FEX SERIES FIXED
FHD SDI + IP ZOOM CAMERA

USER MANUAL
PART ONE

VERSION: FEX-SN-M02202021

Contents

Operating Instructions

Thank you for purchasing our product. If there are any questions, please contact the authorized dealer.

Before operating the unit, please read this manual thoroughly and retain it for future reference.

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IMPORTANT INFORMATION

Legal Notice

Attention:
To ensure account security, please change the password after your first login. You are recommended to set a strong password (no less than eight characters).

The contents of this document are subject to change without prior notice. Updates will be added to the new version of this manual. We will readily improve or update the products or procedures described in the manual.
Best effort has been made to verify the integrity and correctness of the contents in this document, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical errors in this manual.
The product appearance shown in this manual is for reference only and may be different from the actual appearance of your device.
This manual is a guide for multiple product models and so it is not intended for any specific product.
In this manual, the illustrations of displayed interface, parameters displayed, drawings and value ranges may vary with models.

Please see the actual product for details.

Due to uncertainties such as physical environment, discrepancy may exist between the actual values and reference values provided in this manual.

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

Disclaimer

CAUTION!

The default password is used for your first login. To ensure account security, please change the password after your first login. You are recommended to set a strong password (no less than eight characters).

- To the maximum extent permitted by applicable law, the product described, with its hardware, software, firmware and documents, is provided on an "as is" basis.

- Best effort has been made to verify the integrity and correctness of the contents in this manual, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical errors in this manual. The contents of this manual are subject to change without prior notice. Update will be added to the new version of this manual.

- Use of this manual and the subsequent result shall be entirely on the user's own responsibility. In no event shall we be liable to you for any special, consequential, incidental, or indirect damages, including, among others, damages for loss of business profits, business interruption, or loss of data or documentation in connection with the use of this product.

- Video and audio surveillance can be regulated by laws that vary from country to country. Check the law in your local region before using this product for surveillance purposes. We shall not be held responsible for any consequences resulting from illegal operations of the device.

- The illustrations in this manual are for reference only and may vary depending on the version or model. The screenshots in this manual may have been customized to meet specific requirements and user preferences. As a result, some of the examples and functions featured may differ from those displayed on your monitor.

- This manual is a guide for multiple product models and so it is not intended for any specific product.

- Due to uncertainties such as physical environment, discrepancy may exist between the actual values and reference values provided in this manual. The ultimate right to interpretation resides in our company.

Environmental Protection

This product has been designed to comply with the requirements on environmental protection. For the proper storage, use and disposal of this product, national laws and regulations must be observed.

Symbols

The symbols in the following table may be found in this manual. Carefully follow the instructions indicated by the symbols to avoid hazardous situations and use the product properly.

WARNING!: Indicates a hazardous situation which, if not avoided, could result in bodily injury or death.

CAUTION!: Indicates a situation which, if not avoided, could result in damage, data loss or malfunction to product.

NOTE: Indicates useful or supplemental information about the use of product.

Safety Information

WARNING!

Installation and removal of the unit and its accessories must be carried out by qualified personnel. You must read all of the Safety Instructions supplied with your equipment before installation and operation.

Warnings:

- If the product does not work properly, please contact your dealer. Never attempt to disassemble the camera yourself. (We will not assume any responsibility for problems caused by unauthorized repair or maintenance.)
- This installation should be made by a qualified service person and should conform to all the local codes.
- When shipping, the camera should be packed in its original packaging.
- Make sure the power supply voltage is correct before using the camera.
- Do not drop the camera or subject it to physical shock.
- Do not touch sensor modules with fingers. If cleaning is necessary, use a clean cloth with a bit of ethanol and wipe it gently. If the camera will not be used for an extended period of time, put on the lens cap to protect the sensor from dirt.

Maintenance Precautions:

- If there is dust on the front glass surface, remove the dust gently using an oil-free brush or a rubber dust blowing ball.
- If there is grease or a dust stain on the front glass surface, clean the glass surface gently from the center outward using anti-static gloves or an oil-free cloth. If the grease or the stain still cannot be removed, use anti-static gloves or an oil-free cloth dipped with detergent and clean the glass surface gently until it is removed.
- Do not use organic solvents, such as benzene or ethanol when cleaning the front glass surface.

Regulatory Compliance

FCC Part 15

This equipment has been tested and found to comply with the limits for digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

LVD/EMC Directive

This product complies with the European Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/EC.

WEEE Directive–2002/96/EC

The product this manual refers to is covered by the Waste Electrical & Electronic Equipment (WEEE) Directive and must be disposed of in a responsible manner.

Overview

This user guide is suitable for the following models:
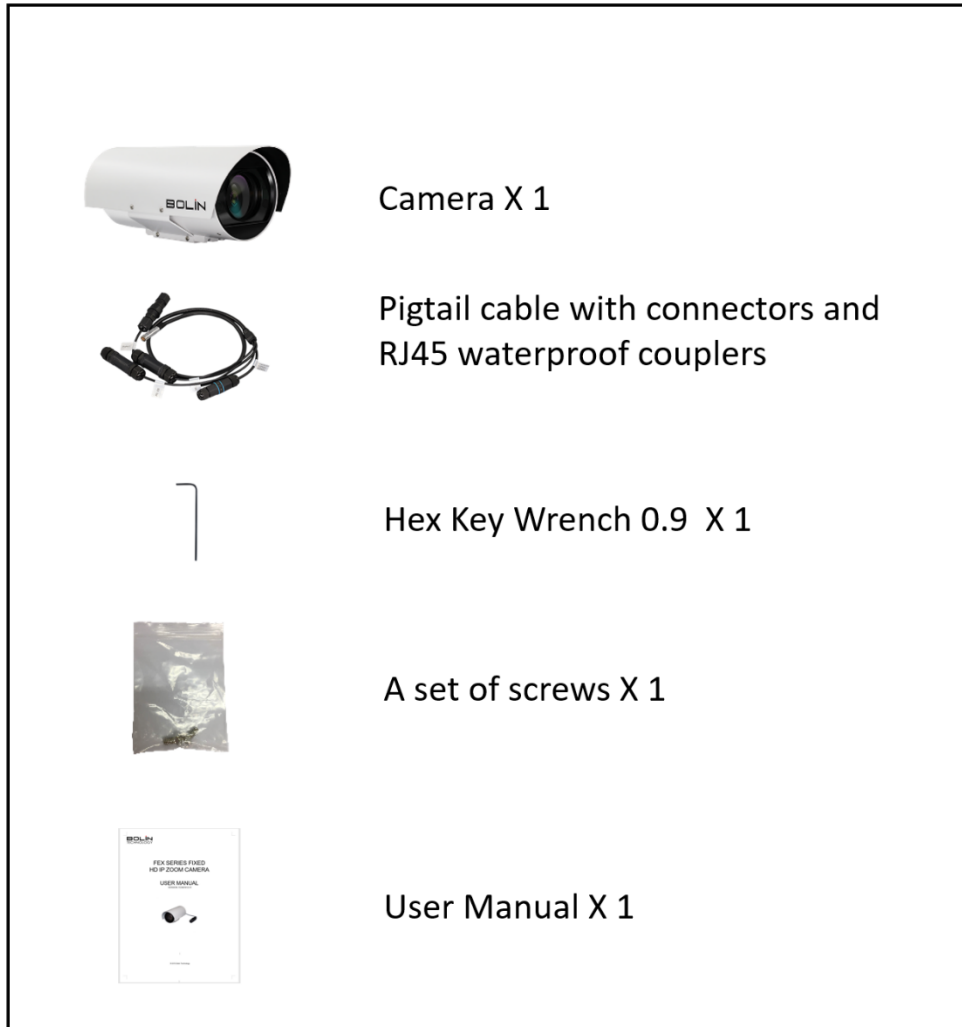If the model numbers that have following letter included in the end, means some extra features included:

- o B Class – Use for broadcasting, SDI video format 1080P and 1080I supported, frame rate up to 60/59.94. It supports not only PELCO D/P, IP ONVIF but also VISCA and VISCA OVER IP control.
- o S Class – Use for video surveillance or other applications, SDI video format 1080P and 720P supported, frame rate up to 60. It supports PELCO D/P and IP ONVIF control.

- FEX30SHD-B-RSNP2   (FHD, SDI+IP, B-Class)
- FEX30SHD-S-RSNP2   (FHD, SDI+IP, S-Class) (Special Order Only)

Key Features(B-Class)

- Video Output: SDI+IP, True Dual-Output SDI+IP Simultaneously, It outputs IP 1080p60/30 when SDI is set to either 1080p60/30 or 1080i59.94/29.97.
- Supports Various Resolutions:
  - o IP: Up to 1080P60
  - o SDI: Up to 1080p60 and 1080i59.94
- Zoom: 30X
- Video Compression: H.264/H.265/MJPEG
- RS485/RS422 Communication, Auto compatible with PELCO D and VISCA Protocol
- Store image parameter (zoom, iris, white balance, exposure, picture setting) to a specified preset
- 120dB true WDR
- Image Stabilizer
- Various Image Functionalities: WDR, Defog, Day/Night
- Outdoor Environmental Rating: IP68, water-resistant Connector, Faceplate heater
- Nitrogen Pressurized Housing, Corrosion Resistant Treatment Housing, Sunshield equipped.
- Wide operating temperature range, -40°C to 65°C continuous, up to 70°C for 12 hours.
- Operating Humidity: 100% suitable for use
- Input Power: POE (IEEE802.3at), 12VDC
- IP supports ONVIF Profile 2.4 compliant and VISCA OVER IP control
- Infrared LED, Illumination up to 50 meters (Optional)
- Supports 255 Presets
- Built-in electrical transient/surge protection
- MS connector on housing with detachable 5ft long Tail-cable water resistant RJ45/Power/RS422/BNC connector
- Mounting plate for standard bracket use.

WHAT'S IN THE BOX

Camera X 1

Pigtail cable with connectors and RJ45 waterproof couplers

Hex Key Wrench 0.9 X 1

A set of screws X 1

User Manual X 1

Accessories (Optional)

FEX-WM-A
Aluminum alloy wall mount bracket

FEX-WM-S
Stainless steel wall mount bracket

Camera Diagrams

Camera

1. Infrared LED Lights
2. Camera Lens, 30X zoom
3. Infrared LED Lights
4. Sunshield
5. Nitrogen Pressurization Schrader Valve (For Factory Use Only)
6. Handle
7. MS Connector (Male), SDI+IP+12VDC+POE+RS422 connection.
8. Nitrogen Pressurization Schrader Valve (For Factory Use Only)
9. Pigtail cable: SDI BNC connector with water-resistant Coupler
10. Pigtail cable: 12VDC power connector (5.5x2.1mm Jack) with water-resistant Coupler
11. Pigtail cable: MS Connector (Female) connect to the camera.
12. Pigtail cable: RJ45 connector (POE IEEE802.3at) with water-resistant Coupler
13. Pigtail cable: RS422 connector with water-resistant Coupler

Installing Your Camera

NOTE:
- *The camera is completely sealed with pressurized nitrogen inside.*
- *Do not open your camera nor release the Nitrogen air from the Schrader Valves without authorization from a BOLIN Technology Support representative*
- *Opening the camera and / or releasing the nitrogen from inside the it may damage the camera. This will void the warranty.*
- *The diagrams included in this user guide are for reference only. See the actual product to install and mount your camera.*

The pigtail cable is detachable. It includes:
1. RJ45 connector for IP video streaming and POE power
2. RS422/RS485 connector for serial control
3. 12VDC injector for power
4. BNC connector for SDI video signal output
5. Four sets of water-resistant couplers for the connectors

Please follow the instruction below to install the connectors and water-resistant couplers correctly.

RJ45 Water-resistant Connector Installation Guide

The RJ45 connector is IP67 water-resistant rated. Please follow the illustration bellow to install the connector.
1. POE-ready Ethernet Port (Built with water Resistant Coupler)
2. RJ45 Head
3. Ethernet Cable (CAT5e/ CAT6)
4. Silicone Ring
5. Paw
6. Silica Gel Pad
7. Cap

1. Insert the Ethernet cable through the water-resistant head kit (parts 4, 5, 6 and 7)
2. Terminate the cable to an RJ45 head
3. Insert the RJ45 head into the Ethernet port
4. Tighten the head kits (parts 4, 5, 6 and 7)
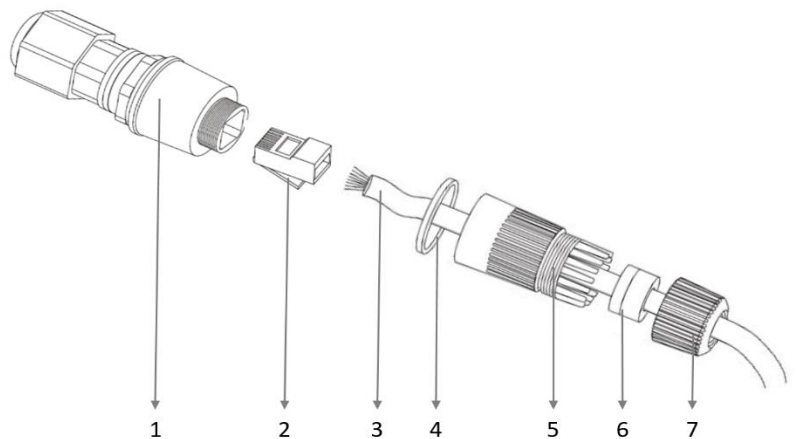
NOTE:
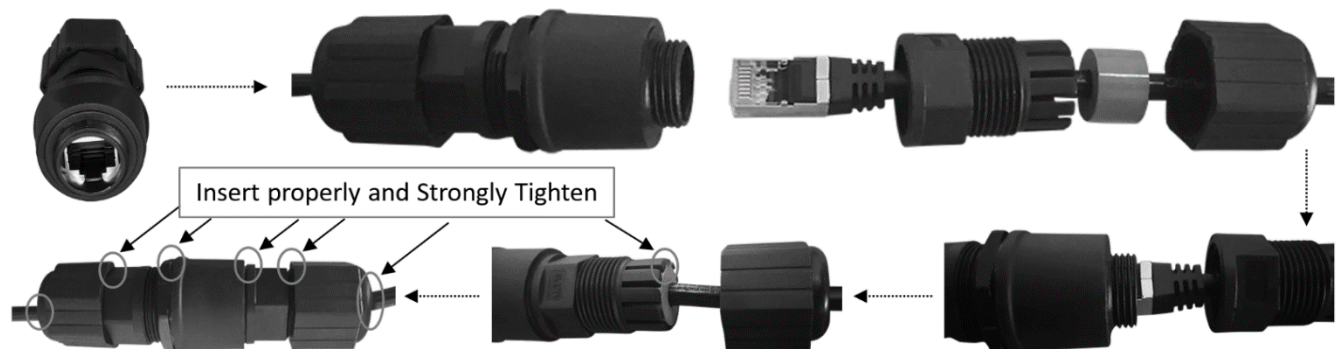Please install the connector properly as the following picture:

NOTE:
The connector that has been installed properly should be like the picture below:

Make the RJ45 connector

RJ45 Connector + Waterproof Coupler Installation

Make the RS422 control connector

1	TX+
2	TX-
3	RX+
4	RX-
5	GND

1	TX+	Red
2	TX-	Purple
3	RX+	Green
4	RX-	Grey
5	GND	Yellow

Pre-Wired inside of the coupler

Open Side for Wiring

Insert properly and Strongly Tighten
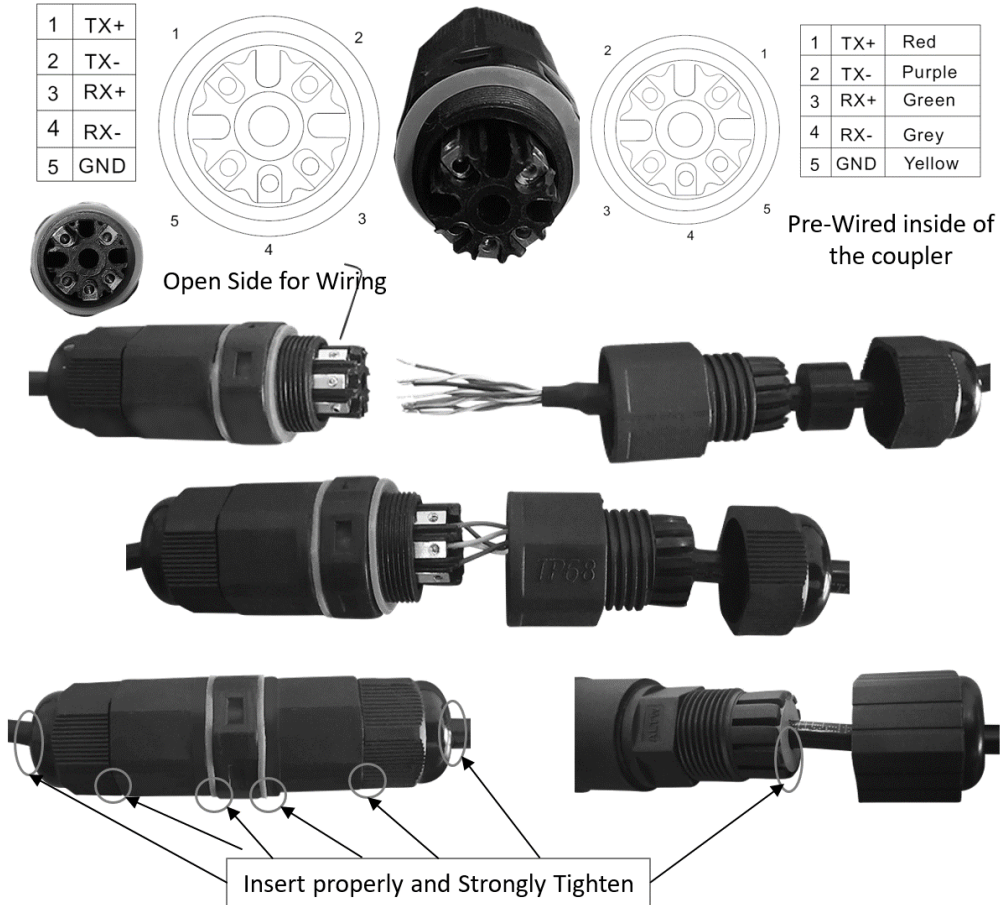
RS422 Connector + Waterproof Coupler Installation

Make the BNC SDI video connector

Insert properly and Strongly Tighten
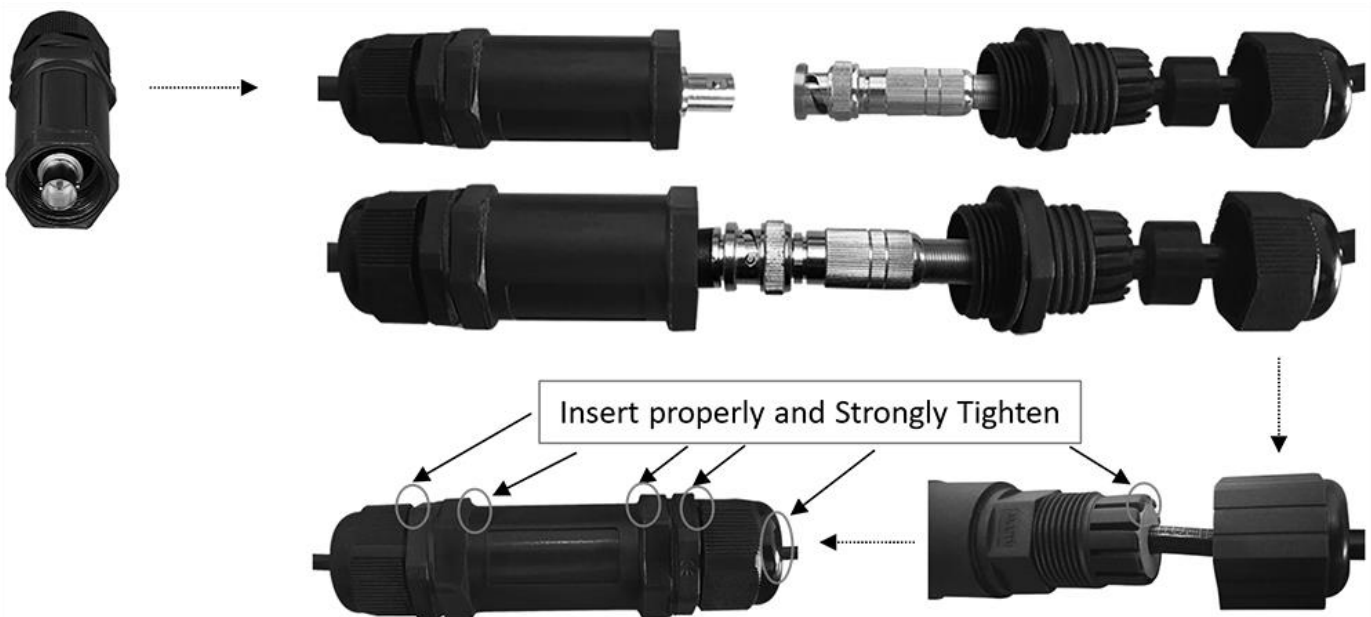
BNC Video Connector + Waterproof Coupler Installation

Make the 12VDC power connector

The power connector type is 5.5x2.1mm Jack.

Insert properly and Strongly Tighten

12VDC Power Connector + Waterproof Coupler Installation

Cable Requirements

- Network Cable: 10/100 Mbps Ethernet CAT 5/5E/6 UTP cables are applicable to the ANSI/EIA/TIA-568A/B and ISO/D. Eight wires in the network cable need to be inserted in parallel into the top of the cable connector. The cable connector needs to be crimped in position. When the cable connector is in position, ensure that the metal pieces of the cable connector are parallel to each other and the clamp of the cable connector is intact.
- SDI Cable: For broadcast use, Belden1694A/5CFB is a suitable cable to transmit broadcast-quality video:

Conductor:

AWG	Stranding	Material	Nominal Diameter
18	Solid	Bare Copper	0.04 in.

Shield Material

Type	Layer	Material	Coverage
Tape	1	Aluminum / Polyester / Aluminum	100%
Braid	2	Tinned Copper	95%

Nom. Capacitance Conductor to shield	Nom. Inductance	Nom. Char. Impedance
16.2 pF/ft	0.106 µH/ft	75 Ohm

Install the Tail Cable

Install and detach the Tail Cable included with the product as following:

1. Hold the MS female connector head and pull back the ring of the connector.
2. Insert the MS female connector head into the MS male connector on the camera completely until you hear the lock sound when the connection is in place and release the ring.

Mounting the Camera

Check Camera Components and Installation Conditions Before mounting your camera, check the device model number and included contents against the packing list to ensure components are complete.

Important:

1. Verify the bearing capacity of the surface where the camera will be mounted
2. Verify that the mounted position meets the bearing requirements. Otherwise, you are advised to reinforce the mounted position to support the device weight. For more information, see the product datasheet.
3. Verify lightning protection and grounding requirements
4. Ground the terminal properly.

NOTE:

- When mounting the camera, please install the bracket adapter to the bracket first and then mount the camera to the bracket.
- Tighten all the screws to hold the camera securely.
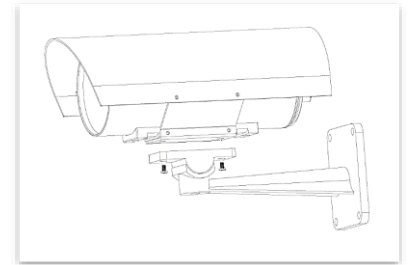
Power Connection

The camera provides two methods of power inputs, either POE (IEEE802.3at) or 12VDC.

Power up the camera

NOTE:

- *Do not turn on the power nor connect the power/POE to the camera Tail Cable until the camera Tail Cable has been connected completely to the camera.*

Use 12VDC or IEEE802.3at standard POE power adaptor or POE switch to power the camera. It takes about 2 minutes for the camera to be completely powered on.

POE, (or 12VDC/24VAC Optional)

NOTE:

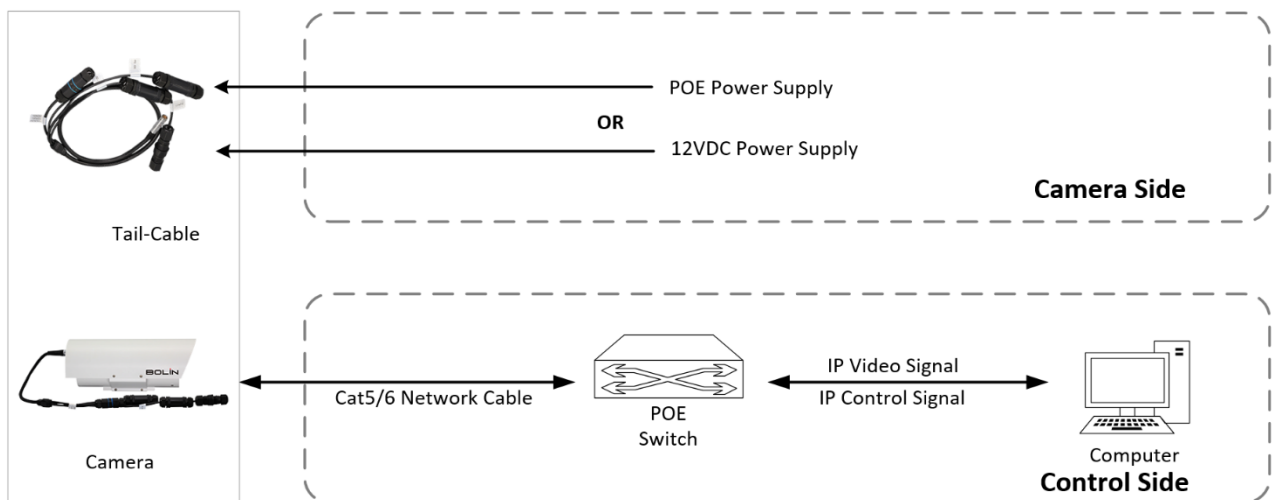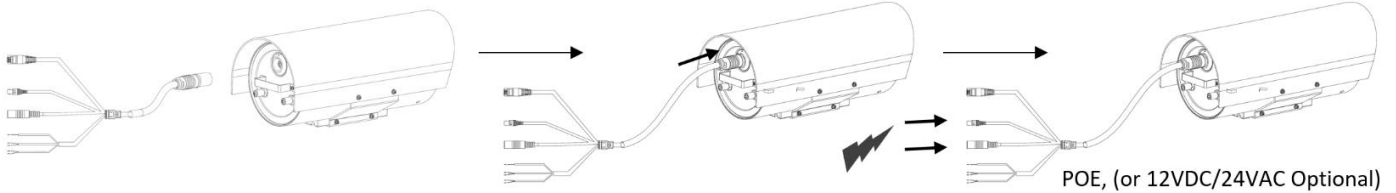- *Use water proof / IP67 rated junction box/ connection box to protect the RJ45 and other connections.*

Control Connection

RS422 (VISCA) connection

1. Only B class supports VISCA control., S class does not support VISCA control
2. Follow the connection below to make the RS422 control connection for the keyboard controller.
3. The camera default address is set to 1, default Baud Rate is set to 9600.
4. Set the keyboard controller Baud Rate to 9600. The Baud Rate of the camera and the controller must be the same. The controller must be VISCA compatible.
5. Use the keyboard controller to change the camera address using the camera's OSD menu.
6. If you want the camera address to be automatically assigned by the VISCA controller, keep the camera address as the default address (set the camera address to 0 using the DIP switches).
7. Reboot the camera by turning it Off/On after the camera address has been set up correctly.
8. Camera RS422 control supports Daisy Chain connection up to 7 cameras.

NOTE: The connection of SONY keyboard is different than other VISCA (Non-Sony) keyboard. The Chart below shows how to make RS422 (1 to 1) connection, as well as an RS422 Daisy Chain (multiple camera connection) using a SONY controller:

SONY Keyboard RS422 Connection

Sony Keyboard Connection

RS422 (VISCA) Daisy Chain Multiple Cameras Connection (Sony Keyboard)
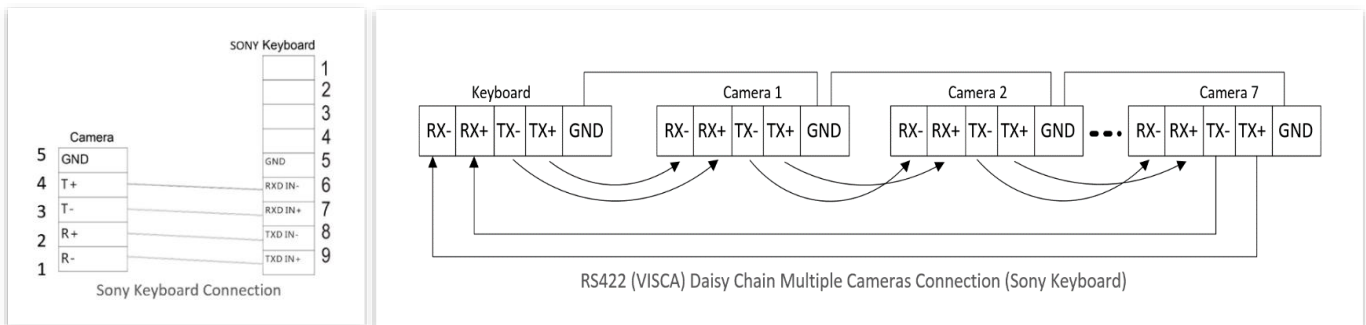
10. How to make RS422 connection (1 to 1) and RS422 Daisy Chain (multiple camera connection) using a Non-Sony controller:

VISCA (Non-Sony) Keyboard RS422 Connection

VISCA Keyboard Connection

RS422 (VISCA) Daisy Chain Multiple Cameras Connection
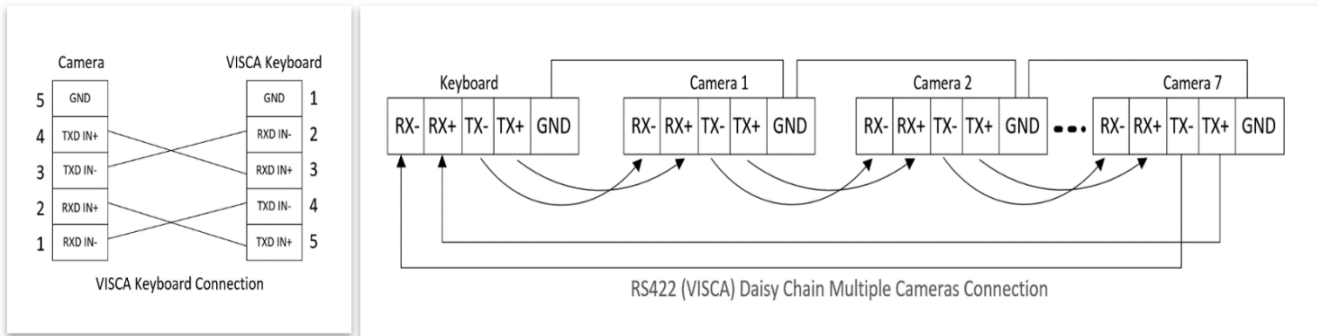
RS422 VISCA connection with RS422 serial port controller

1. 1 to 1 RS422 connection. For how to make the connection on the controller, please refer to the controller user guide.
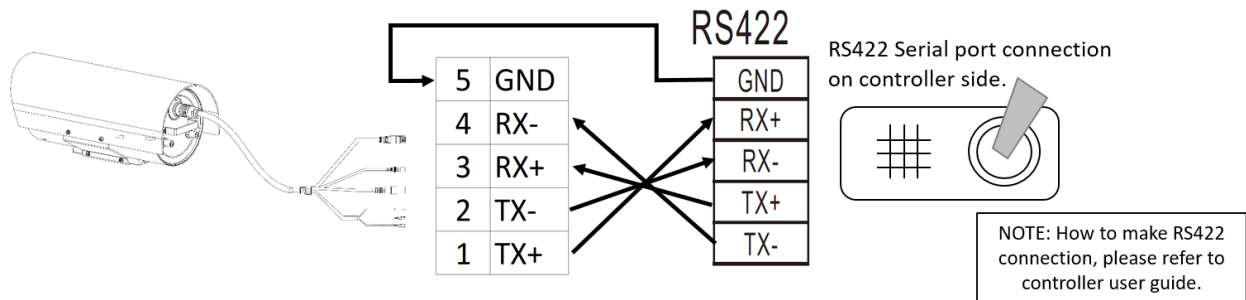
RS422 Connection – Controller with RS422 serial connector

2. RS422 Daisy Chain multiple camera connection. For how to make the connection on the controller, please refer to the controller user guide.
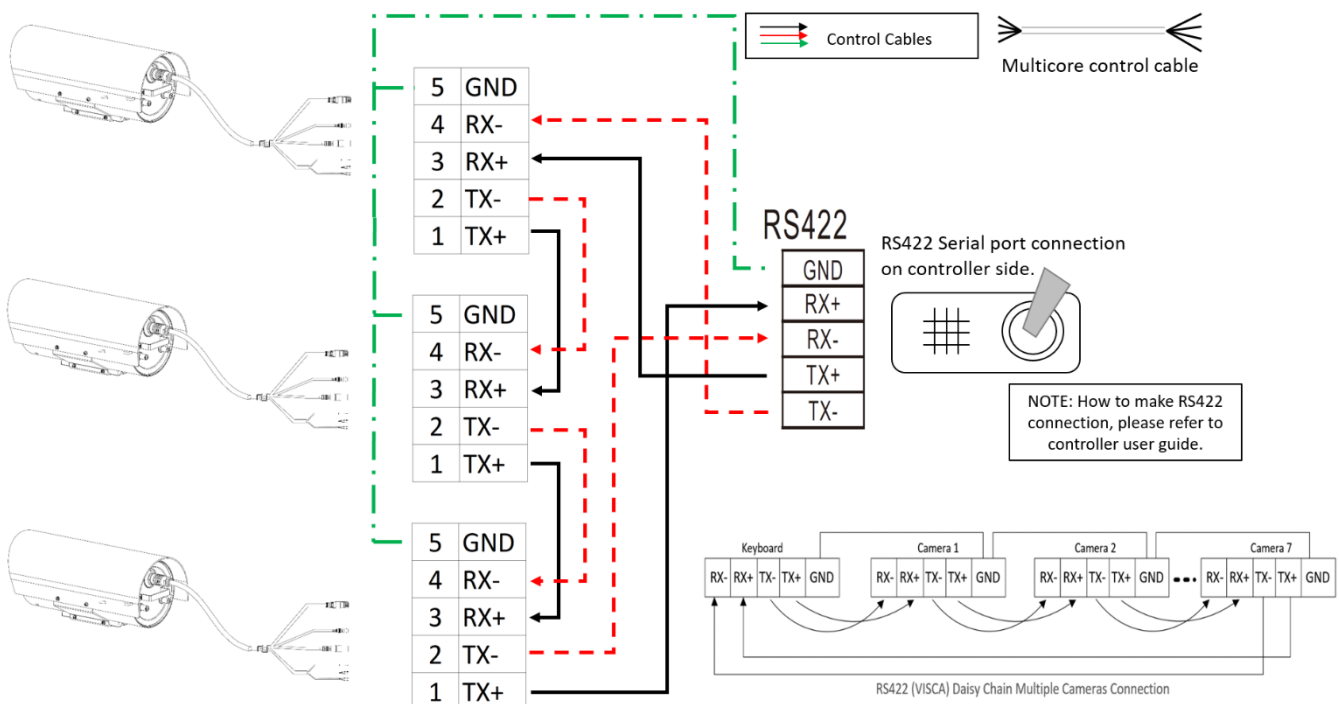
RS422 Daisy Chain Connection – Controller with RS422 serial connector

RS422 VISCA connection with Bolin KBD-1010 controller

1. How to make 1 to 1 RS422 connection with Bolin KBD-1010 controller as below or refer to Bolin KBD-1010 user guide.
    a. **1 to 1 RS422 connection, use Junction Box connection.**

RS422 Connection – Bolin Controller

   b. **1 to 1 RS422 connection using RJ45 to Phoenix connector adaptor (Not Included, sold separately)**

RS422 connection with BOLIN KBD1010 Controller

2. How to make RS422 Daisy Chain multiple camera connection with Bolin KBD-1010 controller as below or refer to Bolin KBD-1010 user guide
   a. **RS422 Daisy Chain connection, use Junction Box connection**

RS422 Daisy Chain Connection – Bolin Controller

   b. **RS422 Daisy Chain connection using RJ45 to Phoenix connector adaptor (Not Included, sold separately)**
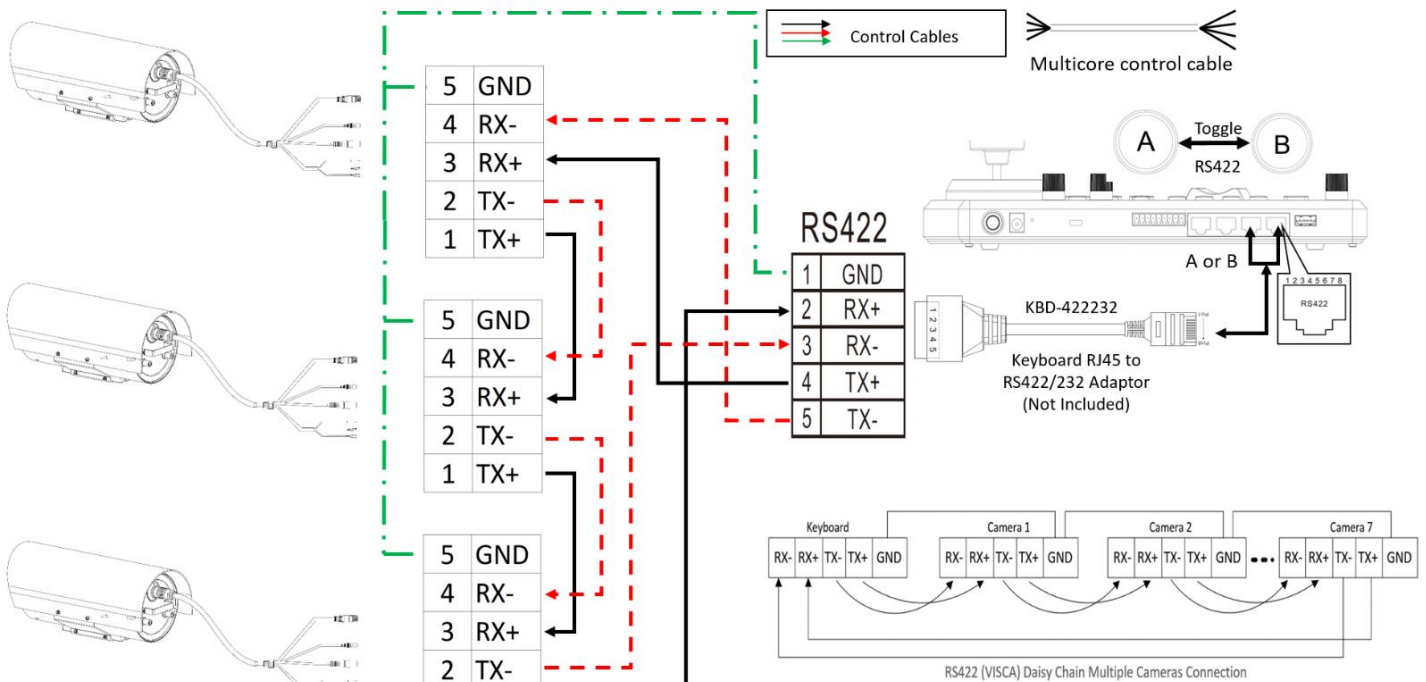
RS422 Daisy Chain Connection – Bolin Controller

PELCO P/D Keyboard RS485 Connection

1. Follow the connection below to make the RS485 control connection for the keyboard controller.
2. The camera default address is set to 1, default Baud Rate is set to 9600.
3. Set the keyboard controller Baud Rate to 9600. The Baud Rate of the camera and the controller must be the same.
4. Use the keyboard controller to change the camera address.
5. The controller must be PELCO D/P compatible. Use preset 95# on the keyboard to bring up/exit camera OSD menu. To operate keyboard, please refer to the user manual of the keyboard you are using.
6. Reboot the camera by turning it Off/On after the camera address has been set up correctly.
7. Camera RS485 multi camera control supports connection up to 255 cameras.
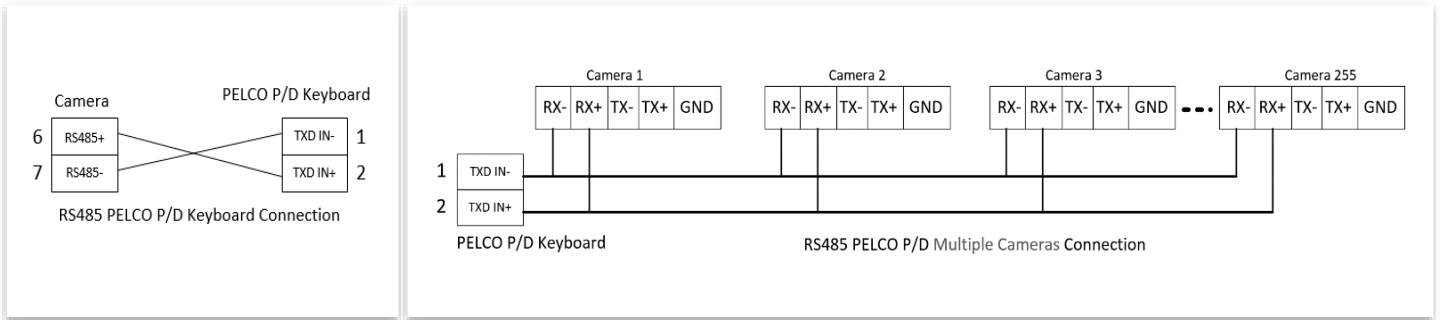
RS485 PELCO connection with RS485 serial port controller

1. 1 to 1 RS485 connection. For how to make the connection on the controller, please refer to the controller user guide.

RS485 Connection – Controller with RS485 serial connector

2. RS485 Daisy Chain multiple camera connection. To make the connection on the controller, please refer to controller user guide.
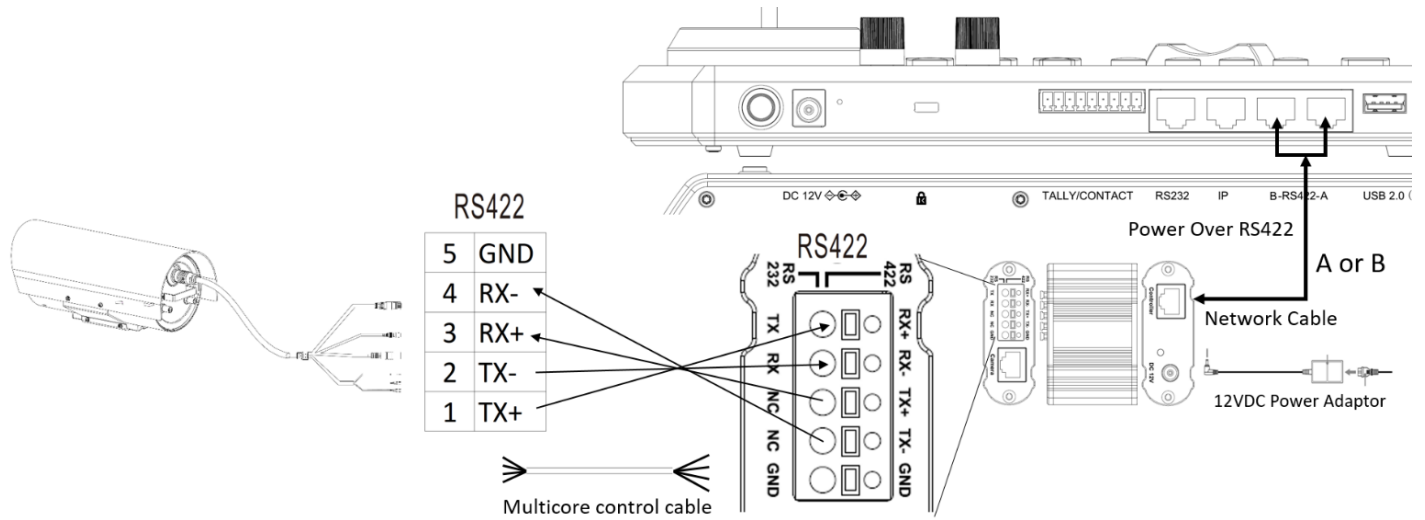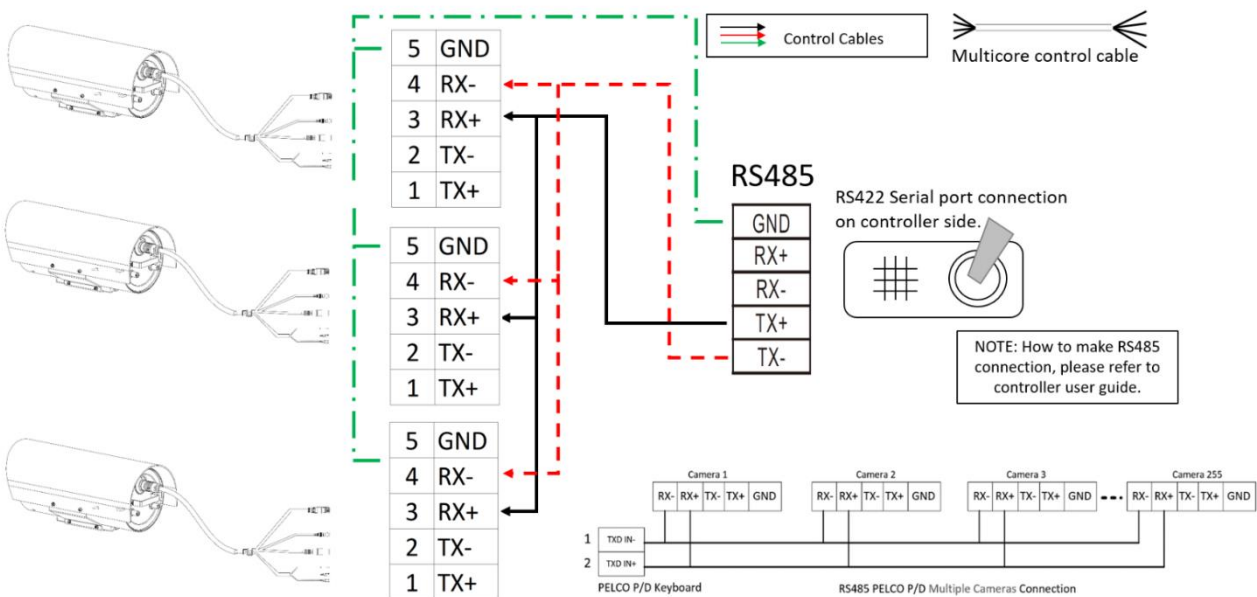

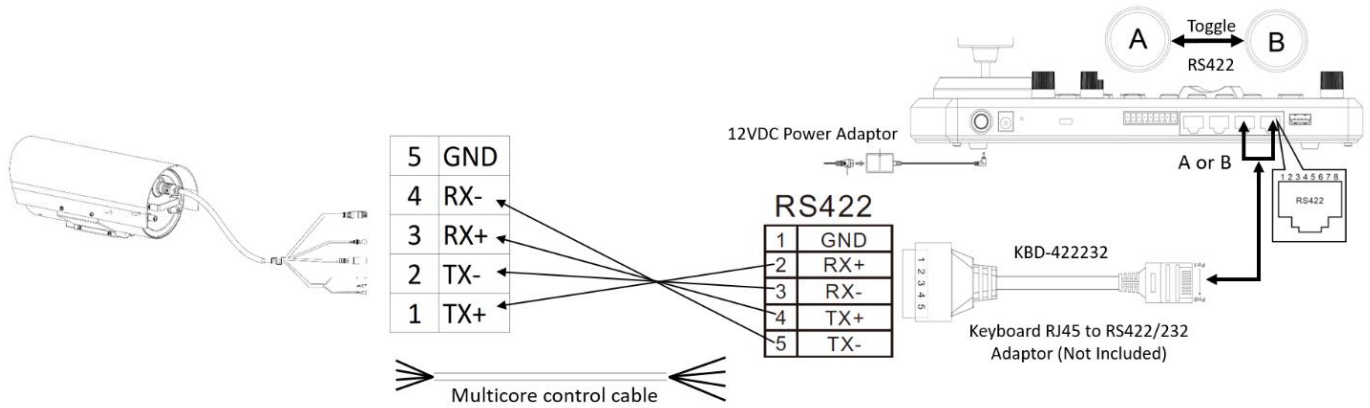RS485 Daisy Chain Connection – Controller with RS485 serial connector

RS485 PELCO connection with Bolin KBD-1010 controller

1. How to make 1 to 1 RS485 connection with Bolin KBD-1010 controller as below or refer to Bolin KBD-1010 user guide.
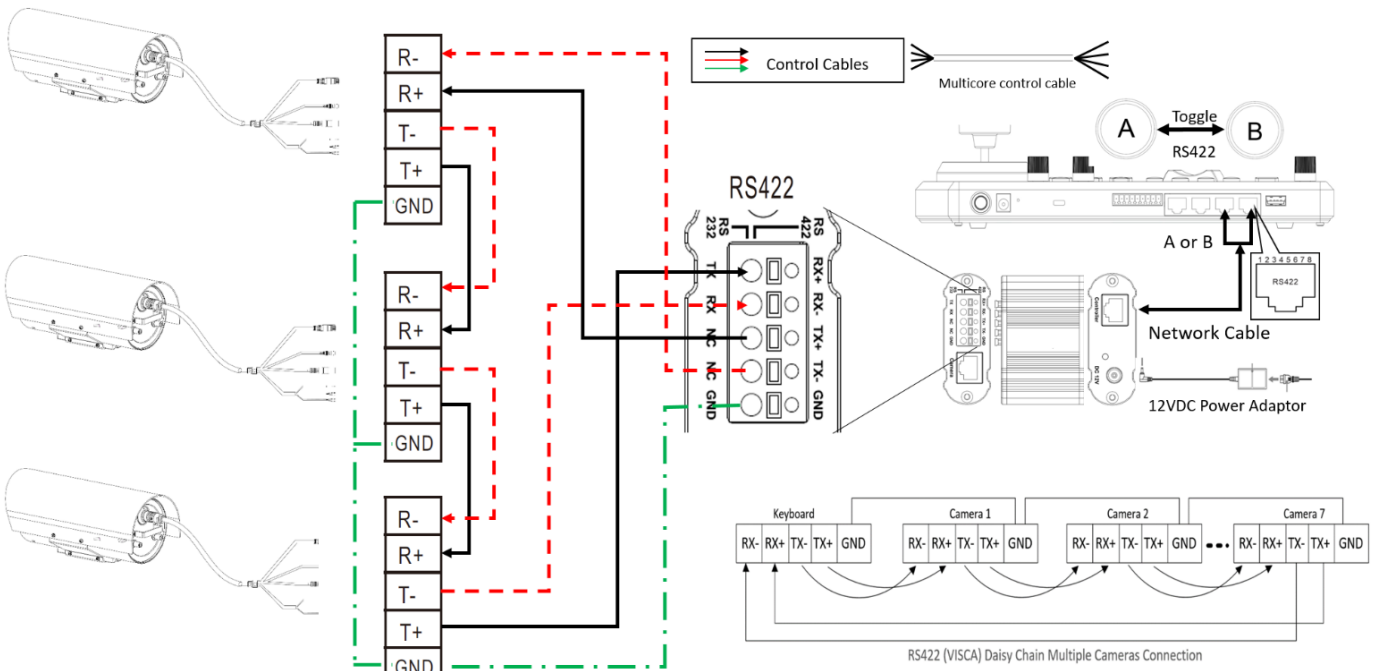   a. **1 to 1 RS485 connection, use Junction Box connection.**
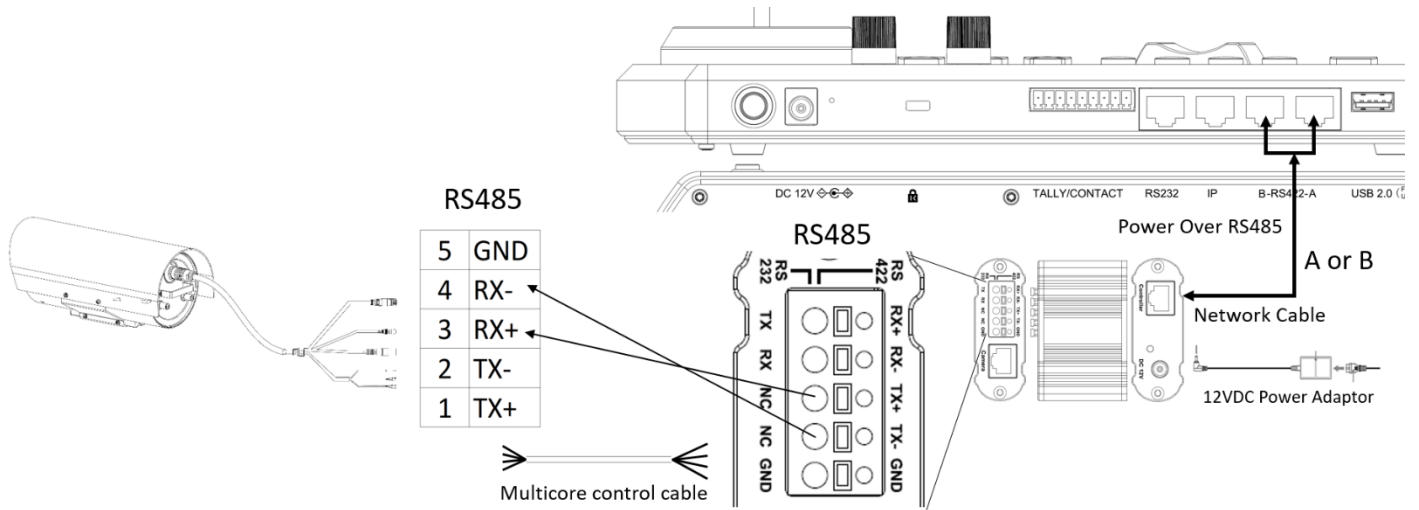
RS485 Connection – Bolin Controller

   b. **1 to 1 RS485 connection using RJ45 to Phoenix connector adaptor (Not Included, sold separately)**
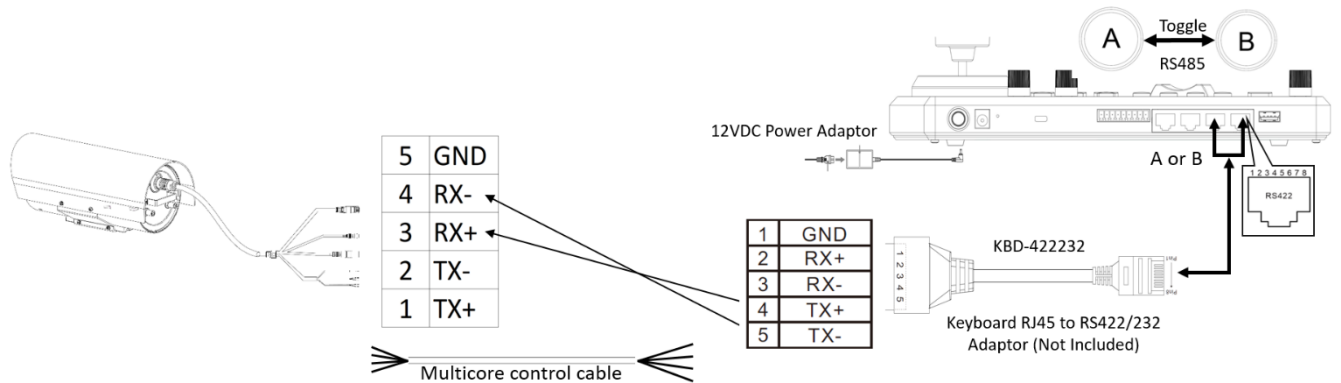
RS485 connection with BOLIN KBD1010 Controller

2. How to make RS485 Daisy Chain multiple camera connection with Bolin KBD-1010 controller as below or refer to Bolin KBD-1010 user guide

    a. **RS485 Daisy Chain connection, use Junction Box connection**
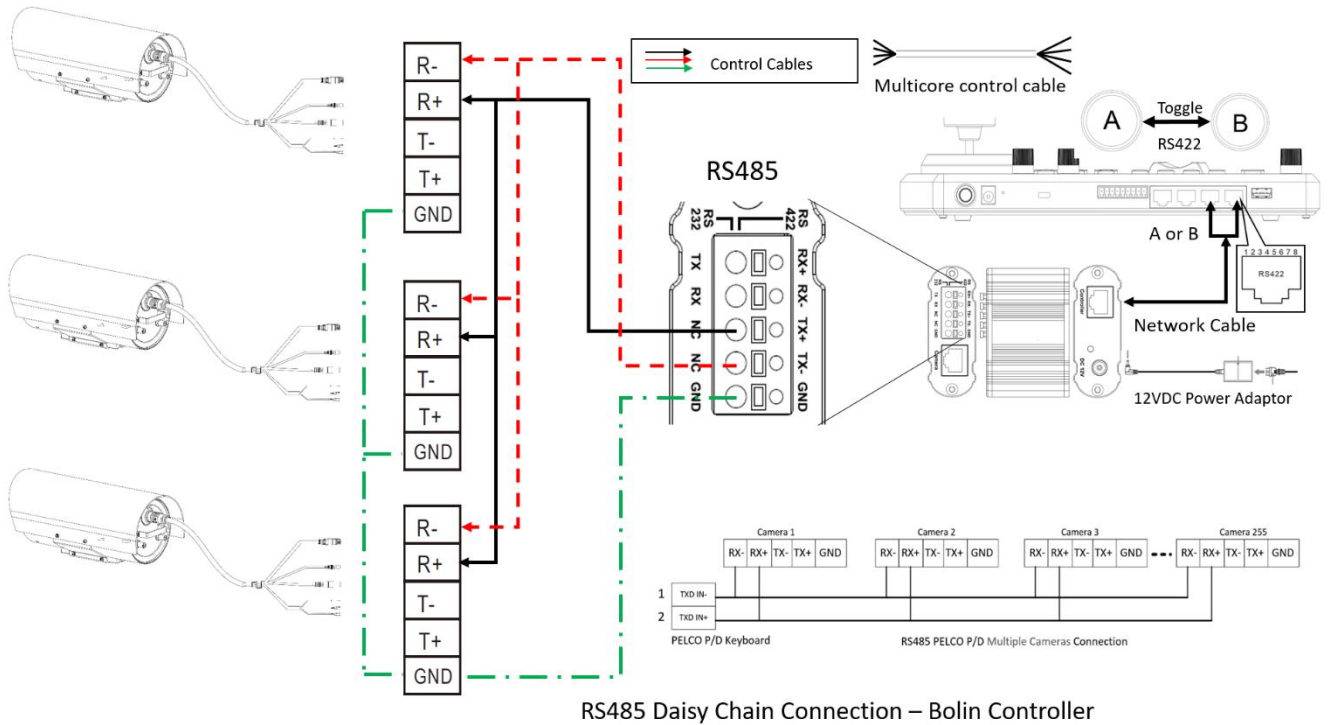
RS485 Daisy Chain Connection – Bolin Controller

    b. **RS485 Daisy Chain connection using RJ45 to Phoenix connector adaptor (Not Included, sold separately)**

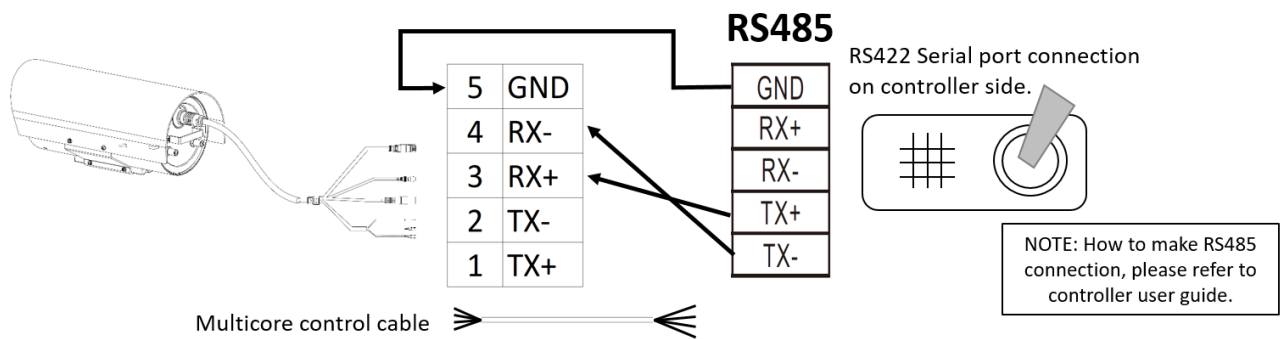RS485 Daisy Chain Connection – Bolin Controller
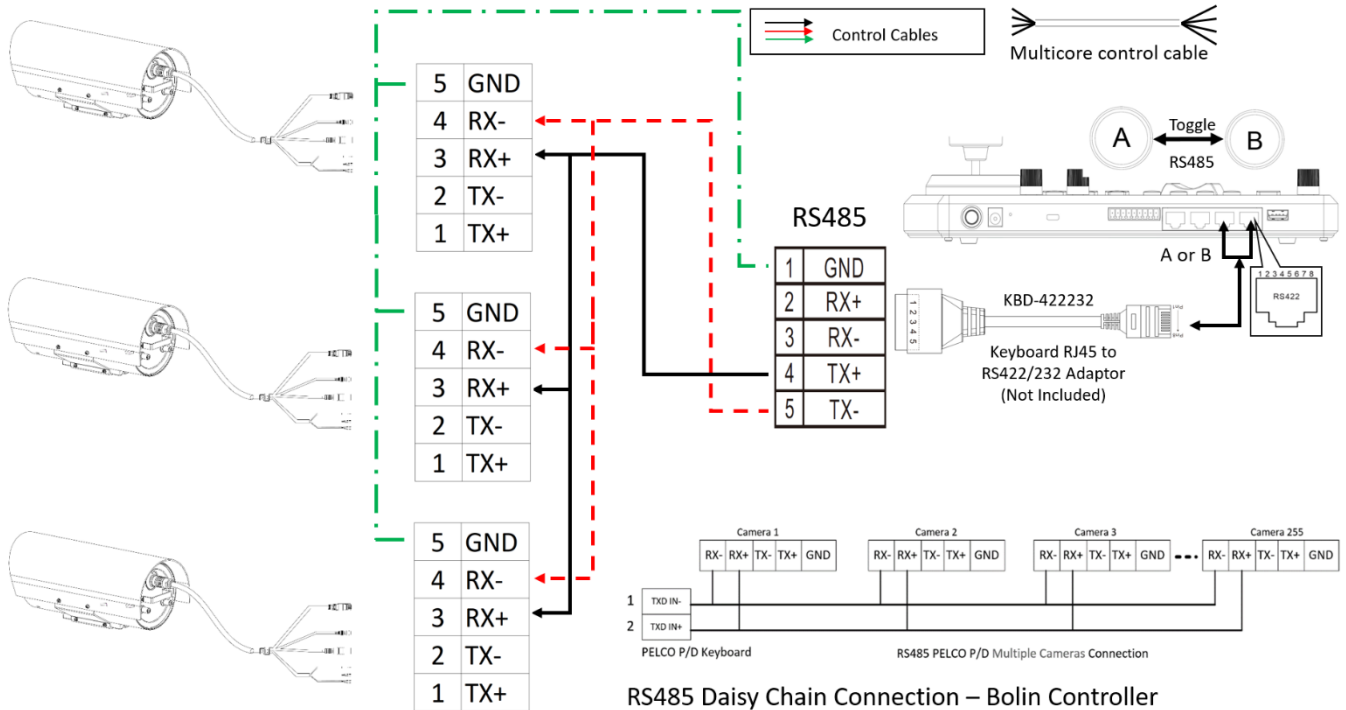
For VISCA / PELCO control, this unit supports daisy chain connection for using multiple cameras.
For control details, refer to Operating Instructions of control keyboard/station software.
- You need to match the communication speed (Baud Rate) between the camera and the joystick controller.

Operating Multiple Cameras Using RS422/485
- Using RS-422 (VISCA), you can connect to 7 cameras.
- Using RS-485 (PELCO), you can connect to 255 cameras.
- Using RS-485 (PELCO), all camera addresses must be set up before the connection. You can set the camera address by operating OSD menu. In this case, you can use multiple control keyboards.

VISCA over IP Control

With VISCA over IP function, you can control the camera using VISCA protocol on a controller equipped with IP communication capabilities via LAN.
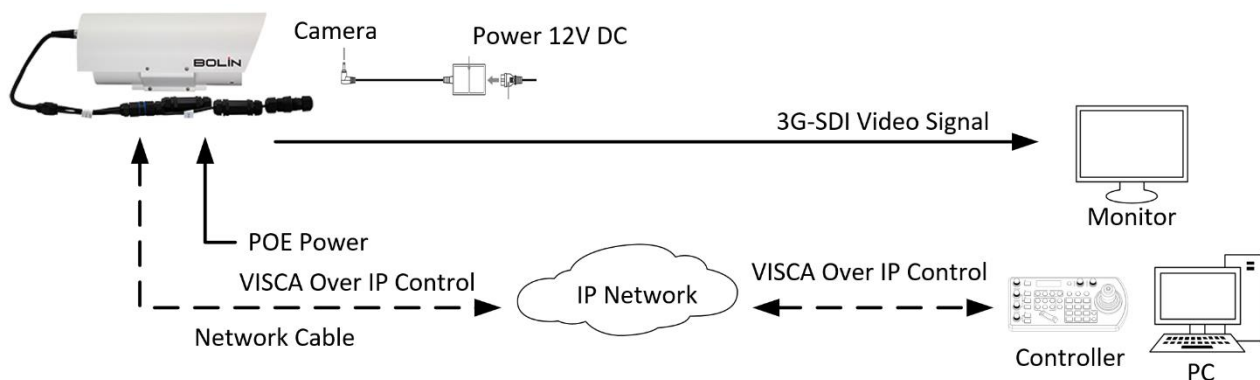
The communication specifications of VISCA over IP are follows:
1. **Interface**
   RJ-45 10/100M
2. **Interface protocol**
   IPv4
3. **Transport protocol**
   UDP
4. **IP address** (Default:192.168.0.13)
5. **Port:** 52381

VISCA over IP Network Configuration
Re-assign the camera

The default information of the IP camera is following:
- Static IP: 192.168.0.13
- Subnet mask: 255.255.255.0
- Gateway: 192.168.0.1
- VISCA over IP control port: **52381**.

The camera IP address needs to be assigned to the IP address that works with your local network.
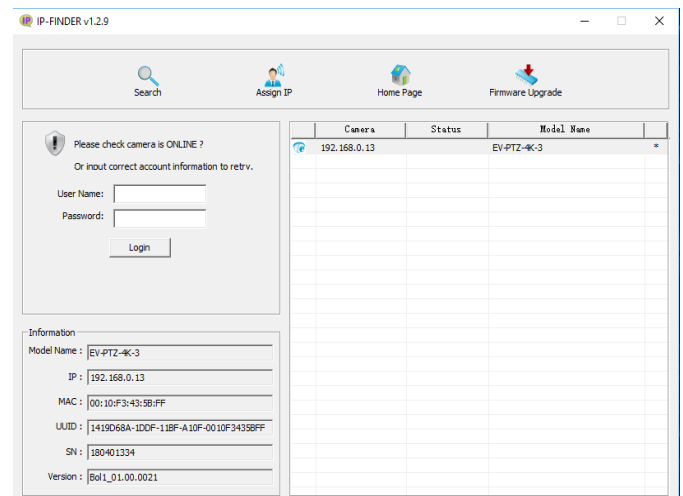
Controlling via VISCA over IP

- Physically connect the network port on the camera to the network switch
- Set the IP address and other network information appropriately to communicate on your network
- Connect the VISCA over IP-compatible controller to the network
- Configure the controller to access the camera's IP address and VISCA over IP port
- ***The IP port within on your control must be set to 52381 to communicate with the camera.***
- Select VISCA protocol on your IP control device.

Recommended way to re-assign the IP address:
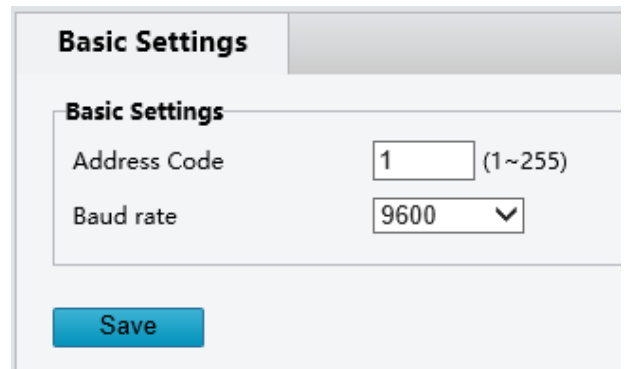
1. Create a local network within which the camera and your PC/Laptop are connected.
2. Install and run the IP-FINDER tool (You can contact Bolin Technical support team for tool requirements)
3. The IP-FINDER can find the camera IP address, which is the default :192.168.0.13
4. Click the search button, select the camera you want to Assign IP address, edit the IP address to the one that matches your local network credential.
5. Once the IP address has been changed successfully, you can access the IP camera via your local network.

Note

How to re-assign the IP address to the camera, please refer to user manual Part Two-IP Camera user guide.

Setup Camera ID, Baud Rate and Control Protocol

1. For you to control a camera, the camera ID, baud rate and control protocol must be set up in advance. The baud rate and the camera ID setting within the Camera must match the baud rate and camera ID setting on the system/control keyboard.

2. The camera can auto detect the protocol being used based on the cables that are connected to its tail cable contacts (RS422/ VISCA and RS485/PELCO-D). Please be sure to set up the camera address and baud rate within the camera.

3. Connect the camera to a monitor before powering on. Once powered, there is an initial setting page that will be displayed on the screen for 5 seconds. On the page, it shows the factory default setting of the camera ID, baud rate and other information. Some users find it helpful to take a picture of this default setting information, so it can be referenced when setting up a keyboard controller.

4. Set the keyboard or control system to match the camera protocol, camera ID, and baud rate setting with the camera.

- Camera supports VISCA and PELCO-D protocols. When connecting a controller to the camera's contacts, the protocol being used is detected automatically by the camera.
- Factory Default Setting: For both SDI and IP video, Baud Rate: 9600, Camera ID: 001, PELCO Protocol.
- RS485 PELCO-D can control up to 255 cameras. Camera ID from 001 to 255 must be set.
- RS422 VISCA protocol can control up to 7 cameras. Camera ID from 1 to 7 must be set.
- Supports baud rate of 2400bps, 4800bps, 9600bps and 38400bps.
- How to set up the address and baud rate of the camera for SDI.
- If using a BOLIN KBD-1010 keyboard controller to control the camera, please follow these steps to set up RS485 control, Enter the Setup menu, and go into the Camera Setting menu, select the camera address/ID you want to set up for, set the baud rate to match the same as the one has been set on camera side, select protocol PELCO-D for RS485 control.
- If using a BOLIN KBD-1010 to control this camera using VISCA control, select RS232/RS422 control method, set the baud rate to match the same as the one has been set on camera side.
- **NOTE:** If you are using a keyboard other than the BOLIN KBD-1010, please refer to the user manual for your keyboard controller for further instructions
- On the camera's IP control side, go into the camera IP web interface setting page by using browser to login camera IP address (Default set to 192.168.0.13), PTZ - Basic Settings page, to set the Baud Rate, camera ID, Protocol to the same as the ones that have been set on the camera's SDI side. (For further details, please refer to Part Two: Network Camera User Manual)
- SDI and IP video setting must be matching with each other, if you change any one of the settings on any sides of the SDI or IP.

📝 NOTE!
- Regarding the camera ID and Baud Rate setting, for the first communication setting, you must match the control system (or keyboard) camera ID and Baud Rate setting to the cameras.
- After communicating successfully in between the camera and the control, you can modify the ID and baud rate of the camera using the keyboard.
- By default, the camera Baud Rate

Adjusting and Setting with Menus

About On-Screen Menus
You can change various settings, such as shooting conditions and system setup of the camera, while observing menus displayed on a connected computer screen.
This section explains how to read the on-screen menus before starting menu operations.
The menu parameters may vary according to the different product model numbers.
For a complete configurations menu, see "Menu Configuration" .

NOTE!	You cannot perform pan/tilt/zoom operations while the menu is displayed.

Using the OSD Menu using a Keyboard Controller

Call preset 95 using the keyboard controller to call/display the On-Screen Menu, the main menu will display on the screen.
How to run presets of cameras, please refer to the manual of the keyboard/control system that you are using.
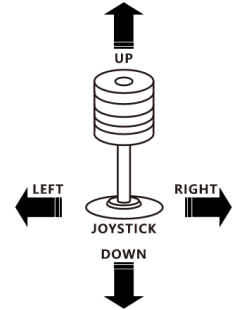
How to adjust settings using a joystick on a keyboard controller
1. Push the joystick of the keyboard up or down: To select the menu item
2. Push the joystick of the keyboard to the right: To select/ confirm
3. Push the joystick of the keyboard to the right: To confirm the value that you want to set to.

When the camera runs with PELCO-D protocol, Call preset 95 to enter the On-Screen Menu by using control keyboard, the main menu will display on the screen.

When the camera runs with VISCA protocol, press the **Menu** button on the VISCA-compatible control keyboard to enter the OSD Menu.

EXPOSURE Menu

The EXPOSURE menu is used to set the items related to exposure.

FULL AUTO: The exposure is adjusted automatically using the sensitivity, electronic shutter speed, and iris.
MANUAL: Adjust the sensitivity (GAIN), electronic shutter speed (SPEED) and iris (IRIS) manually.
When you select one from various exposure modes, some of the following setting items that are required for the selected mode appear.
IRIS PRIOR: Iris Priority mode. The exposure is adjusted automatically using the sensitivity and electronic shutter speed. Adjust the iris (IRIS) manually.
SHUTTER: Shutter mode. The exposure is adjusted automatically using the sensitivity and iris. Adjust the electronic shutter speed (SPEED) manually.
BRIGHT: Adjust the brightness level (LEVEL) manually. Select the brightness level from 0 to 31.
When you select one from various exposure modes, some of the following setting items that are required for the selected mode will appear.

GAIN: Select the gain from the following: 0dB, 3.6dB, 7.1dB, 10.7dB, 14.3dB, 17.8dB, 21.4dB, 25dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB and 50dB.
SHUTTER: Select the electronic shutter speed from the following: 1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1k, 1/1.5k, 1/2k, 1/3k, 1/4k, 1/6k, 1/10k.
IRIS: Select the iris from the following: CLOSE, F1.6, F2.0, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14, CLOSE

BACKLIGHT MODE:
When the background of the subject is too bright, or when the subject is too dark due to shooting in the AE mode, back light compensation will make the subject appear clearer.
This can be set to ON/OFF.

DEFOG:
Defog: ON, OFF. If the shooting scene has fog, you can open the defog function to improve the penetration of the image.

EX-COMP (Exposure Compensation):
When MODE is set to one of FULL AUTO, SHUTTER, IRIS PRIOR or BRIGHT, set this item to ON to enable exposure compensation. When you set EX-COMP to ON, EX-COMP LEVEL can be configured.

EX-COMP LEVEL: Level can be selected from the following: -10.5dB, -9dB, -7.5dB, -6dB, -4.5dB, -3dB, -1.5dB, 0dB, +1.5dB, +3dB, +4.5dB, +6dB, +7.5dB, +9dB, +10.5dB
If you set the level to 0, exposure compensation will be disabled. Level +10.5 is the brightest and –10.5 is the darkest compensation value.
When EX-COMP is set to OFF, exposure compensation does not function.

HIGH SENSITIVITY:
In this mode, the maximum gain increases, enabling to obtain a brighter output even in a darker environment. However, if the gain reaches high level, the image will have a large amount of noise.

SLOW AE (AUTO EXPOSURE)
The slow AE Response function allows you to reduce the exposure response speed. Usually the camera is set up so that the optimum exposure can be obtained automatically within about 1 second. However, using the slow AE response function allows you to lengthen the auto exposure response speed from the initial setup speed (01h) to approx. 10 minutes (30h) (at normal shutter speed).

SLOW SHUTTER:
Slow shutter: ON, OFF. When AUTO SLOW SHUTTER is set to on, it can auto adjust the electronic shutter speed.

GAIN LIMIT: The gain limit can be set at Full Auto, Manual, IRIS PRIOR, Shutter and Bright mode. Use this setting when you want to obtain image in which signal-to noise ratio is particularly important.
Select the gain limit from the following: 10.7dB, 14.3dB, 17.8dB, 21.4dB, 25dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB,

```
OSD                        EXPOSURE

>EXPOSURE                  AE MODE: FULL AUTO
 WHITE BALANCE             IRIS: N/A
 PICTURE                   GAIN: N/A
 LENS PARAMETERS           SHUTTER: N/A
 SYATEM SETUP              BRIGHT: N/A
 FUNCTION SETTING          BACKLIGHT MODE: OFF
 EXIT                      DEFOG: OFF
                           EX-COMP MODE: ON
                           EX-COMPLEVEL: 0DB
                           NEXT PAGE
                           EXIT
```

```
OSD                        EXPOSURE

>EXPOSURE                  HIGH SENSITIVITY    OFF
 WHITE BALANCE             SLOW AE             1
 PICTURE                   SLOW SHUTTER        OFF
 LENS PARAMETERS           GAIN LIMIT          50dB
 SYATEM SETUP              MIN.SHUTTER MODE    OFF
 FUNCTION SETTING          MIN.SHUTTER LIMIT   1/125
 SAVE AND EXIT             EXIT
 EXIT
```

42.8dB, 46.4dB and 50dB

Min. SHUTTER LIMIT (Minimum Shutter Limit)
When the subject becomes dark, the shutter speed becomes slow and the gain is increased. This is a function to put a limit on the shutter speed. It prevents the camera shake when you shoot a moving subject in a dark place.
EXIT: Push the joystick to the right to exit this level menu.

WHITE BALANCE Menu

The WHITE BALANCE menu is used to select the white balance mode.

```
  EXPOSURE
 >WHITE BALANCE
  PICTURE
  LENS PARAMETERS
  SYSTEM SETUP
  FUNCTION SETTING
  SAVE AND EXIT
  EXIT
```

MODE (white balance mode)
Select the white balance mode from the following:

> **AUTO:** This mode computes the white balance value output using color information from the entire screen. It outputs the proper value using the color temperature radiating from a black subject based on a range of values from 2500K to 7500K. This mode is the initial setting.
> **INDOOR:** 3200K Base Mode
> **OUTDOOR:** 5800K Base Mode

```
 MODE: AUTO
 USER DEFINED R: 203
 USER DEFINED B: 213
 EXIT
```

> **OPW (One Push White Balance):** The One Push White Balance mode is a fixed white balance mode that may be automatically readjusted only at the request of the user (One Push Trigger), assuming that a white subject, in correct lighting conditions, and occupying more than 1/2 of the image, is submitted to the camera. One Push White Balance data is lost when the power is turned off. If the power is turned off, reset One Push White Balance.
> **NOTE:** *When you select the OPW (One Push White Balance)*
> Perform the following operations:
> 1. Place an image of white subject (For example: A piece of white paper) in the center of the screen.
> 2. Press the HOME button of the infrared remote controller.

The one-push white balance adjustment is activated.

> **ATW (Auto Tracing White Balance):** Auto Tracing White balance (2000K to 10000K)
> **USER:** This is a mode that enables you to manually set the control of R and B gain up to 256 steps.
> **NOTE:** *When you select USER, R. GAIN (red gain) and B. GAIN (blue gain) appear. You can select each item in the range from 0 to 255.*

> **OUTDOOR AUTO:** This is an auto white balance mode specifically for outdoors. It allows you to capture images with natural white balance in the morning and evening.
> **SODIUM VAPOR LAMP (AUTO/OUTDOOR AUTO):** This is an auto white balance mode specifically for outdoors, which is compatible with sodium vapor lamps.
> **SL AUTO: Sodium Vapor Lamp Auto:** This is an auto white balance mode that is compatible with sodium vapor lamps.
> **SL: Sodium Vapor Lamp:** This is a fixed white balance mode specifically for sodium vapor lamps.
> **SLO AUTO: Sodium Vapor Lamp Outdoor Auto:** This is an auto white balance mode specifically for outdoors, which is compatible with sodium vapor lamps.
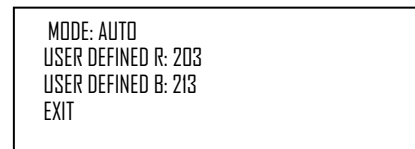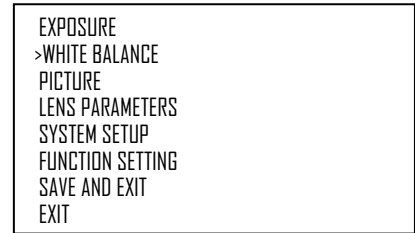
PICTURE Menu

The PICTURE menu is used to set the items related to the picture.

SHARPNESS: Picture sharpness value ranges from 0 to 15.
You can enjoy emphasized edge and high-resolution images.

EFFECT: (Picture Effect)
It consists of the following functions:

- Neg. Art: Negative/Positive Reversal
- Black & White: Monochrome Image
- Image effect from Off, B&W, NEG.ART

COLOR GAIN:
You can configure the color gain from 0 to 14. Use this
setting when bright color is particularly important.

COLOR HUE:
You can adjust color phase from 0 to 14.

FLIP:
Image E-Flipper-Used when ceiling mounting or upright
mounting. Set to OFF is upright mode, set to ON is for ceiling mount.

MIRROR:
You can have the image as seen in a mirror, with the right side as though it were the left.

NOISE REDUCTION:
The NR function removes noise (both random and non-random) to provide clearer images. This function has six steps: levels 1 to 5, plus off. The NR effect is applied in levels based on the gain, and this setting value determines the limit of the effect. In bright conditions, changing the NR level will not have an effect. When it is set to level 7Fh, you can set NR of 2D/3D individually.

> **2D:**
> 2D Noise Reduction is a method of reducing noise within an image by comparing frame-to-frame, removing the variations that do not appear in each frame.

> **3D:**
> 3D Noise Reduction is a method of reducing noise by comparing variances within the same frame, as well as comparing frame-to-frame. This will reduce noise without leaving trails behind a moving object.

STABILIZER:
When the image stabilizer function is set to ON, you can obtain the image with less screen blur caused by shaking. The correction effect can be achieved at the vibration frequency around 10 Hz. The image stabilizer function uses the digital zoom method. Although there are changes in the angle of view and resolution, the sensitivity is maintained.

GAMMA:
You can adjust the gamma value as 0 or 1.

GAMMA OFFSET:
You can choose the offset of the output level of gamma curves. Choose a value from -49 to -64, and 0 to +64.

LOW-ILLUM. CHROMA:
You can configure a Chroma suppress mode for low illumination conditions. This can be useful when color noise is particularly noticeable in such conditions. Four levels (disabled and three levels) are available for the low-illumination Chroma suppress mode.
You can set the brightness from OFF, 3, 2, 1

WDR (Wide dynamic range mode):
Wide Dynamic: ON, OFF. The camera distinguishes light and dark areas within the same scene, adjusts the brightness for dark areas, and also controls the blown-out highlights.
You can select the wide dynamic range mode between ON and OFF.

EXIT: Push the joystick to the right to exit this level menu.

OSD		PICTURE	
EXPOSURE		SHATPNESS	8
WHITE BALANCE		EFFECT	OFF
>PICTURE		COLOR GAIN	5
LENS PARAMETERS		COLOR HUE	6
SYATEM SETUP		FLIP	OFF
FUNCTION SETTING		MIRROR	OFF
SAVE AND EXIT		NOISE REDUCTION	OFF
EXIT		STABILIZER	OFF
		GAMMA	0
		GAMMA OFFSET	0
		LOW-ILLUM. CHROMA	OFF
		DE-FLICKER	OFF
		WDR	OFF
		EXIT	

LENS PARAMETERS Menu

The LENS PARAMETERS menu is used to set the items related to the lens.

ZOOM:

> **Digital zoom:**
> ON, OFF. When DIGITAL ZOOM is set to on, it can use the digital zoom.
>> **NOTE:**
>> ***Digital Zoom feature will be disabled when Low Latency Mode is set to ON.***
>
> **ZOOM OSD DISPLAY:**
> Zooming number of times will be displayed on the screen.

OSD	LENS PARAMETERS	
EXPOSURE	ZOOM:	OFF
WHITE BALANCE	AUTO FOCUS	
PICTURE	MANUAL FOCUS	
>LENS PARAMETERS	NEAR LIMIT	30CM
SYATEM SETUP	JOYSTICK RECOVER:	NONE
FUNCTION SETTING	A/F RECOVER TIME:	---
SAVE AND EXIT	A/I RECOVER TIME:	---
EXIT	DAY/NITE MODE:	DAY
	LASER SETUP:	ON
	ZOOMING SPEED:	8
	PRESET SPEED:	255
	EXIT	

AUTO FOCUS:

> **AF SENSITIVITY:**
> - Normal
> Reaches the highest focus speed quickly, this is the most appropriate mode.
> - Low
> Improves the stability of the focus. When the lighting level is low, the AF function does not take effect, even though the brightness varies, contributing to a stable image.
>
> **AF MODE:**
> - Normal AF Mode
> This is the normal mode for AF operations.
> - Interval AF Mode
> The mode used for AF movements carried out at particular intervals. The initial setting for both is set to 5 seconds.
> - Zoom Trigger Mode
> When zoom position is changed, it becomes AF mode during the pre-set value (initial setting is set to 5 seconds). Then it stops.

MANUAL FOCUS

> **MF SPEED:**
> Fixed Speed: Speed of Manual Focusing is set to a fixed speed.
> Variable Speed: Speed of Manual Focusing can be set to 1-8

JOYSTICK RECOVER:

> **NONE**: No effect.
> **A/F**: After operating the camera, the mode of focus be changed to auto form manual.
> **A/I:** After operate the camera, the mode of IRIS be changed to auto form manual.
> **AF-AI**: After operate the camera, the mode of focus be changed to auto form manual, and, the mode of IRIS be changed to auto form manual.
>
> **A/F RECOVER TIME:**
> When the camera is not in operation, if in the manual focus mode, after the A/F RECOVER TIME, it will automatically transfer to the automatic focus.
> If the time is 0, then the function is closed.
>
> **A/I RECOVER TIME:**
> When the camera is not in operation, if in the manual Iris mode, after the A/I RECOVER TIME, it will automatically transfer to the automatic Iris.
> If the time is 0, then the function is closed.

NEAR LIMIT:

The near limit from the following: 11cm, 30cm, 0.8m, 1.2m, 1.4m, 1.65m, 2m, 2.5m, 3.1m, 4.2m, 6m, 10m, 20m, OVER.

DAY/NITE MODE:

You can select the mode from AUTO, DAY and NIGHT.

> When the camera is set to **AUTO** mode, the camera will automatically turn from Day mode (Color) to Night mode (Black & White) when the lighting condition is low enough, the camera illuminator will be turned on automatically at Night mode.
> When the camera is set to **Day** mode, the camera will stay in Day mode (Color) no matter how low the lighting condition is, the camera illuminator will not be turned on at Night. The image may be too dark to be seen in a low light condition.

When the camera is set to **Night** mode, the camera will stay in Night mode (Black & White) no matter how bright the lighting condition is, the camera illuminator will be turned on all the time. The image will be stay in Black & White.

LASER SETUP:
You can turn on/off IR Laser illuminator
ZOOMING SPEED:
The speed of zooming can be set to value from 1 to 8.
PRESET SPEED:
The speed of preset operating can be set to value from 1 to 255.

EXIT: Push the joystick to the right to exit this level menu.

SYSTEM SETUP Menu

The SYSTEM SETUP menu is used to set the items related to the camera system.

FACTORY DEFAULT:
The menu is used to restore the factory settings.
INTERFACE SET:
This menu is used to set the following parameters:
> **CAMERA ID:**
> Factory Default Setting: 001
> Use RS485 PELCO-D can control up to 255 cameras, camera ID from 001 to 255 has to be set.
> Use RS422 VISCA protocol can control up to 7 cameras, camera ID from 1 to 7 has to be set.
> **BAUD RATE:**
> Factory Default Setting: 9600,
> Select the baud rate from the following: 2400, 4800, 9600, 38400bps.
> **FACTORY FORMAT:**
>> CAMERA ID: 001
>> BAUD RATE: 9600

```
OSD                      SYATEM SETUP

 EXPOSURE                   FACTORY DEFAULT: ON
 WHITE BALANCE            >INTERFACE SET
 PICTURE                    TEMPERATURE READING: ON
 LENS PARAMETERS            SDI VIDEO: 1080P60
>SYATEM SETUP               SYSTEM INFO
 FUNCTION SETTING           SYSTEM RESET
 EXIT                       EXIT


                           CAMERA ID: 001
                           BAUD RATE: 9600
                           FACTORY FORMAT
                           EXIT
```

NOTE:
- *After the camera ID and Baud rate is set, to activate the new set camera ID and Baud rate, the camera has to be rebooted by powering the camera OFF and ON.*
- *For Dual-Output camera, the camera ID and Baud rate on IP web interface is auto-adjusted with the camera ID and Baud rate setting on the SDI side.*
- *Once you modified and saved the camera ID and baud rate setting on camera side, please modify the corresponding parameters on the keyboard side, otherwise the camera and keyboard will be unable to communicate.*

SDI VIDEO:
SDI + IP True Dual Output: You can have parallel SDI and IP video output. Either SDI or IP video format can be set up independently for having dual output simultaneously.
- SDI output: Select the SDI video output format from the following:
  B Class models: 1080P: 60/59.94/50/30/29.97/25; 1080I:60/59.94/50; 720P: 60/59.94/50/30/25.
  S Class models: 1080P: 60/50/30/25; 720P: 60/50/30/25.
- IP output: For IP video output, please refer to User manual part two.

VIDEO FORMAT: **SDI + IP** True Dual Output**:**

The SDI video output and the IP video output can be configured independently. Each can be set to its own resolution. The IP and SDI can output separate video resolutions simultaneously.
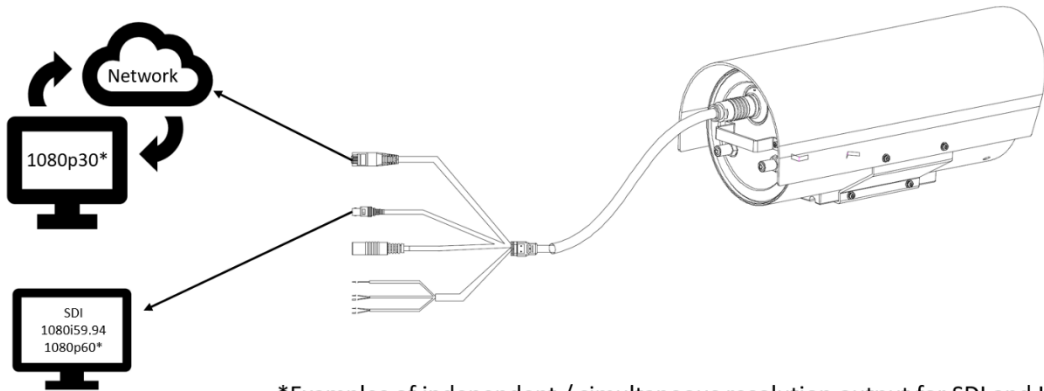
*Examples of independent / simultaneous resolution output for SDI and IP

SDI output options:
   B-Class models:
   - 1080P: 60/59.94/50/30/29.97/25
   - 1080I:60/59.94/50; 720P: 60/50/30/25

   S-Class models:
   - 1080P: 60/50/30/25
   - 720P: 60/50/30/25

IP output options:
   o   1080P:60/30/25
   o   720P:60/30/25

Follow these steps to change the video format:

SDI Video format:
   1. Set SDI video resolution by accessing the SDI OSD menu, and selecting SYSTEM SETUP
   2. Select the SDI VIDEO format you want to have from 1080P: 60/59.94/50/30/29.97/25; 1080I:60/59.94/50; 720P: 60/50/30/25.
   3. Wait for a while for camera new set video format being taken. It is normal that you cannot take the control of the interface while the video format is being changed. Once control has been recovered, reboot the camera by disconnecting the power, and then reconnecting the power.

IP Video format:
   1. Go to IP camera Web Interface
   2. Select the Video/Audio tab
   3. IP video resolution can be set to one of the following: 1080P60, 1080P30, 1080P25, 720P60, 720P30, 720P25

NOTE: For more information regarding setting the IP video format, please refer to **PART TWO-Network Cameras User Manual**

SYSTEM INFO:
   CAMERA ID: Modify in the menu of "INTERFACE SET"
   BAUD RATE: Modify in the menu of "INTERFACE SET"
   SDI VIDEO: Modify in the menu of "INTERFACE SET"
   IP VIDEO: Modify in the menu of "INTERFACE SET"
   VERSION: The software version running on the camera

```
CAMERA ID ： 01
BAUD RATE ： 9600
SDI VIDEO： 1080P/30
SV: SON080BI0020CA06
```

SYSTEM RESET:
Soft reboot to save the changes have been made and make the changes activated

EXIT: Push the joystick to the right to exit this level menu.

FUNCTION SETTING Menu

The FUNCTION SETTING menu is used to set the items related to the camera functionalities.

Note: The number of available presets may be limited by the head-ins, controllers, and DVRs that are connected to your dome system.

PRESETS SETUP:
Preset is to store the PTZ information (such as: Pan and Tilt positions, focal length etc.) under the specific condition, and call the camera PTZ quickly to shoot to the specified location that you want the camera to move to.

```
 EXPOSURE
 WHITE BALANCE
 PICTURE
 LENS PARAMETERS
 SYSTEM SETUP
>FUNCTION SETTING
 EXIT
```

Note: Presets not only save desired image positions, various picture settings such as brightness, exposure values and other variables are also saved and stored.

Note: Pan and Tilt are not available on the FEX model.

The menu is used to manage the presets. Total of 220 presets can be managed.

```
PRESETS SETUP
TOUR SETUP
PATTERN SETUP
IDLE TIMER :  003
IDLE ACTION :  OFF
EXIT
```

> **PRESETS NUMBER:**
> The current preset number that you are managing.
>
> **SET NEW PRESET:**
> To set up (or overwrite) the preset of the preset shown under **PRESET NUMBER**
> 1. Enter this setting menu, you will see "call preset 1 to end" flashing on the screen.
>
> 2. Adjust the camera to the position that you want the preset to be
>
> 3. Call the preset 1 using the keyboard to save the preset as the current position

```
 PRESET NUMBER: 001
 PRESET MEMORY: ON
>SET NEW PRESET
 DELETE PRESET
 EXIT
```

```
CALL PRESET 1 TO END
```

> **DELETE PRESET:**
> With this option selected, push the joystick to the right to delete the preset shown under **PRESET NUMBER** preset.
>
> **EXIT:** Push the joystick to the right to exit this level menu.

```
 PRESET NUMBER: 001
 PRESET MEMORY: ON
 SET NEW PRESET
>DELETE PRESET
 EXIT
```
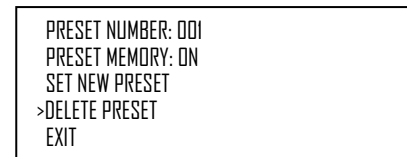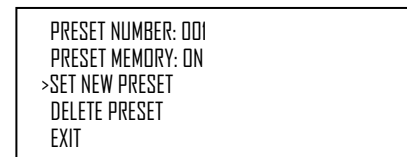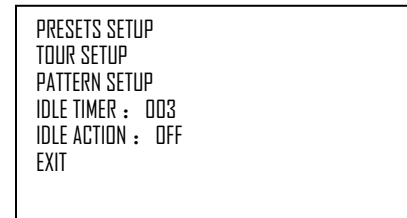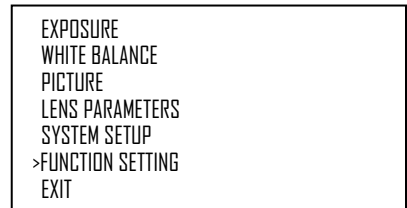
There are pre-programmed functionalities of the camera have been setup with presets, means that these functionalities can be activated or trigged by running certain presets or setting certain presets. For example, run preset 95 is to turn on the OSD menu displayed on the screen, etc.

In order to use the special functions of the camera, the following presets are predefined for specific functions (You can find the default predefined preset at Web interface, Setup -> PTZ -> Advanced Settings):

Preset number	Set / call	Function description
54	Set	Lens Reset
55	Call	Activate Backlight
	Set	Deactivate Backlight
56	Call	Activate auto shutter
	Set	Deactivate auto shutter
57	Call	Activate screen display
	Set	Deactivate screen display
58	Call	Activate Digital Zoom
	Set	Deactivate Digital Zoom
59	Call	Disable WDR
	Set	Enable WDR
60	Call	Auto Iris
	Set	Manual Iris
61	Call	Auto white balance
	Set	Manual white balance
63	Call	Image normal
	Set	Image Flip
64	Call	Color mode
	Set	Black and white mode
65	Call	Auto Day/Night Mode
95	Set	Open menu
97	Call	Start Patrol
	Set	Set Patrol Route
99	Call	Auto focus
	Set	Manual focus

TOUR SETUP:
The menu is used to manage the tours. Total of 4 tours can be managed

```
 PRESETS SETUP
>TOUR SETUP
 PATTERN SETUP
 IDLE TIMER :  003
 IDLE ACTION :  OFF
 EXIT
```

SEQUENCE NUMBER:
The current tour number that you are managing

```
SEQUENCE NUMBER: 001
DEFAULT DWELL: 255
EDIT SEQUENCE
RUN CONTINUOUSLY
EXIT
```

DEFAULT DWELL:
Set the interval time between each of presets in the above tour, the value can be selected from 3 to 255 sec

EDIT SEQUENCE:
Set up the above tour.
1. In the order of ① ② ③ ... ⑥, add each of preset and default dwell time to the tour.
2. The tour path will be set based on the presets and default dwell have been set in step one.

Preset Number	DEFAULT DWELL	Preset Number	DEFAULT DWELL	Preset Number	DEFAULT DWELL
① 000	000	② 000	000	③ 000	000
④ 000	000	⑤ 000	000	⑥ 000	000
000	000	000	000	000	000
000	000	000	000	000	000
...	...	...	...	...	...

RUN CONTINOUSELY: start the tour that has been set.
EXIT: Push the joystick to the right to exit this level menu.

PATTERN SETUP:

A pattern is a memorized, repeating series of pan, tilt, zoom, and preset functions that can be recalled with a command from a controller or automatically by a programmed function (alarm, park, event, or power-up).

The menu is used to manage the patterns. Total of 4 patterns can be managed

> **PATTERN NUMBER**:
> The current pattern number that you are managing

```
PATTERN NUMBER: 001
RECORD NEW PATTERN
RUN CONTINUOUSLY
EXIT
```

> **RECORD NEW PATTERN**:
> Set up the above pattern
> 1. Push the joystick to the right to enter this setting menu
> 2. Move the camera to the start position you want, and then call the preset 1 to save
> 3. Move the camera to each position you want to record the pattern, and then call the preset1 to end
> 4. Finished

> **RUN CONTINIUSELY**: start the above pattern.
> **EXIT**: Push the joystick to the right to exit this level menu.

IDLE TIMER:

If the camera stays in No-operation for certain amount of IDLE Time, the camera would take action automatically.

The menu is used to set the IDLE time, and value can be selected from 0 to 255 sec.

```
PRESETS SETUP
TOUR SETUP
PATTERN SETUP
IDLE TIMER : 003
IDLE ACTION : OFF
EXIT
```
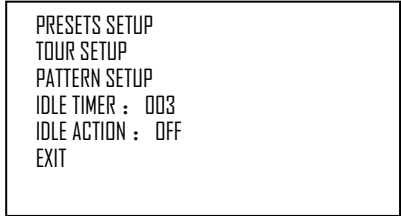
IDLE ACTION:

After the IDLE time, the camera starts the IDLE action automatically.
Even if the idle time's value is set to 0, or during the IDLE time, manual operation will always have the priority to the response.

The menu is used to select the IDLE action.
The IDLE action can be selected from the following:
- o OFF
- o PRESET1-220
- o SCAN1-4
- o TOUR1-4
- o PATT1-4

EXIT: Push the joystick to the right to exit this level menu.

EXIT

Push the joystick to the right to exit the menu. All setting modifications will be discarded, and will not be applied

Use IP Video Output

To use IP video output, please refer to PART TWO - NETWORK CAMERA USER MANUAL

Setting Camera over the LAN

To view and configure your camera via the local area network (LAN), you need to install the Controls (VideoPlugin) for the first time to login the camera IP interface.

1. Connect your camera and your PC as shown in the figure below to ensure the routing is available.
2. Modify the camera settings if necessary, including its IP address and subnet mask.

NOTE
- Default IP address is "192.168.0.13", default username is "admin", and default password is "admin".

Accessing your camera
Before you begin, please check:
1. Make sure the self-test is completed.
2. Your camera is operating properly and connected to the network.
3. The IP camera/encoder only supports IE11, ensure that the PC client you are using is installed with Internet Explorer 11.
4. Open Internet Explorer on your PC.
5. In the address bar, input the IP address plus the port number of your camera (default IP is 192.168.0.13, so the login URL should be http://192.168.0.13), then press Enter to open the login page.
6. Enter the username (default is "admin") and password (default is "admin")
7. Click Login button to access to IP video interface.

To use IP video output, please refer to PART TWO - NETWORK CAMERA USER MANUAL

Menu Configuration

The menus of camera are configured as described below.
OSD Menu Configuration

Menu	EXPOSURE	MODE	FULL AUTO	IRIS	Null
				GAIN	Null
				SHUTTER	Null
				BRIGHT	Null
				BACKLIGHT MODE	OFF, ON
				DEFOG	OFF, ON
				EX-COMP MODE	ON, OFF
				EX-COMP LEVEL	-10.5dB, -9dB, -7.5dB, -6dB, -4.5dB, -3dB, -1.5dB, 0dB, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB
				HIGH SENSITIVITY	OFF, ON
				SLOW AE	1 to 48
				SLOW SHUTTER	OFF, ON
				GAIN LIMIT	10.7dB, 14.3dB, 17.8dB, 21.4dB, 25.0dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB, 50dB
				MIN. SHUTTER MODE	OFF, ON
				MIN. SHUTTER LIMIT	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
				EXIT	
			MANUAL	IRIS	CLOSE, F1.6, F2.0, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14
				GAIN	0dB, 3.6dB, 7.1dB, 10.7dB, 14.3dB, 17.8dB, 21.4dB, 25dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB, 50dB
				SHUTTER	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
				BRIGHT	Null
				BACKLIGHT MODE	Null
				DEFOG	Null
				EX-COMP MODE	ON, OFF
				EX-COMP LEVEL	-10.5dB, -9dB, -7.5dB, -6dB, -4.5dB, -3dB, -1.5dB, 0dB, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB
				HIGH SENSITIVITY	OFF, ON
				SLOW AE	Null
				SLOW SHUTTER	OFF, ON
				GAIN LIMIT	10.7dB, 14.3dB, 17.8dB, 21.4dB, 25.0dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB, 50dB
				MIN. SHUTTER MODE	OFF
				MIN. SHUTTER LIMIT	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
				EXIT	
			IRIS PRIOR	IRIS	CLOSE, F1.6, F2.0, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14
				GAIN	Null
				SHUTTER	Null
				BRIGHT	Null
				BACKLIGHT MODE	Null
				DEFOG	Null
				EX-COMP MODE	ON, OFF
				EX-COMP LEVEL	-10.5dB, -9dB, -7.5dB, -6dB, -4.5dB, -3dB, -1.5dB, 0dB, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB
				HIGH SENSITIVITY	OFF, ON
				SLOW AE	Null
				SLOW SHUTTER	OFF, ON
				GAIN LIMIT	10.7dB, 14.3dB, 17.8dB, 21.4dB, 25.0dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB, 50dB
				MIN. SHUTTER MODE	OFF
				MIN. SHUTTER LIMIT	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
				EXIT	

|		SHUTTER	IRIS	Null
			GAIN	Null
			SHUTTER	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
			BRIGHT	Null
			BACKLIGHT MODE	Null
			DEFOG	Null
			EX-COMP MODE	ON, OFF
			EX-COMP LEVEL	-10.5dB, -9dB, -7.5dB, -6dB, -4.5dB, -3dB, -1.5dB, 0dB, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB
			HIGH SENSITIVITY	OFF, ON
			SLOW AE	Null
			SLOW SHUTTER	OFF, ON
			GAIN LIMIT	10.7dB, 14.3dB, 17.8dB, 21.4dB, 25.0dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB, 50dB
			MIN. SHUTTER MODE	OFF
			MIN. SHUTTER LIMIT	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
			EXIT	
		BRIGHT	IRIS	Null
			GAIN	Null
			SHUTTER	Null
			BRIGHT	0 to 31
			BACKLIGHT MODE	Null
			DEFOG	Null
			EX-COMP MODE	ON, OFF
			EX-COMP LEVEL	-10.5dB, -9dB, -7.5dB, -6dB, -4.5dB, -3dB, -1.5dB, 0dB, 1.5dB, 3dB, 4.5dB, 6dB, 7.5dB, 9dB, 10.5dB
			HIGH SENSITIVITY	OFF, ON
			SLOW AE	Null
			SLOW SHUTTER	OFF, ON
			GAIN LIMIT	10.7dB, 14.3dB, 17.8dB, 21.4dB, 25.0dB, 28.6dB, 32.1dB, 35.7dB, 39.3dB, 42.8dB, 46.4dB, 50dB
			MIN. SHUTTER MODE	OFF
			MIN. SHUTTER LIMIT	1/1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1K, 1/1.5K, 1/2K, 1/3K, 1/4K, 1/6K, 1/10K
			EXIT	
WHITE BALANCE	MODE	ATW	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		OUTDOOR	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		INDOOR	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		AUTO	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		SVL OUTDOOR AUTO	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		SVL	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		SVL AUTO	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		OUTDOOR AUTO	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	
		USER	USER DEFINED	R: 0 to 255
			USER DEFINED	B: 0 to 255
			EXIT	
		OPW	USER DEFINED	R: Null
			USER DEFINED	B: Null
			EXIT	

PICTURE	SHARPNESS		0 to 15
	EFFECT		OFF, B&W, NEG.ART
	COLOR GAIN		1 to 15
	COLOR HUE		1 to 15
	FLIP		OFF, ON
	MIRROR		OFF, ON
	NOISE REDUCTION		
		Mode	OFF, 2D/3D, 5, 4, 3, 2, 1
		2D	OFF, 5, 4, 3, 2, 1
		3D	OFF, 5, 4, 3, 2, 1
		EXIT	
	STABILIZER		OFF, ON
	STABLE ZOOM		OFF, ON
	GAMMA		0, 1
	GAMMA OFFSET		-49 to -64, 0 to 64
	LOW-ILLUM. CHROMA		OFF, 3, 2, 1
	DE-FLICKER		OFF, ON
	WDR		OFF, ON, VE ON
	EXIT		
LENS PARAMETERS	ZOOM		
		DIGITAL ZOOM	OFF, ON
		ZOOM OSD DISPLAY	OFF, ON
		EXIT	
	AUTO FOCUS		
		AF SENSITIVITY	NORMAL, LOW
		AF MODE	NORMAL AF, ZOOM TRIGGER, INTERVAL AF
		EXIT	
	MANUAL FOCUS		
		MF SPEED	FIXED SPEED, VARIABLE SPEED,
		VARIABLE SPEED	(Adjustable when MF SPEED set to VARIABLE SPEED MODE)
		EXIT	
	NEAR LIMIT		11cm, 30cm, 0.8m, 1.2m, 1.4m, 1.65m, 2m, 2.5m, 3.1m, 4.2m, 6m, 10m, 20m, OVER
	JOYSTICK RECOVER		NONE, AF-AI, A/I, A/F
	A/F RECOVER TIME		0 to 255
	A/I RECOVER TIME		0 to 255
	DAY/NITE MODE		AUTO, DAY, NITE
	LASER SETUP		ON, OFF
	ZOOMING SPEED		1 to 8
	EXIT		
SYSTEM SETUP	FACTORYDEFAULT		Succeed
	INTERFACE SET		
		CAMERA ID	001 to 255
		BAUD RATE	2400, 4800, 9600, 19200
		FACTORY FORMAT	Succeed
		LOW LATENCY	ON, OFF
		EXIT	
	TEMPERATURE READING		OFF, ON
	SDI VIDEO		1080p @60@59.94@50@30@29.97@25 1080i @60@59.94@50, 720p @60@59.94@50@30@25
	SYSTEM INFO		
		CAMERA ID	001
		BAUD RATE	9600
		SDI VIDEO	1080p60
		SV	SVB0H080310020AA003T9
	SYSTEM RESET		
	EXIT		

FUNCTION SETTING	PRESETS SETUP		
		PRESET NUMBER	001 to 220
		PRESET MEMORY	ON, OFF
		SET NEW PRESET	CALL PRESET 1 TO END
		DELETE PRESET	
		EXIT	
	TOUR SETUP		
		SEQUENCE NUMBER	001 to 004
		DEFAULT DWELL	003 to 255
		EDIT SEQUENCE	000-000, SAVE & EXIT, CANCEL
		RUN CONTINOUSLY	
		EXIT	
	PATTERN SETUP		
		PATTERN NUMBER	001 to 004
		RECORD NEW PATTERN	MOVE TO START POINT CALL PRESET 1 TO END
		RUN CONTINOUSLY	
		EXIT	
	IDLE TIMER		000 to 255
	IDLE ACTION		OFF, PAIT-4, PAIT-3, PAIT-2, PAIT-1, TOUR-4, TOUR-3, TOUR-2, TOUR-1, PRE001 to PRE220,
	EXIT		
EXIT			

Dimensions
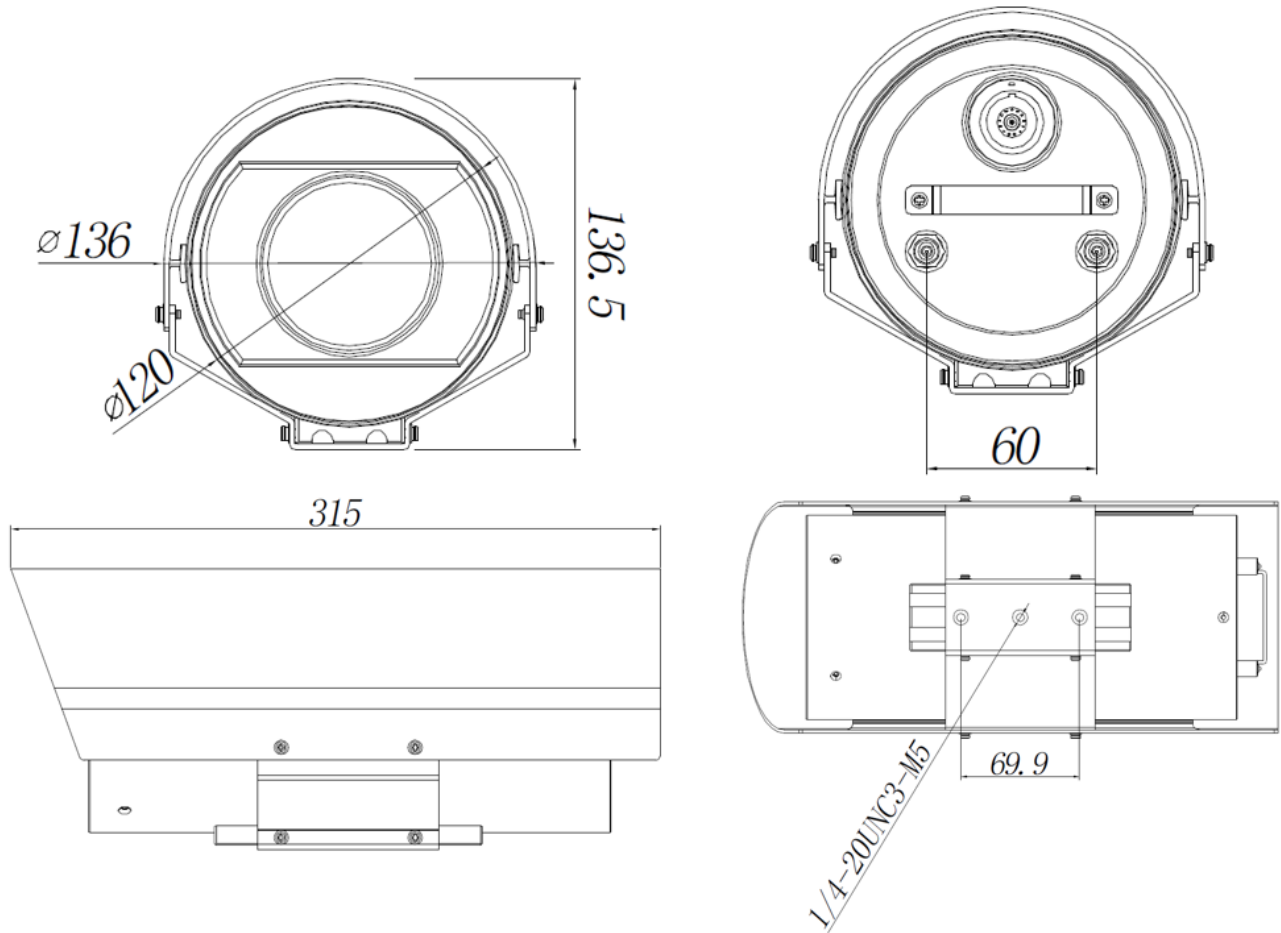
Unit: mm

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