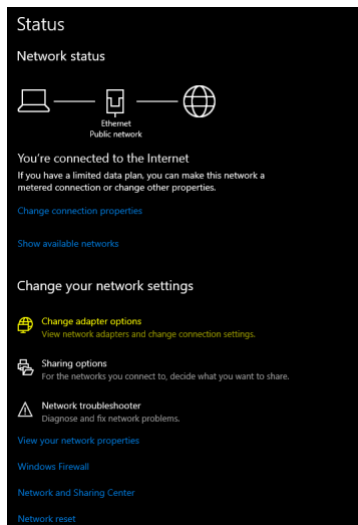
192.168.1.162

The computer must be on the same subnet as the camera to connect successfully, therefore the computer must be connected to the 192.168.1.x subnet. If your network is already using this IP address pool, simply enter the camera's IP address to connect. If it is not this can be achieved via the Local Area Network Properties on the computer.

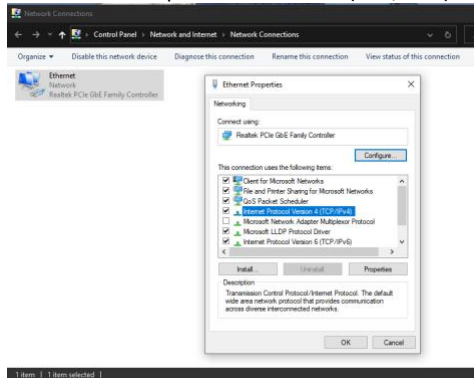
- Right-click on the internet connection in the lower right corner of the desktop and select "Open Network & Internet Settings".



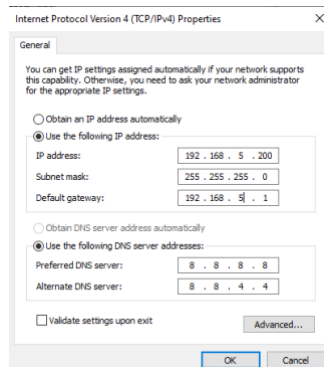
- Select "Change Adapter Options".



- Right-click on your connection (Wi-Fi or Ethernet) and select “Properties”.
- Select “Internet protocol version 4 (TCP/IPv4)” as shown below and click “Properties”.

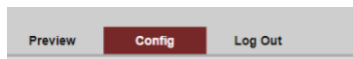


- For the following steps refer to the diagram below. Click on the bubble for “Use the following IP address”
- In the IP address field enter a non-conflicting IP address on the same subnet as the camera. If there is another device with the same IP address you will not be able to connect. In the example below we are using 192.168.1.200
- In the Subnet mask field enter 255.255.255.0 In the Default gateway field type 192.168.1.1 You can leave the DNS fields blank.



NOTE: When you are finished configuring the camera you will need to return to this screen and click the bubbles for “**Obtain an IP address automatically**” and “**Obtain DNS server automatically**” to restore internet connectivity to your computer. Also make sure to reconnect any ethernet cables you may have unplugged.

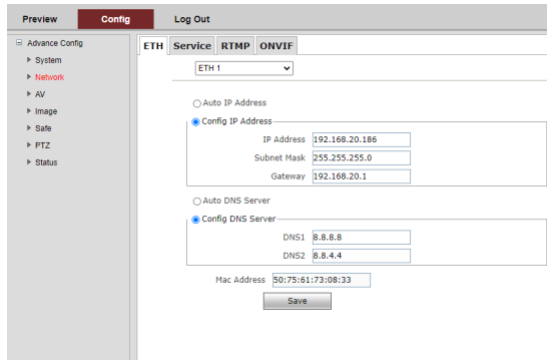
- Click OK to apply your settings.
- Click OK to close the network properties screen.
- Once you have applied your settings open your web browser and enter the IP address of your camera.
- Enter the login information to access the interface. The username and password should both be admin for a default camera. You will now be looking at the camera preview window. At the top left of your screen select Config.



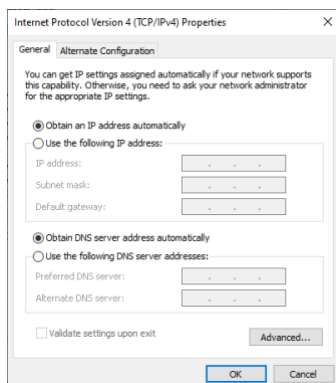
- On the left side of your screen select Network. In the IP address field, you will enter the unused IP address you selected at the beginning. Our example will use an address of 192.168.20.186.

***This address MUST NOT be in use by any other device on your network or you will create an IP conflict and be unable to access your camera. ***

- In the Subnet Mask field enter 255.255.255.0 the enter the IP address of your Default Gateway in the field below. Double-check your values and click the Save Button.
- Unless you are given different information by your network administrator you should enter 8.8.8.8 for DNS1 and 8.8.4.4 for DNS2. Click Save.



- Once you complete the camera setup, repeat the steps on your computer to adjust "Internet Protocol Version 4 (TCP/IPV4) Properties" and click the bubbles for "Obtain IP address automatically" and "Obtain DNS server address automatically". Click OK to close all network-related screens.



- Your computer and camera should now be on your network. Open your web browser and enter the IP address you assigned to your camera and your setup is complete.

5.1 Camera Web Interface

From the Web Interface you can control the camera, view the video feed, and adjust various camera settings and functions.

Preview Screen

From the preview screen you can view the live video feed, preview the embedded audio, and adjust PTZ, Focus, and Iris controls.

Directional Arrows: Use the Up/Down/Left/Right/Diagonal buttons to rotate the camera.

Home Button: Use the Home button to return the camera to the Home position.

Zoom In/Out: Use the Zoom buttons to adjust the zoom level of the camera.

Focus In/Out: Use the Focus buttons to manually adjust the camera's focus.

Speed Control: Use the slider to adjust the PTZ speed of the camera.

Preset Tab: Use the Preset tabs to Set, Recall, and Delete Preset positions. To record a preset, adjust the camera to the desired location and zoom level. Highlight the preset number you wish to record and click the “Set” button. To recall a preset, highlight the preset number you wish to recall and click the “Call” button. To delete a preset, highlight the preset number you wish to recall and click “Delete”.

Configuration Screen

From the configuration screen you can set and adjust all the functions and parameters of the camera.

System Page

The system page contains information regarding the camera, time settings, firmware, and main video output resolution.

Version Tab: The version tab contains camera information including model number, serial number, firmware and hardware versions, and MAC address.

Time Tab: The time tab allows you to adjust time, date, and time zone settings.

Maintain Tab: This tab allows you to reboot, restore factory default settings, and update the firmware.

Config Tab: Name the camera, select menu language, select Video Standard (not used), set output resolution, and enable/disable UVC (USB) video output.

Network Page

The network page includes network settings, port settings, and streaming settings.

ETH Tab: Select static (Config IP Address) or DHCP (Auto IP Address), select Auto or Manual DNS settings.

Service Tab

MSG Port: default 8080

RTSP Port: default 554

HTTP Port: default 80

VISCA Port: default 52381

WebSocket Port: default 8880

Note: Changing the port number requires restarting the camera to valid. In order to avoid port conflicts, please be careful to modify.

RTMP Tab

Enable RTMP: (Check box)

Server: Enter the server URL and Stream Key of your streaming platform in the format of : rtmp://serverURL/StreamKey.

(Ex. rtmp://a.rtmp.youtube.com/live2/du36-z46c-1p31-4kxw-29yx)

Port: Set according to your streaming platform (YouTube=1935, Facebook=443)

Stream Type: Select desired stream

ONVIF Configuration Tab

ONVIF Authentication: Authentication enable, default disable.

ONVIF Server Port: default 8554.

ONVIF RTSP Authentication: Authentication enable, default disable.

RTSP Port: ONVIF RTSP Port, default 8554.

AV Page

The AV page is where you will find all the audio and video settings for stream encoding.

Stream Type: Use the pull-down to select which of the 3 streams you wish to adjust. When you select a stream, all options and settings on the page affect the selected stream.

Stream Key: This shows the address information for your streaming output. This is not adjustable and should be added to the

end of your camera's IP address as shown below:

Default Main Stream: **rtsp://192.168.1.162:554/0/0/0** Default Sub-Stream:
rtsp://192.168.1.162:554/0/0/1

Frame Rate: Specify frame rate (1-30). Frame Rate Priority prioritizes frame rate over image quality when VBR mode is enabled.

GOP: Frame interval (1-60). Default is 30.

Bitrate: Video Bit Rate (1-10240). Default is 4096

Resolution: Set streaming video resolution

Stream Mix Type: Select Complex or Video Stream. Complex Stream includes audio.

Encode Type: Select video encoding format.

Bitrate Type: CBR (Coded Bit Rate), VBR (Variable Bit Rate), Fix QP (Fixed Bit Rate).

-When CBR is selected stream quality, IFrame, and PFrame settings are unavailable.

-When VBR is selected IFrame and PFrame settings are unavailable.

-When Fix QP is selected stream quality setting is unavailable.

Audio Encode Type: Select audio encoding format. AAC is recommended for most streaming platforms.

Audio Input Mode: Select Mic Level or Line Level

Audio Input Gain: Set the audio input gain level (1-10, mute)

Audio Quality: Select High or Low

Image Page

On the image page you will find all the image, iris, and focus settings for adjusting the camera's picture.

Display Tab-

Brightness: Brightness adjustment slider

Contrast: Contrast adjustment slider

Hue: Hue adjustment slider

Saturation: Color saturations adjustment slider

Sharpness: Video sharpness adjustment slider

Mirror: Horizontal image reverse

Flip: Vertical image reverse

Flicker: Lighting flicker compensation

AWB Mode: Auto White Balance Mode settings

BLC: Backlight Compensation adjustment

DNR(3D): 3D Digital Noise Reduction Control

Camera Tab-

Focus Mode: Change camera focusing mode

Near Limit: Set the distance from the lens for auto focusing. The camera will not focus on anything closer than the set value.

Sensitivity: Auto focus sensitivity level
ICR Mode: Infrared Cutfilter Removal Mode
AE Mode: Auto Exposure Mode
AE Level: Auto Exposure Level adjustment
HLC: Highlight Compensation Level
DNR(2D): 2D Digital Noise Reduction adjustment
Gamma: Gamma adjustment

Safety Page

From this screen you can modify the login information

PTZ Page

From this screen you can view and modify the PTZ control settings of the camera.

PTZ Address: Set the PTZ control address of the camera

Protocol: Set the serial control protocol

Baud Rate: Set the serial control baud rate

LR-Direction: Reverse the left and right controls

Vertical Axis: Reverse the up and down controls

Display Mag: Display current magnification (zoom) level

Status Page

On this screen you can view the current bit rates of the 3 IP streams.

6. Tech Support

Before contacting tech support, we may have answered your question already! Visit our BZBGear support page at bzbgear.com/support for valuable information on our products.

Here you will find our Knowledge Base (bzbgear.com/knowledge-base) consisting of tutorials, quick start guides, and step-by-step troubleshooting instructions. Also visit our YouTube channel BZB TV at youtube.com/c/BZBTVchannel for help setting up, connecting, and other how-to videos regarding our products.

If you still need answers, please call 1.888.499.9906, email support@bzbgear.com, or chat at bzbgear.com

7. Warranty

BZBGear Pro AV products and Cameras come with a **three-year warranty**. An extended two-year warranty is available for our Cameras upon registration for a total of five years.

For an extended two-year warranty on our Cameras, follow these steps:

1. Register your Camera within 90 days of purchase by visiting bzbgear.com/warranty.
2. Complete the registration form. Provide all necessary proof of purchase details, including serial number and a copy of your sales receipt.

For complete warranty information, please visit bzbgear.com/warranty or scan the QR code below.



8. Mission Statement

BZBGear manifests from the competitive nature of the audiovisual and live streaming industry to innovate while keeping the customer in mind. AV solutions can cost a pretty penny, and new technology only adds to it. We believe everyone deserves to see, hear, and feel the advancements made in today's AV world without having to break the bank. BZBGear is your answer for applications requiring the latest pro AV and live streaming solutions.

You'll notice comparably lower prices with BZBGear while the performance and quality are on par with the top brands in the industry. Our team offers system design consultation and expert tech support seven days a week for all BZBGear products. Our unparalleled support is our way of showing we care for every one of our customers. Whether you're an integrator, home theater enthusiast, or a do-it-yourselfer, BZBGear offers solutions allowing you to focus on your project and not your budget.