USER MANUAL

PTZ Camera controller over IP and serial
AV-CON300-IP

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Markings

The Product has Markings. The labels are placed at the bottom of the Product and on the packaging. See the respective figures below:
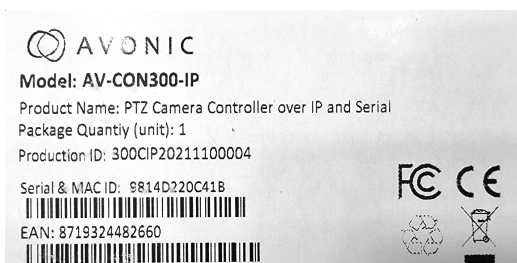
Figure 1: Markings (Product)

Figure 2: Markings (Packaging)

EC DECLARATION OF CONFORMITY

Table 1: EC Declaration of Conformity

AVONIC

EC DECLARATION OF CONFORMITY

1. Models No:	AV-CON300-IP
2. Brand Name:	Avonic
3. Product Name:	PTZ Camera Controller over IP and Serial
4. Manufacturer:	Avonic
	Exportweg 11a
	2645ED Delfgauw
	The Netherlands

3. This declaration of conformity is issued under the sole responsibility of the manufacturer

4. The object of the declaration described in point 1 is in conformity with the EMC2014/30/EU

5. Standards	EN 55032: 2015
	EN 61000-3-2: 2014
	EN 61000-3-3: 2013
	EN 55035: 2017

6. Signed for and on behalf of Avonic:

Delfgauw, 25th of April, 2019

Martijn van Bodegom,
Product Manager

IMPORTANT INFORMATION

Liability

Avonic will NOT be held responsible for any damage or injury caused by unqualified persons carrying out these tasks, or by not following the instructions in this Manual.

Intended Use and Non-Intended Use

Installation

The following applies to the **installation** of the CON300-IP:
- The installation activities described in this Manual should ONLY be executed by experienced technicians.
- The installation activities should NOT be executed by minors, mentally disabled persons or other persons not qualified to perform these tasks.

Operation

The following applies to the **operation** of the CON300-IP:
- The operational activities described in this Manual should ONLY be executed by people with enough technical knowledge to perform the activities in a safe manner.
- This Product is specifically developed for video conferencing / streaming via internet by companies, institutes and universities. It is NOT meant for private use in the residential area.
- This Product should ONLY be used indoors.
- This Product is NOT a medical device and should NOT be used as a substitute for professional medical judgment. It is NOT designed or intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of any condition or disease. Please consult your healthcare provider prior to making any decisions related to your health.

Important Precautions

⚠	The Product is NOT intended for use where failure of the device could lead to death, personal injury, or severe environmental damage.
⚠	Be sure that you have COMPLETELY READ and UNDERSTOOD ALL information in this Manual before unpacking, installing and using this Product. Keep the Manual in a safe place for future reference or download it from www.avonic.com.
⚡	Failure to follow the SAFETY NOTES as described in this chapter could result in fire, electric shock, injury, or damage to the Product or other property.
⚡	Power the Product ONLY with the included cable and power adapter. Other adapters may not meet applicable safety standards, and could pose a risk of death or injury when connected.

Symbols Used in This Manual

Symbol	Meaning	Description
⚠	Danger	Not following the instructions associated with this symbol may lead to personal injury and / or serious damage to the Product.
⚡	Electrical Shock	Not following the instructions associated with this symbol may lead to life-threatening situations and / or serious damage to the Product.
⚠	Important	The information associated with this symbol requires special attention.

Symbol	Meaning	Description
	Information	The information associated with symbol refers to a general remark or a reference to other documentation.
	Instruction	This symbol refers to one or more user instructions.
	Recycling	Specific parts of the Product can be re-used.

Acronyms

The following acronyms are used in this Manual:

IP	Internet Protocol	Protocol that govern the way data packets are transmitted over the internet and other networks. IP provides a unique address for each device connected to a network, allowing data to be sent and received between devices across the internet.
OSD	On-Screen Display	Display menu that appears on your monitor screen when the camera is connected to IP, SDI or HDMI.
PTZ	Pan / Tilt / Zoom	Directions to which the lens moves: Pan (horizontal), Tilt (vertical) and Zoom (magnify objects on large distance).
PSU	Power Supply	Power adapter of the controller.
RJ45	Registered Jack 45	Standardized connector commonly used for Ethernet networking cables. It is the most widely used connector for connecting devices to local area networks (LANs) and the internet. The RJ45 connector resembles a larger version of a telephone jack but has more pins and is specifically designed to accommodate twisted-pair cables commonly used in Ethernet networks.
RS232	Recommend Standard 232	Communication protocol used for serial communication between devices.
RS485	Recommend Standard 485	Communication protocol used for serial communication between devices over long distances. It is an extension of the RS-232 protocol and is designed to overcome the limitations of RS-232, such as limited range and susceptibility to noise.
SKU	Stock Keeping Unit	Stock keeping unit used by Avonic. Every camera has an unique SKU with AV-CM (Avonic Camera).
VISCA	Video System Control Architecture	Communication protocol developed by Sony. It is widely used for controlling and operating various types of cameras and other audiovisual equipment remotely. VISCA enables bidirectional communication between the control device (such as a remote controller or a computer) and the target device (such as a camera).

Contents

INTRODUCTION

Purpose of This Manual

The purpose of this manual is to provide safety instructions and guidelines for the proper unpacking, installation, operation, maintenance, and disposal of the Avonic AV-CON300-IP.

> In this Manual, the Avonic AV-CON300-IP is referred to as the 'Product'.

Target Audience

This Manual is developed for installation technicians who install the Product at client sites, and for IT professionals who are responsible for operating the Product.

Document Structure

The Manual is subdivided into the following **Chapters**:

1. Introduction
2. Safety
3. Product Overview
4. Unpacking
5. Mounting and Installation
6. Operation
7. Maintenance
8. Transport and Storage
9. Disposal and Recycling
10. Troubleshooting

The following appendices are added to this manual:

- Appendix A - Datasheet Specifications

AVONIC

SAFETY INSTRUCTIONS

This chapter contains important safety information regarding the unpacking, installation and use of the camera.

Important Precautions

⚠️	The Product is NOT intended for use where failure of the device could lead to death, personal injury, or severe environmental damage.
⚠️	Be sure that you have COMPLETELY READ and UNDERSTOOD ALL information in this Manual before unpacking, installing and using this Product. Keep the Manual in a safe place for future reference or download it from www.avonic.com.
⚡	Failure to follow the SAFETY NOTES as described in this chapter could result in fire, electric shock, injury, or damage to the Product or other property.
⚡	Power the Product ONLY with the included cable and power adapter. Other adapters may not meet applicable safety standards, and could pose a risk of death or injury when connected.

Intended Use

❗	This Product is intended to control one or more (Avonic) PTZ cameras. See also section Intended Use and Non-Intended Use for details.

Handling

⚠️	To prevent the risk of injury, take the following precautions when handling this Product: • Handle the Product with care. It is made of metal and plastic and has sensitive electronic components inside. • The Product can be damaged if dropped, burned, punctured or crushed, or if it comes into contact with liquid. • If you suspect any damage to the Product, discontinue its use, as it may cause overheating or injury.

Installation

⚠️	To prevent the Product from falling down which may cause injuries: • Set up this Product on a hard, stable surface. • Ensure the construction is capable of supporting four times the weight of the Product. (See 'General Specifications > Weight product' in the Product Datasheet for the exact weight.) • Use a safety loop or drop protection that prevents the Product from falling if the construction fails. • During installation, NEVER install a Product above a person. • Check the installation at least once a year. An improper construction could cause the unit to fall off, resulting in personal injury.

Ventilation

⚠️	To prevent the risk of life-threatening injury or damage to the Product or other property, caused by electric shock or fire hazard due to overheating: • Maintain adequate ventilation by NOT installing or placing the Product unit in a bookcase, built-in cabinet or any other confined space. • Ensure that curtains or any other material does NOT obstruct the ventilation.

Repair

Take the following precautions if the Product should be repaired:

- Don't open this Product and don't attempt to repair it yourself. Disassembling the Product may damage it or may cause injury to you.
- If this Product is damaged, malfunctioning, or if it comes into contact with liquid, contact Avonic or an Avonic Authorized Service Provider.
- Repairs by service providers other than Avonic or an Avonic Authorized Service Provider may not involve the use of Avonic genuine parts and may affect the safety and functionality of the device. You can find more information about repairs and service at www.avonic.com.

Power and Adapter

To prevent the risk of life-threatening injury or damage to the Product or other property, caused by electric shock or fire hazard:

- Power this Product ONLY with the included cable and power adapter. Other adapters may not meet the applicable safety standards. They could pose a risk of death or injury when connected.
- Do NOT use damaged cables.
- Do NOT power the Product in a moist / wet environment.
- Before you power the Product, ensure the cable is fully inserted into the power adapter.
- Plug the power adapter directly into a power outlet.
- Do NOT use the power adapter at a moist / wet location.
- Do NOT connect or disconnect the power adapter with wet hands.
- Keep the Product, cable, and power adapter in a dry and well-ventilated area when in use.
- Stop using the power adapter and any cables if any of the following conditions exist:
    - The power adapter plug or prongs are damaged.
    - The cable becomes frayed or otherwise damaged.
    - The power adapter is exposed to excessive moisture, or liquid is spilled into it.
    - The power adapter has been dropped, and its enclosure is damaged.

Atmospheric Conditions

To prevent the risk of injury or damage to the Product or other property caused by a potentially explosive atmosphere:

- Do NOT use this Product in an area with a potentially explosive atmosphere, such as areas where the air contains high levels of flammable chemicals, vapors, or particles (such as grain, dust, or metal powders), may be hazardous.
- Exposing this Product to environments having high concentrations of industrial chemicals, including near evaporating liquified gasses such as helium, may damage or impair this Product functionality.
- Obey all signs and instructions.

PRODUCT OVERVIEW

Description

The Avonic AV-CON300-IP is an advanced IP PTZ camera controller and compatible with the Avonic cameras as well with other brands that supports VISCA, Visca over IP, Pelco-D and Pelco-P protocols. Switch easily between auto and manual focus, Aperture and white balance settings, save and recall presets and connect multiple controllers to multiple cameras.

Features

The Avonic CON300-IP has the following features:

Number of Presets
With this controller it is possible to control up to 255 cameras and up to 10 presets per camera.

Connection
The CON300-IP controller supports the VISCA, Visca over IP, Pelco-D and Pelco-P protocol and can be connected to RS232/485 or via LAN ethernet connection.

Direct Control
This controller gives you direct control over the most important camera settings like Pan, Tilt, Zoom. But also PTZ speed, Focus, Iris, Brightness, White Balance and R/B color correction can be controlled easily. Access all other settings of the camera easily through the OSD of the camera using the controller.

Mix 'n match serial and IP control
Due to the added IP functionality the AV-CON300-IP is a true hybrid solution for new and existing installations.

UNPACKING

This chapter outlines what is included in the product package and provides instructions for safely unpacking the product, as well as guidelines for returning the product if needed.

Package Contents

The following tables contains an overview of the package contents of the Product.

No.	Quantity	Description	Avonic SKU
1	1 pc	PTZ Camera Controller	AV-CON300-IP
2	1 pc	* Power Supply 12V/2.5A	AV-CON300-PSU
3	1 pc	5 way Phoenix Connector	AV-PHOENIX-5
4	1 pc	RJ45 to DIN-8 cable for RS232	AV-CON300-DIN

The Phoenix Connector is already plugged in at the back of the controller.

Each item is visualized below and referenced by the associated number in the table above:

Figure 3: Package Contents

Power Adapter Usage

* Use only the Power Adapter of GME Technology (Shenzhen) Co., ltd with model number: GME60C - 120400FDR in combination with the CON300. Using another Power Adapter may lead to injury and/or damage to the product. See the picture of the Power Adapter label below:

Figure 4: Power Adapter label

Unpacking the Controller

Execute the following steps to unpack the CON300-IP and associated components:

1. Open the box.
2. Verify the following on and inside the box:
    - If the box and the plastic CON300-IP bag are sealed.
    - If the CON300-IP is placed inside the box in its protective foam.
    - If the contents of the box matches exactly the items as described in Package Contents.
    - If this is NOT the case, contact Avonic and stop here. See also the picture below:

CON300-IP in box

CON300-IP Accessories (PSU and RJ45 cable)

3. Break the seal of the sealed bag.
4. Take the CON300-IP out of the bag.
5. Install the CON300-IP following the steps as provided in the chapter INSTALLATION on page 14

Return Procedure

If, for any reason, you have to return the camera to Avonic, Execute the following steps:

1. Place the CON300-IP back in its protective foam.

2. Place the CON300-IP with **all** of its components in the box.

3. Verify that the contents of the box **exactly** matches the items as provided in Package Contents.

4. Contact Avonic for the Return Procedure.

INSTALLATION

This chapter outlines the necessary steps for a safe and proper installation of the controller. There are two methods available to install the controller:

1. Connecting a controller to a Camera
2. IP (Network) Connection

> ⚠️ Take the following precautions to prevent the Product from falling down which may cause injuries:
> - Set up this Product on a hard, stable surface.
> - Ensure the mounting construction is capable of supporting four times the weight of the Product. (See **'General Specifications > Weight product'** in the Product Datasheet for the exact weight.)
> - Use a safety loop or drop protection that prevents the Product from falling if the mounting construction fails.
> - During installation, NEVER install a Product above a person.
> - Check the installation at least once a year. An improper installation could cause the unit to fall off, resulting in personal injury.

Connecting a Controller to a Camera

A controller gives you direct control over the most important camera settings (e.g., Pan, Tilt, Zoom, Focus, White Balance). You can access all other settings through the **OSD Menu** of the camera using the controller. The CON300-IP has the following connections:
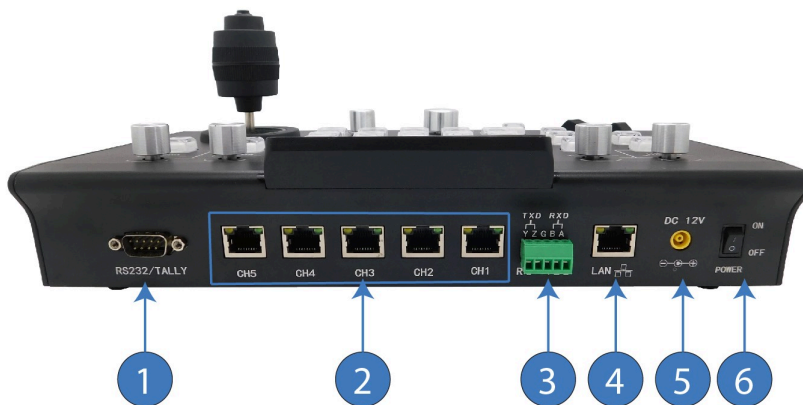
Number	Port
1	Firmware upgrade connector (9-pin DSUB male)
2	Camera control channel CH1-CH5 (RJ45)
3	5-pin Phoenix interface (only CH1)
4	Lan/Ethernet connection standard RJ45
5	12V DC power supply connector
6	Power switch

Connect the controller as follows to the camera:
1. Connect the power supply to the 12v DC connector **(5)**.
2. Connect an Ethernet cable to the LAN/Ethernet port **(4)**, the supplied RJ45 cable to one of the camera control channel ports **(2)**, or connect the Phoenix connector to the 5-pin Phoenix interface **(3)** for a serial connection (via a 2-pin Phoenix connector to the camera).
3. Switch the power to ON **(6)**.

RJ45 to Mini DIN-8 plug

The Avonic AV-CON300-IP 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. The Mini DIN 8 connector is used for RS232.
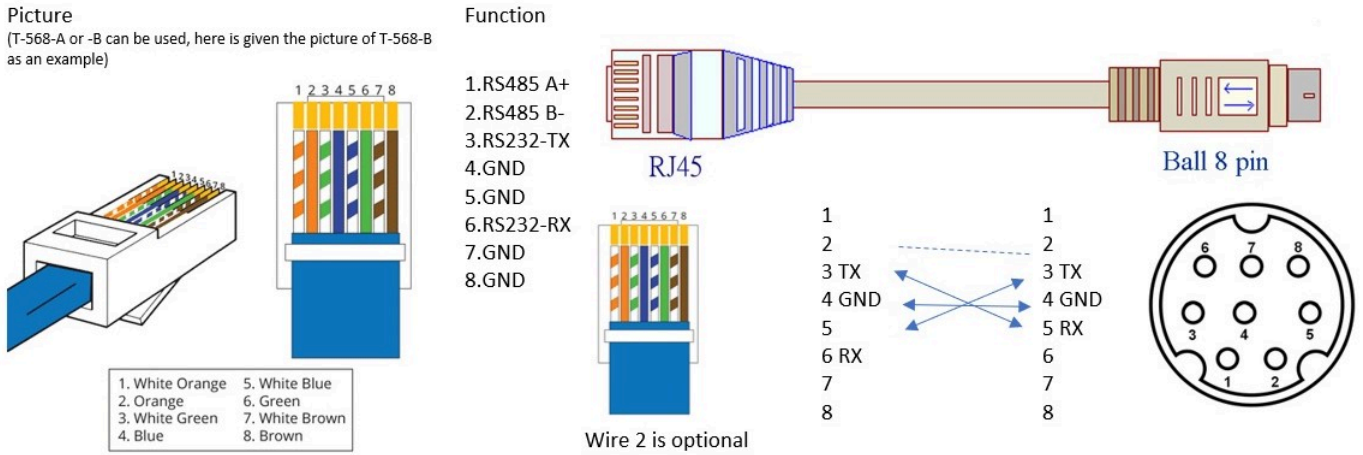
> To control the cameras assigned to the other channels, more RJ45 cables are required.

Connect the cable using the diagram below:

Figure 5: RJ45 to Mini DIN-8 plug diagram

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

Function

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

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

RJ45 — Ball 8 pin

1	1
2	2
3 TX	3 TX
4 GND	4 GND
5	5 RX
6 RX	6
7	7
8	8

Wire 2 is optional

RS-485 Interface

It is possible to connect a 5-pins Phoenix connector to the controller using a cable to a 2-pins Phoenix connector. This 2-pins Phoenix connector can be connected to the RS485 interface on the camera.

> It is only possible for the camera(s) assigned to channel 1.

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

COM port settings

In default working mode, an Avonic camera is able to connect to the CON300-IP 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.

IP (Network) Connection

Execute the following steps to connect the controller and an Avonic PoE camera to a LAN:

Connect the controller and the camera to a (PoE) switch. Use for this an Ethernet connection. See Connecting a Controller to a Camera. See also the diagram below:

> ! In case more cameras are connected to the controller, each camera needs to be addressed the right way to a camera number of the controller. The following settings need to match in both camera and controller:
> 1. Protocol (VISCA, PELCO-P or PELCO-D)
> 2. Camera address number (1, 2 or n)
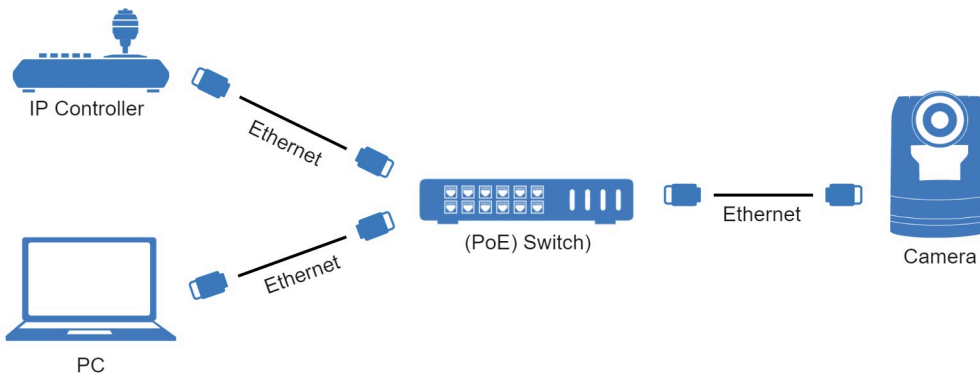> 3. Communication settings as baud rate (9600), parity, etc.

Figure 6: IP Network Connection Diagram

RS-232 (VISCA) Network Connection

Execute the following steps to connect the controller to the back of the camera(s) via RS-232:

1. Make the connection using **daisy chaining** network architecture.
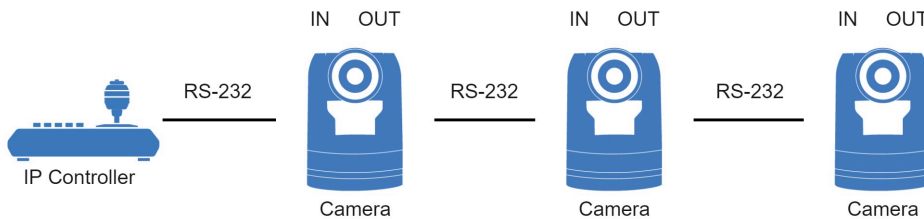2. Keep in mind that the maximum cable length for RS-232 is 10-15m.

Figure 7: RS-232 Network Connection Diagram

RS-485 Network Connection

Execute the following steps to connect multiple cameras to RS-485:

1. Attach the cameras to a 2-wire twisted pair bus (maximum length 1200m) that is terminated at both ends with a 120Ω-impedance resistor.
2. Ensure that the maximum distance from the bus to the camera or controller is 5m. If you use only ONE camera, the impedance resistor is not needed.
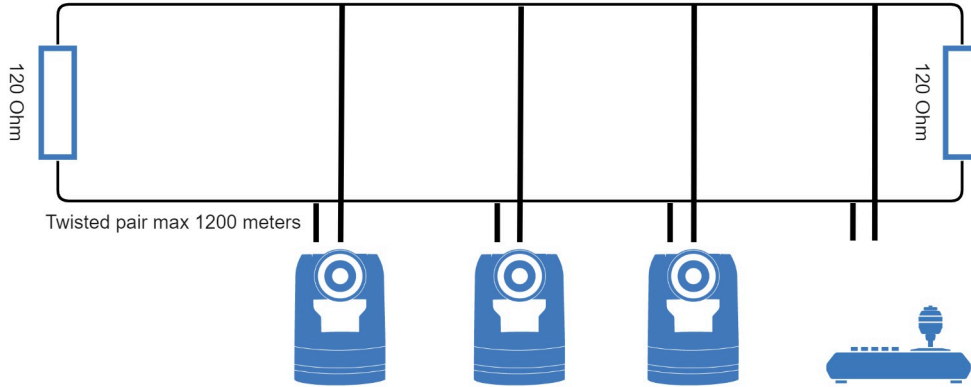

Figure 8: RS-485 Network Connection Diagram

OPERATION

This chapter will explain the operation instructions for using the CON300-IP.

OSD Menu

The CON300-IP is provided with an **On-Screen Display (OSD) Menu**.

This is an integrated on-screen menu that can be accessed within the CON300-IP to change specific functions in order to control the camera.

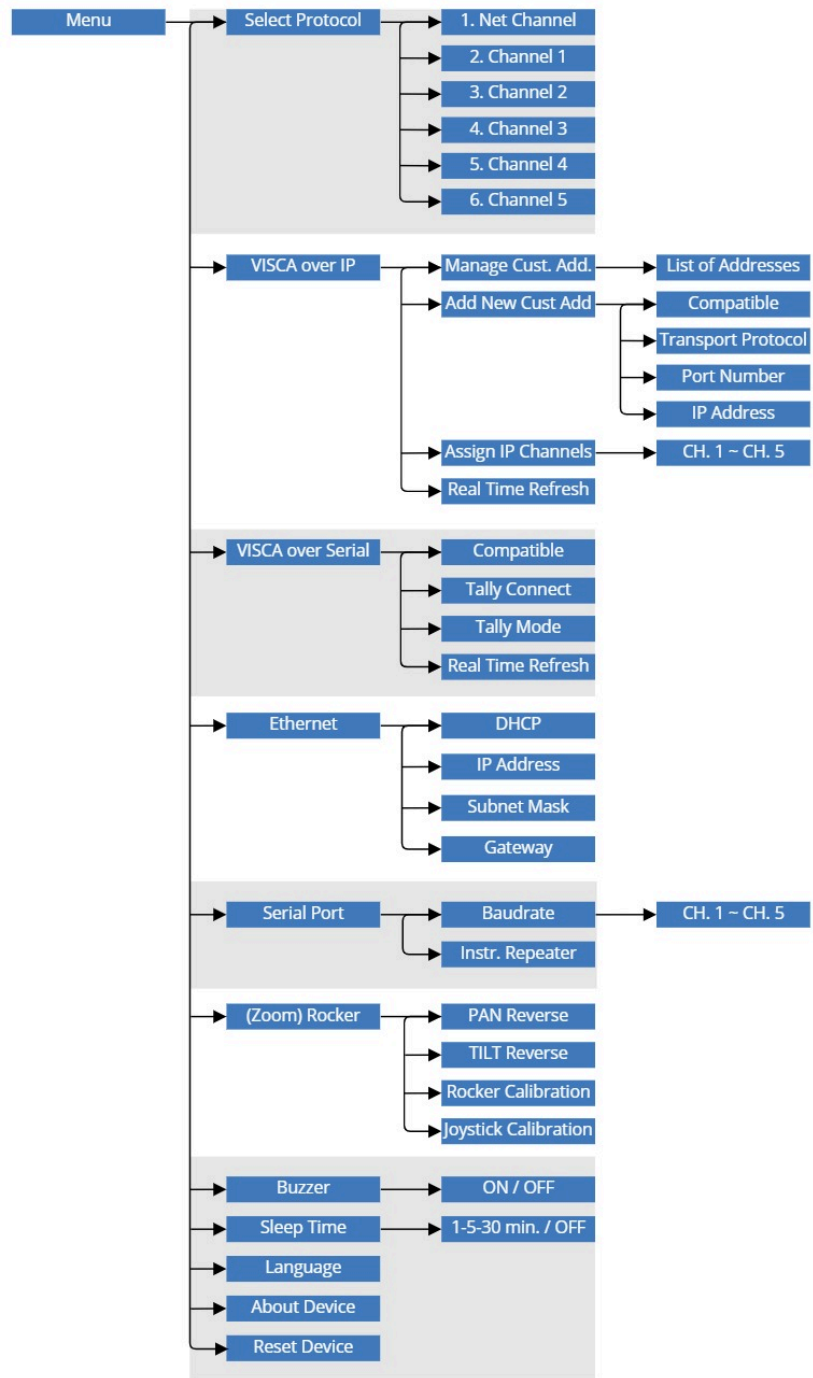The OSD Menu is visible on the screen on the controller.

Figure 9: OSD menu structure

Button Overview

Nr.	Button		Nr.	Button
1.	Manual Iris Control		11.	Toggle White Balance modes
2.	Manual Brightness Control		12.	CH1~CH5 select camera channel 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 (Number) Keys [0~9]
8.	Red gain		18.	PTZ control joystick
9.	Blue gain		19.	Joystick button
10.	Toggle menu on/off		20.	Information Display

Joystick control

With the joystick it is possible to move (pan/tilt) the camera(s), but you can also use the joystick to navigate in the menu of the controller itself. See the table below:

| Joystick control	Functionality
	Scroll through the menu, the menu features, or feature values
	Enter a menu feature
	Left the menu feature/ or left the CON300-IP menu
	Zoom in/ Enter a menu feature
	Zoom out/ left a menu feature
	When any value has changed, press to enter the value
	1. Enter CON300-IP Menu 2. One press to go one step back in the Menu (in CON300-IP menu mode) 3. Another press to save the settings and exit the Menu

First Start

Follow instructions below when you want to start the CON300-IP for the first time:

1. The controller has a physically ON and OFF switch at its back. Switch this button to ON.
2. The screen on the controller will light up. Press the Menu key.
3. In the menu move the joystick up and down until you see **Ethernet**. Click the joystick button to enter this setting.
4. Move the joystick up and down to select IP address and click the joystick button to enter.
5. Enter the IP address you want to give for the CON300-IP and click the joystick button to confirm.
6. Leave the menu of the controller. The IP address will be automatically saved. See also Ethernet.

Figure 10: Example of the Ethernet settings
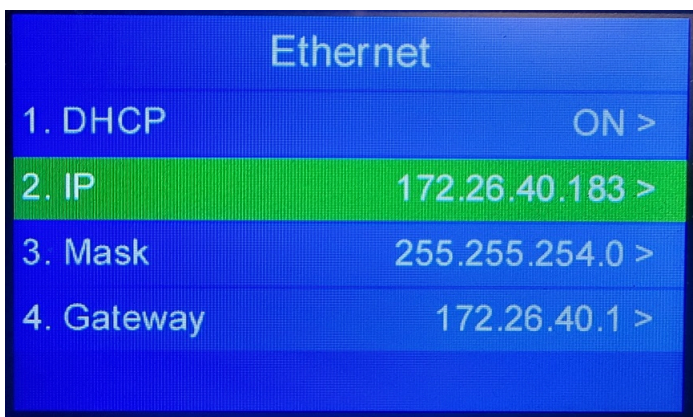
Menu structure

The menu structure will explain all the menu features of the CON300-IP menu itself. See Camera OSD menu if you want to use the CON300-IP to navigate through the OSD menu of the camera.

Follow instructions below to navigate through the CON300-IP menu:
1. Press Menu to enter the CON300-IP menu.
2. In the menu, move the joystick up/down to scroll through the menu options.
3. Move the joystick to the right to choose the highlighted menu features.
4. Move the joystick up/down again to change the menu features or feature values.
5. Press the Menu Button to leave the menu and another press to save the settings and exit the CON300-IP menu.

- It is also possible to move the joystick to the left to leave a menu feature.
- Or to twist the joystick clockwise to enter a menu feature and to twist the joystick anti-clockwise to leave a menu feature.

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
```

Under **Select Protocol** you can choose which protocol you want to use to control the camera(s). Select **Net Channel** if you want to control your camera(s) over IP. Select **Channel 1 - 6** to control a camera that is assigned to that channel, using a serial connection (VISCA/ PELCO-D/PELCO-P).

Use the NET button on the controller to switch between the VISCA over IP and serial modes.

VISCA over IP

```
VISCA OVER IP (ADDRESSING AND PROGRAMMING OF ALL CAMERAS OVER IP)

    ▶           Manage Custom Address
        1           Compatible:             Standard (CM70 / CM40 series / Legacy (CM60 series) / Auto
        2           IP Address:             Edit IP Address of the (to be) controlled camera
        3           Transport Protocol:     UDP / TCP
        4           UDP / TCP Port:         Enter port number (1259 is standard)
        5           Delete this Camera:     Upon pressing on the joystick, the camera will be deleted

                    Add New Custom Address
        1           Compatible:             Standard (CM70 / CM40 series / Legacy (CM60 series) / Auto
        2           Transport Protocol:     UDP / TCP
        3           UDP / TCP Port:         Enter port number (1259 is standard)
        4           IP Address:             Edit IP Address of the (to be) controlled camera


    ▼▲      Select Item
    ◄►      Change Value


    [Menu]  Back
```

When you have chosen to control the camera(s) over IP, you can enter VISCA over IP to add a new IP address or manage the existing IP address. It is also possible to assign channels to IP addresses.

> Read Camera selection and Switch between Serial and IP mode, if you want to select and control a camera.

Manage Custom (existing) Address

Follow instructions below:

1. Select the Camera/ IP address from the list that is displayed on the screen of the controller.
2. Choose the compatibility mode with which your camera is compatible and click the joystick button to confirm:

   - Standard (Avonic CM40 series camera or CM70 series camera)
   - Legacy (Avonic CM60 series camera)
   - Auto (The controller will automatically recognise the camera model to select the correct compatibility mode for that camera. When you change the camera model connected to a specific IP address, the controller will automatically change the compatibility mode.)

3. Edit the IP address of the controlled camera using the Number (Position) Keys and click the joystick button to confirm.
4. Choose the protocol to transport the commands with: UDP or TCP and click the joystick button.
5. Edit or enter the UDP/ TCP Port number (using the Number Keys). Standard is 1259. Click the joystick button.
6. Move the joystick to the right and hold it in that position to delete the camera.

Add new Custom Address

Choose **add new Custom Address** to enter a new IP address to control a camera that you recently added to your local network and follow the instructions below:

1. Choose the method with which your camera is compatible and click the joystick button to confirm. See above.
2. Choose the protocol to transport the commands with: UDP or TCP and click the joystick button.
3. Enter the UDP/TCP port number (using the Position (number) Keys). Standard is 1259. Click the joystick button.
4. Edit the IP address of the camera to be controlled using the Number Keys and click the joystick button. A message on the display pops up with the text 'A new camera has been added'.

Assign IP Channels

```
VISCA OVER IP (Continued)

  ▶           Assign IP Channels
       1         Choose Channel 1 ~ 5
       2         Select Camera:          Choose a camera from the list added under 2.2


                 Real Time Refresh:      ON / OFF



  ▼▲    Select Item
  ◀▶    Change Value


  [Menu]   Back
```

Choose Assign IP channels, if you want to control the camera by using one of the channels. Follow instructions below:

1. Create first a new IP address! Follow Add new Custom Address.

2. Select Assign IP channels and choose a channel (1-5). Click the joystick button to confirm.

3. Go to **Select Camera** and scroll through the list, select the IP address you just created and click the joystick button. The display will go back to the previous screen and the newly created IP address will be shown next to the selected channel.

4. Set the Real time Refresh to ON or OFF. See below.

> **Reassign channel 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.

Real time Refresh

When the Real time Refresh setting is set to ON, it means that the controller will inquire every second the status of the camera and give you feedback about its settings. So you know if the camera is set to auto focus or manual focus, or auto exposure or manual exposure etc.

VISCA over Serial

```
VISCA OVER SERIAL

  ▶    1       Compatible:           Standard (CM70 / CM40 series / Legacy (CM60 series) / Auto
        2       Tally Connect:        By Channel / By Address
        3       Tally Mode:           OFF / Output / Normal
        4       Real Time Refresh:    ON / OFF


  ▼▲    Select Item
  ◀▶    Change Value


[Menu]    Back
```

Follow instructions below to control the camera using VISCA over Serial:

1. Choose the compatibility mode: standard (Avonic CM40/ CM70 series camera), Legacy (Avonic CM60 series camera), or Auto (assigns automatically the correct compatibility mode).

2. Select **channel** if you want to control the camera using the [CH] buttons, or **address** if you want to control the camera using the ADDR button and Number buttons.

3. Select Tally mode Off, Output, or normal.

4. Select Real time Refresh ON or OFF. See Real time Refresh.

> You can use 7 cameras per Channel button when using VISCA over serial and 1 camera per address.

Ethernet

```
ETHERNET

  ▶    1.  DHCP            ON / OFF
        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
```

Ethernet will set the network settings for the CON300-IP. Follow instructions below:

1. If you have a DHCP server connected with your network, set this feature to ON.
2. Set the IP address to connect the CON300-IP to your local network. Use the number buttons and click the Joystick button to confirm.
3. Set the subnet mask using the number buttons and click the Joystick button.
4. Set the Gateway using the number buttons and click the Joystick button.

Serial Port

```
SERIAL PORT

   ▶      1.  Baudrate                  Channel 1 ~ 5 / 2400 / 4800 / 9600 / 19200 / 38400 / 115200 bps
          2.  Instruction Repeater      OFF / Channel X as input


   ▼▲      Select Item
   ◀▶      Change Value

   [Menu]  Back
```

The Serial Port option can be used to set the Baud Rate.

The Baud Rate must match exactly the Baud Rate setting in the camera.

Follow instructions below:

1. Move the joystick up and down to choose a channel (even if you have chosen an address to connect with the camera).
2. Set the Baud Rate for that channel to control the camera.
3. Set the Instruction Repeater to the channel you just set the baud rate for.

(Zoom) Rocker

```
(ZOOM) Rocker

   ▶      1.  PAN Reverse               OFF / ON
          2.  TILT Reverse              OFF / ON
          3.  Zoom Rocker Calibration   Follow on screen instructions
          4.  Joystick Calibration      Follow on screen instructions


   ▼▲      Select Item
   ◀▶      Change Value

   [Menu]  Back
```

With the (Zoom) Rocker setting it is possible to synchronize the picture for multiple cameras.

Follow instructions below:

1. Use the Joystick to Enter the PAN reverse feature. And use the Joystick again to set the PAN reverse OFF or ON. The same can be done for the TILT reverse feature.
2. Enter **Zoom Rocker calibration** to calibrate the PAN and TILT reverse feature. Press [Zoom Tele] hard and release it. Then press the Joystick button. Do the same with [Zoom Wide].
3. Enter **Joystick calibration**. A warning appears that you must not touch the Joystick for 5 seconds. After that the JOYSTICK is automatically calibrated and a screen is popping up that the calibration was successful.

Buzzer

```
BUZZER

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


   ▼▲      Select Item
   ◀▶      Change Value

   [Menu]  Back
```
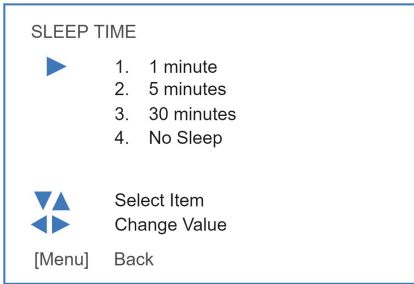
Use the joystick to switch between ON and OFF and click the joystick button for confirmation. When the buzzer is ON, the controller will make a sound when you press a button.

Sleep time

```
SLEEP TIME
    ▶        1.   1 minute
             2.   5 minutes
             3.   30 minutes
             4.   No Sleep


    ▼▲       Select Item
    ◀▶       Change Value

    [Menu]   Back
```
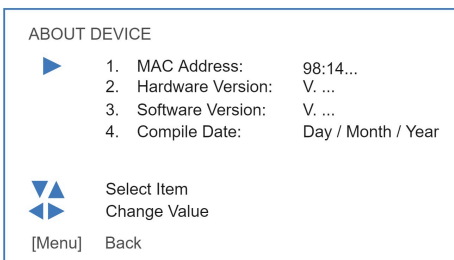
Sleep time will set before the CON300-IP will fall asleep. Move the joystick up and down to switch between the settings and click the joystick button to save.

Language

```
Language
    ▶        English



    ▼▲       Select Item
    ◀▶       Change Value

    [Menu]   Back
```
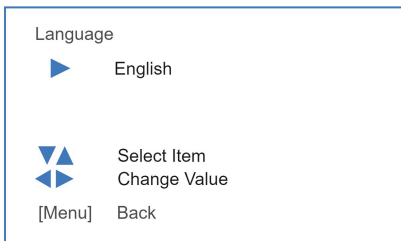
Language is always English. This cannot be changed.

About Device

```
ABOUT DEVICE
    ▶        1.   MAC Address:        98:14...
             2.   Hardware Version:   V. ...
             3.   Software Version:   V. ...
             4.   Compile Date:       Day / Month / Year


    ▼▲       Select Item
    ◀▶       Change Value

    [Menu]   Back
```

Under About Device you can see the MAC address of the CON300-IP, the hardware and software version installed and the compile date.

Reset Device

```
RESET DEVICE
    ▶        1.   NO
             2.   YES


    ▼▲       Select Item
    ◀▶       Change Value

    [Menu]   Back
```
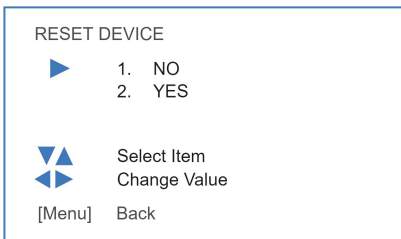
This will Reset the CON300-IP to its factory settings. Follow instructions below:

1. Move the joystick up and down to switch between Yes and No.

2. Select Yes if you want to reset the device and click the joystick button. The controller will reset all settings and display the rocker switch calibration. Follow instructions on screen to complete the reset.

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Shortcuts

With the CON300-IP it is possible to make some adjustments to the settings of the camera(s) by using only one or two buttons on the controller. Read below to see what the CON300-IP is capable of.

PTZ Operation and (Zoom) Rocker Button

	Pan, tilt to move the camera in every position.
	Zoom in and out.
	Press to set the camera in home position.
	Zoom in and out when moving the camera.
	Finetune PTZ speed (how fast the camera will move).

Follow instructions below:

1. Move the joystick in every direction to move the camera in a specific position.
2. Twist the joystick to zoom in and out.
3. Press the button on the joystick to set the camera in home (default) position.
4. If you want to zoom in and out while moving the camera, press the (zoom) Rocker button and move the joystick at the same time.
5. Turn the PTZ speed knob to change the speed how fast the camera will move.

Camera selection

The selection of a camera or multiple cameras depends on communication protocol that is used by that camera or cameras. See VISCA over IP and VISCA over Serial in the menu of the CON300-IP.

Before you can select a camera, you need to assign first a camera to a specific channel and/or address. This can be done in the menu of the CON300-IP. See the links above.
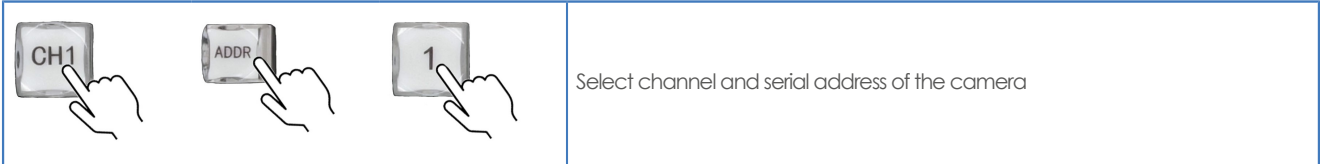
IP camera selection

	Press to select a channel to which the cameras is assigned.
	Select the camera from a list of IP addresses.

Follow instructions below to select a camera:

1. Press one of the 5 channel buttons to select the camera or cameras you wish.

2. If you have multiple cameras assigned to one channel and you wish to control one of these, press the ADDRESS button to call a list of IP addresses and move the JOYSTICK up and down to select a specific IP address (camera).

3. Press the ADDRESS button again to leave this list.

Serial camera selection

CH1	ADDR	1	Select channel and serial address of the camera

Follow instructions below to select a camera:

1. Press the channel button to which the camera is connected with.

2. Press the address button and the NUMBER button to select the IP address of the camera.

Switch between Serial and IP mode

Use the NET button to switch between the serial and IP mode. See picture below:

Serial mode display

In serial mode you will see on the display:

1. Status of current protocol and address in use.
2. Actual send/receive status and status of the LAN connection.
3. Status of current command.
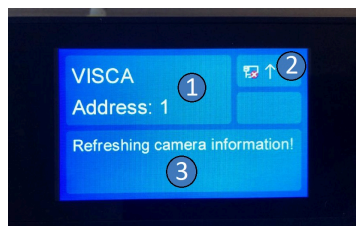
IP Mode Display

In IP mode you will see on the display:
1. Status of current protocol and IP address in use.
2. Actual send/receive status and status of the LAN connection.
3. Status of current command.

Set, call or delete a preset

With the CON300-IP you can make, call or delete a preset. A preset is an adjustment to the settings of the CON300-IP that you can frequently use. In most cases this is a specific position of the camera, but if you have turned ON the Real time Refresh in the menu of the CON300-IP, the controller will remember the status of the camera (if the camera is set to auto/manual focus, auto/ manual exposure, auto/manual white-balance etc).

		Set Preset
		Call Preset
		Delete Preset

Set (make) a preset

Follow instructions below to set (make) a preset:
1. Set the camera in the desired position.
2. Make the desired changes to the focus, exposure or white-balance setting using the CON300-IP, if you have turned ON the **Real time Refresh** option.
3. Press SET (button will light up) and the desired NUMBER button. If you want to make another preset, set the camera again in the desired position, make your changes to the focus, exposure, or white-balance settings (in case **Real time Refresh** in ON) and press another NUMBER button.
4. Press the SET button again (button will light off) to return to the normal operation.

Call a preset

Follow instructions below to call a preset:
1. Press the NUMBER button of the preset you want to call. The camera will turn automatically in that position. Looking at the controller, you can see if you have turned on auto focus, exposure and/or white-balance. These buttons will light up if this is the case.

Delete a preset

Follow instructions below to delete a preset:
1. Press RESET (button will light up) and the NUMBER button of the preset you want to delete.
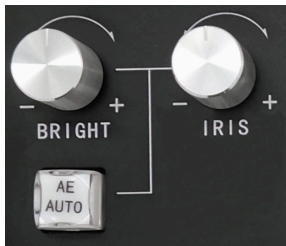2. Press RESET button again (button will light off) to return to normal operation.

Focus, exposure and white-balance

> On the controller there is a fourth button that is not visible on the pictures below. The reason is that these buttons do not have an exposure or white-balance functionality on the controller.

	Press the button for autofocus, or turn the knob for manual focus.
	Press the button for auto-exposure, or turn the bright and iris knobs for manual exposure.
	Press the WB mode button for switching the white-balance mode, or turn the RGain and BGain knobs for manual white-balance.

Follow instructions below:

1. Press the Autofocus button (at the left) to focus automatically the camera. Or turn the Focus Knob (at the right) to focus the camera manually.
2. Press the AE auto button for switching to auto-exposure mode. Or turn the Bright and Iris knobs to make manually adjustments to the exposure settings of the camera.
3. Press the WB mode button to switch between the white-balance modes (WB AUTO, INDOOR, OUTDOOR, ONE PUSH, ATW, MANUAL) of the camera. Or turn the RGain knob (making red darker and lighter) and BGain knob (making blue darker and lighter) for manual adjustments to the white-balance settings.

> There is no need to touch the WB mode, AE auto and auto focus buttons again to set the auto function of these settings OFF. As soon as you touch the turning knobs, it will switch to the manual mode of these settings.

OSD menu of the camera

It is possible to use the CON300-IP to call and navigate through the OSD menu of the camera.

	LONG Press to enter the OSD menu of the camera/ press again to go one level up/ leave OSD menu.
	Navigate through the settings of the OSD menu.
	Choose a menu setting.
	Leave a menu setting.
	Choose a feature of the menu setting.
	Change the value of the feature.

Follow instructions below:

1. Press the menu button **LONG** until the controller displays on the screen: "Camera menu ON/OFF".
    If the camera is connected (and selected, see Camera selection), the controller will display the OSD menu of that camera. The Menu button will be light up red and turns off after a moment. The controller is now ready to navigate the OSD of the camera.
2. Move the Joystick up and down to navigate through the settings of the OSD menu.
3. Move the Joystick to the left to choose a menu setting.
4. Move the Joystick to the right to leave a menu setting.
5. Twist the Joystick clockwise to choose a feature of the menu setting.
6. Twist the Joystick anti-clockwise the change the value of the feature.
7. Press the Menu button to go one level up in the OSD menu, or to leave the OSD menu.

MAINTENANCE

Maintenance

Take the following actions to maintain the CON300-IP:

- If you will not be using the CON300-IP for a long time, disconnect the AC powercord of the AC adaptor to the outlet.
- Use a soft (dry) cloth or tissue to clean the controller.
- Please use a soft dry cloth to clean the controller. If the CON300-IP is very dirty, clean it with diluted neutral detergent.

Do not use any type of solvents, which may damage the surface.

Usage Precautions

Take the following precautions:

- Do not operate close to powerful electromagnetic radiation, such as TV or radio transmitters, etc.

TRANSPORT AND STORAGE

Specific guidelines apply for transportation and storage of the CON300-IP. Follow the guidelines below:

> **Transport:**
> 1. The CON300-IP needs protection against vibration and shock. Ensure that the CON300-IP cannot move inside its box and inside the transportation vehicle. Ensure also that the box is properly sealed.
> 2. Avonic's address and/or the address of the local distributor should be clearly visible on the package.
> 3. Keep the transportation vehicle dry and maintain the temperate and humidity when transporting the CON300-IP. See **'Operating humidity'** and **'Storage temperature'** in the provided **Datasheet** for the applicable values.

> **Storage:**
> 1. Maintain adequate ventilation in your storage room and ensure that any (other) materials does not obstruct the ventilation.
> 2. Do NOT store the CON300-IP in a storage room together with (highly) flammable materials or where the air contains such chemicals.
> 3. Ensure that the CON300-IP has protection against vibration and shock inside the storage room and cannot move or fall of.
> 4. Keep the storage room dry and maintain the temperate and humidity when storing the CON300-IP. See **'Operating humidity'** and **'Storage temperature'** in the provided **Datasheet** for the applicable values.

DISPOSAL AND RECYCLING

In general, the term 'E-Waste' or 'Waste of Electrical and Electronic Equipment' applies to items of all types of electrical and electronic equipment and its parts that have been discarded by the owner as waste without the intention of re-use.

⚠️ E-Waste, like the CON300 controller and **ALL** of its accessories, needs to be disposed **separately** from normal waste. See the symbol below that can be found on the product and package label:

⚠️ Avonic is NOT responsible for personal data left in the settings of the controller as far as this is possible (like camera names, IP Addresses, user names, passwords etc.) **Delete** personal data **BEFORE** you send the controller back to Avonic!

Send the controller and all its accessories to Avonic or your **local distributor**. See Package Contents to see what you have to send back. Follow the instructions from the Return Procedure.

Avonic outsources the disposal and recycling of its E-Waste camera materials to **Stichting Open**.

See **https://stichting-open.org/ for more information about the disposal and recycling.**

TROUBLESHOOTING

General

1. Turn the CON300-IP off and on again and check if the problem persists.
2. If it does, restore to the factory default.

Power Issues

No display and no button lights:

1. Check the net power.
2. Check the power supply.

Serial functionality issues

Cannot control the camera (controller is not responding):

- Check serial cable(s) and the RJ45 termination.
- Reset to factory default by choosing controller menu option 11.

IP functionality issues

Cannot control camera (controller is not responding):

- Check network cable.
- Check if the controller is in the same subnet as camera.
- Reset the factory default by choosing controller menu option 11.

APPENDIX A - DATASHEET SPECIFICATIONS

SPECIFICATIONS

Controller

Interface	5X RJ-45 RS485/RS232 - 1X RJ-45 IP
Baud rates	2400BPS, 4800BPS, 9600BPS, 19200BPS, 38400BPS, 115200
Protocol	PELCO-D, PELCO-P, VISCA, VISCA OVER IP
Number of cameras	UP TO 50 OVER SERIAL, UP TO 255 OVER IP
Number of presets	10 PER CAMERA
Joystick	3D-AXIS (LEFT/RIGHT, UP/DOWN, ZOOM IN/OUT)
Display	COLOR LCD WITH BACKLIGHT
Adjustment functions	PAN/TILT, ZOOM, FOCUS, BRIGHTNESS, IRIS, GAIN, WHITE BALANCE (AUTO, ONE-PUSH, RED/BLUE GAIN)

General Specifications

Input voltage	DC12V
Power consumption	8W
Power supply	12V3A
Power connector	EIAJ-4 - PHILMORE 255 PLUG
Operating temperature	0°C ~ 40°C
Storage temperature	-20°C ~+50°C
Operating humidity	≤90% (NON-CONDENSATION)
Color	Black
Dimensions product	29,5 CM X 18,5 CM X 7,0 CM
Weight product	1.7 KG
Dimensions box WxHxD (mm)	36 X 24 X 16 CM
Weight box	2.4 KG
Included	CON300, PSU, RJ45-8DIN-MALE CABLE, 9DSUB-FEMALE 9DSUB FEMALE CABLE

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AVONIC

PTZ Camera controller over IP and serial
AV-CON300-IP

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