AVer CL01 PTZ Professional Camera Controller and

Video Conferencing Cameras

July 2021

Steps to connect the CL01 Professional Camera Controller and AVer Video Conferencing Cameras via RS232 and Network (IP-UDP).

The AVer CL01 PTZ Professional Camera Controller is compatible with all AVer Auto Tracking and PTZ cameras and a variety of other brands.   The CL01 has simple configuration to manage up to 7 cameras at an instant (Max. connections of up to 255 cameras) via different control protocols.

CL01 Features:

- Pan / Tilt / Zoom Speed Control
- 7 Quick Camera selects (CAM1 – CAM7)
- 3 infinite Rotate Knobs
- RS-232 / RS-422 / RS-485 / IP control interface
- VISCA / Pelco-D / Pelco-P protocols
- 1 Year Warranty

Camera connection with the AVER CL01 Professional Camera Controller

There have been instances where the question is asked, "Why use Visca-Over-IP compared to RS-232/RS-422 or vice-versa"?

Typically, RS232/RS422 responds quicker than Visca over IP (depends on Network quality); however, using IP control is more convenient and can control more cameras on the Network.

Another thing to take into consideration is distance, if cameras are close to controller, then maybe using RS232/RS422 makes sense, but if cameras are further away, then using IP control may make even more sense.

Lastly, cabling, making an RJ45 Cat5E/Cat6 cable is straight forward these days and acquiring cable and cable ends are fairly easy.   Creating the RS232/RS422 cable may not be so easy to make and obtain, depending on where you are located.

Connecting CL01 to a Video Conferencing Camera

Camera Side

AVer has three distinct business units:

- Pro-AV
- Video Conferencing
- K-12 Education

We will be discussing the Video Conferencing Cameras (VC), the connections, and the configurations needed for them to work with an RS-232 remote control connection.
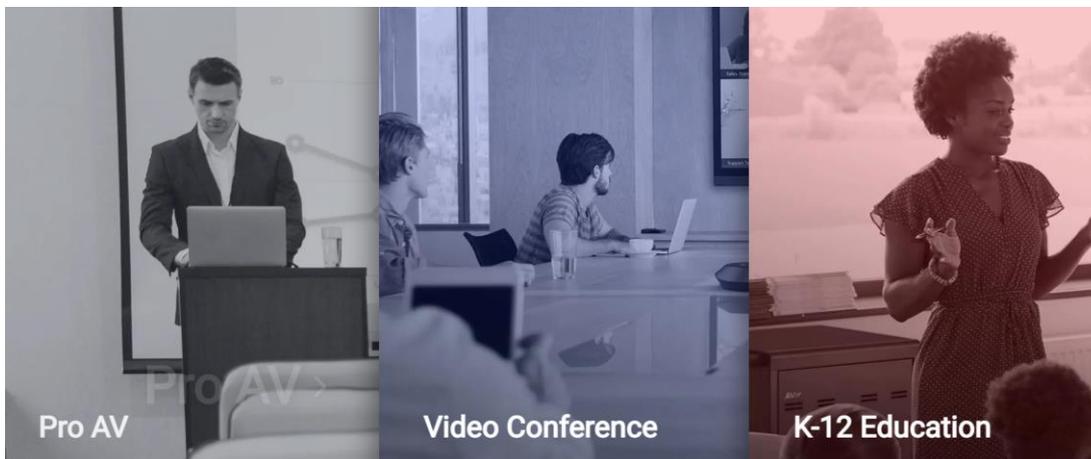
We will be discussing the following AVer Video Conferencing cameras connected to the AVer CL01 Camera Controller.

- CAM520 Pro2
- CAM520
- VC520 Pro2

CAM520 Pro2 and AVer CL01 Camera Controller, Visca over IP

The AVer CAM520Pro2 camera can be controlled via VISCA over IP or RS-232 protocols. We will discuss the network **Visca over IP** here, note that you will need a network switch and Cat5E cabling for connecting the equipment together.
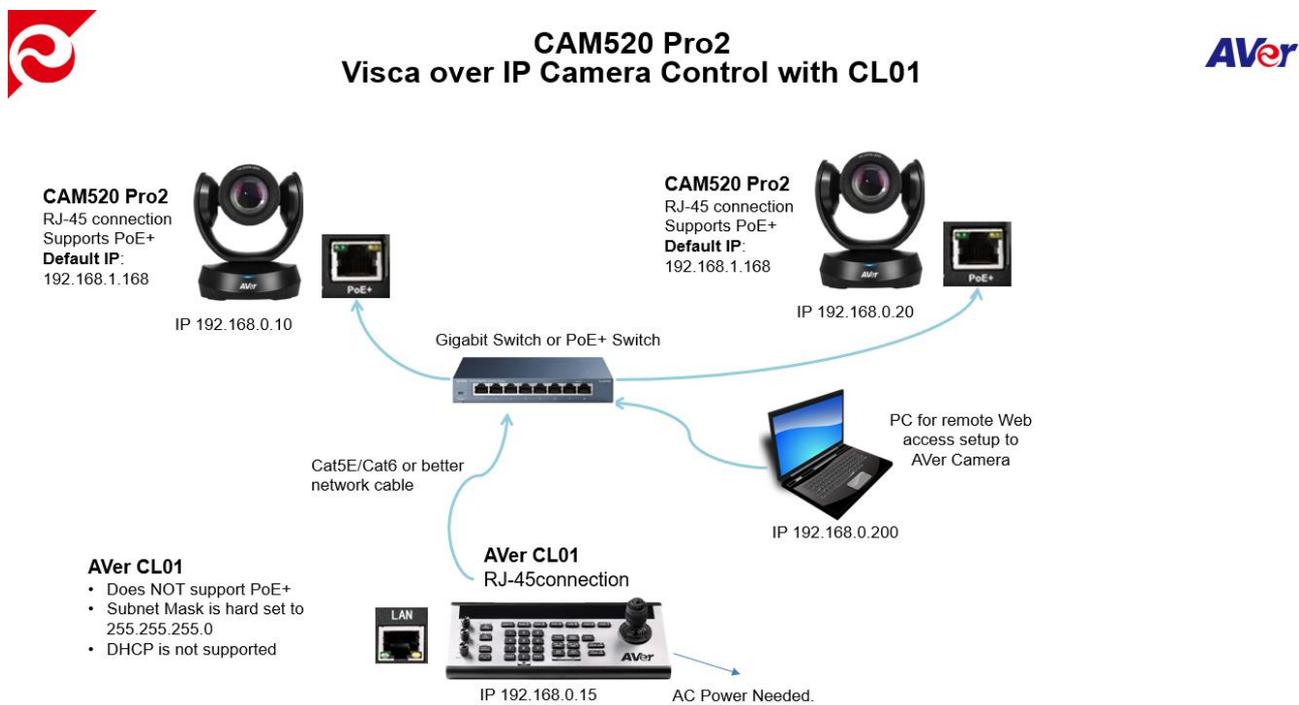
1. Use the AVer PTZAPP2 to gain access to the camera's configuration via USB, to configure the network and IP of the camera. Once configured, the hardware connections can be made. PTZAPP2 software can be found here:
   https://www.averusa.com/business/support/

2. Refer to the CAM520-Pro2 User Manual for more detailed information of the camera, connect the USB-Type B connector to a computer and launch the PTZAPP2 software (Windows & MAC), then change the Default IP address (192.168.1.168) of the camera, if needed, to match your network.

CAM520 Pro2 and AVer CL01 Camera Controller, Visca over IP (continued)

2. Launch PTZApp 2* (PTZ) and connect CAM520 Pro2 to PC with USB cable. The camera default IP address is **192.168.1.168**.
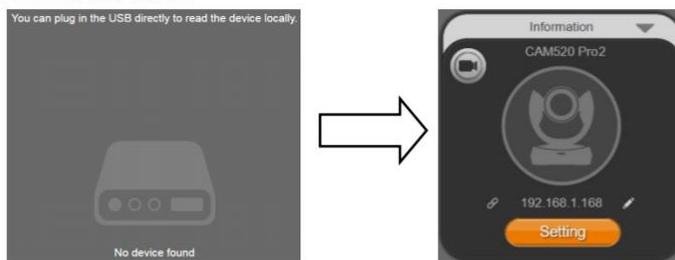
[Note] The browser supports:
• Chrome: version 76.x or above   • Firefox: version 69 or above   • IE: Doesn't support

3. The Default IP, (192.168.1.168), can then be changed to match your network.

3. Click pencil icon ( ) to edit IP address**.

4. Once the IP has been changed and all the network cables have been connected, type in the **NEW IP address** in a Chrome browser, you should be prompted for Password, **aver4321**, then asked to create a NEW *Username* and *Password*, please write them down.

4. Click weblink icon ( ) to launch Chrome page. Please enter the password (default password is **aver4321**). User will be asked to set a new account and password. (Please enter PTZApp2 to reset password back to default while password is forgotten.)

CAM520 Pro2 and AVer CL01 Camera Controller, Visca over IP (continued)

5. Once logged in, verify you have basic control of the camera using the PTZ controls from the WebUI.

6. Navigate to the RS232 Settings page and verify the Visca over IP setting is set to **On**.

7. There are few things to keep in mind when connecting with **VISCA over IP**:

   - Please make sure the _VISCA over IP option_ is enabled on PTZ App 2.
   - Make sure the CAM520Pro2 **Address** is set to 1.
   - On the **CL01**, please use "Sony Visca", "Baud Rate 9600, Address 001".
   - A network switch/hub is needed between the CL01 and CAM520 Pro, the CL01 does not support a direction connection.

8. Once the CAM520Pro2 camera has been setup for Visca over IP connectivity, we now need to configure the CL01 controller.

CAM520 Pro2 and AVer CL01 Camera Controller, Visca over IP, CL01 setup

There are some pre-requisites for the CL01 to connect to your network enabled camera.
First, note that a directly connected Cat5e cable from your computer or camera to the CL01 will *not* work, you will need a (10/100/1000) type Network switch/router to be placed in between the devices.
With the Network IP connection, it will look more like the following diagram.
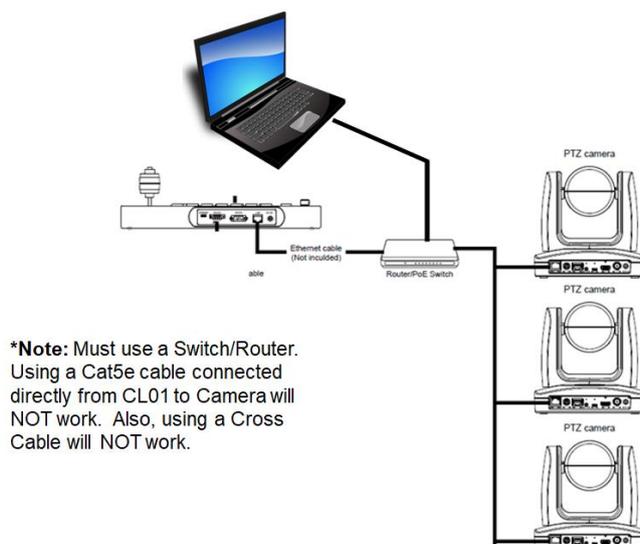
There are a couple of different Network IP connections to use for all 3 devices to connect over the network.

DHCP: One way is to use DHCP, where there is a DHCP server is handling the IP address and giving out IP addresses as they are powered up on the network.

Static: STATIC IP addresses are used where we are more in control of the IP's being used or defined. In this example we will use STATIC IP's, assigning IP's AdHoC, where no other devices will be on the network.

*Note: It is important to make sure that the IP addresses being used are not a duplicate of another device on the network as it will cause issues connecting.

CL01 Camera Controller NIC

A couple of things to note regarding the CL01 NIC.

- The CL01 uses a hard coded Subnet Mask of 255.255.255.0
- No DHCP setting, an IP *must* be reserved/assigned and entered for the CL01.
- The CL01 does not support PoE+, the included power adaptor must be used.

Connecting CL01 to a Camera via (IP) Network (continued)

There are 7 main steps to connect the CL01 and Cameras on the same IP Network, the first 3 main steps are for adding a PC/MAC to the network, if you do need to do that, you can skip to step 4.

1. List your Network IP addresses you will use for your Camera, Computer, and Controller CL01.

   Camera1: 192.168.0.10
   Controller CL01: 192.168.0.15
   Computer: 192.168.0.200

2. Verify your NIC's IP configuration on your laptop to match how you will connect.
3. Verify and configure the Cameras IP address using the PTZAPP2/USB connection of the camera.
4. Configure CL01 IP address and Com Port set to VISCA over IP (SonyVISCA).
5. Configure CL01 Camera1 IP address.
6. Connect the (3) devices to the same switch/router.
7. Verify "Link" lights on Camera, Computer, and CL01.

Step 2: Verify IP address of your laptop: Locate the hard wired NIC on your laptop and "right-click" for properties.   Select IPV4, the Properties, and select "Use the following IP address".
Computer IP: 192.168.0.200
Subnet mask: 255.255.255.0
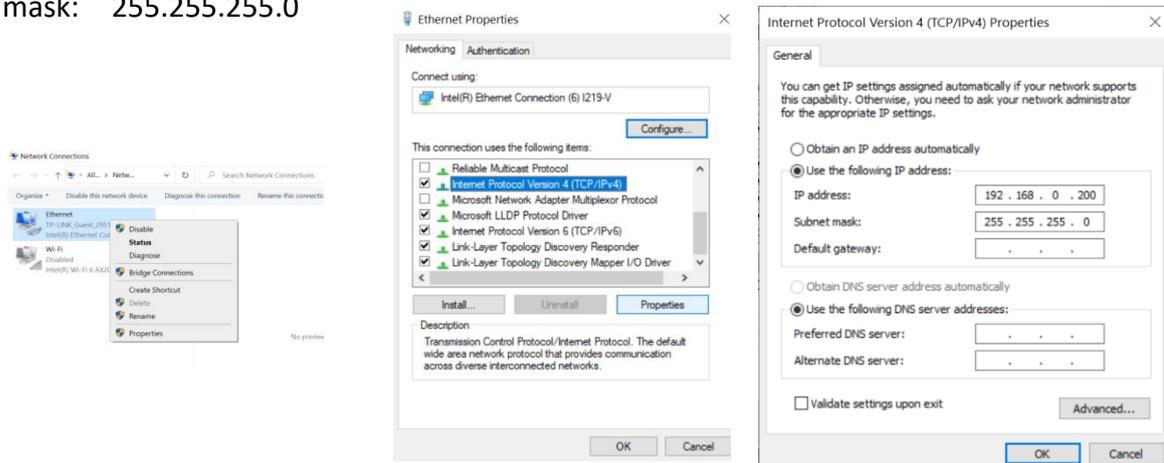
Step 3: Verify IP address of the Camera to be controlled from previous camera setup steps.
Set IP address and Mask to match other devices.
   Camera IP: 192.168.0.10, Subnet Mask: 255.255.255.0

Connecting CL01 to a Camera via (IP) Network (continued)

Step 4: Verify IP address of the CL01 Camera Controller:
Connect power, once booted, **long press Menu** to get the "System Settings" menu on the OLED display of CL01.

1. While on #1, Move Joystick to the right to gain access to the next sub-menu.


```
1.   Language: English
2.   LED brightness: Normal
3.   Backlight: Auto
4.   Joystick sensitive: 7        ↓↓↓↓
5.   Auto standby: Off            ↑↑↑↑
6.   ItselfIP: 192.168.000.088:08090
7.   About keyboard
```

2. Move Joystick to #6 (ItselfIP), and then move to right to configure the IP of the CL01.   You can use the CL01 number pad to enter digits.
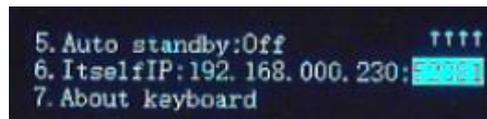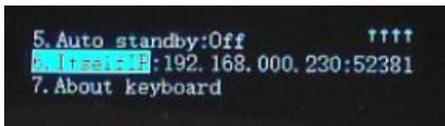
    ItselfIP: 192.168.0.15   Port: 52381

3. Once entered, move Joystick to right to confirm.
4. Move Joystick to left to exit submenu and return to "System Setting" menu.

```
1.   System Setting
2.   COM setting
3.   Ethernet setting
4.   Password setting
```
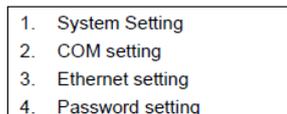
5. Move Joystick to #2, COM setting, move to the right to select.

```
1.   Channel: CAM1
2.   Address: 1
3.   Baudrate: 9600
4.   Protocol: Visca
```
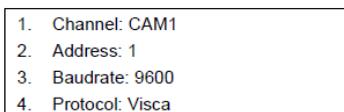
6. Select the Channel for the Camera, CAM1, Address:1, select protocol by moving joystick Up/Down to #4 **Protocol: SonyVisca**
7. Once **SonyVisca** is selected, move Joystick to the right to confirm.

Connecting CL01 to a Camera via (IP) Network (continued)

Step 5: Verify IP address of the Camera CAM1 IP on Controller:

Connect power, once booted, **long press Menu** to get the "System Settings" menu on the OLED display of CL01.
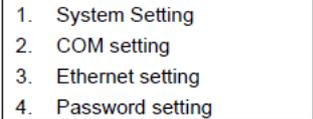
1.	System Setting
2.	COM setting
3.	Ethernet setting
4.	Password setting

1. Move Joystick to #3, Ethernet setting, move to right to select.

1.	Channel: CAM1
2.	Cam IP: 192.168.001.100
3.	Port: 52381

2. Move Joystick to #2, CAM IP, and move to right to enter the IP address of the Camera, in our setup it is: 192.168.0.10
3. Once entered, move Joystick to right to confirm.
4. Move Joystick to left to exit submenu and return to "System Setting" menu.
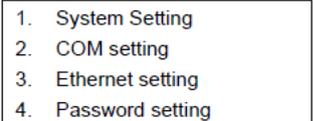
1.	System Setting
2.	COM setting
3.	Ethernet setting
4.	Password setting

5. Move Joystick to left, to exit the sub-menu and return to main menu.
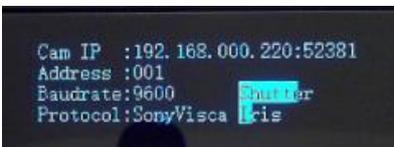

```
Cam IP   :192.168.000.220:52381
Address  :001
Baudrate :9600        Shutter
Protocol :SonyVisca   Iris
```

6. With CAM1 selected, you should see CAM IP address entered and **Protocol** set to **SonyVisca**.

Connecting CL01 to a Camera via (IP) Network (continued)

Steps 6/7: Connect the devices using Cat5e cable or better to your switch.

- If connecting to a TR530/TR320 camera, verify that the Visca Over-IP has been **enabled** in the cameras "Advanced Setting".   This can be done by 2 ways; using the OSD or by logging in via the Web UI, using Chrome or IE-11.   ***Note:** MS Edge and Safari will not work.

Step 6/7: Connect the devices using Cat5e cable or better to your switch.
- Observe the network link lights of the Switch, Camera, Computer, and CL01.
- Select CAM1 and try to control Camera with CL01 Joystick.
- If no control, verify ALL the IP address and Subnets are correct.
- Open a "CMD" prompt in Windows and type "ping 192.168.0.220" to see if you can ping the Camera.
- Try to ping the CL01, type "ping 192.168.0.230". You should get 0% loss.

This concludes the CL01 and Camera connection via IP-Network connection.

Check in on our Pro-AV Support website for helpful "How To" videos and documentation.

https://www.averusa.com/pro-av/support/

CAM520 Pro2 and AVer CL01 Camera Controller, RS-232

The AVer CAM520Pro2 camera can be controlled via VISCA over IP or the RS-232 connection ports. We will discuss the RS-232 type here.

Below is an RS-232 cable connection drawing showing the needed cables.

CAM520 Pro2 and AVer CL01 Camera Controller, RS-232 (continued)

With the RS232 serial connection, there are different protocols that can be used, below is a summary of the protocols.

VISCA: Up to 7 cameras can be addressed.

Pelco-P: Up to 32 cameras can be addressed.

Pelco-D: Up to 256 cameras can be addressed, (Address 0-255).

VISCA over IP: Up to 256 cameras can be addressed on the same network subnet.

The **CL01** can control (1 – 255) cameras with different protocols/connections used.

*Note: An RS232 Y-cable splitter (In/Out) is used to "daisy chain" the cameras together when connecting more than (1) camera.

Part Number: PTRSINOUT, [Din9-M to (2) Din8-F]
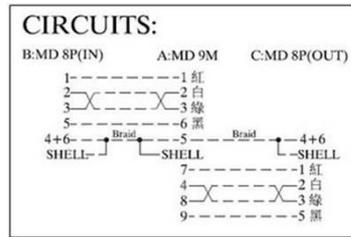
There is an RS232 accessories cable used with the PTZ cameras to connect its MiniDin9 connection using a Mini DIN8 to 9Pin DSub connector.

Part Number: PTDIN8PT1, Din8-M to 9-Pin DSub-F
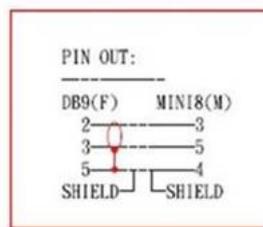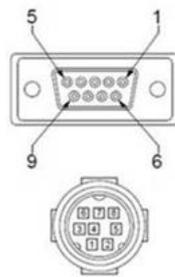
● RS232 Port Pin definition
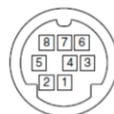
RS232 Pin	
No.	Pin
1	DTR
2	DSR
3	TXD
4	GND
5	RXD
6	GND
7	NC
8	NC

● Din8 to D-Sub9 Cable Pin definition
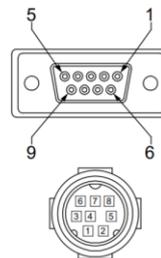
CAM520 Pro2 and AVer CL01 Camera Controller, RS-232 (continued)

1. Once the hardware connections are made, use the AVer PTZAPP2 (Windows & MAC) to gain access to the camera's configuration.   It can be found here:
   https://www.averusa.com/business/support/

USB connection:

2. Next, open PTZAPP2, go to the Settings Tab and select the following:
   Address: 1, for Camera 1
   Baud Rate: 9600
   Protocol: Visca
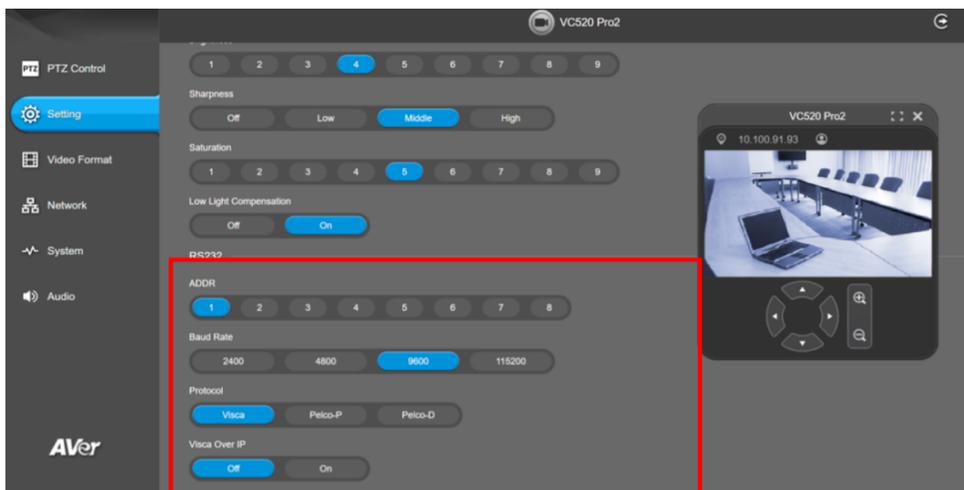
3. Verify Visca over IP is set to OFF.
4. Next, we will go to the CL01 Camera Controller to setup the control there.

CAM520 Pro2 and CL01 RS232 connection

CL01 Controller Side

1. Power up the CL01, "Long press" the *Menu* key for 3-4 seconds to gain access to the *SubMenu*.
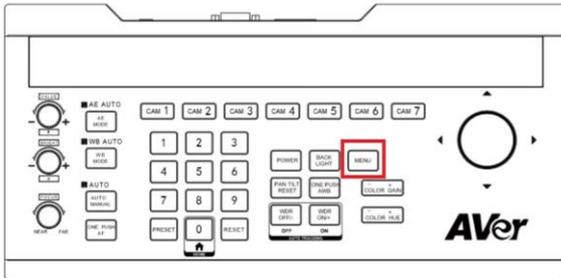
2. Next, use the Joystick to navigate (L-R-Up-Down) through the Menus, go to #2, COM setting.
3. Next, once on #2, move Joystick right to access menu, you should see the following information for *Channel*, *Address*, *Baudrate*, and *Protocol*.
4. Next, make sure the settings here match what was entered on the camera, Specifically the Protocol, make sure it is set to **Visca**.
   Move the joystick to the right to confirm selection.
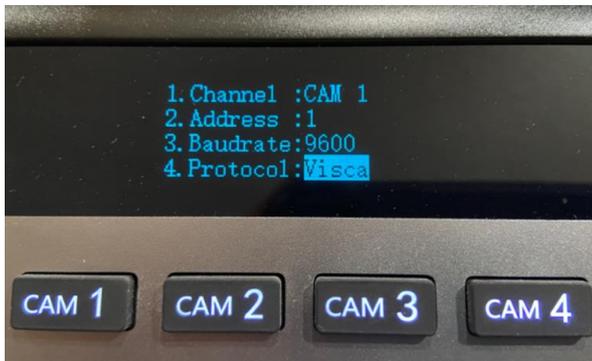
5. Next, you should now be able to select CAM1 and control the camera from the CL01 controller.

VC520 Pro2 and AVer CL01 Camera Controller, Visca over IP

The AVer VC520Pro2 camera/speakerphone can be controlled via VISCA over IP or RS-232 protocols.

We will discuss the network **Visca over IP** here, note that you will need a network switch and Cat5E (or better) cabling for connecting the equipment together.

The process is the same as the CAM520 Pro2, please refer to the CAM520 Pro2 section. Below is a connection diagram for the Visca over IP connection.

VC520 Pro2 and AVer CL01 Camera Controller, RS-232

The AVer VC520Pro2 camera/speakerphone can be controlled via VISCA over IP or the RS-232 connection ports.

We will discuss the RS-232 type here.

Below is a connection diagram for the RS-232 connection.

The setup process for the VC520 Pro2 Camera system is the same as the CAM520 Pro2 RS-232 configuration, please refer to that section.

CAM520 and AVer CL01 Camera Controller, RS-232

The AVer CAM520 camera can be controlled via the RS-232 connection port.

We will discuss the RS-232 type here.

Below is an RS-232 cable connection drawing showing the needed cables and connections.

CAM520 and AVer CL01 Camera Controller, RS-232 (continued)

With the RS232 series connection, there are different protocols that can be used, below is a summary of the protocols.

> **VISCA:** Up to 7 cameras can be addressed.
> **Pelco-P:** Up to 32 cameras can be addressed.
> **Pelco-D:** Up to 256 cameras can be addressed, (Address 0-255).
> **VISCA over IP:** Up to 256 cameras can be addressed on the same network subnet.

The **CL01** can control (1 – 255) cameras with different protocols/connections used.

CAM520 Camera Cables
SKU: COMVCC232

Din6-M to DSub9-F

SKU: COMVCC232
Din6-M to DSub9-F cable

RS232 Pin Definition

MH11061-H1S1-4F
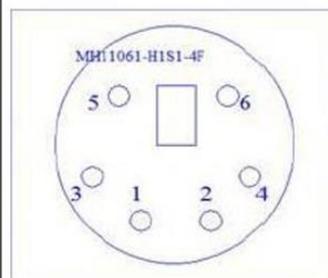
Pin	Definition
1	RS232_DTR
2	RS232_DSR
3	N.C.
4	RS232_TXD
5	GND
6	RS232_RXD
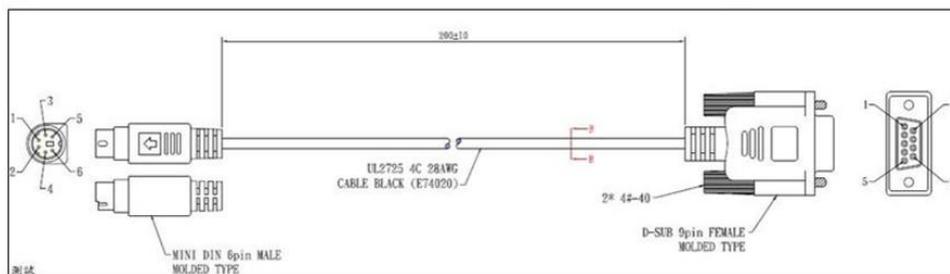
UL2725 4C 28AWG
CABLE BLACK (E74020)

MINI DIN 6pin MALE
MOLDED TYPE

D-SUB 9pin FEMALE
MOLDED TYPE

CAM520 and AVer CL01 Camera Controller, RS-232 (continued)

1. Once the hardware connections are made, use the AVer PTZAPP2 or PTZAPP (Windows & MAC) to gain access to the camera's configuration.   It can be found here: https://www.averusa.com/business/support/

USB connection:

2. Connect a Micro USB Type-B cable from the CAM520 to your computer and open the PTZAPP2 software.

3. Go to the *Settings Tab* and select the following:
   Address: (1, for Camera 1) (2, for Camera 2), etc.
   Baud Rate: 9600
   Protocol: Visca
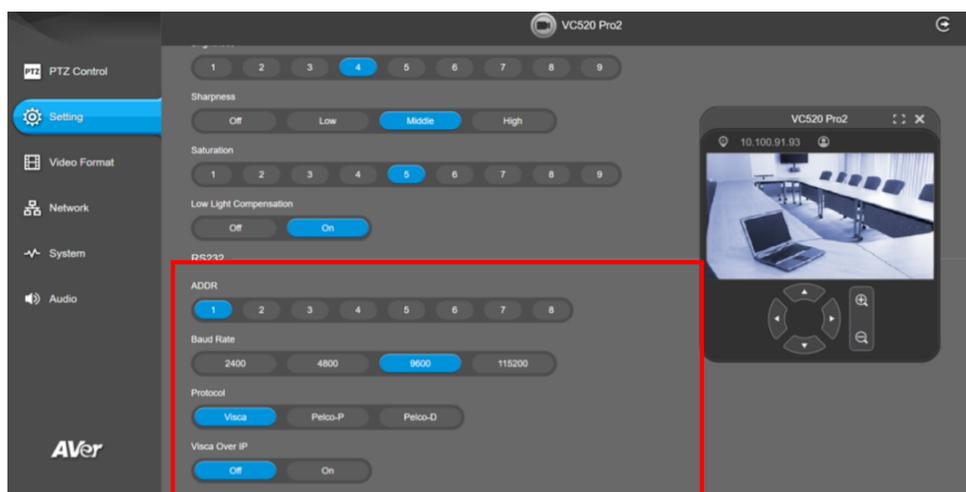
4. Verify Visca over IP is set to OFF.
5. For more detailed information of the PTZAPP2/PTZAPP software, please refer to the User Manual of the camera.
6. Next, we will go to the CL01 Camera Controller to setup the control there.

CAM520 and CL01 RS232 connection

CL01 Controller Side

1. Power up the CL01, "Long press" the *Menu* key for 3-4 seconds to gain access to the *SubMenu*.
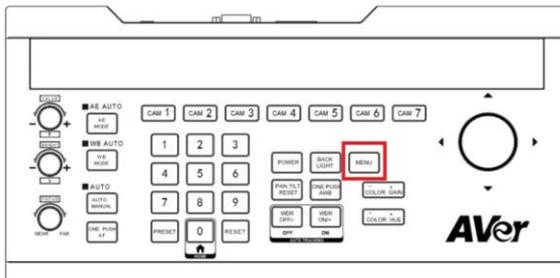
2. Next, use the Joystick to navigate (L-R-Up-Down) through the Menus, go to #2, COM setting.

3. Next, once on #2, move Joystick right to access menu, you should see the following information for *Channel*, *Address*, *Baudrate*, and *Protocol*.

4. Next, make sure the settings here match what was entered on the camera, specifically:

   Address, make sure it is set to how the camera was defined, (1-7)

   Protocol, make sure it is set to **Visca**.

   Move the joystick to the right to confirm selection.

5. Next, you should now be able to select CAM1 and control the camera from the CL01 controller.

Vaddio
Address: 1
RJ-45
connection

2 (RXD) From 8 (TXD)
3 (TXD) to 7 (RXD)
5 (GND) to 6 (GND)
Control Pins

DB-9 F
RJ-45 F
RJ-45 F
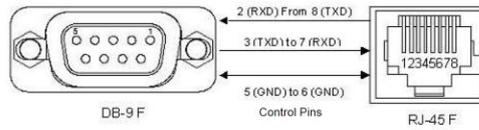
Vaddio   **CL01**
Pin-8 (TXD) to Pin-2 (RXD)
Pin-7 (RXD) to Pin-3 (TXD)
Pin-5 (GND) to Pin-5 (GND)

1.Channel :CAM 1
2.Address :1
3.Baudrate:9600
4.Protocol:Visca
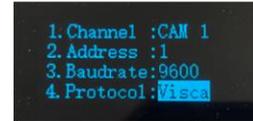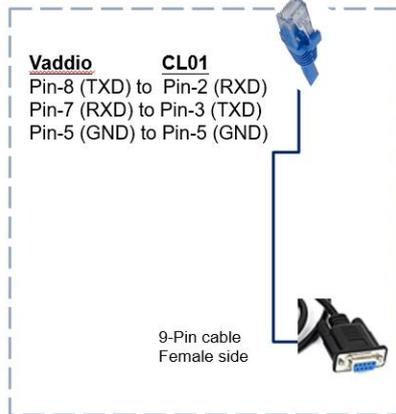
AVer CL01
RS-232: D-Sub 9 connection, (Male)
RS-422: 4-Pin Phoenix connector

RS232

9-Pin cable
Female side

AC Power Needed.

AVer CL01 Camera Controller Specifications

Product Specifications

I/O Interface	Communication	RS-485, RS-422, RS-232, IP, Micro USB for firmware upgrades
	Baud Rate	2400, 4800, 9600, 19200, 38400 bps
User Interface	Display	OLED display screen
	Rotation Button	3
	Camera Shortcut Channel	7
	Joystick	1
	Keyboard	Backlit Keys
Camera Control	IP Address	Default: 192.168.1.162 / 163 / 164 / 165 / 166 / 167 / 168 (from Cam 1 to Cam 7)
	UDP Port	08090
	Cam ID	1 to 7
	Control Protocol	VISCA, SONY VISCA , Pelco-D/P, UDP, IP (VISCA over IP)
System	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Dimensions	173 mm (W) x 99 mm (H) x 350 mm (D)
	Gross Weight	2.5 kg
	Power Source	DC 12V/2A, AC 100–240V
	Power Consumption	24 W
	Application	Indoor
	Package Content	User manual / 4-pin RS485 terminal / power adapter
	Part Number	PTCAMCTRL