

Avonic

AV-CM44-VCUC

HD PTZ Conferencing Camera 5x Zoom



User Manual

Version 1.0

Update notes:

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Introduction

Congratulations

Thank you for purchasing the Avonic AV-CM44-VCUC HD PTZ Conferencing Camera. 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

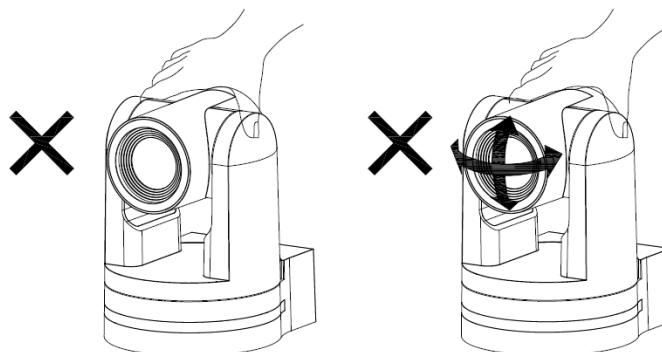
For any questions or suggestions, contact the reseller or the local distributor of Avonic. Find the local distributor on the website of Avonic. For the recent manual or datasheet, look at the Avonic website: www.avonic.eu

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.
- Use wall mount brackets or ceiling mount brackets available at Avonic for safe installation.
- 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 take-back procedure.

Handling precautions

Be cautious to take the camera by its base. When placing back the camera in its protective foam, be sure the lens is in horizontal position.



Package contents

Quantity	Description	Avonic SKU
1 pc	PTZ Camera	AV-CM44-VCUC
1 pc	Power Supply 12V/A	AV-CM40-PSU
1 pc	Remote Control	AV-CM40-RC
1 pc	RS232 9-pin male to 8-pin male	AV-CM-RS232

Accessories

Avonic Wall mount

SKU White : CM-WMW

SKU Black : CM-WMB



Avonic Ceiling mount

SKU White : CM-CMW

SKU Black : CM-CMB



Product Overview

The Avonic AV-CM44-VCUC is a high-quality PTZ camera, with USB2.0 output. The camera is designed for fixed installations and works very well in low light conditions. The camera is equipped with high quality components like a Panasonic CMOS sensor and a glass lens with 5x optical zoom. Control the camera over RS232 or RS485 with any controller with VISCA or PELCO support.

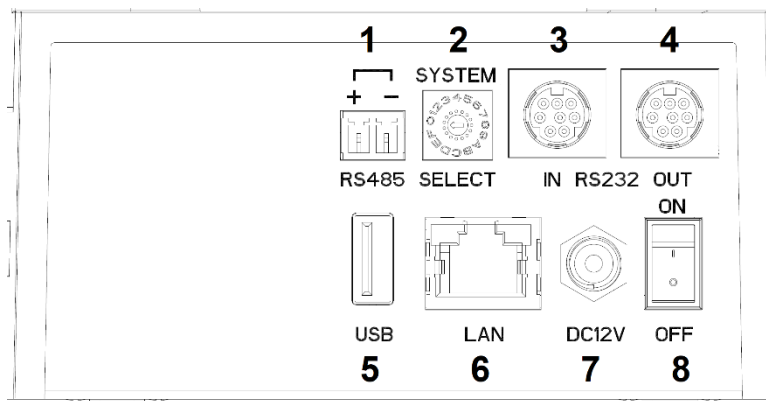
Features

- Apply high-quality 1/2.8 inch, 2.07 million effective pixels high-quality HD CMOS sensor to achieve maximum Full HD 1920 x 1080 high-resolution image.
- The output frame rate is up to 60fps in 1080P
- 5x Optical Zoom, glass lens.
- Remote Control Using RS232/485 interface, all the parameters of the camera can be remotely controlled.
- Leading autofocus algorithm for a fast, accurate and stable auto-focusing lens.
- Low noise and High SNR: Low Noise CMOS effectively ensures high SNR of the camera.
- Advanced 2D/3D noise reduction technology is also used to further reduce the noise while ensuring image sharpness.
- Quiet PTZ: By adopting a high accuracy step driving motor mechanism, it works extremely quiet and moves smoothly and very quickly to the designated position.
- Auto-Flip function
- Low-power sleep function: the consumption is lower than 500mW in sleep mode.
- Supports Multiple Control Protocols: VISCA, PELCO-D, PELCO-P protocols which can also be automatically recognized.

Installation

Connections

Input and Output Description



1. RS-485 two-wire serial communication with 2-pin Phoenix connector
2. System Selector (see Installation for more details)
3. RS-232 mini-DIN-8 IN (connect the supplied RS-232 cable)
4. RS-232 mini-DIN-8 OUT for daisy chaining RS-232 connection
5. USB2.0 Type A, UVC video output
6. RJ45 Ethernet connection (for firmware update only)
7. DC12V power with locking screw (connect the supplied DC PSU)
8. Power ON/OFF

System Select Switch

	0	-	8	720p30
	1	1080p50	9	720p25
	2	-	A	-
	3	-	B	-
	4	-	C	-
	5	720p50	D	-
	6	1080p30	E	-
	7	1080p25	F	-

CAUTION:

- a. After changing the switch, you need to restart the camera to take effect.

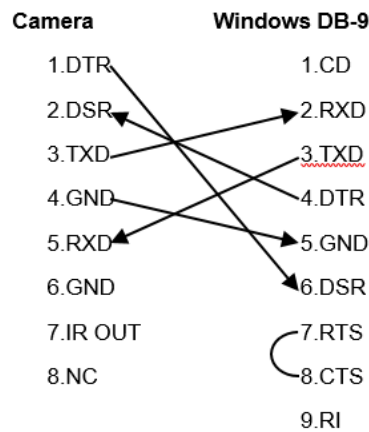
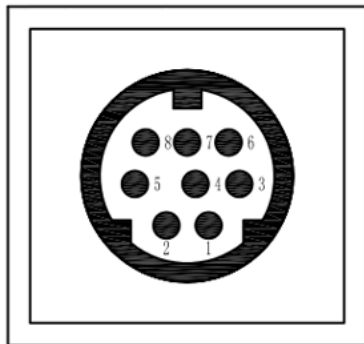
Power adapter

This equipment is equipped with a 12V/2A DC power supply. Insert the power supply according to the requirements, turn on the power switch.

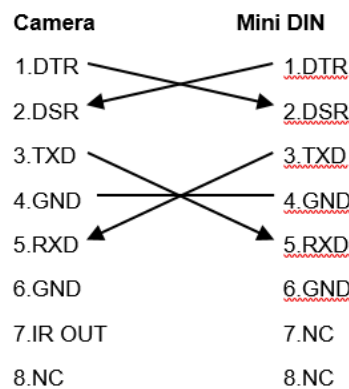
Power On

Pan-Tilt will rotate to the maximum position of top right after the camera started, then it returns to the center, the process of initialization is finished. (Note: If the position preset 0 has been stored, the position preset 0 will be called after initialization). From this point onwards the user can control the camera with RC or Serial Communication.

RS232 Interface

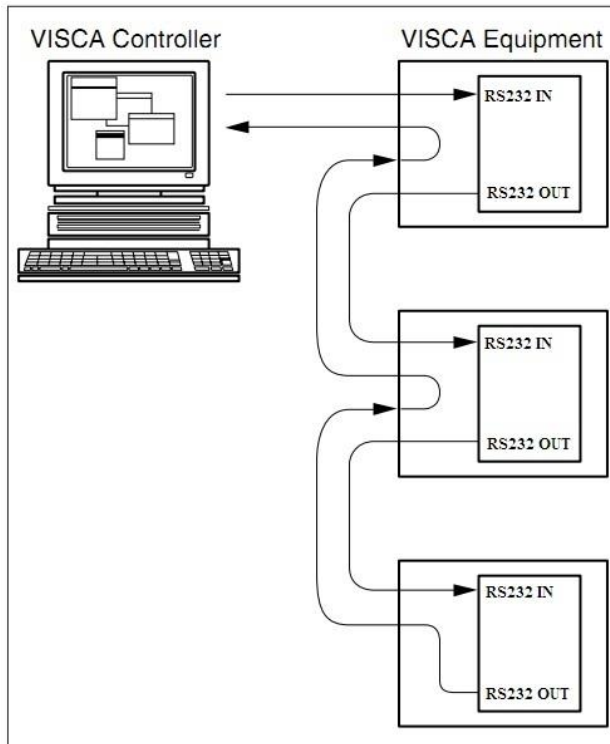


No.	Function
1	DTR
2	DSR
3	TXD
4	GND
5	RXD
6	GND
7	IR OUT
8	NC



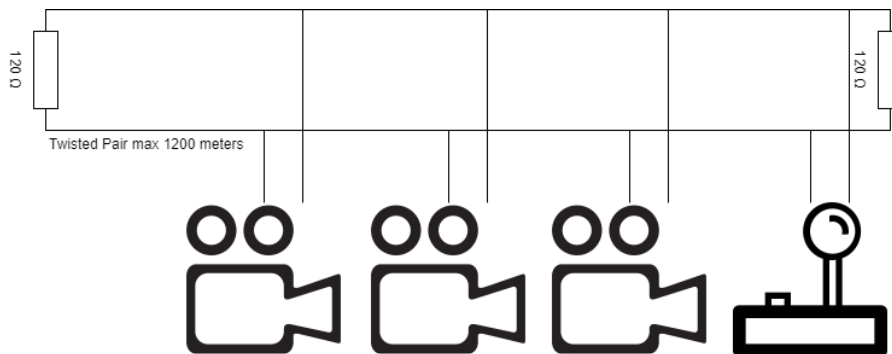
VISCA network connection diagram

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

The AV-CM44-VCUC is equipped with a limited WebGUI to perform a firmware upgrade. The camera can be attached directly to a PC with standard network patch cable or to a network switch. For further information, see chapter [Operation section WebGUI](#).

Operation

Remote Controller



- a. Set
- b. Power
- c. Camera select
- d. Number Keys
- e. Focus + -
- f. Auto/Manual Focus
- g. Zoom + -
- h. Set & Clear Preset
- i. PTZ keys (up/down/left/right)
- j. Home
- k. BLC (Back Light Control) ON/OFF
- l. Menu
- m. Function Keys (F1/F2/F3/F4)
- n. Blank buttons

a. Set

This button has no function with this camera.

b. Power

Press the power button for 3 sec to turn on the camera. After a short press, the camera will step into standby mode.

If the position preset 0 has been stored, the position preset 0 will be called up after initialization. Some camera models will turn to the back when turned off, this is called the “privacy mode”.

c. Camera select

Up to 4 different cameras can be controlled with 1 IR remote Control. With the camera select buttons (1,2,3,4) you can select the IR channel the remote control is using. The default camera IR channel is 1. So to control a camera on first use, please select camera 1 (IR channel 1) on the remote control.

To control a second camera you first need to change the IR channel stored in the camera from 1 to 2.

- First turn off the other camera's in the room you don't want to change, to prevent that other camera's also get changed accidentally.
- Select camera 1 on the remote control, because the camera is still configured to listen to IR channel 1.
- Press **【*】 + 【#】 + 【F2】** to change the IR channel inside the camera to IR channel 2
- Select camera 2 on the remote control and see if the camera respond to the remote control now.

Key Combinations: (Default IR address is 1)

【*】 + 【#】 + 【F1】	: Camera Address No.1
【*】 + 【#】 + 【F2】	: Camera Address No. 2
【*】 + 【#】 + 【F3】	: Camera Address No. 3
【*】 + 【#】 + 【F4】	: Camera Address No. 4

d. Number Keys

The number keys are used to call presets.

e. Focus +-

Focus the camera with the + and – button. If the buttons are not working the camera is probably set to auto-focus. Please push the button “manual focus” first before using the focus buttons.

f. Auto/Manual Focus

Set the camera in auto-focus or manual-focus. If the camera is configured to auto-focus the button “Focus +-“ are disabled. When the camera is in “manual focus” modus and the Zoom buttons are used, the camera automatically switch to auto-focus.

g. Zoom +-

Zoom the camera with these buttons. When the camera is in “manual focus” modus and the Zoom buttons are used, the camera automatically switch to auto-focus.

h. Set & Clear Preset

A preset is a specific position of a camera that you save into the camera. A preset is assigned to a number from 0-9. To set a preset first point the camera in a specific directing and a specific zoom position. Now assign the position to a number with the button “Set Preset”. You

can call the preset by pressing the number 0-9 on the remote control.

Set Preset: **【SET PRESET】 + 【<number>】**

Call Preset: simply press **【<number>】**

Clear Preset: **【CLEAR PRESET】 + 【<number>】**

If the position preset 0 has been stored, the position preset 0 will be called up after initialization.

i. PTZ keys (up/down/left/right)

Move the camera in a direction.

j. Home

Set the direction of the camera to a center position.

k. BLC (Back Light Control) ON/OFF

Change the Back light control setting.

l. Menu

The Menu button opens the “On Screen Display (OSD)” menu. This menu is visible on the HDMI/SDI/IP/USB output (depends on the camera model). If the menu is not in English, please press **【*】 + 【#】 + 【4】** to change the Menu language to English.

m. Function Keys (F1/F2/F3/F4)

Used to configure the IR channel inside the camera. See [c. Camera select] above for instructions.

n. Blank buttons

These buttons have no function with this camera

Other Key Combinations:

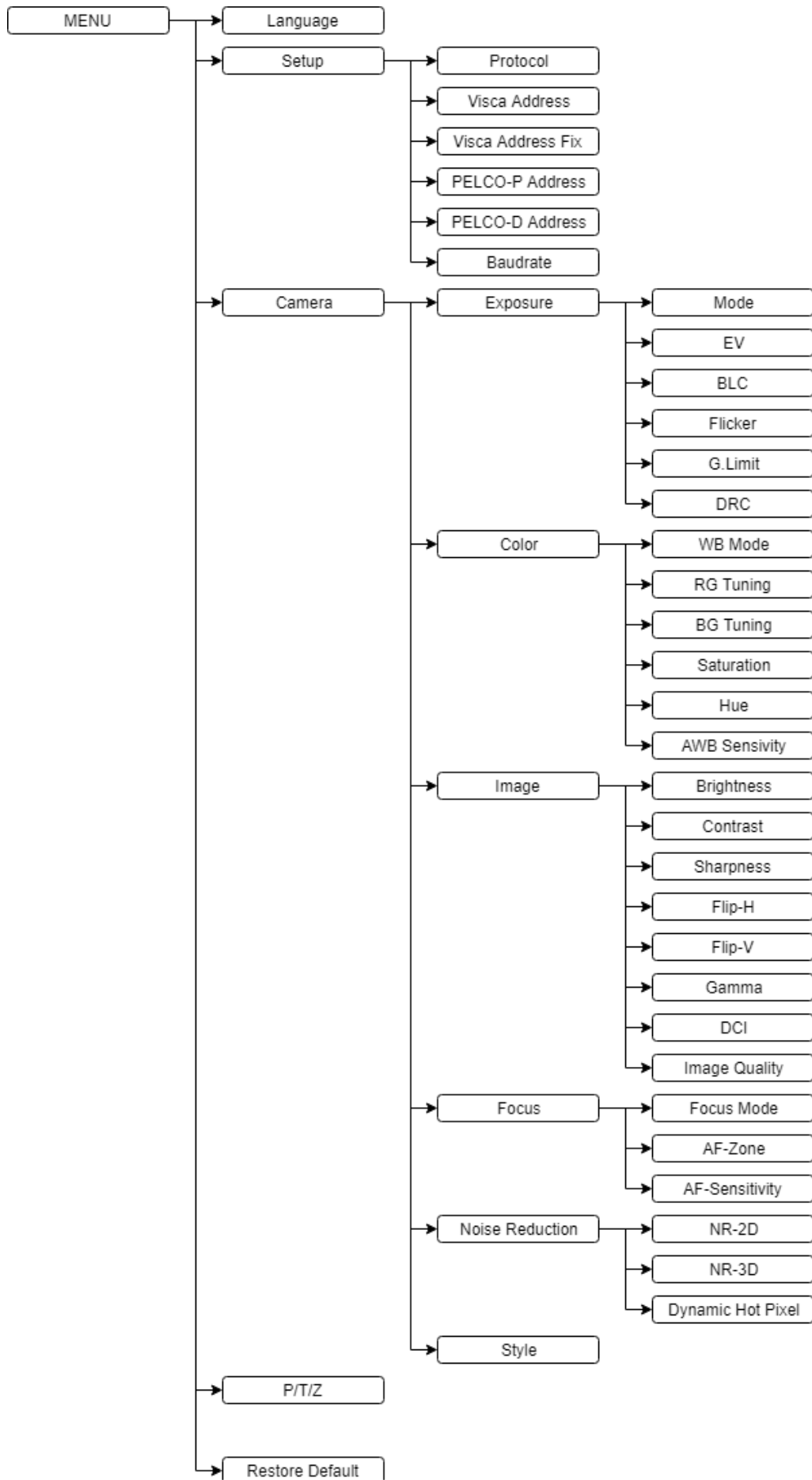
【*】 + 【#】 + 【4】	: Menu set to English
【*】 + 【#】 + 【6】	: Restore factory defaults
【*】 + 【#】 + 【9】	: Flip switch (just temporary flip to view the image flipped)
【*】 + 【#】 + 【Auto】	: Enter into the aging mode, only for quality control purposes
【*】 + 【#】 + 【Manual】	: Restore the default username, password, and IP address
【#】 + 【#】 + 【#】	: Clear all presets
【#】 + 【#】 + 【1】	: Switch the video format to 1080p50
【#】 + 【#】 + 【5】	: Switch the video format to 720p50
【#】 + 【#】 + 【6】	: Switch the video format to 1080p30
【#】 + 【#】 + 【7】	: Switch the video format to 1080p25
【#】 + 【#】 + 【8】	: Switch the video format to 720p30
【#】 + 【#】 + 【9】	: Switch the video format to 720p25

OSD Menu

The OSD menu can be accessed by the Remote Control or an Avonic PTZ controller. In the following pages, the navigating is described for using the IR Remote Control.

Menu tree

(next page)



1. MENU

Press [MENU] button to display the main menu on the screen. Use the arrow buttons to move the cursor to the item to be set. Press the [HOME] button to enter the corresponding sub-menu.

MENU	
▶ Language	EN / CN
Setup	
Camera	
P/T/Z	
Version	
Restore Default	
▲▼ Select Item	
◀▶ Change Value	
[Home] Enter	
[Menu] Exit	

2. SETUP

SETUP	
▶ Protocol	AUTO / VISCA / PELCO-D / PELCO-P
Visca Address	1 ~ 7
Visca Address Fix	ON / OFF
PELCO-P Address	1 ~ 255
PELCO-D Address	1 ~ 255
Baudrate	2400 / 4800 / 9600 / 115200 / 38400
▲▼ Select Item	
◀▶ Change Value	
[Menu] Back	

3. CAMERA

CAMERA

- ▶ Exposure
 - Color
 - Image
 - Focus
 - Noise Reduction
 - Style Soft / Default / Normal / Clarity / Bright

▲▼ Select Item

◀▶ Change Value

[Menu] Back

3.1 EXPOSURE

EXPOSURE

- ▶ Mode Auto / Manual / SAE / AAE / Bright
- Iris F11 ~ F1.8 / CLOSE
- Shutter 1/25 ~ 1/10000
- EV ON / OFF
- EV Level -7 ~ +7
- BLC ON / OFF
- Flicker 50Hz / 60Hz / OFF
- G. Limit 0 ~ 15
- DRC 1 ~ 8 / CLOSE

▲▼ Select Item

◀▶ Change Value

[Menu] Back

3.2 COLOR

COLOR

- ▶ WB Mode Auto / 3000K / 4000K / 5000K / 6000K / 7000K / Manual / OnePush
- RG Tuning -10 ~ 10
- BG Tuning -10 ~ 10
- RG 0 ~ 255
- BG 0 ~ 255
- Saturation 60% - 200%
- Hue 0 ~ 14
- AWB Sensitivity Low / Middle / High

▲▼ Select Item

◀▶ Change Value

3.3 IMAGE

The Flip function can be set, although the camera has an automatically flip function.

IMAGE

► Brightness	0 ~ 14
Contrast	0 ~ 14
Sharpness	0 ~ 15
Flip-H	ON / OFF
Flip-V	ON / OFF
B&W-Mode	Color / B&W
Gamma	0.45 / 0.50 / 0.55 / 0.63 / Default
DCI	1 ~ 8 / Close
Image Quality	0 ~ 5

▲▼ Select Item

◀▶ Change Value

[Menu] Back

3.4 FOCUS

FOCUS

► Focus Mode	Auto / Manual / OnePush
AF-Zone	Top / Center / Bottom / All
AF-Sensitivity	Low / Middle / High

▲▼ Select Item

◀▶ Change Value

[Menu] Back

3.5 NOISE REDUCTION

NOISE REDUCTION

► NR-2D	1 ~ 7 / Auto / OFF
NR-3D	1 ~ 8 / OFF
Dynamic Hot Pixel	1 ~ 5 / OFF

▲▼ Select Item

◀▶ Change Value

[Menu] Back

4. P/T/Z

P/T/Z

- | | |
|-----------------|-------------|
| ▶ Speed by Zoom | ON / OFF |
| Zoom Speed | 1 ~ 8 |
| Image Freezing | ON / OFF |
| Acc Curve | Slow / Fast |

▲▼ Select Item

◀▶ Change Value

[Menu] Back

5. RESTORE DEFAULT

RESTORE DEFAULT

- | | |
|--------------------|----------|
| ▶ Restore Default? | NO / YES |
|--------------------|----------|

▲▼ Select Item

◀▶ Change Value

[Menu] Back

[Home] OK

Serial Communication Control

COM port settings

In default working mode, the camera is able to connect to a VISCA 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.

Command List

See Appendix A

WebGUI

The AV-CM44-VCUC is equipped with a limited WebGUI to setup minimal functionality to perform a firmware upgrade.

Login

The default IP address of the AV-CM44-VCUC is 192.168.5.163

The default username is : admin

The default password is : admin

The login screen looks like this:

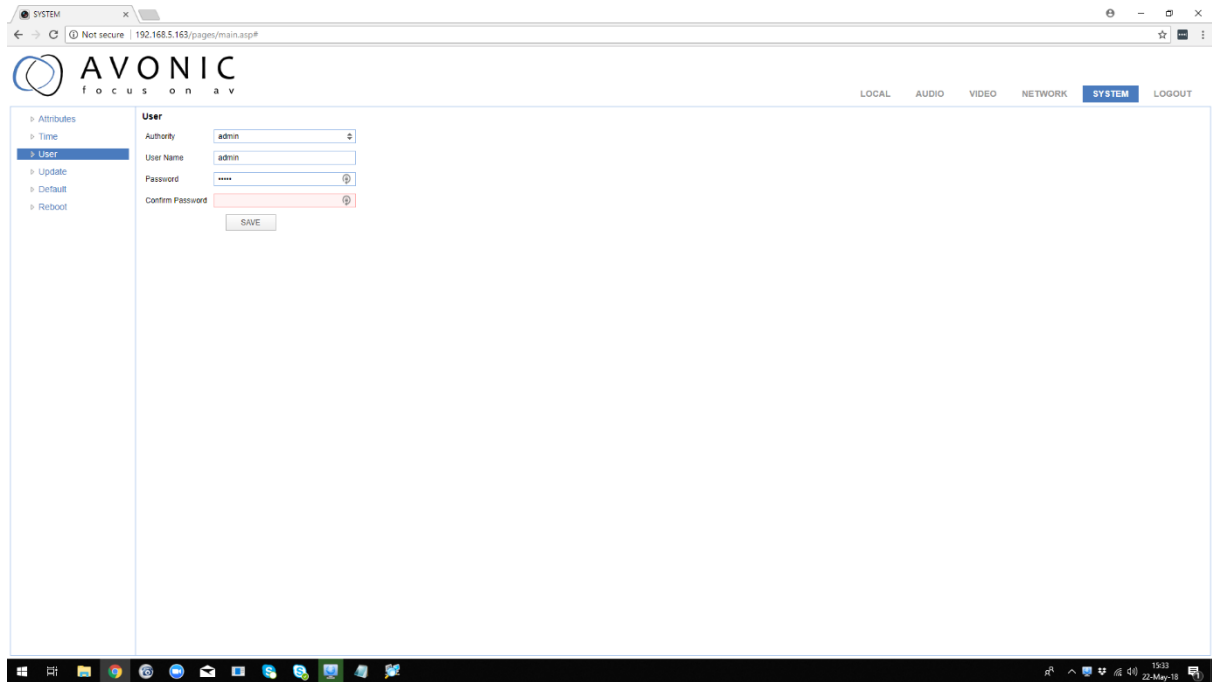


User Name:

Password:

System

In the System Tab it is possible to change username and password, perform a firmware upgrade, reset the camera to Default settings and Reboot the camera.



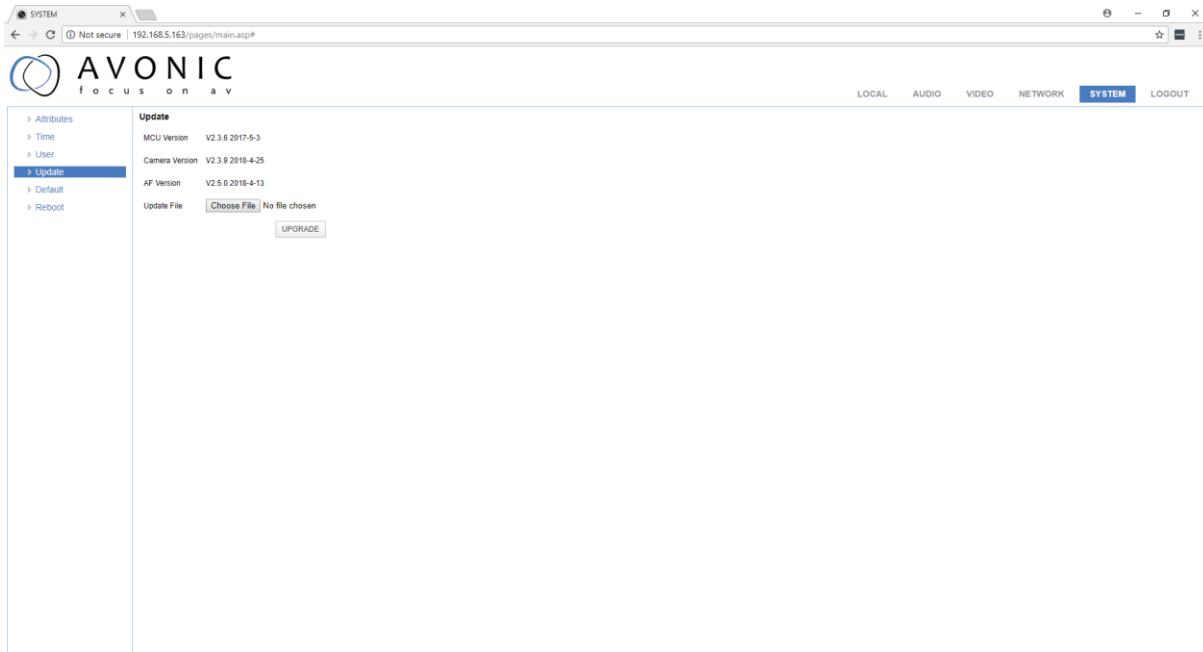
The screenshot displays the AVONIC web interface in a browser window. The address bar shows the URL `192.168.5.163/pages/main.asp#`. The interface features a top navigation bar with tabs for LOCAL, AUDIO, VIDEO, NETWORK, and SYSTEM (which is currently selected). On the left, a sidebar menu lists options: Attributes, Time, User (selected), Update, Default, and Reboot. The main content area is titled 'User' and contains the following fields:

- Authority: dropdown menu set to 'admin'
- User Name: text input field containing 'admin'
- Password: password input field with masked characters
- Confirm Password: password input field with masked characters
- A 'SAVE' button is located below the Confirm Password field.

The Windows taskbar is visible at the bottom of the browser window, showing the date and time as 15:33 on 22-May-18.

Update

The update form gives information on the current firmware versions and the possibility to update the firmware by choosing an upgrade file provided by Avonic. Do not turn off the camera while updating.

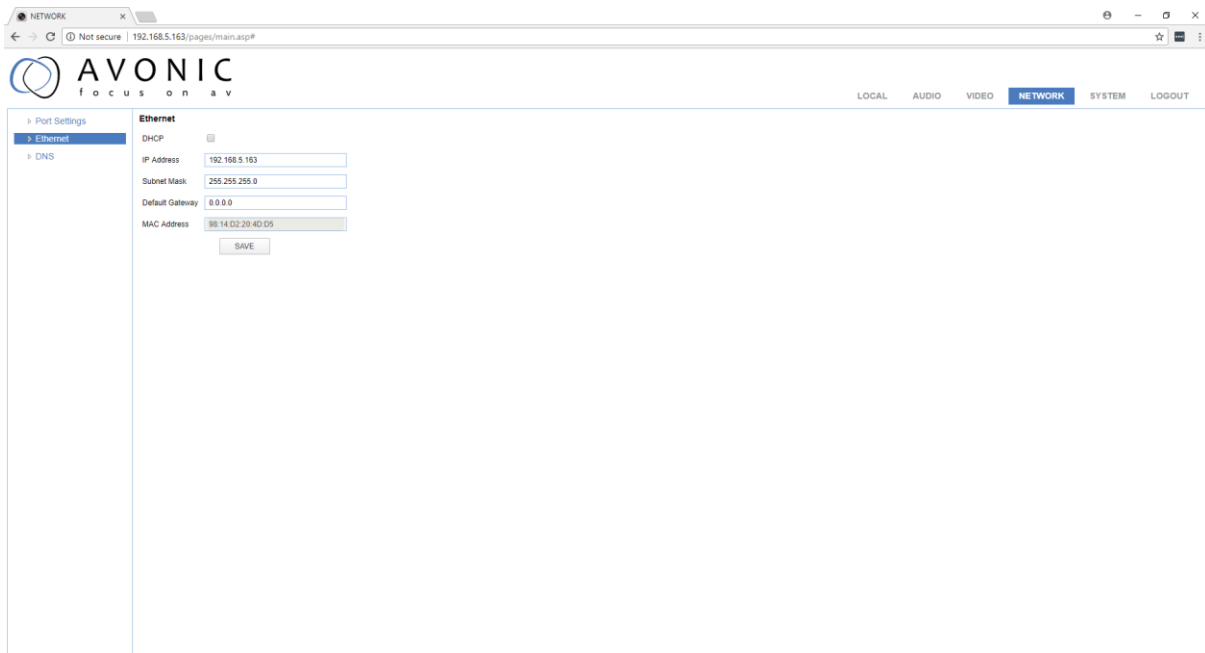


The screenshot shows a web browser window with the address bar displaying "192.168.5.163/pages/main.asp#". The page header features the Avonic logo and navigation tabs: LOCAL, AUDIO, VIDEO, NETWORK, **SYSTEM**, and LOGOUT. On the left, a sidebar menu lists: > Attributes, > Time, > User, > **Update**, > Default, and > Reboot. The main content area is titled "Update" and displays the following information:

MCU Version	V2.3.6 2017-5-3
Camera Version	V2.3.9 2018-4-25
AF Version	V2.5.0 2018-4-13
Update File	<input type="button" value="Choose File"/> No file chosen
<input type="button" value="UPGRADE"/>	

Network

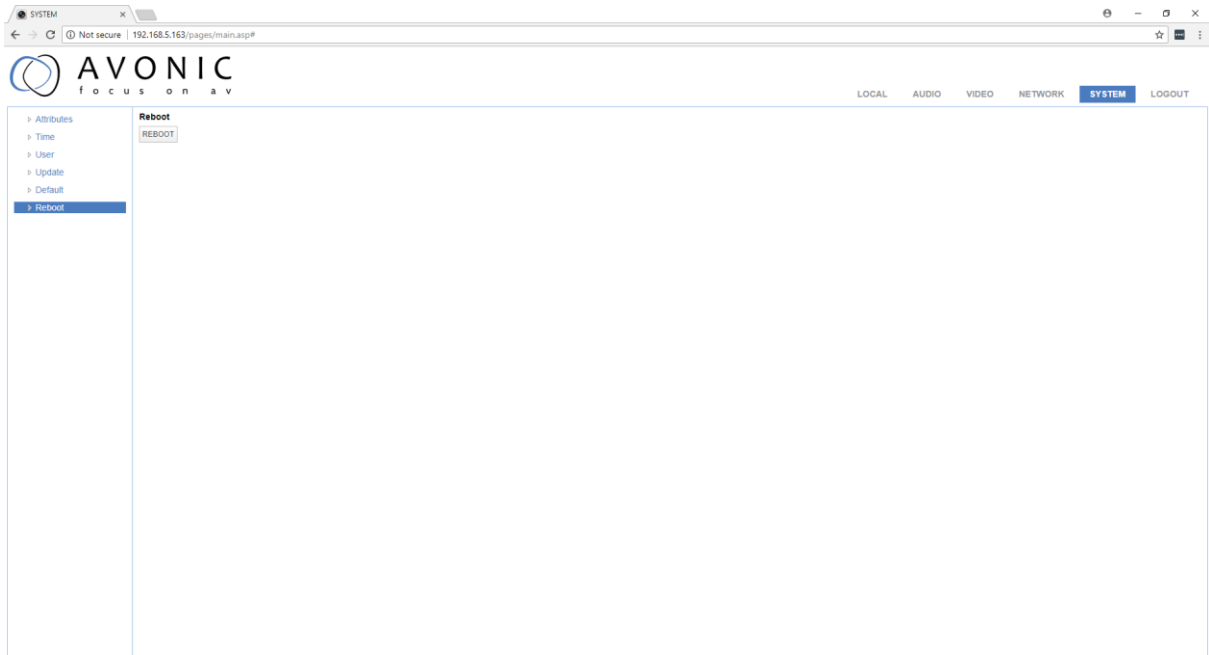
In the Network Tab network IP settings can be changed. These settings involve DHCP or fixed IP address and DNS settings and port settings. Save changed settings and Reboot the camera.



The screenshot shows a web browser window with the address bar displaying "192.168.5.163/pages/main.asp#". The page features the AVONIC logo and a navigation menu with tabs: LOCAL, AUDIO, VIDEO, NETWORK (selected), SYSTEM, and LOGOUT. On the left, a sidebar lists "Port Settings", "Ethernet" (selected), and "DNS". The main content area is titled "Ethernet" and contains a "DHCP" checkbox (unchecked). Below it are input fields for "IP Address" (192.168.5.163), "Subnet Mask" (255.255.255.0), "Default Gateway" (0.0.0.0), and "MAC Address" (88:14:D2:29:4D:D5). A "SAVE" button is located at the bottom of these fields.

Reboot

If any changes made, these settings will only take effect after a reboot of the camera.



Maintenance

Camera Maintenance

- If the camera 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 camera cover.
- Please use the soft dry cloth to clean the lens. If the camera is very dirty, clean it with diluted neuter detergent. Do not use any type of solvents, which may damage the surface.

Unqualified Application

- No shooting extreme bright object for a long period of time, such as sunlight, light sources, etc.
- No operating in unstable lighting conditions, otherwise the image will be flickering.
- No operating close to powerful electromagnetic radiation, such as TV or radio transmitters, etc.

Troubleshooting

General advise

- Turn the camera off and on again and check if the problem persists.

Power Issues

- No self-test and no power LED
 - Check the net power
 - Check the power supply

Image

- No image
 - Check power of camera and monitor
 - Check video cable quality and length
 - Check if video specifications of monitor match the specs of the camera
- Abnormal image
 - Check video cable quality and length
 - Check cable connections
- Dithering or flickering image
 - Check camera fixation and nearby vibration sources
 - Check anti-flickering setting in OSD
 - Check Noise Reduction settings in OSD
- Color issues
 - Check options in OSD, like exposure, color temp, Red and Blue tuning

Control

- IR remote controller does not work
 - Check battery
 - Check IR channel 1 to 4
 - Check direct sight to front of camera and distance
 - PTZ control works only when not in OSD menu mode. Exit the menu.
- Remote Controller does not work
 - Check power of the controller
 - Check RS-232 or RS-485 cable quality, length, polarity and network architecture
 - Check serial communication settings on both camera and controller
 - Check VISCA / PELCO address settings on both camera and controller

WebGUI

- Cannot enter WebGUI
 - Check network cable
 - Check if PC is in the same subnet as camera

- Firmware update failed
 - Check firmware file integrity, download it again.

Appendix A

VISCA Camera Return Command List

x= Camera Address [1-7]

y= Socket Number

z = Camera Address + 8

All parameter values are in HEX

Command	Function	Command Package	Note
AddressSet	Broadcast	88 30 0p FF	VISCA Address setting to address p
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	8x 01 04 07 03 FF	
	Tele(Variable)	8x 01 04 07 2p FF	p = 0(low) - 7(high)
	Wide(Variable)	8x 01 04 07 3p FF	p = 0(low) - 7(high)
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position

Command	Function	Command Package	Note
ACK/Completion Messages	ACK	z0 4y FF (y: Socket No.)	Return when the command is accepted.
	Completion	z0 5y FF (y: Socket No.)	Return when the command has been executed.

Command	Function	Command Package	Note
Error Messages	Syntax Error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is sent.

Command Buffer Full	z0 60 03 FF	Indicates that two sockets are already being used(executing two commands) and the command could not be accepted when received.
Command Canceled	z0 6y 04 FF (y: Socket No.)	Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned.
No Socket	z0 6y 05 FF (y: Socket No.)	Returned when no command is executed in a socket specified by the cancel command, or when an invalid socket number is specified.
Command Not Executable	z0 6y 41 FF (y: Execution command Socket No. Inquiry command: 0)	Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during autofocus.

VISCA Camera Control Command List

x= Camera Address

y= Socket Number

z = Camera Address + 8

All parameter values are in HEX

Command	Function	Command Package	Notes
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far(Variable)	8x 01 04 08 2p FF	p = 0(low) - 7(high)
	Near(Variable)	8x 01 04 08 3p FF	
	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position
	Auto Focus	8x 01 04 38 02 FF	AF On/Off
	Manual Focus	8x 01 04 38 03 FF	
	Auto/Manual	8x 01 04 38 10 FF	
CAM_ZoomFocus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position p=0-4 qrs=0-F tuvw: Focus Position
CAM_WB	Auto	8x 01 04 35 00 FF	Normal Auto
	Indoor mode	8x 01 04 35 01 FF	Indoor mode
	Outdoor mode	8x 01 04 35 02 FF	Outdoor mode
	OnePush mode	8x 01 04 35 03 FF	One Push WB mode
	Manual	8x 01 04 35 05 FF	Manual Control mode
	OnePush trigger	8x 01 04 10 05 FF	One Push WB Trigger
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual Control of R Gain
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain
CAM_Bgain	Reset	8x 01 04 04 00 FF	Manual Control of B Gain
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain
CAM_AE	Full Auto	8x 01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure

			mode
	Iris priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode
	Bright	8x 01 04 39 0D FF	Bright Mode(Manual control)
CAM_SlowShutter	AutoSlowShutterLimit	8x 01 04 2A 0p 00 FF	
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position
CAM_Gain	Reset	8x 01 04 0C 00 FF	Gain Setting
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 0C 00 00 0p 0q FF	pq: Gain Position
	Gain Limit	8x 01 04 2C 0p FF	p: Gain Position
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 0D 00 00 0p 0q FF	pq: Bright Position
CAM_ExpComp	On	8x 01 04 3E 02 FF	Exposure Compensation On/Off
	Off	8x 01 04 3E 03 FF	
	Reset	8x 01 04 0E 00 FF	Exposure Compensation Amount Setting
	Up	8x 01 04 0E 02 FF	
	Down	8x 01 04 0E 03 FF	
	Direct	8x 01 04 4E 00 00 0p 0q FF	pq: ExpComp Position
CAM_BackLight	On	8x 01 04 33 02 FF	Back Light
	Off	8x 01 04 33 03 FF	Compensation On/Off
CAM_NR(2D)Mode	Auto	8x 01 04 50 02 FF	ND2D Auto/Manual
	Manual	8x 01 04 50 03 FF	
CAM_NR(2D)Level	-	8x 01 04 53 0p FF	p: NR Setting (0: Off, level 1 to 5)
CAM_NR(3D)Level	-	8x 01 04 54 0p FF	p: NR Setting (0: Off, level 1 to 8)
CAM_Flicker	-	8x 01 04 23 0p FF	p: Flicker Settings (0: Off, 1: 50Hz, 2: 60Hz)
CAM_DHotPixel	-	8x 01 04 56 0p FF	p: Dynamic Hot Pixel Setting (0: Off, level 1

			to 6)
CAM_ApertureMode (sharpness)	Auto	8x 01 04 05 02 FF	Sharpness Auto
	Manual	8x 01 04 05 02 FF	Sharpness Manual
CAM_Aperture (sharpness)	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	pq: Aperture Gain
CAM_PictureEffect	Off	8x 01 04 63 00 FF	Picture Effect Setting
	B&W	8x 01 04 63 04 FF	
CAM_Memory	Reset	8x 01 04 3F 00 pp FF	pp: Memory Number(=00 to FE)
	Set	8x 01 04 3F 01 pp FF	
	Recall	8x 01 04 3F 02 pp FF	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal On/Off
	Off	8x 01 04 61 03 FF	
CAM_PictureFlip	On	8x 01 04 66 02 FF	Image Flip Vertical On/Off
	Off	8x 01 04 66 03 FF	
CAM_ColorGain	Direct	8x 01 04 49 00 00 00 pp FF	pp: Color Gain setting 00 (60%) to 0E -200%
SYS_Menu	Off	8x 01 06 06 03 FF	Turns off the menu screen
Pan_tiltDrive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 01h (low speed) to 18h (high speed)
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	WW: Tilt speed 01h (low speed) to 14h (high speed)
	Right	8x 01 06 01 VV WW 02 03 FF	
	Upleft	8x 01 06 01 VV WW 01 01 FF	YYYY: Pan Position
	Upright	8x 01 06 01 VV WW 02 01 FF	ZZZZ: Tilt Position
	DownLeft	8x 01 06 01 VV WW 01 02 FF	
	DownRight	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	AbsolutePosition	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z FF	

	RelativePosition	8x 01 06 03 VV WW v0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan_tiltLimitSet	LimitSet	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1 UpRight 0: DownLeft YYYY: Pan Limit Position ZZZZ: Tilt Position
	LimitClear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	
CAM_AFSensitivity	High	8x 01 04 58 01 FF	AF Sensitivity High/Normal/Low
	Normal	8x 01 04 58 02 FF	
	Low	8x 01 04 58 03 FF	
CAM_SettingReset	Reset	8x 01 04 A0 10 FF	Reset Factory Setting
CAM_Brightness	Direct	8x 01 04 A1 00 00 0p 0q FF	pq: Brightness Position
CAM_Contrast	Direct	8x 01 04 A2 00 00 0p 0q FF	pq: Contrast Position
CAM_Flip	Off	8x 01 04 A4 00 FF	Single Command For Video Flip
	Flip-H	8x 01 04 A4 01 FF	
	Flip-V	8x 01 04 A4 02 FF	
	Flip-HV	8x 01 04 A4 03 FF	
CAM_SettingSave	Save	8x 01 04 A5 10 FF	Save Current Setting
CAM_Iridix	Direct	8x 01 04 A7 00 00 0p 0q FF	pq: Iridix Position
CAM_AWBSensitivity	High	8x 01 04 A9 00 FF	High
	Normal	8x 01 04 A9 01 FF	Normal
	Low	8x 01 04 A9 02 FF	Low
CAM_AFZone	Top	8x 01 04 AA 00 FF	AF Zone weight select
	Center	8x 01 04 AA 01 FF	
	Bottom	8x 01 04 AA 02 FF	
CAM_ColorHue	Direct	8x 01 04 4F 00 00 00 0p FF	p: Color Hue setting 0h (- 14 dgrees) to Eh (+14 degrees

VISCA Query Command List

x= Camera Address

y= Socket Number

z = Camera Address + 8

All parameter values are in HEX

Command	Command Package	Return Package	Note
CAM_PowerInq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off(Standby)
		y0 50 04 FF	Internal power circuit error
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_FocusAFMode Inq	8x 09 04 38 FF	y0 50 02 FF	Autofocus
		y0 50 03 FF	Manual Focus
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_WBModelInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	Indoor mode
		y0 50 02 FF	Outdoor mode
		y0 50 03 FF	OnePush mode
		y0 50 05 FF	Manual
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_BrightPosInq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ExpCompModeInq	8x 09 04 3E FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ExpCompPosInq	8x 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BacklightMode Inq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_Noise2DMode Inq	8x 09 04 50 FF	y0 50 02 FF	Auto Noise 2D
		y0 50 03 FF	Manual Noise 3D
CAM_Noise2DLevel	8x 09 04 53 FF	y0 50 0p FF	Noise Reduction (2D) p: 0 to 5
CAM_Noise3DLevel	8x 09 04 54 FF	y0 50 0p FF	Noise Reduction (3D) p: 0 to 8

CAM_FlickerModelInq	8x 09 04 55 FF	y0 50 0p FF	p: Flicker Settings(0: OFF, 1: 50Hz, 2: 60Hz)
CAM_ApertureModelInq(Sharpness)	8x 09 04 05 FF	y0 50 02 FF	Auto Sharpness
		y0 50 03 FF	Manual Sharpness
CAM_ApertureInq(Sharpness)	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_PictureEffectModelInq	8x 09 04 63 FF	y0 50 02 FF	Off
		y0 50 04 FF	B&W
CAM_MemoryInq	8x 09 04 3F FF	y0 50 0p FF	p: Memory number last operated.
SYS_MenuModelInq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LR_ReverseInq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_PictureFlipInq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_RegisterValueInq	8x 09 04 24 mm FF	y0 50 0p 0p ff	mm: Register No. (00 to FF) pp: Register Value (00 to FF)
CAM_ColorGainInq	8x 09 04 49 FF	y0 50 00 00 00 0p FF	p: Color Gain setting 0h (60%) to Eh (200%)
CAM_IDInq	8x 09 04 22 FF	y0 50 0p 0q 0r 0s FF	pqrs: Camera ID
CAM_VersionInq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	ab: Factory Code cd: Hardware Version mnpq: ARM Version rstu: FPGA Version vw: Camera model 01: C Type 02: M Type 03: S Type
VideoSystemInq	8x 09 06 23 FF	y0 50 00 FF	1920x1080i60
		y0 50 01 FF	1920x1080p30
		y0 50 02 FF	1280x720p60
		y0 50 04 FF	NTSC
		y0 50 05 FF	NTSC
		y0 50 06 FF	NTSC
		y0 50 07 FF	1920x1080p60
		y0 50 08 FF	1920x1080i50
		y0 50 09 FF	1920x1080p25

		y0 50 0A FF	1280x720p50
		y0 50 0C FF	PAL
		y0 50 0D FF	PAL
		y0 50 0E FF	PAL
IR_Receive	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
Pan-tiltMaxSpeedInq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max Speed
Pan-tiltPosInq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	www: Pan Position zzzz: Tilt Position
CAM_TypeInq	8x 09 00 03 FF	y0 50 01 FF	C Type
		y0 50 02 FF	M Type
		y0 50 03 FF	S Type
CAM_DateInq	8x 09 00 04 FF	y0 50 0r ss uu vv ww 0D FF	Version information r: Big Version Number ss: Little Version Number uuuu: Year vv: Month ww: Day
CAM_ModelInq	8x 09 04 A6 FF	y0 50 00 FF	Mode0
		y0 50 02 FF	Mode2
CAM_GainLimitInq	8x 09 04 2C FF	y0 50 0q FF	p: Gain Limit
CAM_DHotPixelInq	8x 09 04 56 FF	y0 50 0q FF	p: Dynamic Hot Pixel Setting (0: Off, level 1 to 6)
CAM_AFSensitivityInq	8x 09 04 58 FF	y0 50 01 FF	High
		y0 50 02 FF	Normal
		y0 50 03 FF	Low
CAM_BrightnessInq	8x 09 04 A1 FF	y0 50 00 00 0p 0q FF	pq: Brightness Position
CAM_ContrastInq	8x 09 04 A2 FF	y0 50 00 00 0p 0q FF	pq: Contrast Position
CAM_FlipInq	8x 09 04 A4 FF	y0 50 00 FF	Off
		y0 50 01 FF	Flip-H
		y0 50 02 FF	Flip-V
		y0 50 03 FF	Flip-HV
CAM_IridixInq	8x 09 04 A7 FF	y0 50 00 00 0p 0q FF	pq: Iridix Position
CAM_AFZone	8x 09 04 AA FF	y0 50 00 FF	Top
		y0 50 01 FF	Center
		y0 50 02 FF	Bottom
CAM_ColorHueInq	8x 09 04 4F FF	y0 50 00 00 00 0p FF	p: Color Hue setting 0h (- 14 degrees) to

Eh (+14 degrees			
CAM_AWBSensitivityInq	8x 09 04 A9 FF	y0 50 00 FF	High
		y0 50 01 FF	Normal
		y0 50 02 FF	Low
CAM_LensBlockInq	8x 09 7E 7E 00 FF	y0 50 0u 0u 0u 0u 00 00 0v 0v 0v 0v 00 0w 00 FF	uuuu: Zoom Position vvvv: Focus Position w.bit0: Focus Mode 1: Auto 0: Manual
CAM_CameraBlockInq	8x 09 7E 7E 01 FF	y0 50 0p 0p 0q 0q 0r 0s tt 0u vv ww 00 xx 0z FF	pp: R_Gain qq: B_Gain r: WB Mode s: Aperture tt: AE Mode uu: BackLight uu Exp Comp. vv: Shutter Position ww: Iris Position xx Bright Position z: Exp Comp. Position
CAM_OtherBlockInq	8x 09 7E 7E 02 FF	y0 50 0p 0q 00 0r 00 00 00 00 00 00 00 00 FF	p.bit0: Power 1:On, 0:Off q.bit2: LR Reverse 1:On, 0:Off r.bit3~0: Picture Effect Mode
CAM_EnlargementBlockInq	8x 09 7E 7E 03 FF	y0 50 00 00 00 00 00 00 00 0p 0q rr 0s 0t 0u FF	p: AF sensitivity q: bit0: Picture flip(1:On, 0:Off) rr.bit6~3: Color Gain (0h(60%) to Eh(200%)) s: Flip(0: Off, 1:Flip-H, 2:Flip-V, 3:Flip-HV) t: bit2~0: NR2D level u: Gain limit

Pelco-D Protocol Command List

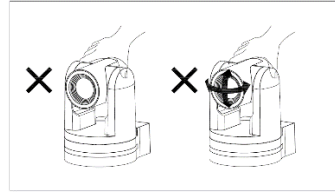
Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Up	0xFF	Address	0x00	0x08	Pan Speed	Tilt Speed	SUM
Down	0xFF	Address	0x00	0x10	Pan Speed	Tilt Speed	SUM
Left	0xFF	Address	0x00	0x04	Pan Speed	Tilt Speed	SUM
Right	0xFF	Address	0x00	0x02	Pan Speed	Tilt Speed	SUM
Zoom In	0xFF	Address	0x00	0x20	0x00	0x00	SUM
Zoom Out	0xFF	Address	0x00	0x40	0x00	0x00	SUM
Focus Far	0xFF	Address	0x00	0x80	0x00	0x00	SUM
Focus Near	0xFF	Address	0x01	0x00	0x00	0x00	SUM
Set Preset	0xFF	Address	0x00	0x03	0x00	Preset ID	SUM
Clear Preset	0xFF	Address	0x00	0x05	0x00	Preset ID	SUM
Call Preset	0xFF	Address	0x00	0x07	0x00	Preset ID	SUM
Auto Focus	0xFF	Address	0x00	0x2B	0x00	0x01	SUM
Manual Focus	0xFF	Address	0x00	0x2B	0x00	0x02	SUM
Query Pan Position	0xFF	Address	0x00	0x51	0x00	0x00	SUM
Query Pan Position Response	0xFF	Address	0x00	0x59	Value High Byte	Value Low Byte	SUM
Query Tilt Position	0xFF	Address	0x00	0x53	0x00	0x00	SUM
Query Tilt Position Response	0xFF	Address	0x00	0x5B	Value High Byte	Value Low Byte	SUM
Query Zoom Position	0xFF	Address	0x00	0x55	0x00	0x00	SUM
Query Zoom Position Response	0xFF	Address	0x00	0x5D	Value High Byte	Value Low Byte	SUM

Pelco-P Protocol Command List

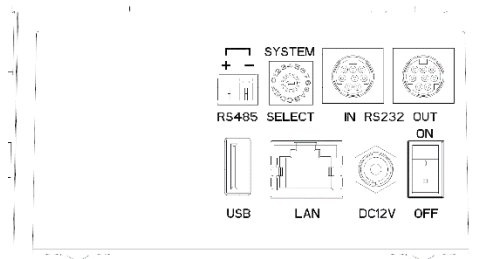
Function	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Up	0xA0	Address	0x00	0x08	Pan Speed	Tilt Speed	0xAF	XOR
Down	0xA0	Address	0x00	0x10	Pan Speed	Tilt Speed	0xAF	XOR
Left	0xA0	Address	0x00	0x04	Pan Speed	Tilt Speed	0xAF	XOR
Right	0xA0	Address	0x00	0x02	Pan Speed	Tilt Speed	0xAF	XOR
Zoom In	0xA0	Address	0x00	0x20	0x00	0x00	0xAF	XOR
Zoom Out	0xA0	Address	0x00	0x40	0x00	0x00	0xAF	XOR
Focus Far	0xA0	Address	0x00	0x80	0x00	0x00	0xAF	XOR
Focus Near	0xA0	Address	0x01	0x00	0x00	0x00	0xAF	XOR
Set Preset	0xA0	Address	0x00	0x03	0x00	Preset ID	0xAF	XOR
Clear Preset	0xA0	Address	0x00	0x05	0x00	Preset ID	0xAF	XOR
Call Preset	0xA0	Address	0x00	0x07	0x00	Preset ID	0xAF	XOR
Auto Focus	0xA0	Address	0x00	0x2B	0x00	0x01	0xAF	XOR
Manual Focus	0xA0	Address	0x00	0x2B	0x00	0x02	0xAF	XOR
Query Pan Position	0xA0	Address	0x00	0x51	0x00	0x00	0xAF	XOR
Query Pan Position Response	0xA0	Address	0x00	0x59	Value High Byte	Value Low Byte	0xAF	XOR
Query Tilt Position	0xA0	Address	0x00	0x53	0x00	0x00	0xAF	XOR
Query Tilt Position Response	0xA0	Address	0x00	0x5B	Value High Byte	Value Low Byte	0xAF	XOR
Query Zoom Position	0xA0	Address	0x00	0x55	0x00	0x00	0xAF	XOR
Query Zoom Position Response	0xA0	Address	0x00	0x5D	Value High Byte	Value Low Byte	0xAF	XOR

Appendix B Quick Start

Be cautious to take the camera by its base. When placing back the camera in its protective foam, be sure the lens is in horizontal position.



Please check connections are correct before starting. Press the Switch ON/OFF button on the rear of the camera, the power LED is lid. Pan-Tilt will rotate to the maximum position of top right after the camera started, then it returns to the center, the process of initialization is finished. (Note: If the position preset 0 has been stored, the position preset 0 will be called up after initialization) Set all desired settings in the OSD by using the IR remote controller.



Use Avonic PTZ Controller to control the camera.

Appendix C Dimensions

