# AVONIC

# Avonic PTZ Camera 20x/12x/30x zoom
## CM70-IP / CM71-IP / CM73-IP

# CONTENTS

# INTRODUCTION

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

## Join Avonic

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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 AND ACCESSORIES

## Contents

| Quantity | Description | Avonic SKU |
|----------|-------------|------------|
| 1 pc | PTZ Camera | AV-CM70/71/73-IP-B/W |
| 1 pc | Power Supply 12V/A | AV-CM40-PSU |
| 1 pc | Remote Control | AV-CM40-RC |
| 1 pc | USB cable type A to type A | AV-USB20-AA |
| 1 pc | RS232 9-pin male to 8-pin male | AV-CM-RS232 |
| 1 pc | 2-way RS485 serial connector | AV-PHNX-2 |
| 1 pc | 5-way Balanced audio conn. | AV-PHNX-5 |

## 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.
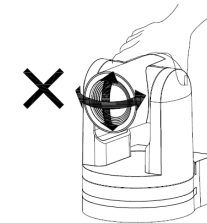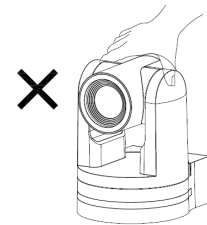
## Accessoiries

Ceiling mount
SKU  white: CM-CMW
SKU black: CM-CMB

Wall mount
SKU  white: CM-WMW
SKU black: CM-WMB

Wall and Ceiling mount
SKU  white: AV-MT200-W
SKU black: AV-MT200-B

# PRODUCT OVERVIEW

The Avonic CM70 series is a high quality PTZ camera line with simultaneous HDMI, 3G-SDI, USB 2.0 and IP stream ethernet outputs. The cameras are designed for fixed installations in less then optimal light conditions. The CM70 series includes a rich featureset usually found on broadcast-grade cameras, including a user-adjustable Colour Matrix and SRT streaming (licensed premium functions). The CM70 series has the ability to deliver outstanding quality under low light conditions, thanks to its high SNR CMOS sensor. The sensor delivers Full HD 1080p60 video

## Features

*   Panasonic high-quality 1/3 inch, 2.12 million effective pixels HD CMOS sensor
*   Output frame rate up to 60fps in 1080P
*   20x/12x/30x Optical Zoom, glass lens.
*   Remote Control Using  RS232/ RS485/ IP/ IR/ USB 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.
*   High accuracy, silent step driving motor makes for accurate fast and quiet panning and tilting, in High Speed Mode <100° p/s pan speed and <70° p/s tilt speed
*   Multi-Format Video Outputs: HDMI 1.4a, 3G-SDI, USB2.0, ethernet
*   Ethernet port with PoE functionality
*   Tally Light functionality for on-air indication (licensed premium feature)
*   High Speed Mode; upgraded Pan and Tilt speed
*   Encrypted SRT streaming (licensed premium feature)
*   Fully customizable RGB colour matrix for perfect integration with other cameras (licensed premium feature)
*   The 3G-SDI is available for 100m transmission at 1080p60 format (SMPTE 424M). The output image is 8-bit YCbCr 4:2:2 level B (SMPTE 425M).
*   Auto-Flip function
*   Low-power sleep function: power consumption less than 500mW in standby mode.
*   Supports multiple Control Protocols: VISCA OVER IP, Onvif, VISCA, PELCO-D, PELCO-P; protocols which can also be automatically recognized.
*   Kensington Lock

# INSTALLATION

## Connections



1. Kensington Lock
2. Balanced Audio Line in 5-pin Phoenix connector
3. RS-485 two-wire serial communication with 2-pin Phoenix connector
4. System Selector (see Installation for more details)
5. RS-232 mini-DIN-8 IN (connect the supplied RS-232 cable)
6. RS-232 mini-DIN-8 OUT for daisy chaining RS-232 connection
7. 3G-SDI video output SMTPE 425M level B compliant
8. HDMI Type A
9. USB2.0 Type A, UVC video output and control
10. RJ45 Ethernet connection, with PoE
11. DC12V power with locking screw (connect the supplied DC PSU)
12. Power ON/OFF
13. Fall protection eye

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# System Select Switch



| 0 | 1080p60 | 8 | 720p30 |
|---|---------|---|--------|
| 1 | 1080p50 | 9 | 720p25 |
| 2 | 1080i60 | A | 1080p59.94 |
| 3 | 1080i50 | B | 1080i59.94 |
| 4 | 720p60 | C | 720p59.94 |
| 5 | 720p50 | D | 1080p29.97 |
| 6 | 1080p30 | E | 720p29.97 |
| 7 | 1080p25 | F | Via OSD/Webgui |

CAUTION:

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

b. 720p30, 720p29.97 and 720p25 not supported by the SDI output.

c. There are four ways to select the video output (via OSD, direct button combination on the remote control, via the webgui or via the rotary dial) of the camera, but the

rotary dial takes priority after a reboot, except on setting F where all the outputs are defined digitally
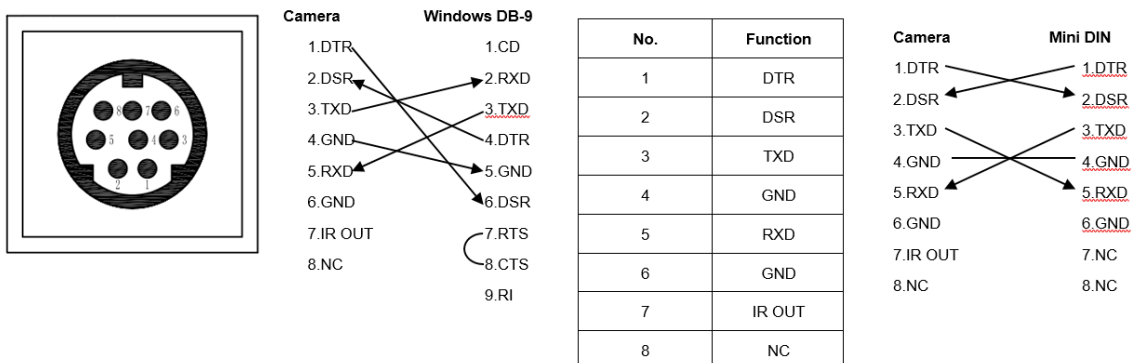
## Power adapter

This product is equipped with a 12V/2A DC power supply. Insert the power supply according to the require-ments, turn on the power switch. Alternatively use a PoE ethernet connection, the Power switch on the back of the camera needs to be switched to the 'ON' position.

## 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. The camera will show its current IR-channel setting and IP Address on the osd (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, Serial, USB or IP Communi-cation.

# RS232 Interface



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

# RS232 network connection diagram

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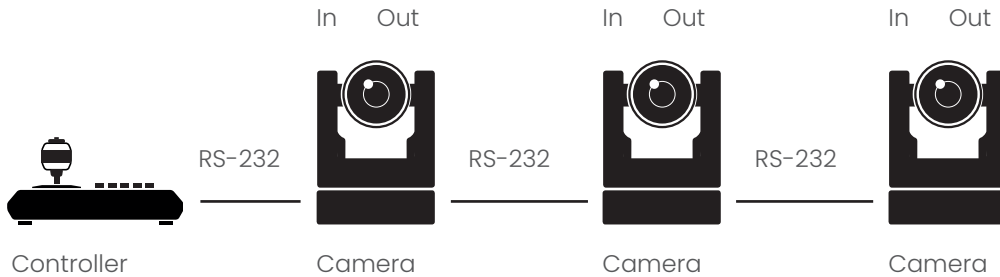


# RS485 network connection diagram

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.
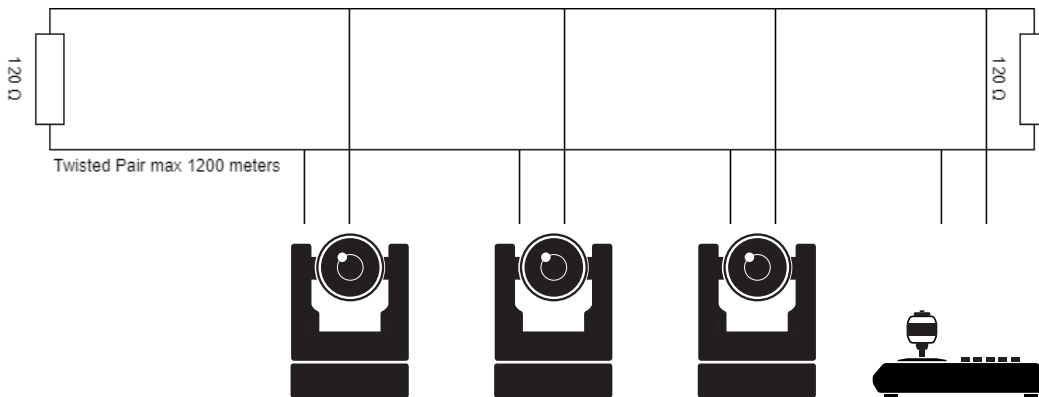


# IP network connection diagram

Connect an Avonic PoE camera to a  LAN using a standard (PoE) switch, if the unit is simultaneously connected to both PoE and its own power supply, the power supply will take priority. If the power supply is disconnected when PoE is present, the camera will remain operational without interruption.
Addressing is done via IP, the Visca address in a Visca over ip environment is always 1.
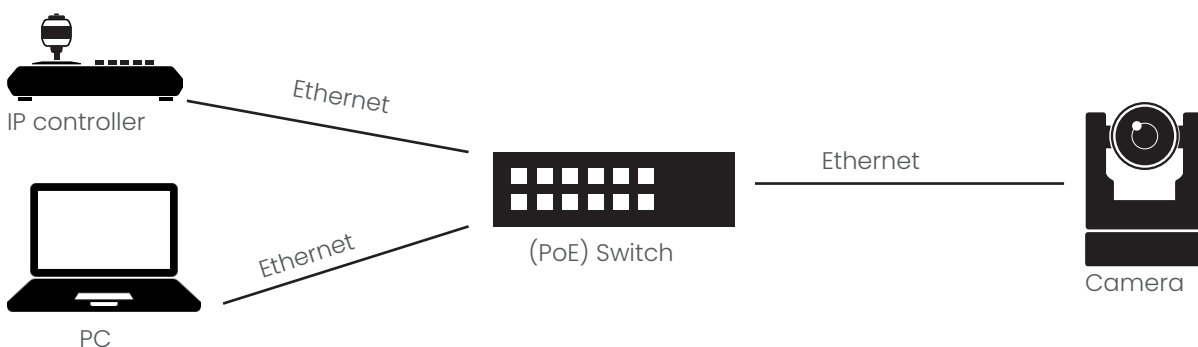
# OPERATION

## Remote controller

a.     Power

b.     Set

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.       Power

Press the power button to turn on the camera. If the position preset 0 has been stored, the position preset 0 will be called after initialization. Press the power button again to turn the camera off, it will turn to the back when turned off, this is called the "privacy mode".

### b.       Set

This button has no function with this camera.

### 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.
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.
    The camera will confirm this on screen.
  • Select camera 2 on the remote control to control this camera.
Key Combinations: (Default IR address is 1)
[*]+[#]+[F1]                      : Camera Address No. 1   [*]+[#]+[F3]                      : Camera Address No. 3
[*]+[#]+[F2]                      : Camera Address No. 2   [*]+[#]+[F4]                      : Camera Address No. 4

### d.       Number Keys

The number keys are used to call presets. Press the number [0-9] of the preset desired and the camera will respond accordingly (See 'h' on how to set & clear presets)

### e.       Focus + -

Push the button [manual focus] first before using the focus buttons. Focus the camera with the [+] and [−] button. If the camera does not respond check if the camera is set to auto-focus.

### f.       Auto/Manual Focus

Set the camera in auto-focus or manual-focus. If the camera is configured to auto-focus the buttons [Focus + -] are disabled. When the camera is in "manual focus" modus and the Zoom buttons are used, the camera automatically switces 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 switches 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 as-sign 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:                            [<number>]
Clear Preset:                          [CLEAR PRESET]+[<number>]
If the position preset 0 has been stored, this position will be called after initialization.

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### 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 output. 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 of the camera. See [**c**. Camera select] above for instructions.

### n.    Blank buttons

These buttons have no function with this camera.

## Other Key Combinations
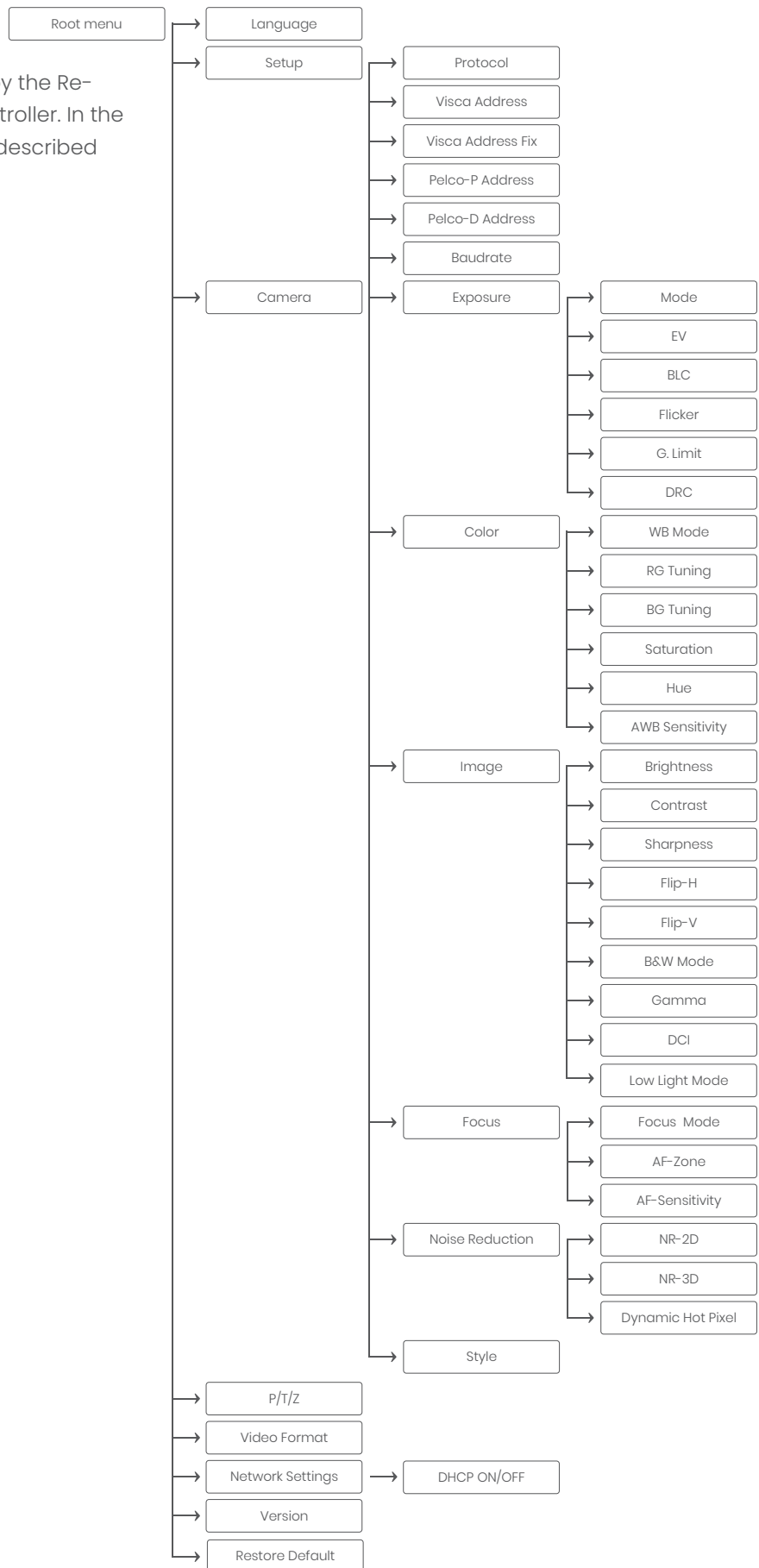
[*]+[#]+[4]              : Menu set to English
[*]+[#]+[6]              : Restore factory defaults
[*]+[#]+[9]              : Flip switch (just temporary flip to view the image flipped)
[*]+[#]+[Auto]          : Enter into the aging mode, only for quality control purposes
[*]+[#]+[Manual]        : Restore the default username, password, and IP address

[#]+[#]+[#]             : Clear all presets
[#]+[#]+[0]             : Switch the video format to1080p60*
[#]+[#]+[1]             : Switch the video format to 1080p50*
[#]+[#]+[2]             : Switch the video format to 1080i60*
[#]+[#]+[3]             : Switch the video format to 1080i50*
[#]+[#]+[4]             : Switch the video format to 720p60*
[#]+[#]+[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*
**\*NOTE: THE CAMERA RETURNS TO THE VIDEO OUTPUT SETTING OF THE ROTARY DIAL AFTER A REBOOT**
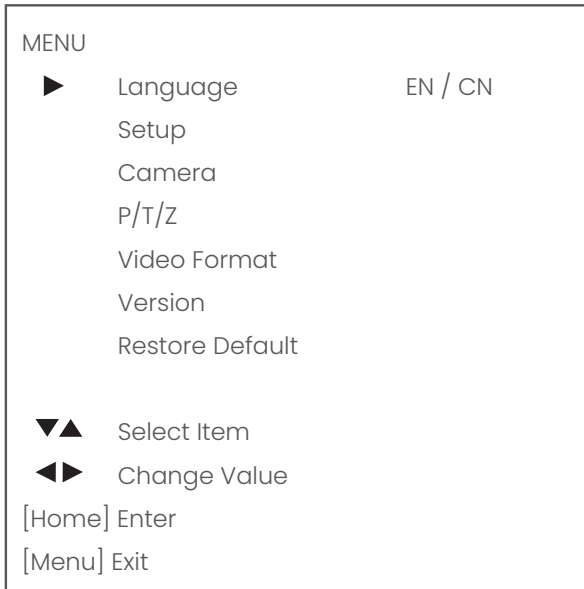
# OSD MENU

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.

| Root menu |
|---|

- Language
- Setup
  - Protocol
  - Visca Address
  - Visca Address Fix
  - Pelco-P Address
  - Pelco-D Address
  - Baudrate
- Camera
  - Exposure
    - Mode
    - EV
    - BLC
    - Flicker
    - G. Limit
    - DRC
  - Color
    - WB Mode
    - RG Tuning
    - BG Tuning
    - Saturation
    - Hue
    - AWB Sensitivity
  - Image
    - Brightness
    - Contrast
    - Sharpness
    - Flip-H
    - Flip-V
    - B&W Mode
    - Gamma
    - DCI
    - Low Light Mode
  - Focus
    - Focus Mode
    - AF-Zone
    - AF-Sensitivity
  - Noise Reduction
    - NR-2D
    - NR-3D
    - Dynamic Hot Pixel
  - Style
- P/T/Z
- Video Format
- Network Settings
  - DHCP ON/OFF
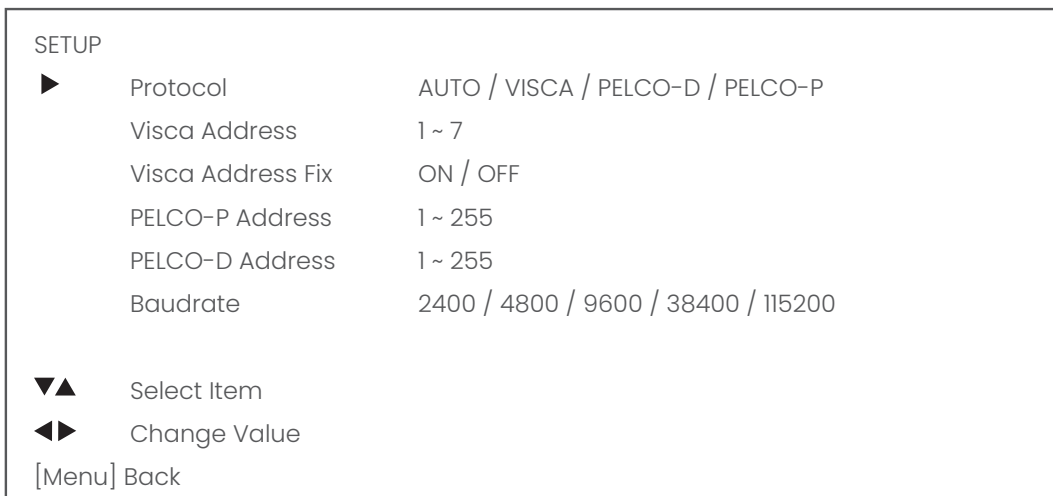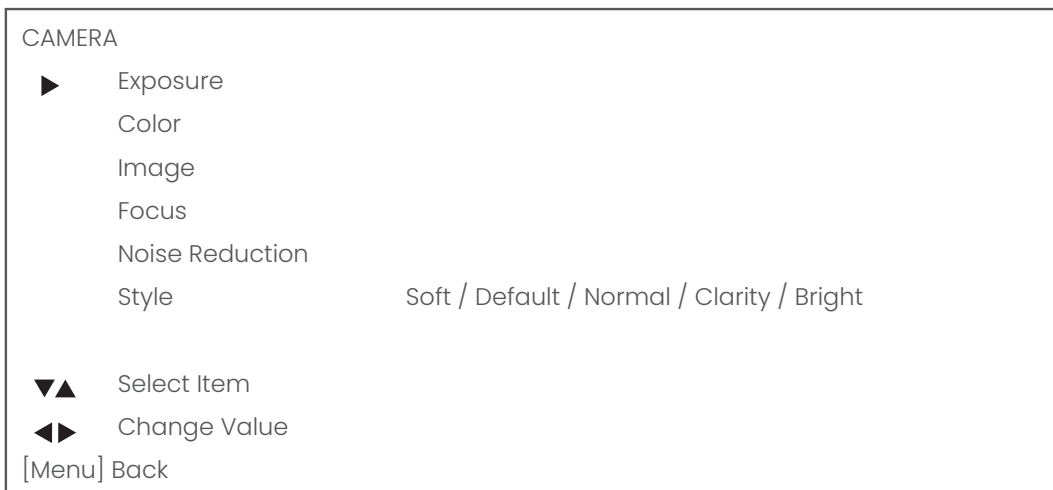- Version
- Restore Default

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## 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. Press [ ◀▶ ] to change setting. Press [Menu] to go back

```
MENU
   ▶      Language              EN / CN
          Setup
          Camera
          P/T/Z
          Video Format
          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 / 38400 / 115200


   ▼▲     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 / 2400K ~ 7100K 100K increments / 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
[Menu] Back
```

### 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
          Low Light Mode          ON / OFF
   ▼▲     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 / Auto/  OFF
          Dynamic Hot Pixel       1 ~ 5 / OFF


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

```

### 3.6 STYLE

```
STYLE
   ▶      Style                   Default / Normal / Clarity / Bright / Soft


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

## 4. PTZ

```
PTZ
    ▶        Speed by Zoom          ON / OFF
             Zoom Speed             1 ~ 8
             Image Freezing         ON / OFF



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

## 5. VIDEO FORMAT

```
VIDEO FORMAT
    ▶        Video Format           1080p60/ 1080p50/ 1080i60/ 1080i50/ 1080p30/ 1080p25/ 720p60/
                                    720p50/ 720p30/ 720p25/ 1080p59.94/ 1080i59.94/ 1080p29.97/
                                    720p59.94/ 720p29.97


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

## 6. NETWORK SETTINGS

```
    ▶        DHCP                   ON/OFF
             IP Address             xxx.xxx.xxx.xxx
[Menu] Back
```

## 7. VERSION

```
VERSION
    ▶        MCU Version            nr        date
             Camera Version         nr        date
             AF Version             nr        date


[Menu] Back
```

## 8. 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 an RS-232 or RS-485 serial interface.

The camera can be controlled via RS-232, the parameters of RS-232 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.

For command list, see Appendix A
* default value

# IP Control

### Network settings

By default the ip address of the camera is **192.168.5.163** with username and password **admin/admin.** Avonic IP cameras can be controlled by any device using the Visca over IP protocol (see command list Appendix A).
The control parameters for the CM4x and CM7x-IP cameras are as follows:
- IP Address: 192.168.5.163
- Username: admin
- Password: admin
- TCP or UDP port: 1259
- Parity bit: none.

# WEBGUI

## Login

default IP*: **192.168.5.163**
default username: **admin**
default password: **admin**

The login screen:
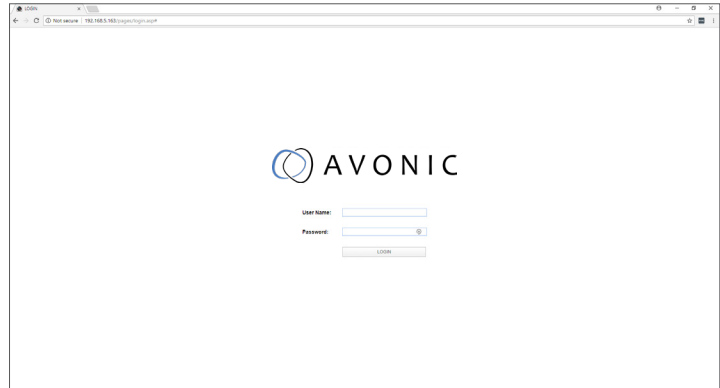


**\*Note:**

If DHCP is enabled and there is no DHCP server available, the camera will self appoint an IPv4 link-local address between 169.254.0.0 and 169.254.255.255. The IP address is shown on screen at start-up.

## Local

A preview of the camera ip-video output. When an image is not visible, make sure to have flash enabled for this webpage.
On the right is PTZ control, speed by zoom slider, focus and zoom functionality.
Click on the camera icon below the screen to switch preview between main stream and sub stream. Note that preview only works when the main- or sub-stream is set to H264 (see page 22).
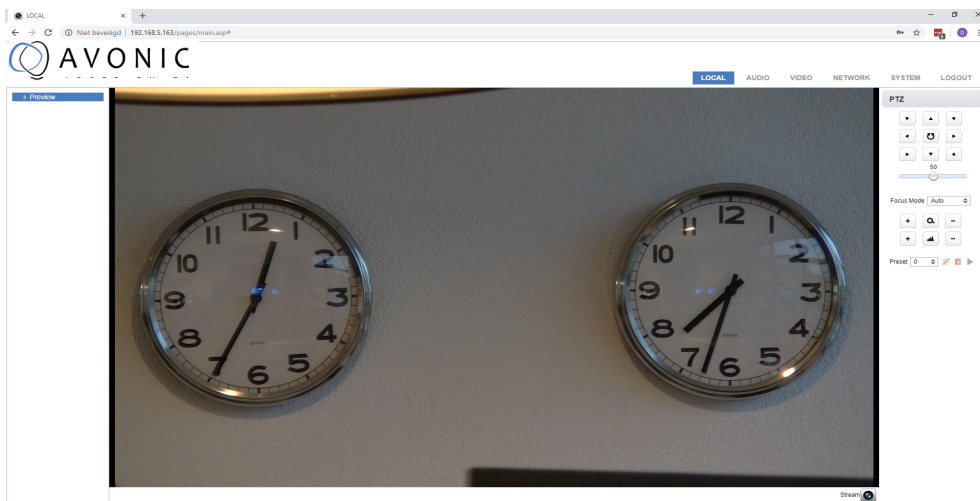
# Audio

Enable or disable embedding of the audio input on the back of the camera.

Select encoding type mp3, AAC or G.711A

| | |
|---|---|
| Select sample rate: | 16000, 32000, 44100, 48000 |
| Sample bits: | always 16 |
| Bitrate Kbps : | 32, 48. 64, 96, 128 |
| Channel: | Mono or Stereo |
| Input volume: | 1 ~ 10 |
| Audio Delay (ms) | 0 ~ 200 |

# Video

In this section you will find the various settings concerning the video output, including the main settings as found in the normal OSD menu of the camera..



## Video Encoder
**Video Encoder options:**

|  | Main Stream | Sub Stream |
| --- | --- | --- |
| Compressed Format : | MJPEG/ H.264/ H265 | MJPEG/ H.264/ H265 |
| Profile: | BP/ MP/ HP | BP/ MP/ HP |
| Image Size: | 1920*1080/  1280*720 | 1920*1080/  1280*720/ 320*180/ 320*240/ 640*360 |
| Rate Control: | CBR (constant bit rate)/ VBR (variable bit rate) depending on format | |
| Image quality: | fixed at 'best' | fixed at 'good' |
| Bit Rate (Kb/S): | 64-40960 | 64-40960 |
| Frame Rate (F/S): | 5-60 frames per second | 5-30 frames per second |
| I Frame Interval: | 1-300 | 1-150 |
| I Frame min. QP: | 10-51 | 10-51 |
| Stream name: | live/av0 | live/av1 |

| RTP Package* | Small Package (standard MTU size, 1500 bytes) |
| --- | --- |
|  | Big Package** (approx. 60kb MTU size) |

Click on 'Save' to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully.

* NOTE:  a reboot is required after changing this setting.
**NOTE: when 'Big Package' is selected, the Local tab with flashplayer preview will stop functioning. Make sure the application you want to use is able to handle the 'Big Package' option.

## Streaming Video
**Stream options:**

|  | Main Stream | Sub Stream |
|---|---|---|
| Enable: | mark checkbox to enable/ disable | mark checkbox to enable/ disable |
| Protocol type: | RTMP, SRT | RTMP, SRT |
| Host Address: | 192.168.5.11 | 192.168.5.11 |
| Host port: | 1935 | 1935 |
| Stream name: | live/av0 | live/av1 |
| User Name: | empty is default setting | empty is default setting |
| Password: | empty is default setting | empty is default setting |
| SRT Password for stream encr.: | empty is default setting | empty is default setting |
| Crypto key lenght in bytes: | 0, 16, 24, 32 | 0, 16, 24, 32 |

Click on 'Save' to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully

## Multicast Streaming
**Stream options:**

|  | Main Stream | Sub Stream |
|---|---|---|
| Enable: | mark checkbox to enable/ disable | mark checkbox to enable/ disable |
| Protocol type: | RTP/ TS Multicast/ TS Unicast | RTP/ TS Multicast/ TS Unicast |
| Address (multicast): | 224.0.0.0~ 239.255.255.255 | 224.0.0.0~ 239.255.255.255 |
| Address (unicast): | Specify the ip address to which you want the Unicast stream pushed | |
| Port: | 4000 (default) | 4002 (default) |
| Acces Method: | rtp://224.1.2.3:4000 | rtp://224.1.2.3:4002 |

Click on 'Save' to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully.

## Camera Settings

**In this area all OSD settings can be changed like when using the remote control:**

Focus, Exposure, Color, Image, Noise Reduction, Style. If a value is changed with the remote control, use the [refresh] button to update the webgui.
Note that only a picture will be shown with the main video stream set to H264.

## CCM Customizable Color Matrix

If the additional license for SRT and the Customizable Color Matrix (CCM) has been purchased, the Camera Settings menu will have an extra tab in the camera settings; CCM. The CCM is intended to finetune the  color settings of the camera to seamlessly integrate with an existing camerasystem.

## OSD

Note that only the output of the camera will be shown with the main stream set to H264.

In this area it is possible to put a camera name and time as overlay on the ip-stream (Overlay is  exclusively available on the ip-stream, not on the other outputs).

Show time and show title can be enabled or disabled by marking or unmarking the checkbox next to the respective setting (the time and name settings can be found under the tab System chapters Attributes and Time).

Below is a dropdown menu for the desired font color as well as directional arrows to move the title and time to the preferred position on the screen.

## OSD Font Size (related to Camera name and Time)

Scale size automatically to resolution for both main- and substream, check or uncheck box, if checked the camera name and time overlay will always scale with the image, keeping the proportions intact.

Save to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully
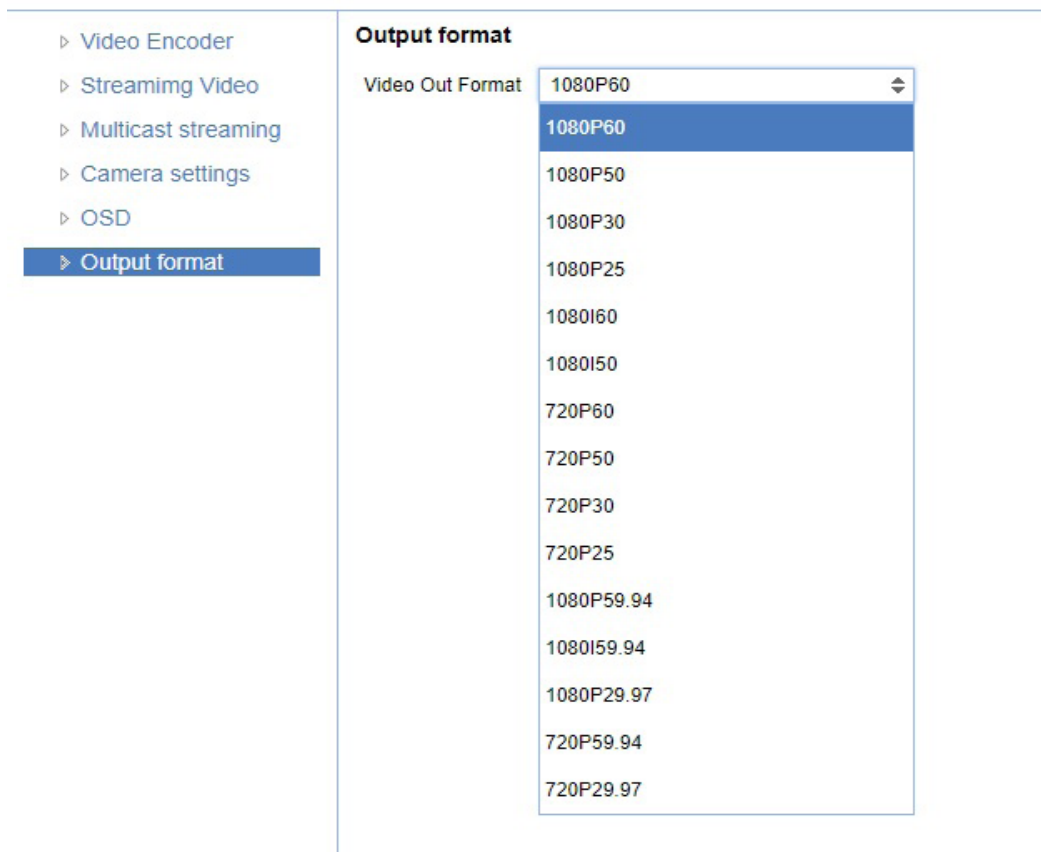
## Output Format

This setting is related to the output resolution and framerate on the HDMI and SDI connectors, to set the resolution of the main- and sub-ipstreams use the webgui. The resolution of the USB output is determined by the computer connected to it.

Save to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully

**SRT Settings**

These settings are related to the SRT streaming protocol; the port, passkey and encryption bit can be defined on this page.



# Network

**Port Settings**

On this page specific ports can be defined for the different streaming outputs and protocols the camera supports. Make sure these settings don't interfere with other uses and services on the same network.
Save to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully.

**Ethernet and DNS settings**

In this section the ip-settings for the ethernet adapter can be made; DHCP, IP address, Subnet Mask, Default Gateway and on the next tab, the Preferred and Alternative DNS server can be specified.
The MAC Address can be found on the last visible line.
Save to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully and that a reboot is needed for the changes to take effect.
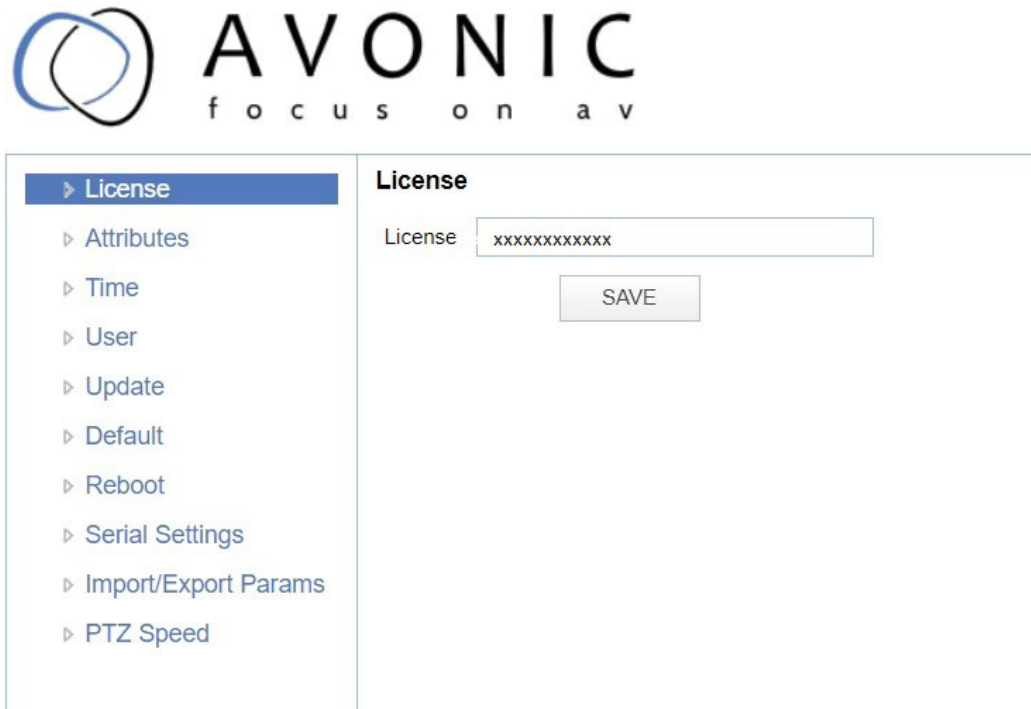
# System

## License

If you have purchased the license for the premium features of this camera, this is where you can enter the License key to unlock them. No need for a reboot, it is instantly activated. The license can be bought through your local sales channel or contact Avonic directly.
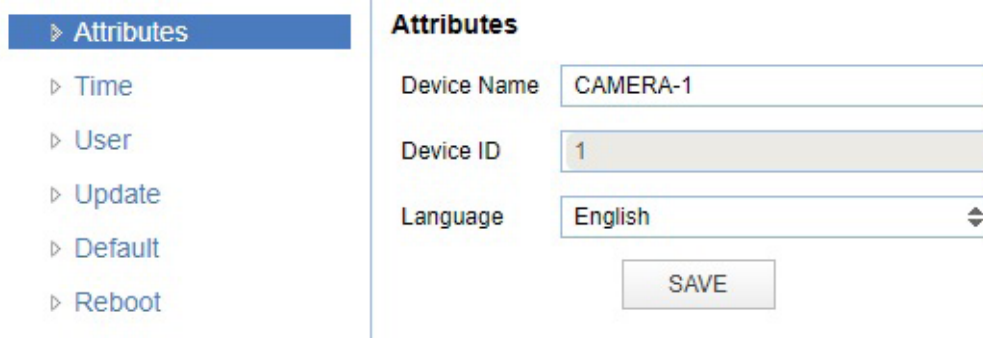


## Attributes

Specify a specific device name to display in the OSD, which can be useful when using multiple cameras on the same LAN. Device-ID is always 1 (addressing is done via IP). The language cannot be changed.
Save to apply settings, a small dialogue screen appears in the bottom right of the window telling the settings are saved successfully.
WARNING: The ONVIF protocol doesn't accept spaces in the camera name.

## Time

Manually set time and date or synchronize time and date via a computer or an external server on the LAN or WAN.

▷ Attributes
▷ Time
▷ User
▷ Update
▷ Default
▷ Reboot

**Time**

| Time | |
|---|---|
| Date Format | MM-DD-YYYY |
| Date Sprtr | / |
| Zone | (GMT+01:00)Berlin, Stockholm, Rom |
| Hour Type | 24 Hours |
| NTP Enable | ☐ |
| Update Interval | 1 day |
| Host Url | time.nist.gov |
| Host Port | 123 |

SAVE

**Time Settings**

| Time Settings | Synchronize with computer time |
|---|---|
| Computer Time | 2019-02-21 14:10:47 |

SYNC.

## User

Define different users with levels of permission and different username passwords combinations. There are 2 levels of users: administrators with access to all features and user-1 and user-2 with access to the preview and PTZ-controls.

▷ Attributes
▷ Time
▷ User
▷ Update
▷ Default
▷ Reboot

**User**

| Authority | admin |
|---|---|
| User Name | admin |
| Password | ••••• |
| Confirm Password | |

SAVE

## Update

By default this screen shows a readout of the current firmware versions. Update file provides a firmware upgrade functionality via this screen. When the camera is done uploading and processing the update it will reboot. Make sure to refresh your browser and log in again after the reboot.

▷ Attributes
▷ Time
▷ User
▷ Update
▷ Default
▷ Reboot

**Update**

| MCU Version | V2.4.1 2019-1-24 |
|---|---|
| Camera Version | V2.4.1 2019-1-25 |
| AF Version | V4.0.2 2018-12-4 |
| Update File | Bestand kiezen   Geen bestand gekozen |

UPGRADE
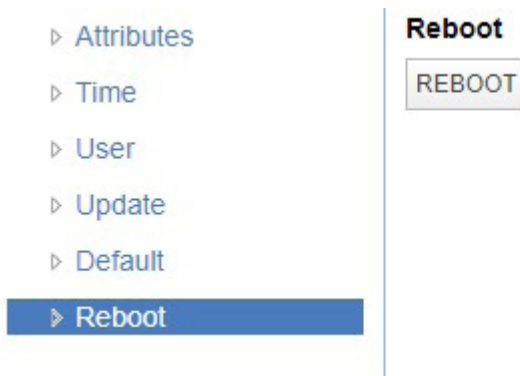
## Default

Click on the button to perform a factory default. The camera will be ready for use again after the boot cycle.
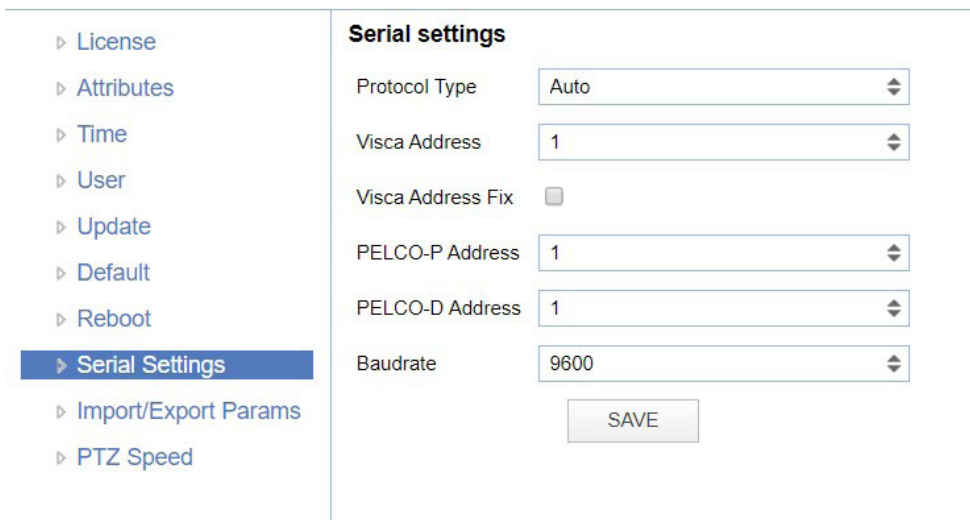


## Reboot

Click on the button to activate a reboot, the camera will be ready for use after it has restarted.
Log in again after the reboot.



## Serial Settings

Choose the preferred protocol to use and the accompanying address to go with it. Or leave the system on 'auto' and have the camera detect which protocol is being used (addressing is still needed, even on auto).

## Import/ Export Parameters

The CM7x cameras have the ability to import or export a configuration.
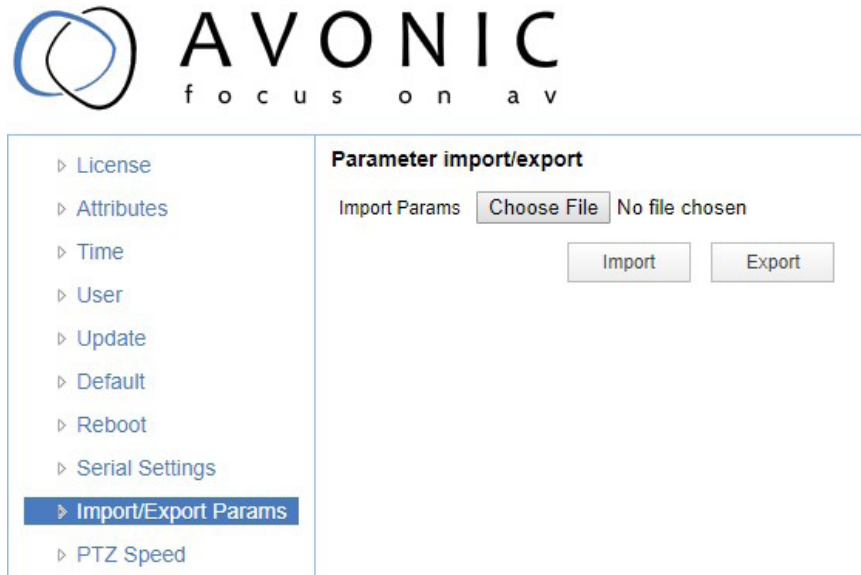


## PTZ Speed

It is possible to increase the maximum pan and tilt speed, this can be useful in a conference system where quick action is necessary. The camera will produce slightly more noise when this setting is set to 'high'.
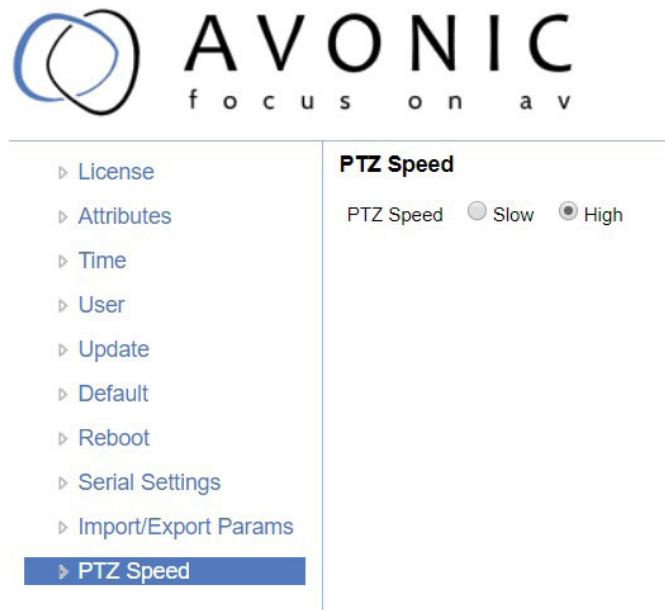


## MJPEG Snapshot

The Avonic CM7x-IP cameras are equipped with a MJPEG snapshot feature for example to implement into third party software.
To access the MJPEG snapshot feature use the following format:

http://IP/img/capjpg/snapshot.jpg

Every time the page is refreshed the picture will be updated.

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

## Unauthorized Use

- Do not film extreme bright objects for a prolonged period of time, such as sunlight, light sources, etc.
- Do not operate in unstable lighting conditions, otherwise the produced image could be less than optimal.
- Do not operate close to powerful electromagnetic radiation, such as TV or radio transmitters, etc.

# TROUBLESHOOTING

## General Advice

- Turn the camera off and on again and check if the problem persists.
- Restore to Factory Default

## Power Issues

- No self-test (applies only to PTZ cameras) and no power LED
  - Check the net power
  - Check the power supply
  - Check the physical power button on the back of the camera

# 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, white balance, color temp, Red and Blue tuning

# Control

- No self-test (PTZ cameras only) and no power LED
  - Check the net power
  - Check the power supply
- 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
  - Check IP network settings on both camera and controller

# WebGUI

- Cannot enter WebGUI
  - Check network cable
  - Check if PC is in the same subnet as camera
  - Reset the factory default ip settings by pressing [*] [#] [Manual] and Reboot
- Firmware update failed
  - Check firmware file integrity, download it again.

# VISCA command list

Replace the 'x' in all the '8x' addresses with the serial Visca address set in the camera to control it. When using VISCA over IP the 'x' in al the '8x' addresses is always '1', as the unique identifier is the IP address.

# VISCA over IP commands

The Avonic IP camera is implemented with a TCP server. The TCP port number is 1259 by default and can be altered in the WebGUI. Once the connection between client and server is set up, the client will be able to send PTZ commands to the server. The server then parses and executes the PTZ command.

The Avonic IP Camera also has an implemented UDP server. The UDP port number is fixed on 1259. Once the connection between client and server is set up, the client will be able to send PTZ commands to the server. The server then parses and executes the PTZ command.
**Pay attention to the fact that the camera does not send back any communication via UDP.**

The VISCA over IP command list is based on the VISCA protocol. Not all VISCA commands are implemented.

The PTZ Command format is according to the definition of the VISCA protocol. The VISCA address of the camera is set to 1 by default and can be changed in the WebGUI. As all cameras are uniquely identified by their IP address, all VISCA serial addresses of the cameras that are controlled over IP do not necessarily have to be unique.

Default settings:
TCP port                1259
UDP port                1259 (same port as TCP; is correct)
VISCA address           1

### 1. Camera return commands

x = Camera Address

y = Socket Number

z = Camera Address + 8

All parameter values are in HEX

| Return/complete Command | | | |
|---|---|---|---|
| **Command** | **Function** | **Command Packet** | **Comments** |
| **ACK/Completion Messages** | ACK | 90 4y FF (y: Socket No.) | Return when the command is accepted. |
| | Completion | 90 5y FF (y: Socket No.) | Return when the command has been executed. |

| Error command | | | |
|---|---|---|---|
| **Command** | **Function** | **Command Packet** | **Comments** |
| **Error Messages** | Syntax Error | 90 60 02 FF | Returned when the command format is different or when a command with illegal command parameters is accepted. |
| | Command Buffer Full | 90 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 | 90 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 | 90 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 | 90 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 auto focus. |

AVONIC

## 2    Camera control commands

x = Camera Address
y = Socket Number
z = Camera Address + 8

All parameter values are in HEX

| Camera control commands | | | |
|---|---|---|---|
| Command | Function | Command Packet | Comments |
| Address Set | Broadcast | 88 30 01 FF | Address setting |
| CAM_Power | On | 8x 01 04 00 02 FF | Power ON (only works over serial connection) |
| | Off | 8x 01 04 07 00 FF | Power OFF |
| CAM_Zoom | Stop | 8x 01 04 07 00 FF | |
| | Tele (Standard speed) | 8x 01 04 07 02 FF | |
| | Wide (Standard speed) | 8x 01 04 07 03 FF | |
| | Tele (Variable speed) | 8x 01 04 07 2p FF | p = 0(low speed) – F(high speed) |
| | Wide (Variable speed) | 8x 01 04 07 3p FF | |
| | Direct | 8x 01 04 47 0p 0q 0r 0s FF | pqrs(0-F): Zoom Position |
| CAM_Focus | Stop | 8x 01 04 08 00 FF | |
| | Far (Standard speed) | 8x 01 04 08 02 FF | |
| | Near (Standard speed) | 8x 01 04 08 03 FF | |
| | Far (Variable speed) | 8x 01 04 08 2p FF | p = 0(low) – F(high) |
| | Near (Variable speed) | 8x 01 04 08 3p FF | |
| | Direct Focus Position | 8x 01 04 48 0p 0q 0r 0s FF | min p = 0, q = 0, r = 0, s = 0 max p = 0, q = 6, r = E, s = A |
| | Auto Focus | 8x 01 04 38 02 FF | AF On |
| | Manual Focus | 8x 01 04 38 03 FF | AF Off |
| | Auto/Manual | 8x 01 04 38 10 FF | AF Toggle On/Off |
| 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 |

| Camera control commands | | | |
|---|---|---|---|
| **Command** | **Function** | **Command Packet** | **Comments** |
| 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_Iris | Reset | 8x 01 04 0B 00 FF | Iris Setting (CAM_AE is set to Iris Priority) |
| | Up | 8x 01 04 0B 02 FF | |
| | Down | 8x 01 04 0B 03 FF | |
| | Direct Iris Position | 8x 01 04 4B 00 00 0p 0q FF | min p = 0 q = 0 max p = 0, q = C |
| CAM-Shutter | Direct | 8x 01 04 4A 00 00 0p 0q FF | min p = 0 q = 0 max p = 1 q = 0 |
| 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 (only works with exposure mode Bright enabled) | 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 Compensation On/Off |
| | Off | 8x 01 04 33 03 FF | |

| Camera control commands | | | |
|---|---|---|---|
| Command | Function | Command Packet | Comments |
| 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: 0ff, level 1 to 6) |
| | | | |
| | | | |
| CAM_Apertu-re(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 Num-ber(=0 to 127) |
| | 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 | Diret | 8x 01 04 49 00 00 00 0p FF | p: Color Gain setting 0h (60%) to Eh (200%) |
| SYS_Menu | Off | 8x 01 06 06 03 FF | Turns on/off the menu screen |
| | On | 8x 01 06 06 02 FF | |

| Camera control commands | | | |
|---|---|---|---|
| **Command** | **Function** | **Command Packet** | **Comments** |
| Pan_tiltDrive | Up | 8x 01 06 01 VV WW 03 01 FF | VV: Pan speed 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed 0x01 (low speed) to 0x14 (high speed) YYYY: Pan Position ZZZZ: Tilt Position |
| | Down | 8x 01 06 01 VV WW 03 02 FF | |
| | Left | 8x 01 06 01 VV WW 01 03 FF | |
| | Right | 8x 01 06 01 VV WW 02 03 FF | |
| | Upleft | 8x 01 06 01 VV WW 01 01 FF | |
| | Upright | 8x 01 06 01 VV WW 02 01 FF | |
| | 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 0Z FF | |
| | RelativePosition | 8x 01 06 03 VV WW 0Y 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: Down-Left 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 |

## Camera control commands

| Command | Function | Command Packet | Comments |
|---|---|---|---|
| CAM_AWBSensiti-vity | 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 |

### 3        Inquiry commands

x = Camera Address

y = Socket Number

z = Camera Address + 8

All parameter values are in HEX

## Inquiry Command

| Command | Function | Command Packet | Comments |
|---|---|---|---|
| CAM_ZoomPosInq | 8x 09 04 47 FF | 90 50 0p 0q 0r 0s FF | pqrs: Zoom Position |
| CAM_FocusAF-ModeInq | 8x 09 04 38 FF | 90 50 02 FF | Auto Focus |
| | | 90 50 03 FF | Manual Focus |
| CAM_FocusPosInq | 8x 09 04 48 FF | 90 50 0p 0q 0r 0s FF | pqrs: Focus Position |
| CAM_WBModeInq | 8x 09 04 35 FF | 90 50 00 FF | Auto |
| | | 90 50 01 FF | Indoor mode |
| | | 90 50 02 FF | Outdoor mode |
| | | 90 50 03 FF | OnePush mode |
| | | 90 50 05 FF | Manual |
| CAM_RGainInq | 8x 09 04 43 FF | 90 50 00 00 0p 0q FF | pq: R Gain |
| CAM_BGainInq | 8x 09 04 44 FF | 90 50 00 00 0p 0q FF | pq: B Gain |
| CAM_AEModeInq | 8x 09 04 39 FF | 90 50 00 FF | Full Auto |
| | | 90 50 03 FF | Manual |
| | | 90 50 0A FF | Shutter priority |
| | | 90 50 0B FF | Iris priority |
| | | 90 50 0D FF | Bright |
| CAM_ShutterPosInq | 8x 09 04 4A FF | 90 50 00 00 0p 0q FF | pq: Shutter Position |
| CAM_IrisPosInq | 8x 09 04 4B FF | 90 50 00 00 0p 0q FF | pq: Iris Position |
| CAM_BrightPosInq | 8x 09 04 4D FF | 90 50 00 00 0p 0q FF | pq: Bright Position |

| Inquiry Command | | | |
|---|---|---|---|
| **Command** | **Function** | **Command Packet** | **Comments** |
| **CAM_ExpComp-ModeInq** | 8x 09 04 3E FF | 90 50 02 FF | On |
| | | 90 50 03 FF | Off |
| **CAM_ExpCompPosInq** | 8x 09 04 4E FF | 90 50 00 00 0p 0q FF | pq: ExpComp Position |
| **CAM_Backlight-ModeInq** | 8x 09 04 33 FF | 90 50 02 FF | On |
| | | 90 50 03 FF | Off |
| | | | |
| | | | |
| **CAM_Noise2DLevel** | 8x 09 04 53 FF | 90 50 0p FF | Noise Reduction (2D) p: 0 to 5 |
| **CAM_Noise3DLevel** | 8x 09 04 54 FF | 90 50 0p FF | Noise Reduction (3D) p: 0 to 8 |
| **CAM_Flicker-ModeInq** | 8x 09 04 55 FF | 90 50 0p FF | p: Flicker Settings(0: OFF, 1: 50Hz, 2: 60Hz) |
| **CAM_Aperture-ModeInq(Sharpness)** | 8x 09 04 05 FF | 90 50 02 FF | Auto Sharpness |
| | | 90 50 03 FF | Manual Sharpness |
| **CAM_ApertureInq(Sharpness)** | 8x 09 04 42 FF | 90 50 00 00 0p 0q FF | pq: Aperture Gain |
| **CAM_PictureEffect-ModeInq** | 8x 09 04 63 FF | 90 50 02 FF | Off / Color |
| | | 90 50 04 FF | B&W |
| **CAM_MemoryInq** | 8x 09 04 3F FF | 90 50 0p FF | p: Memory number last operated. |
| **SYS_MenuModeInq** | 8x 09 06 06 FF | 90 50 02 FF | On |
| | | 90 50 03 FF | Off |
| **CAM_LR_ReverseInq** | 8x 09 04 61 FF | 90 50 02 FF | On |
| | | 90 50 03 FF | Off |
| **CAM_PictureFlipInq** | 8x 09 04 66 FF | 90 50 02 FF | On |
| | | 90 50 03 FF | Off |
| **CAM_ColorGainInq** | 8x 09 04 49 FF | 90 50 00 00 00 0p FF | p: Color Gain setting 0h (60%) to Eh (200%) |

| Inquiry Command | | | |
|---|---|---|---|
| **Command** | **Function** | **Command Packet** | **Comments** |
| VideoSystemInq | 8x 09 06 23 FF | 90 50 00 FF | 1920x1080p60 |
| | | 90 50 01 FF | 1920x1080p50 |
| | | 90 50 02 FF | 1920x1080i60 |
| | | 90 50 03 FF | 1920x1080i50 |
| | | 90 50 04 FF | 1280x720p60 |
| | | 90 50 05 FF | 1280x720p50 |
| | | 90 50 06 FF | 1920x1080p30 |
| | | 90 50 07 FF | 1920x1080p25 |
| | | 90 50 08 FF | 1280x720p30 |
| | | 90 50 09 FF | 1280x720p25 |
| | | 90 50 0A FF | 1920x1080p59.94 |
| | | 90 50 0B FF | 1920x1080i59.94 |
| | | 90 50 0C FF | 1280x720p59.94 |
| | | 90 50 0D FF | 1920x1080p29.97 |
| | | 90 50 0E FF | 1280x720p29.97 |
| Pan-tiltMaxSpee-dInq | 8x 09 06 11 FF | 90 50 ww zz FF | ww: Pan Max Speed zz: Tilt Max Speed |
| Pan-tiltPosInq | 8x 09 06 12 FF | 90 50 0w 0w 0w 0w 0z 0z 0z 0z FF | wwww: Pan Position zzzz: Tilt Position |
| CAM_GainLimitInq | 8x 09 04 2C FF | 90 50 0q FF | p: Gain Limit |
| CAM_DHotPixelInq | 8x 09 04 56 FF | 90 50 0q FF | p: Dynamic Hot Pixel Setting (0: 0ff, level 1 to 6) |
| CAM_AFSensitivi-tyInq | 8x 09 04 58 FF | 90 50 01 FF | High |
| | | 90 50 02 FF | Normal |
| | | 90 50 03 FF | Low |
| CAM_BrightnessInq | 8x 09 04 A1 FF | 90 50 00 00 0p 0q FF | pq: Brightness Position |
| CAM_ContrastInq | 8x 09 04 A2 FF | 90 50 00 00 0p 0q FF | pq: Contrast Position |
| CAM_FlipInq | 8x 09 04 A4 FF | 90 50 00 FF | Off |
| | | 90 50 01 FF | Flip-H |
| | | 90 50 02 FF | Flip-V |
| | | 90 50 03 FF | Flip-HV |
| CAM_IridixInq | 8x 09 04 A7 FF | 90 50 00 00 0p 0q FF | pq: Iridix Position |
| CAM_AFZone | 8x 09 04 AA FF | 90 50 00 FF | Top |
| | | 90 50 01 FF | Center |
| | | 90 50 02 FF | Bottom |
| CAM_ColorHueInq | 8x 09 04 4F FF | 90 50 00 00 00 0p FF | p: Color Hue setting 0h (- 14 degrees) to Eh ( +14 degrees) |
| CAM_AWBSensitivi-tyInq | 81 09 04 A9 FF | 90 50 00 FF | High |
| | | 90 50 01 FF | Normal |
| | | 90 50 02 FF | Low |

| AV-CM7x specific commands | | | |
|---|---|---|---|
| Command | Function | Command Packet | Comments |
| Pan-tilt_MaxSpeed | High Speed Pan/Tilt ON | 8x 0A 01 31 03 FF | High Speed PT ON |
| | High Speed Pan/Tilt OFF | 8x 0A 01 31 02 FF | High Speed PT OFF |
| | | | |
| ARM/MCU_Version Inq | Inquiry ARM/MCU Version | 8x 09 0A 01 03 FF | |
| CAM/UVC_Version Inq | Inquiry Cam/UVC version | 8x 09 00 02 FF | |
| | | | |
| CAM_TallyLight | Red | 8x 01 7E 01 0A 00 02 03 FF | Tally Light Red ON |
| | Green | 8x 01 7E 01 0A 00 03 02 FF | Tally Light Green ON |
| | Off | 8x 01 7E 01 0A 00 03 03 FF | Tally Light OFF |

# APPENDIX B DIMENSIONS

AVONIC