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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 °C ~ +50 °C  
  Humidity: <95%  
  Voltage: DC12V ±2V  
  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

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

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

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

MAIN MENU

EXPOSURE
COLOR
PICTURE
ADVANCED
PRIVACY
SYSTEM
EXIT

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】
  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
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.

- [FLIP]: 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

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

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
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 cameras 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”.

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• 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 delete 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 validate. 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
Default Sub-Stream: rtsp://192.168.1.162:554/0/1

**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

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**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

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**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](http://bzbgear.com/support) for valuable information on our products.

Here you will find our Knowledge Base ([bzbgear.com/knowledge-base](http://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](http://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](http://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](http://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](http://bzbgear.com/warranty) or scan the QR code below.

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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.