



PTZ camera controller over IP and serial

AV-CON300-IP

User Manual

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Introduction

Congratulations

Thank you for your Avonic purchase. Before beginning to operate this device, please read the manual in order to make sure the best performance is obtained. Save this manual for future reference.

Contact

For any questions or suggestions, contact your reseller or the local distributor of Avonic. Find the local distributor on the website of Avonic. For the most recent version of the manual or datasheet, look at the Avonic website: www.avonic.eu

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Safety Notes

- Installation and servicing should only be done by Qualified Service Personnel and conform to all local codes.
- This unit is designed for indoor use only and it must not be installed where exposed to water or other liquids and moisture.
- Before powering on the device, check the input power voltage carefully.
- Avoid shock and vibration when transporting and installing the device.
- Electronic devices produce heat. Do not block the ventilation slots of the device and make sure the installation environment is well ventilated to avoid overheating.
- Before cleaning, unplug the power cable. Use a soft, damp cloth to clean the device, do not use strong or abrasive detergent to clean that will damage the device.
- If you wish to dispose this product, please contact Avonic to obtain info about the disposal procedure.

Package contents

Contents

Quantity	Description	Avonic SKU
1 pc	PTZ Camera Controller	AV-CON300-IP
1 pc	Power Supply 12V/2.5A	AV-CON300-PSU
1 pc	5 way phoenix connector	AV-PHOENIX-5
1 pc	RJ45 to DIN-8 cable for RS232	AV-CON300-DIN

Product Overview

The Avonic AV-CON300-IP is an advanced PTZ camera controller with serial and ip controlling capabilities. With this controller it is possible to control up to 255 cameras and using up to 255 presets per camera.

The controller supports the Visca, Visca over IP, Pelco-D and Pelco-P protocol and can be connected with standard RJ45 connectors for easy integration . The Avonic AV-CON300-IP is therefore compatible with all Avonic PTZ cameras as well with other brands that support these protocols.

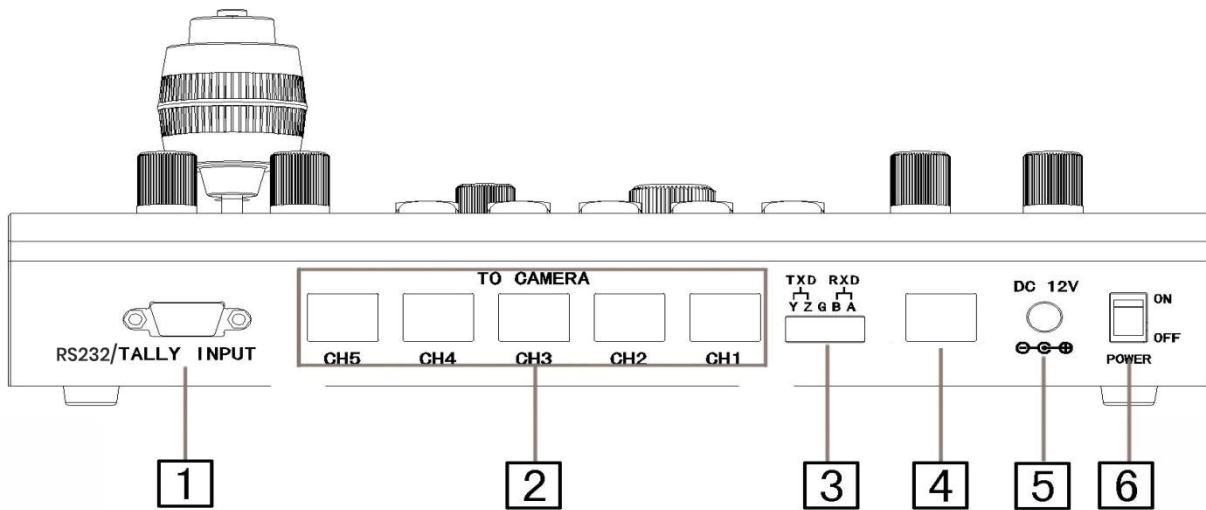
Switch easily between serial and ip control, auto and manual focus, save and load presets, and connect multiple controllers to multiple cameras.

Features

- Optical 3D joystick gives a comfortable pan / tilt / zoom operation.
- Control for camera OSD menu operation.
- VISCA protocol can be used to control up to 35 cameras over 5 channels. Over Pelco up to 50 cameras, 10 per channel.
- VISCA over IP protocol can be used to control up to 255 cameras.
- PTZ and lens control speed can be adjusted through their respective control buttons.

Installation

Connections



1. Firmware upgrade connector (9-pin DSUB male)
2. Camera control channel CH1-CH5 (RJ45)
3. 5-pin Phoenix interface (only CH1)
4. Lan/Ethernet connection standard RJ45
5. 12V DC power supply connector
6. Power switch

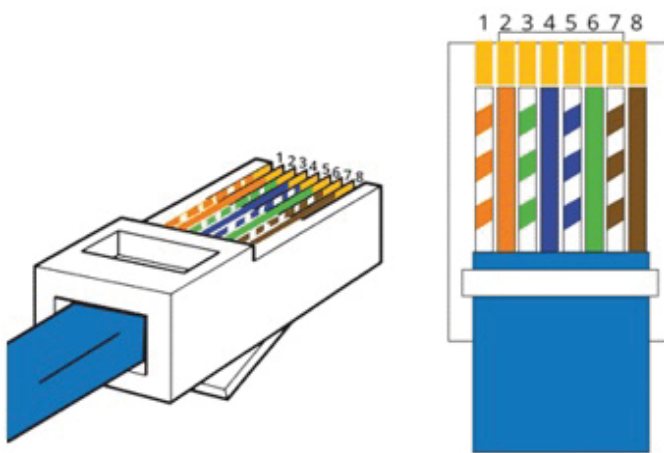
RJ45 channels (CH1-CH5) Serial Control

The Avonic AV-CON300 comes with a single RS232 connecting cable with RJ45 plug to Mini DIN-8 plug. With this cable only 1 channel can be connected to the controller. This channel can control up to 7 (VISCA) or up to 10 (PELCO) cameras.

To control the cameras assigned to the other channels, more RJ45 cables are required. The Mini DIN 8 connector is used for RS232. The RS485 requires only 2 wires and can often be attached to a 2-pin Phoenix connector at the camera. The RJ45 pin-layout diagram is as follows:

Picture

(T-568-A or -B can be used, here is given the picture of T-568-B as an example)



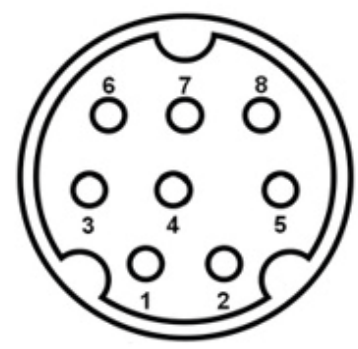
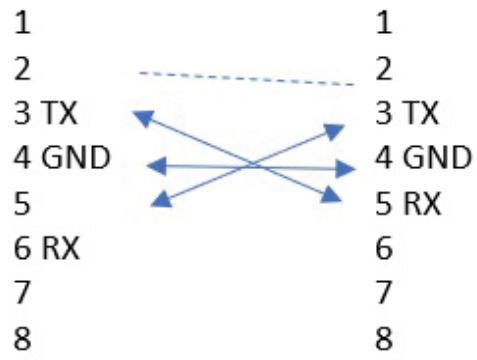
- | | |
|-----------------|----------------|
| 1. White Orange | 5. White Blue |
| 2. Orange | 6. Green |
| 3. White Green | 7. White Brown |
| 4. Blue | 8. Brown |

Function

- 1.RS485 A+
- 2.RS485 B-
- 3.RS232-TX
- 4.GND
- 5.GND
- 6.RS232-RX
- 7.GND
- 8.GND



Wire 2 is optional



RJ45 channels (CH1-CH5) Serial Control continued

The camera(s) assigned to channel 1 can also be controlled using the 5-pin Phoenix connector. The connection diagram is as follows:

Picture



Function

1. RS422 (-)
2. RS422 (+)
3. GND (G)
4. RS485 (-)
5. RS485 (+)

Serial Communication Control

COM port settings

In default working mode, an Avonic camera is able to connect to the Con300ip controller with RS-232 or RS-485 serial interface.

The camera can be controlled via RS-232, the parameters of RS-232C are as follows:

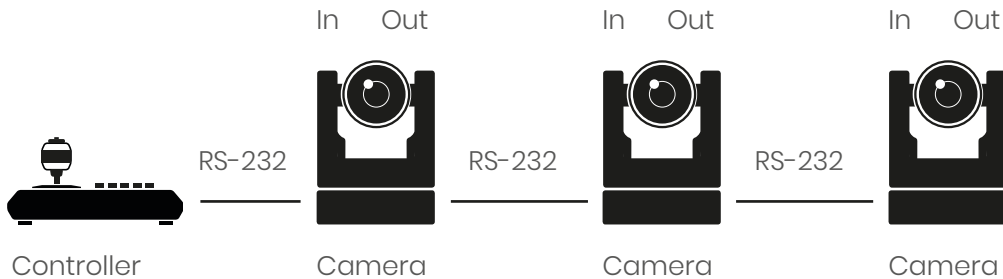
- Baud rate: 2400/4800/9600/115200
- Start bit: 1 bit.
- Data bit: 8 bits.
- Stop bit: 1 bit.
- Parity bit: none.

The camera can be controlled via RS-485, Half-duplex mode. The parameters are:

- Baud rate: 2400/4800/9600
- Start bit: 1 bit.
- Data bit: 8 bits.
- Stop bit: 1 bit.
- Parity bit: none.

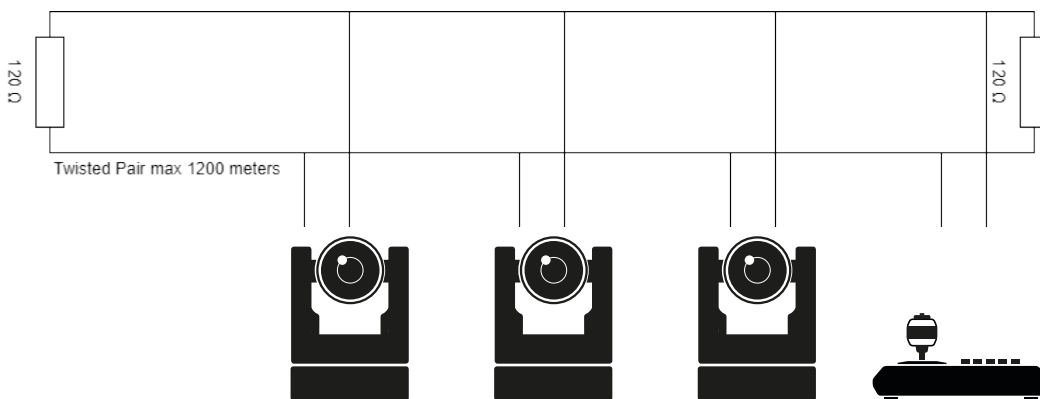
VISCA network connection diagram

When connecting multiple cameras through RS-232, use daisy chaining network architecture. Max cable length for RS-232 is 10-15m.



RS485 network connection diagram

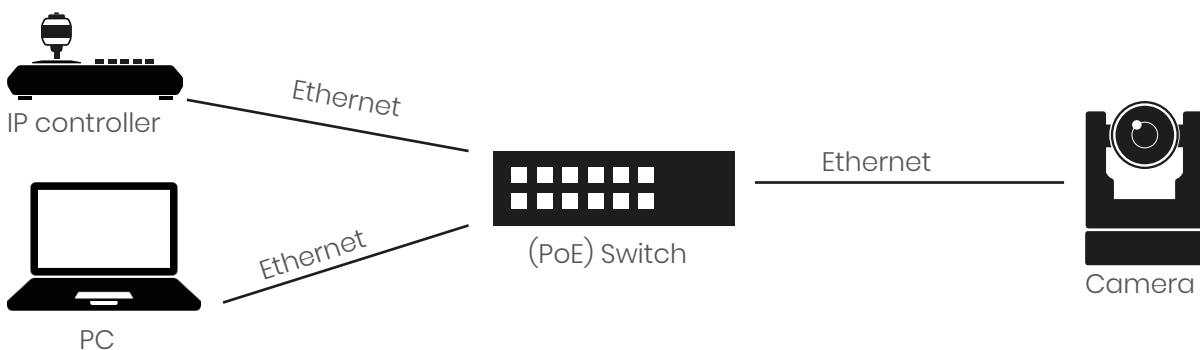
To connect multiple cameras by RS485, the cameras are attached to a 2-wire twisted pair bus (max length 1200m) that is terminated at both ends with a 120 Ω impedance resistor. The maximum distance from the bus to the camera or controller is 5m.



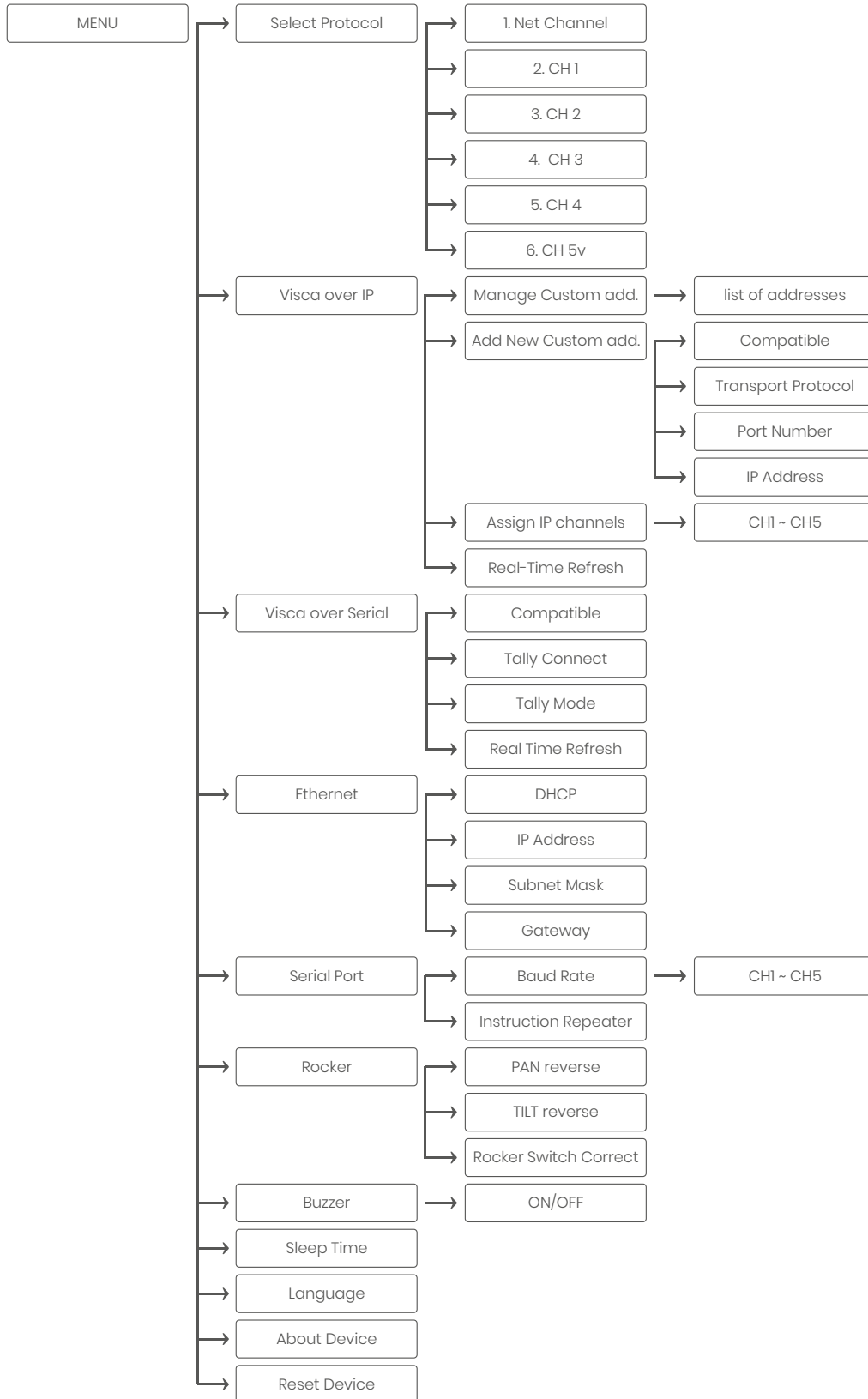
IP network connection diagram

Connect an Avonic ip controller to a LAN using a standard lan switch.

Addressing is done via IP, the Visca address in a visca over ip environment is always 1.



OSD Menu



Overview of Buttons



- | | | | |
|-----|---|-----|-------------------------------|
| 1. | Manual Iris Control | 11. | Toggle White Balance modes |
| 2. | Manual Brightness Control | 12. | CH1-CH5 select camera buttons |
| 3. | Auto Exposure | 13. | Reset preset position |
| 4. | Manual selection of camera | 14. | Auto focus 'ON' button |
| 5. | Set preset position of camera | 15. | Manual focus |
| 6. | Zoom in and out 'rocker' button | 16. | Control of PTZ speed |
| 7. | Toggle button between Net and Serial mode | 17. | Position Key [0-9] |
| 8. | Red gain | 18. | PTZ control joystick |
| 9. | Blue gain | 19. | Joystick button |
| 10. | Toggle menu on/off | 20. | Information Display |

Menu Structure

MENU

Press the [MENU key]

In the menu, move the joystick up/down [▼▲] to scroll through the menu options. Move the joystick to the right [▶] to choose the highlighted menu option. Move the joystick up/down [▼▲] to change values. Move the joystick to the left [◀] to go one level up in the menu.

If any value has changed, use the home button on top of the joystick to enter the value. Press [MENU] to go one step back in the menu and another press to save the settings and exit the menu.

1. SELECT PROTOCOL

Select Protocol

▶	1. Net Channel	Visca over IP
	2. Channel 1	Visca/ Pelco D/ Pelco P
	3. Channel 2	Visca/ Pelco D/ Pelco P
	4. Channel 3	Visca/ Pelco D/ Pelco P
	5. Channel 4	Visca/ Pelco D/ Pelco P
	6. Channel 5	Visca/ Pelco D/ Pelco P

▼▲ Select Item
◀▶ Change Value
[Menu] Back

2. Visca over IP

Addressing and programming of all cameras connected over IP

▶	2.1.	Manage Custom Address	
	2.1.1.	Compatible:	Standard (CM4X/CM7X)/ Legacy (CM6X)/ Sony
	2.1.2.	IP Address:	edit IP address of the to be controlled camera
	2.1.3.	Transport Protocol:	UDP/TCP
	2.1.4.	UDP/TCP Port:	enter portnumber (1259 is standard)
	2.1.5.	Delete this camera:	upon pressing right on the joystick the camera will be deleted immediately!
	2.2.	Add new Custom Address	
	2.2.1.	Compatible	Standard (CM4X/CM7X)/ Legacy (CM6X)/ Sony
	2.2.2.	Transport Protocol:	UDP/TCP
	2.2.3.	UDP/TCP Port:	enter portnumber (1259 is standard)
	2.2.4.	IP Address:	edit IP address of the to be controlled camera

▼▲ Select Item
◀▶ Change Value
[Menu] Back

2. Visca over IP continued

Assign IP addresses to CH1-CH5 buttons for direct control of 5 IP cameras

- ▶ 2.3.1 Choose Channel 1-5
- 2.3.2 Select Camera Choose a camera from the list of cameras added under 2.2. Click the Home Button on the joystick to confirm your choice
- 2.4. Real time Refresh ON/OFF

▼▲ Select Item

◀▶ Change Value

[Menu] Back

3. Visca over Serial

Visca

- ▶ 3.1 Compatible: Standard (CM4X/CM7X)/ Legacy (CM6X)/ Sony
- 3.2 Tally Connect: By Channel/ By Address
- 3.3 Tally Mode: Off/ Output
- 3.4 Real Time Refresh: ON/ OFF

▼▲ Select Item

◀▶ Change Value

[Menu] Back

4. Ethernet

Ethernet

- ▶ 1. DHCP OFF/ ON
- 2. IP Address specify IP address using numerical buttons, click joystick for OK
- 3. Subnet Mask specify Subnet Mask using numerical buttons, click joystick for OK
- 4. Gateway specify Gateway using numerical buttons, click joystick for OK

▼▲ Select Item

◀▶ Change Value

[Menu] Back

5. SERIAL PORT

Serial Port

- ▶ 1. Baud Rate Channel 1-5 2400/ 4800/ 9600/ 19200/ 38400/ 115200 bps
- ▶ 2. Instruction Repeater Off/ Channel X as input

▼▲ Select Item

◀▶ Change Value

[Menu] Back

6. ROCKER

Rocker

- ▶ 1. PAN Reverse OFF/ ON
- ▶ 2. TILT Reverse OFF/ ON
- ▶ 3. Rocker Switch Correct Follow on screen instructions

▼▲ Select Item

◀▶ Change Value

[Menu] Back

7. BUZZER

Buzzer

- ▶ 1. OFF, click joystick for OK
- ▶ 2. ON, click joystick for OK

▼▲ Select Item

[Menu] Back

8. SLEEP TIME

Sleep Time

- ▶ 1. 1 minute, click joystick for OK
- ▶ 2. 5 minutes, click joystick for OK
- ▶ 3. 30 minutes, click joystick for OK
- ▶ 4. No Sleep, click joystick for OK

▼▲ Select Item

[Menu] Back

9. LANGUAGE

Language

- ▶ No settings to be made

▼▲ Select Item

[Menu] Back

10. ABOUT DEVICE

About Device

- ▶ 1. MAC address: 98:14...
- 2. Software Version: V.
- 3. Compile Date: month/day/year

▼▲ Select Item

[Menu] Back

11. RESET DEVICE

Reset Device

- ▶ 1. NO click joystick for OK
- 2. Yes click joystick for OK, controller will reset all settings and present the rocker switch calibration.

▼▲ Select Item

[Menu] Back

Switch between serial and IP mode

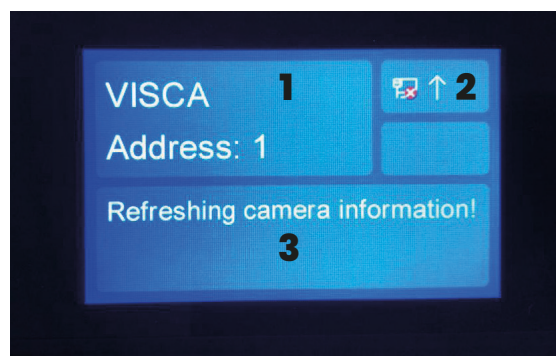
To switch between serial or IP mode of the CON300-ip, use the [NET] Button



Serial Mode Display

In serial mode the display looks like the picture below.

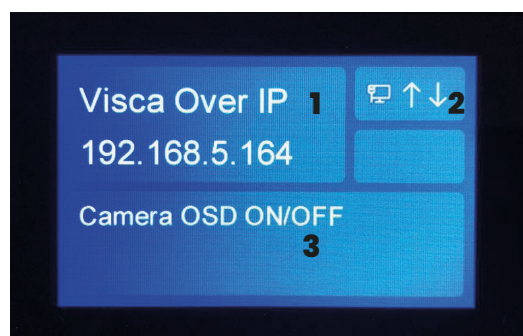
1. status of the current protocol and address in use.
2. actual send/receive status and status of the lan connection.
3. status of current command



IP Mode Display

In IP mode the display looks like the picture below.

1. status of the current protocol and address in use.
2. actual send/receive status and status of the lan connection.
3. status of current command



Control settings

The controls for the cameras are mostly the same, either in serial or IP mode. The one exception is the manual selection of cameras via the [ADDR] button. See point 2.1 and 2.2. for the differences.

1. Boot

Plug in the power supply, the display will show the Visca address of the channel chosen and the last used physical Channel button will light up.

2.1 Serial Camera Selection

Press the [CH] button to select the connection to which the camera is connected, then press the [ADDR] button and the Position Key [0~9] to select the serial address of the camera.

2.2 IP Camera Selection

Either choose one of the 5 [CH] channel buttons for direct control or press [ADDR] to call up a list of programmed ip addresses, scroll down the list with the [JOYSTICK] and press the [JOYSTICK BUTTON] to confirm the camera IP address.

3. PTZ operation

The Pan, Tilt and Zoom operations can be controlled by the [JOYSTICK]. In addition, the [Zoom Rocker Button] can be used at the same time. The speed of the action can be fine-tuned by the [PTZ SPEED] rotary button. The [JOYSTICK BUTTON] sends the camera to its home position.

The focus can be automatically set with the [AUTO] button or manually set near or far by the [FOCUS] button.

4. Set Preset

Set the camera in desired position. Then press [SET] preset (key light on) and the Position Key [0~9]. Preset 0 is the preset to which the camera automatically goes after a reboot.

Choose another Preset to set or press [SET] preset again (key light off) to return to normal operation.

5. call Preset

Press the Position Key [0~9] of the desired preset, in total 10 presets (including preset 0) are available per camera through the AV-CON-300-IP.

6. Delete Preset

Press [RESET] (key light on) and the Position Key [0~9]. Press [RESET] (key light off) again to return to normal operation.

7. Exposure mode selection

Press [AE AUTO] button to trigger auto exposure mode;

Rotate the [BRIGHT] knob to override the Auto Exposure mode, it adjusts the brightness of the camera, "+" to increase the brightness, "-" to reduce the brightness;

Rotate the [IRIS] knob to override the Auto Exposure mode, it adjusts the aperture of the camera, "+" to increase aperture and "-" to reduce aperture;

8. White balance mode selection

Press the [WBC MODE] button to cycle the white balance modes (WB AUTO, INDOOR, OUTDOOR, ONE PUSH, ATW, MANUAL);

Rotate the [R] rotary button that triggers the manual white balance mode, which adjusts the depth of the color red, "+" the red becomes darker, and "-" red becomes lighter.

Rotate the [B] rotary button that triggers the manual white balance mode, which adjusts the depth of the color blue, "+" the blue becomes darker, and the "blue" becomes lighter;

9. Camera OSD menu call

Press and hold the [MENU] button until the controller display shows 'Camera OSD on/off' to open the camera OSD menu. If a camera is connected, the OSD of the camera will be displayed on the monitor.

NOTE: the [MENU] button will be lit red and turns off after a moment. The controller is now ready to navigate the OSD of the camera.

The [JOYSTICK] navigates up and down through the menu. To choose a menu item, twist the [JOYSTICK] to TELE (clockwise). To change a value of a menu setting, move the [JOYSTICK] to the left or the right.

The [MENU] button moves the menu up one level.

Create a custom IP address and assign it to a Channel Button

In this section we will explain how to create a custom IP address and then add it to one of the CH buttons for direct control of a camera. This section basically breaks down in two; the first part is to create an IP address in the controller. The second part is to assign this new IP address to one of the [CH] buttons.

Create a custom IP address:

1. Open the menu by pressing [MENU].
2. Select 'Visca over IP'.
3. Select 'Add New Custom Address',
4. Enter the compatibility mode, click the [JOYSTICK BUTTON] to confirm.
5. Select the Transport Protocol, click the [JOYSTICK BUTTON] to confirm.
6. Enter the Port Number using Position Key [0~9] (standard setting is 1259), click the [JOYSTICK BUTTON] to confirm.
7. Enter the IP-address of the camera using Position Key [0~9], click the [JOYSTICK BUTTON] to confirm the selection.
8. A message on the display pops up with the text 'A new camera has been added'.

Assign the created IP address to a CH button:

1. Open the menu by pressing [MENU]
2. Select 'Visca over IP', click the [JOYSTICK BUTTON] to confirm
3. Select 'Assign IP Channels', click the [JOYSTICK BUTTON] button to confirm
4. Select the CH you wish to program, click the [JOYSTICK BUTTON] button to confirm
5. Scroll through the list, select the IP address you just created and click the [JOYSTICK BUTTON] button to confirm your choice. The display will go back to the previous screen and the newly created IP address will be shown next to the selected channel.

Reassign a [CH] Button IP shortcut after deletion or adjustment

After an IP address has been deleted or changed in the Manage Custom Address menu it will remain in the cache memory of the previously assigned [CH] button, therefore it is important to reassign this [CH] Button to another IP address, or the same if changes were made.

Maintenance

Controller Maintenance

- If the controller will not be used for a long time, please turn off the power switch, disconnect AC power cord of AC adaptor to the outlet.
- Use soft cloth or tissue to clean the display.
- Please use a soft dry cloth to clean the controller. If the device is very dirty, clean it with diluted neuter detergent. Do not use any type of solvents, which may damage the surface.

Unauthorized Use

- Don't operate close to powerful electromagnetic radiation, such as TV or radio transmitters, etc.

Troubleshooting

General advise

- Turn the controller off and on again and check if the problem persists.
- Restore to Factory Default (menu option 11)

Power Issues

- No display and no buttons lit
 - Check the net power
 - Check the power supply

IP functionality issues

- Cannot control camera
 - Check network cable
 - Check if the controller is in the same subnet as camera
 - Reset the factory default by choosing menu option II.

Serial functionality issues

- Cannot control camera
 - Check serial cable(s) and the RJ45 termination
 - Reset the factory default by choosing menu option II.

Specifications

<i>Comm. Interface</i>	<i>RJ45/ RS-485/RS-232</i>
<i>Protocol</i>	<i>Pelco-D, Pelco-P, VISCA</i>
<i>Baud Rate</i>	<i>2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 115200</i>
<i>Number of cameras</i>	<i>Up to 50 serial, up to 254 over IP</i>
<i>Joystick</i>	<i>3D-axis (Left/Right, Up/Down, Zoom In/Out)</i>
<i>Display</i>	<i>Color LCD display with backlight</i>
<i>Adjustment functions</i>	<i>Pan/Tilt, Zoom, Focus, Brightness, Iris, Gain, White Balance (Auto, m R/B Gain)</i>
<i>Power</i>	<i>DC12V</i>
<i>Power Consumption</i>	<i>8W</i>
<i>Working Temperature</i>	<i>0 °C~40 °C</i>
<i>Storage Temperature</i>	<i>-20 °C~+50 °C</i>
<i>Relative Humidity</i>	<i>≤90% (non-condensation)</i>
<i>Unit Dimensions</i>	<i>295mm x 185mm x 70mm</i>
<i>Net Weight</i>	<i>1.7 kg</i>