

# Device: Panasonic AG-CX350



## Introduction

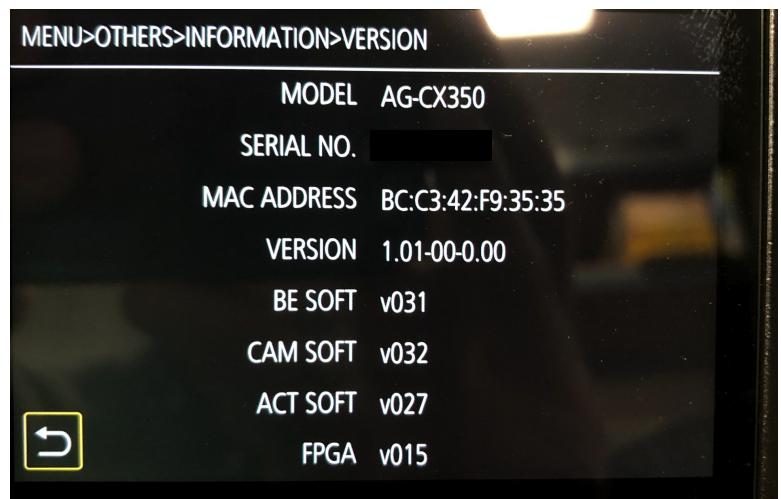
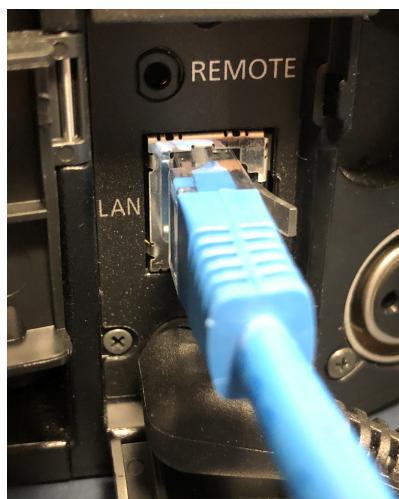
The Device Core "Panasonic CX350" is used for controlling the AG-CX350 camera. The goal of this manual is to help configuring a SKAARHOJ interface to control features available in the Device Core at this present time.

## Multicam Control

Please notice with the release of UniSketch v2.4.xxx Multicam Control have been enabled. Prior to v2.4.xxx only a single camera could be controlled from the Device Core. With the update up to 4 cameras can be controlled from a single Device Core. Please see information in the section "Multicam Control"

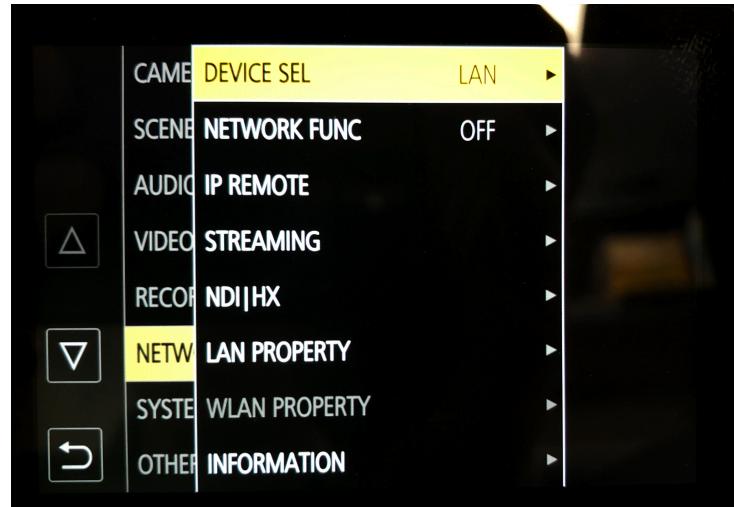
## Setting up Camera

In order to control the camera it must be connected to the same network as your SKAARHOJ Controller.. All communication between a SKAARHOJ interface and the camera is done via IP. The implementation have been done on version 1.01-00.0.00

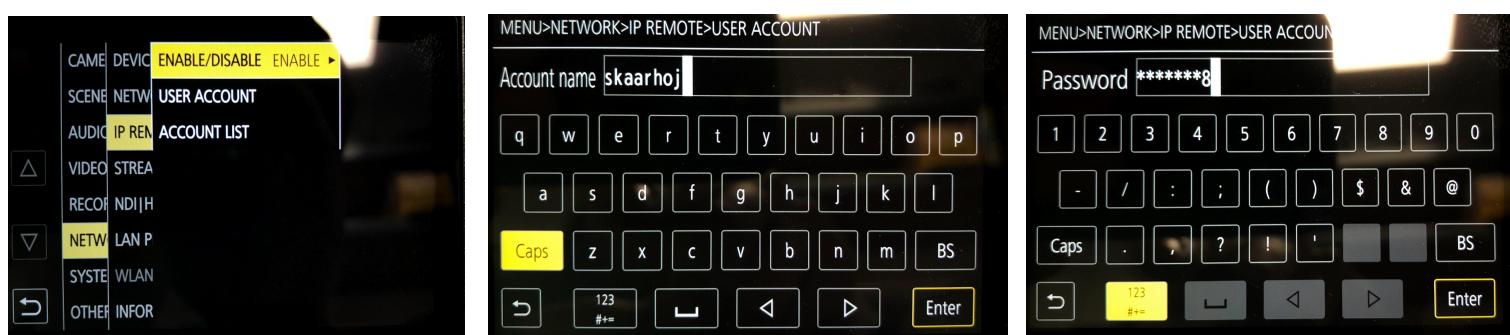


A number of actions are required for a SKAARHOJ controller to communicate with the camera. Please follow these procedures in the MENU → NETWORK SETTINGS. The aim of the procedures is to set a **static IP address** on the camera which the SKAARHOJ controller can connect to and to create a **user account** for authentication. You can use a different IP address as long as the Panasonic Device Core on the SKAARHOJ controller reflects this.

- MENU - NETWORK - DEVICE SEL - **LAN**



- MENU - NETWORK - IP REMOTE - ENABLE/DISABLE - **ENABLE**
- MENU - NETWORK - IP REMOTE - ENABLE/DISABLE - **USER ACCOUNT**
- Add a account
  - Account name: **skaarhoj**
  - Account password: **12345678**



- MENU - NETWORK - LAN PROPERTY - **IPv4 SETTING** set static IP
  - DHCP: **OFF**
  - IP ADDRESS: **192.168.10.27**
  - SUBNET MASK: **255.255.255.0**
  - DEFAULT GATEWAY: **192.168.10.1**
  - PRIMANRY DNS:



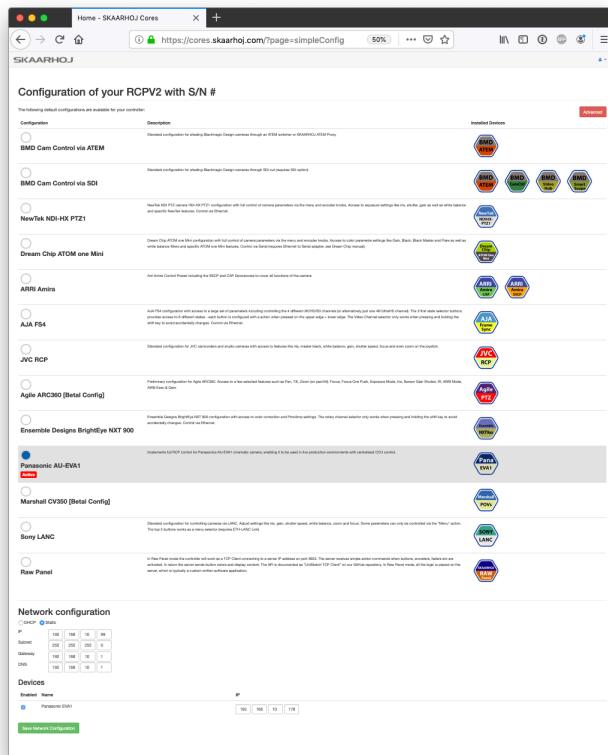
CAME	DEVIC	MAC	DHCP	OFF	>
SCENE	NETW	<b>IPv4 S</b>	<b>IP ADDRESS</b>	192.168.10.27	
AUDIO	IP REN	IPv6 S	<b>SUBNET MASK</b>	255.255.255.0	
VIDEO	STREA		<b>DEFAULT GATEWAY</b>	192.168.10.1	
RECOR	NDI H		<b>PRIMARY DNS</b>	0.0.0.0	
<b>NETW</b>	LAN P		<b>SECONDARY DNS</b>	0.0.0.0	
SYSTEM	WLAN				
OTHER	INFOR				

## Setting up a RCPv2 controller using the default configuration “Panasonic AG-CX350”

*Please notice the below instructions are for the Panasonic AU-EVA1 manual but the principles are the same. Use the Panasonic AG-CX350 configuration instead.*

Please follow these instructions if you have a RCPv2 and want to use it with the Panasonic AU-EVA1 camera.

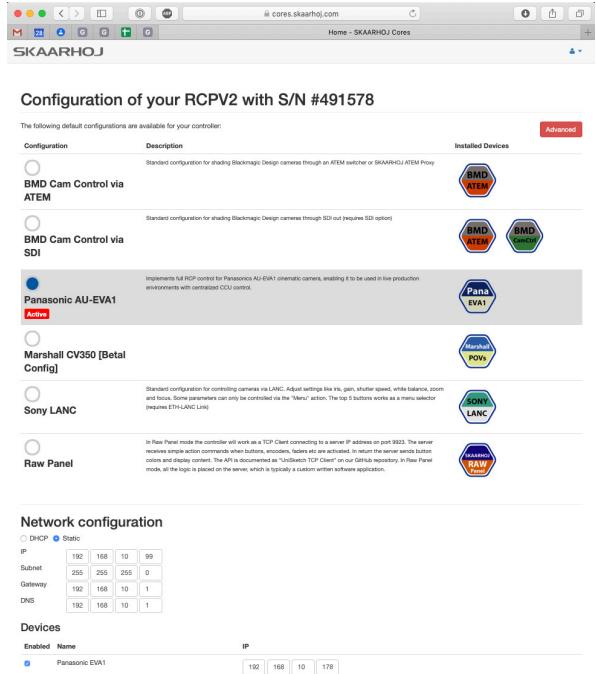
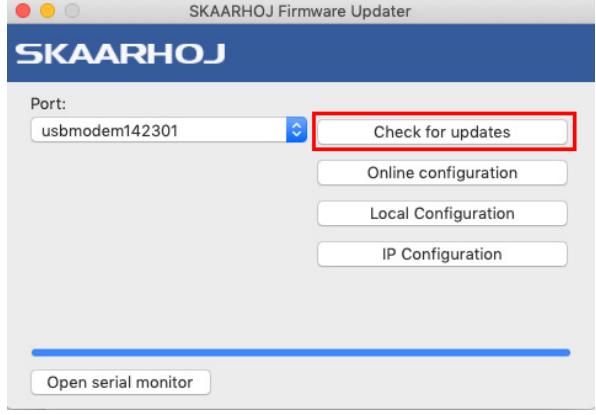
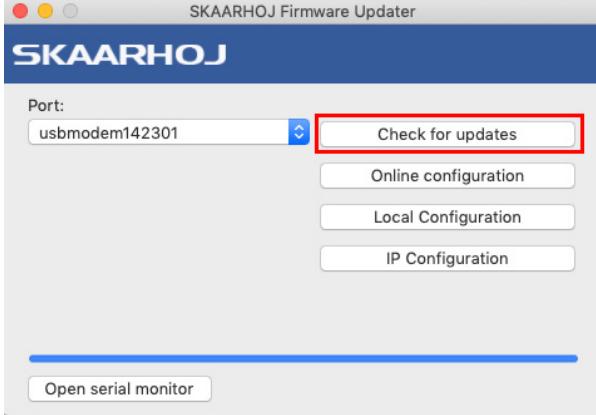
If your RCPv2 has been shipped preconfigured with the “Panasonic AU-EVA1” configuration please go to section **“Confirm Connection”**



If you have a RCPv2 and want to use the default configuration “Panasonic AU-EVA1” please follow these steps

- Download and install the Firmware Updater Application (<https://www.skaarhoj.com/support/firmware-updater/>)
- Connect the RCPv2 with the USB programming cable (if you are on Windows and have multiple com ports available please see the section “Port selection on Windows” in the Installation and Operation Manual (<https://www.skaarhoj.com/support/manuals/>)
- Press “Online Configuration” in the Firmware Application

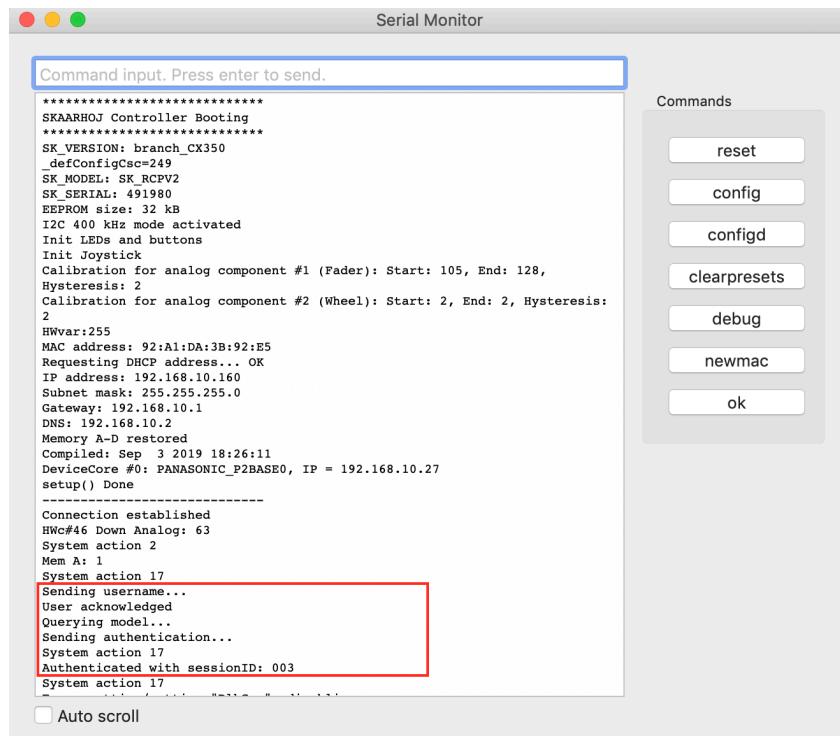
# SKAARHOJ DEVICE CORES

<p><b>Direct Selection of Default Config</b></p> <p>If no custom configurations have been made on the RCPv2 you will be presented with this interface</p>  <p>Select the "Panasonic AU-EVA1" config and then go to the Firmware Application and press "Check for updates". This will generate a firmware file on our server and download it to the controller.</p> <p>If you want to use different IP addresses then alter "Network configuration" and press "Save Network Configuration" and then press "Check for updates" in the Firmware Application</p>	<p><b>Selection of Default Config</b></p> <p>If custom configurations have been made on the RCPv2 you will be presented with this interface</p>  <p>Select the "Panasonic AU-EVA1" config in the drop down list. This will load the configuration on the configuration page. Then go to the Firmware Application and press "Check for updates".</p> <p>This will generate a firmware file on our server and download it to the controller.</p>
 <p>Notice on Windows the Port dropdown will display "COM" ports. Please see section "Port selection on Windows" in Installation and Operation manual <a href="https://www.skaarhoj.com/support/manuals/">https://www.skaarhoj.com/support/manuals/</a></p>	 <p>Notice on Windows the Port dropdown will display "COM" ports. Please see section "Port selection on Windows" in Installation and Operation manual <a href="https://www.skaarhoj.com/support/manuals/">https://www.skaarhoj.com/support/manuals/</a></p>

## Confirm Connection

If the RCPv2 have come preconfigured with the Panasonic Configuration or you have just successfully downloaded the Firmware to the RCPv2, then it is ready to control the camera *provided* you have followed the steps in the "Setting up Camera" section. It is important that the IP address you have set on the camera matches the IP address of the Panasonic CX350 Device Core.

Connection to the camera can be confirmed from the Serial Monitor with the commands as shown below.



The screenshot shows a 'Serial Monitor' window with the following log output:

```

*****
SKAARHOJ Controller Booting
*****
SK_VERSION: branch_CX350
_defConfigCsc=249
SK_MODEL: SK_RCPV2
SK_SERIAL: 491980
EEPROM size: 32 kB
I2C 400 kHz mode activated
Init LEDs and buttons
Init Joystick
Calibration for analog component #1 (Fader): Start: 105, End: 128,
Hysteresis: 2
Calibration for analog component #2 (Wheel): Start: 2, End: 2, Hysteresis:
2
HWvar:255
MAC address: 92:A1:DA:3B:92:E5
Requesting DHCP address... OK
IP address: 192.168.10.160
Subnet mask: 255.255.255.0
Gateway: 192.168.10.1
DNS: 192.168.10.2
Memory A-D restored
Compiled: Sep 3 2019 18:26:11
DeviceCore #0: PANASONIC_P2BASE0, IP = 192.168.10.27
setup() Done
-----
Connection established
HWc#46 Down Analog: 63
System action 2
Mem A: 1
System action 17
Sending username...
User acknowledged
Querying model...
Sending authentication...
System action 17
Authenticated with sessionID: 003
System action 17

```

A red box highlights the line "Authenticated with sessionID: 003".

To the right of the log, there is a sidebar titled "Commands" containing the following buttons:

- reset
- config
- configd
- clearpresets
- debug
- newmac
- ok

Auto scroll

The subsequent output in the Serial Monitor will display a lot of Error messages. This is expected as the base layer for communication between the AG-CX350 and the AU-EVA1 Panasonic Camera are the same, but the feature set of the AG-CX350 is more slim.

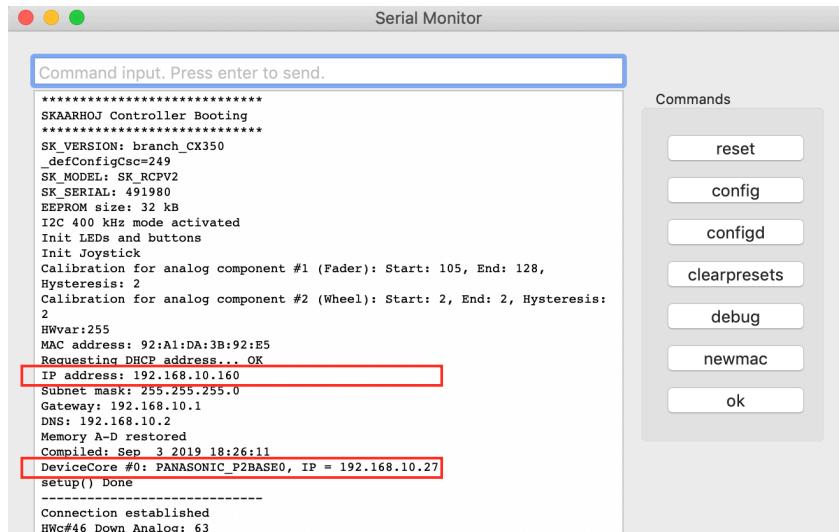
```

Connection established
HWc#46 Down Analog: 63
System action 2
Mem A: 1
System action 17
Sending username...
User acknowledged
Querying model...
Sending authentication...
System action 17
Authenticated with sessionID: 003
System action 17
Error getting/setting "BlkGam", disabling...
Error getting/setting "BlkGamRange", disabling...
Error getting/setting "Chrolv", disabling...
Error getting/setting "ColCorreBCyPh", disabling...
Error getting/setting "ColCorreBCySat", disabling...
Error getting/setting "ColCorreBPh", disabling...
Error getting/setting "ColCorreBSat", disabling...
System action 17
Error getting/setting "ColCorreCyGPh", disabling...
Error getting/setting "ColCorreCyGSat", disabling...
Error getting/setting "ColCorreCyPh", disabling...
Error getting/setting "ColCorreCySat", disabling...
Error getting/setting "ColCorreGPh", disabling...
Error getting/setting "ColCorreGSat", disabling...
Error getting/setting "ColCorreGY1Ph", disabling...
Error getting/setting "ColCorreGY1Sat", disabling...
Error getting/setting "ColCorreGY1YPh", disabling...
Error getting/setting "ColCorreGY1YSat", disabling...
System action 17
Error getting/setting "ColCorreMgBPh", disabling...
Error getting/setting "ColCorreMgBSat", disabling...
Error getting/setting "ColCorreMgPh", disabling...
Error getting/setting "ColCorreMgSat", disabling...
Error getting/setting "ColCorreRMgPh", disabling...
Error getting/setting "ColCorreRMgSat", disabling...
Error getting/setting "ColCorreRPh", disabling...
Error getting/setting "ColCorreRRMgPh", disabling...
Error getting/setting "ColCorreRRMgSat", disabling...
Error getting/setting "ColCorreRSat", disabling...
Error getting/setting "ColCorreSw", disabling...
Error getting/setting "ColCorreY1Ph", disabling...
Error getting/setting "ColCorreY1RPh", disabling...
Error getting/setting "ColCorreY1RPh", disabling...
Error getting/setting "ColCorreY1RSat", disabling...
Error getting/setting "ColCorreY1Sat", disabling...
Error getting/setting "ColCorreY1Y1RPh", disabling...
Error getting/setting "ColCorreY1Y1RSat", disabling...
Error getting/setting "DtlCor", disabling...
Error getting/setting "DtlFreq", disabling...
Error getting/setting "DtlSw", disabling...
Error getting/setting "GamMode", disabling...
Error getting/setting "KneeMPoint", disabling...
Error getting/setting "KneeMSlope", disabling...
Error getting/setting "LNMrxBG", disabling...
Error getting/setting "LNMrxBR", disabling...
Error getting/setting "LNMrxGB", disabling...
Error getting/setting "LNMrxGR", disabling...
Error getting/setting "LNMrxRB", disabling...
Error getting/setting "LNMrxRG", disabling...
Error getting/setting "LNMrxSw", disabling...
Error getting/setting "MBlkGam", disabling...
Error getting/setting "MDtl", disabling...
Error getting/setting "MGam", disabling...
Error getting/setting "MainCol", disabling...
Error getting/setting "MedSts", disabling...
Error getting/setting "WClip", disabling...
Error getting/setting "WClipLv", disabling...
19
.88
.89
 Auto scroll

```

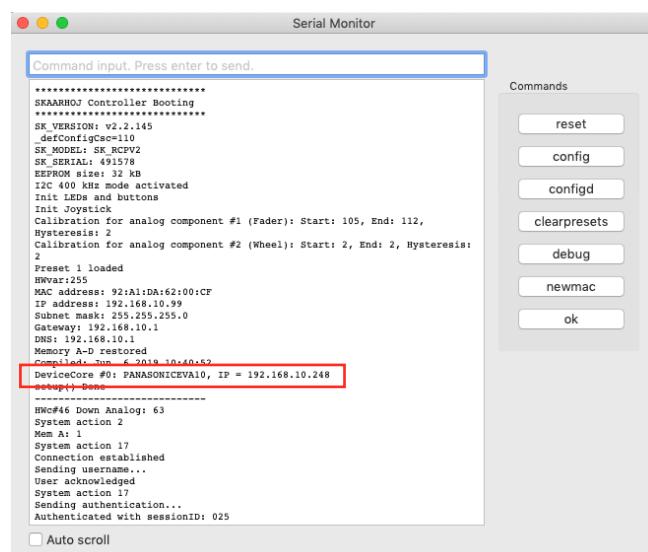
## Check IP Addresses on SKAARHOJ Controller

If you have issues connecting to the camera it is recommend to confirm that IP settings are correct. A way to confirm IP settings on the SKAARHOJ controller is using the Serial Monitor in the Firmware Application and check IP settings in the boot up process.



## Using different IP address on Panasonic AU-EVA1 camera

You can set a different IP address on the camera *as long as* the Device Core IP address is updated as well. You can use the "IP Configuration" option in the Firmware Application to change the Device Core IP address.



Debugging Connection between SKAARHOJ Controller and Camera

If IP settings are correct but the Account name is not correct the Serial Monitor will report "Camera Error: Wrong user"



If the Account name is correct but the password is not the Serial Monitor will report "Camera Error: Wrong User" after reporting that the user is acknowledged.

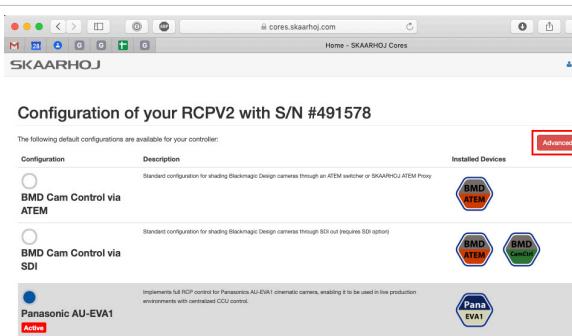
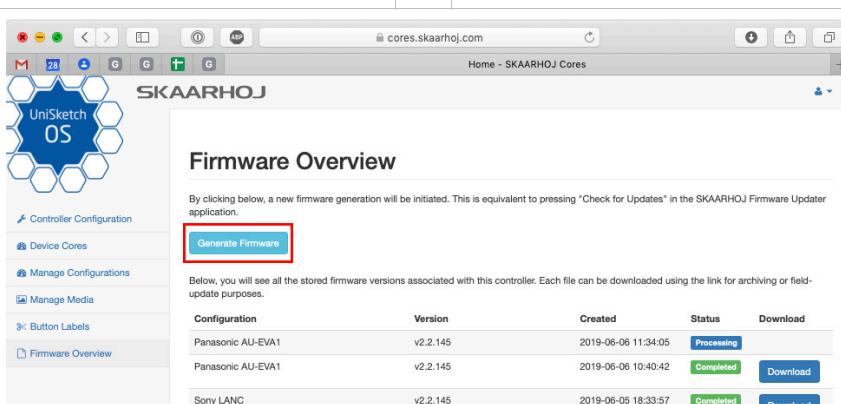


## Alternative way of Downloading and Installing the Firmware on a RCPv2

Please notice the below instructions are for the Panasonic AU-EVA1 manual but the principles are the same. Use the Panasonic AG-CX350 configuration instead.

If you have issues using the Firmware Application to generate and installing the Firmware on your RCPv2 please follow these steps

- Press "Online Configuration" in the Firmware Application

<p><b>Direct Selection of Default Config</b> If no custom configurations have been made on the RCPv2 you will be presented with this interface</p>  <p>Select the "Panasonic AU-EVA1" config and press "Advanced"</p>	<p><b>Selection of Default Config</b> If custom configurations have been made on the RCPv2 you will be presented with this interface</p>  <p>Select the "Panasonic AU-EVA1" config in the drop down list.</p>
 <p>Press the "Firmware Overview" tab and press "Generate Firmware"</p>	

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After the firmware have been generated press "Download"

Open the Firmware Updater Application and use the "Load Firmware from file" in the option tab

Select the ".hex" firmware file. Naming might be different dependent on browser but it should be a .hex file to be selected.

When done the Firmware Updater application reports "Firmware successfully updated"

## Setting up Controller

*This section is only relevant if you are building a configuration from scratch.*

The Device Core "Panasonic CX350" must be added to your controller

The Device Core *must* have the IP address matching, the one set on the camera it self (see "Setting up Camera" section).

This is a overview of the actions implemented in the Device Core

- Panasonic CX350: Iris
- Panasonic CX350: Auto Iris
- ✓ Panasonic CX350: Pedestal
- Panasonic CX350: Focus (Creep)
- Panasonic CX350: Focus (Step)
- Panasonic CX350: Focus (Fine)
- Panasonic CX350: Focus (Binary)
- Panasonic CX350: Auto Focus
- Panasonic CX350: Zoom (Creep)
- Panasonic CX350: Zoom (Step)
- Panasonic CX350: Zoom (Fine)
- Panasonic CX350: Zoom (Binary)
- Panasonic CX350: ND Filter
- Panasonic CX350: Record
- Panasonic CX350: Variable Shutter
- Panasonic CX350: Shutter
- Panasonic CX350: Auto White Balance
- Panasonic CX350: Auto Black Balance
- Panasonic CX350: White Balance Select
- Panasonic CX350: Exp Index Gain
- Panasonic CX350: Knee Select
- Panasonic CX350: Menu Display
- Panasonic CX350: Menu Enter
- Panasonic CX350: Menu Navigation
- Panasonic CX350: User Switch
- Panasonic CX350: Bars
- Panasonic CX350: Red Tally
- Panasonic CX350: Camera Select

## Multicam Control

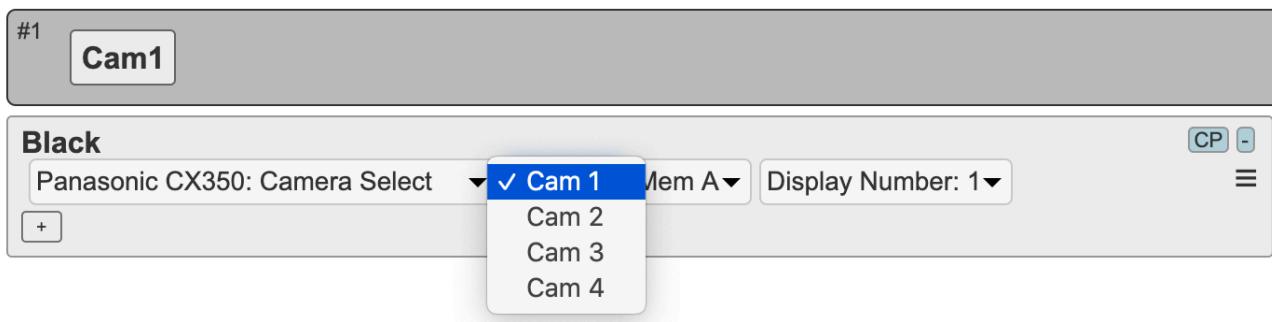
With launch of UniSketch V2.4.xx the Panasonic AG-CX350 Device Core have been updated with Multicam support. This means by *default* the Device Core will try and connect to up to 4 cameras in a consecutive IP structure like this:

- **Device Core IP (AG-CX350 #1):** 192.168.10.92
- **AG-CX350 #2:** 192.168.10.93
- **AG-CX350 #3:** 192.168.10.94
- **AG-CX350 #4:** 192.168.10.95

It is therefore not recommend to have other Panasonic cameras in the IP range if you just want to control a single camera *unless* you set a Device Core option limiting the number of cameras the Device Core will try and connect to (see "Device Configurations" section)

## Sending/receiving data from cameras

Please notice with the update for Multicam Control a new action have been added to the Device Core: Camera Select. This action *must* be utilised in order to get proper feedback from the cameras. If the action is not used to change which camera is used, the SKAARHOJ controller will fail to get proper feedback from the cameras connected to the controller (*only relevant if the SKAARHOJ controller connects to more than one camera*)



### **Sending data:**

Regardless if the above action is utilised a SKAARHOJ controller will always be able to transmit data to the selected camera. In other words it is possible to assign control of camera 1 and camera 2 directly different hardware components on a SKAARHOJ controller (without using the "Camera Select" action). However if an action is dependent on knowing the state of the camera such as Shutter mode which is dependent on if Variabel Shutter mode is on/off then it will not be possible to change Shutter Mode unless the "Camera Select" action is utilised. Since "Shutter Mode" needs to know if "Variabel Shutter" is on/off.

### **Receiving data:**

If you change a parameter on the camera itself such as iris value, the SKAARHOJ controller will only get feedback if the action "Camera Select" have been selected with the matching camera number.

Example:.. Changing iris on CAM1 while the SKAARHOJ controller is set to control CAM2 (via memory or Camera Select action) will not update the SKAARHOJ controller with CAM1 information. The SKAARHOJ controller must have action "Camera Select" used with matching camera number in order to get feedback from that particular camera.

### **Using Camera Select action**

When assigning the “Camera Select” action to a button, the button/display content will be shown if the controller finds a camera. When you press to select a camera it will be highlighted.

## Device Configurations

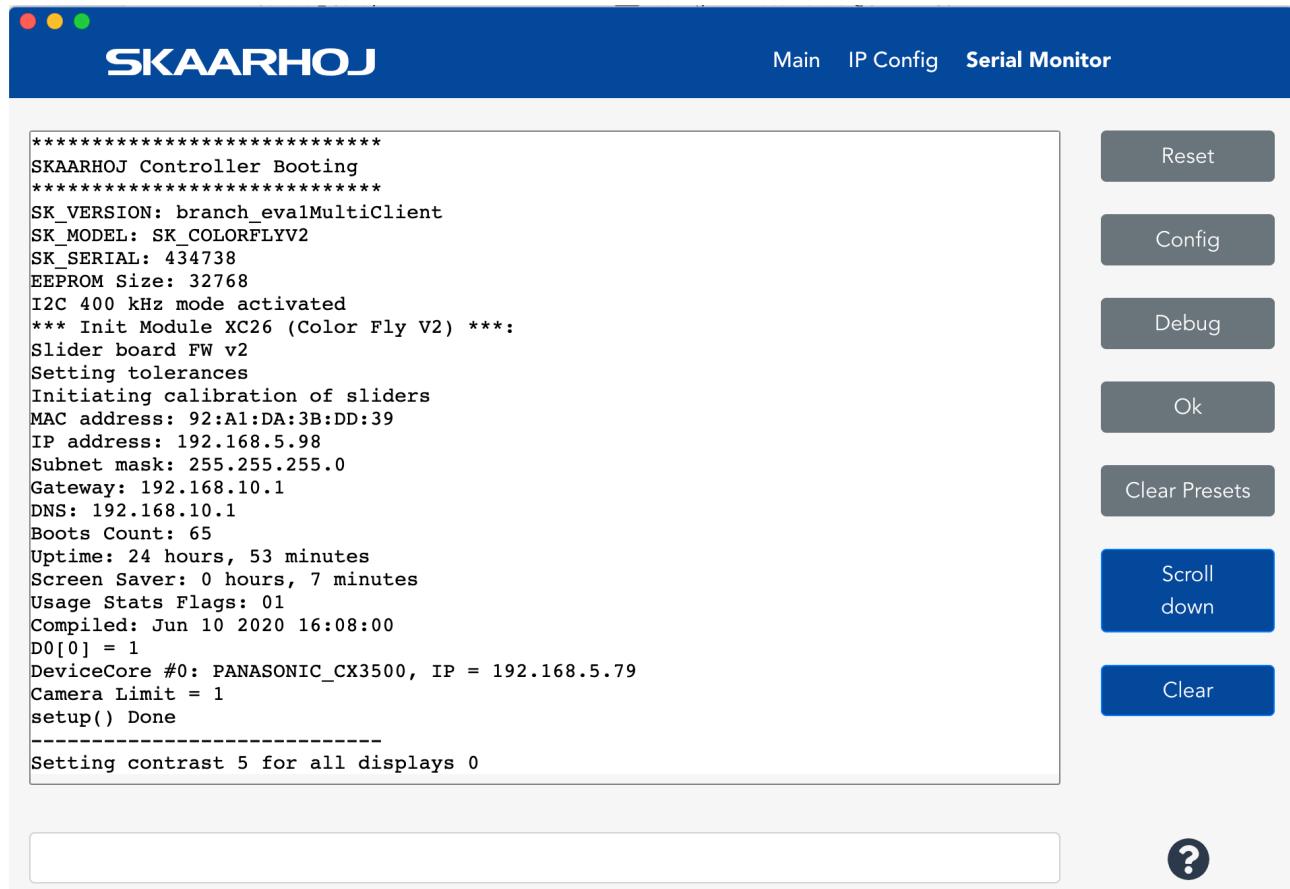
Device configuration options exist:

- Index 0: **Limits number of cameras for control**
  - If "0" = default (Device Core will connect to 4 cameras)
  - If "1-4" =If "1" the Device Core will only connect to 1 cameras, if "2" the Device Core will only connect to 2 cameras and so forth.

Example:

Limiting the Device Core option to connect to only 1 camera could look like this device configuration code: "D0:0=1" where the general form would be "Dx:y=z" where "x" is the number of the device core as installed on the controller (starting with zero for the first device core), "y" the index number and "z" the value for that index.

To confirm that a device configuration is in fact detected by the controller, please check it out on the serial monitor where it will be mentioned:



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Example: If the Panasonic AG-CX350 device core is the first like below:

The screenshot shows the SKAARHOJ Device Cores page. On the left is a sidebar with a hexagonal logo for UniSketch OS and links for Controller Configuration, Device Cores, Manage Configurations, Manage Media, Button Labels, and Firmware Overview. The main content area has a title 'Device Cores' and a sub-section for 'Panasonic AG-CX350 [Beta Config]'. It displays a camera icon, a brief description ('Control of Panasonic high-end handheld Camcorder with 4K/HDR capabilities.'), and a link to the 'Device Core Manual'. Below this are two status indicators: 'Client limit: 1' and 'Core limit: 2-3'. A button '+ Add another device' is at the bottom, and a green 'Save Settings' button is at the very bottom right.

Then settings the additional connection behaviour would be set by this configuration under "Manage Media" on the configuration page for your controller

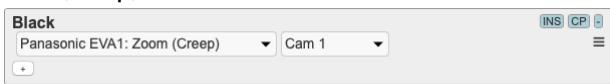
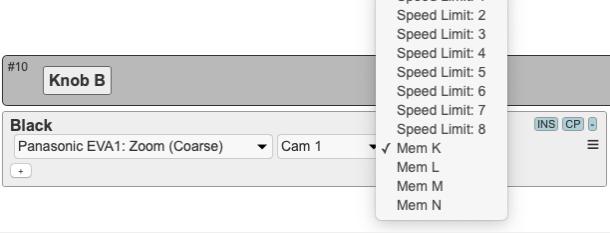
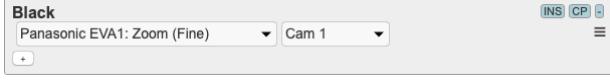
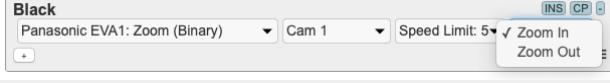
The screenshot shows the SKAARHOJ Manage Media page. The sidebar is identical to the previous screenshot. The main content area has a title 'Manage Media' and a sub-section for 'Panasonic AG-CX350 [Beta Config]'. It includes a heading 'Device Core Options' with a note about additional options supported by some cores. Below this is a text input field containing 'D0:0=1'. Under the heading 'Strings', there is a button 'Add String' and a row labeled 'String 1: Spd Zoom'.

## Zoom + Focus

Please notice if a Zoom in/out adjustment have been initiated on a SKAARHOJ controller and one try to zoom directly on the lens this will overrule Zooming from the SKAARHOJ controller.

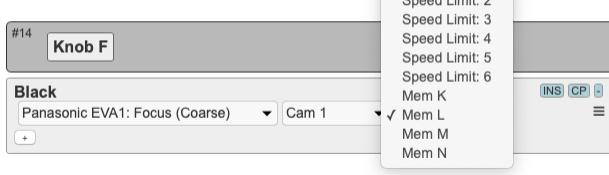
If a Focus near/far adjustments have been initiated on a SKAARHOJ controller and one try to focus directly on the lens this will overrule Focus adjustments from the SKAARHOJ controller.

This is a table of actions for some of the actions in the Panasonic CX350 Device Core (noted with EVA1 actions but principle is the same)

<b>Zoom (Creep)</b>	 <p>Initiates a Creep Zoom in/out with speeds between -8 to +8</p> <p><i>Binary triggers:</i> Will only reflect the speed of the Creep Zoom value (-8 to +8)</p> <p><i>Pulse inputs:</i> Will cycle between -8 to +8. When -8 Creep Zoom out is at the highest speed. When +8 Creep Zoom in is at the highest speed. When 0 no zoom is initiated.</p> <p><i>Displays:</i> "Creep Zm/Speed of zoom"</p>
<b>Zoom (Step)</b>	 <p>Zoom in/out with steps defined to a specific value. Used to quickly zoom to a desired range</p> <p><i>Binary triggers:</i> Will only reflect the current zoom value in mm</p> <p><i>Pulse inputs:</i> Will zoom in/out with the given speed value</p> <p>Speed Limit 1: Small steps Speed Limit 8: Large steps</p> <p><i>Displays:</i> "Step Zm/Zoom range in mm"</p>
<b>Zoom (Fine)</b>	 <p>Zoom in/out with small steps to a specific value zoom range</p> <p><i>Binary triggers:</i> Will only reflect the current zoom value in mm</p> <p><i>Pulse inputs:</i> Will zoom in/out in small steps to set a specific zoom range. Only recommended to use for very small adjustments. Reacts slow if turned multiple times</p> <p><i>Displays:</i> "Fine Zm/Zoom range in mm"</p>
<b>Zoom (Binary)</b>	 <p>Used to zoom in/out via buttons instead of a encoder</p> <p><i>Binary triggers:</i> Zoom in/out as long as a button is pressed and held down. Speed of the zoom is determined with the speed limiter.</p> <p><i>Pulse inputs:</i> Not implemented</p> <p><i>Displays:</i> "Zoom/[Out,In]"</p>
<b>Focus (Creep)</b>	 <p>Initiates a Creep Focus far/nearer with speeds between -6 to +6</p> <p><i>Binary triggers:</i> Will only reflect the speed of the Creep Focus value (-6 to +6)</p> <p><i>Pulse inputs:</i> Will cycle between -6 to +6. When -6 Creep Focus near is at the highest speed. When +6 Creep Focus far is at the highest speed. When 0 no zoom is initiated.</p> <p><i>Displays:</i> "Creep Fcs/Speed of focus"</p>

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## Focus (Step)



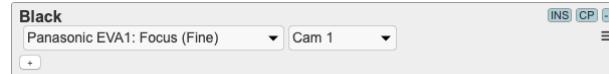
Focus far/near with steps defined to a specific value. Used to quickly focus to a desired range

*Binary triggers:* Will only reflect the current focus value in m

*Pulse inputs:* Will focus far/near with the given speed value  
Speed Limit 1: Small steps  
Speed Limit 6: Large steps

*Displays:* "Step Fcs/Focus range in m"

## Focus (Fine)



Focus far/near with small steps to a specific value focus range

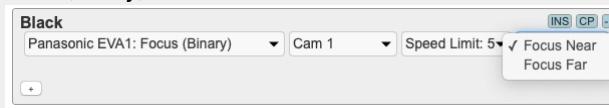
*Binary triggers:* Will only reflect the current focus value in m

*Pulse inputs:* Will focus far/near in small steps to set a specific focus value. Only recommended to use for very small adjustments. Reacts slow if turned multiple times

*Displays:* "Fine Fcs/Focus range in m"

Used to Focus far/near via buttons instead of a encoder

## Focus (Binary)



*Binary triggers:* Focus far/near as long as a button is pressed and held down. Speed of the focus is determined with the speed limiter.

*Pulse inputs:* Not implemented

*Displays:* "Focus/[Near,Far]"

## Tally

With the default configuration "Panasonic CX350" for the RCPv2 tally will be enabled on the camera from the DB9 connector (EXT I/O) directly on the RCPv2 panel.

### Integrating Tally directly via IP from Video Switchers

It is possible to integrate tally directly from a Video Switcher we have a Device Core for. In the case of a ATEM Switcher the following steps needs to be taken to achieve Tally control on the camera:

- Add an ATEM Device Core to the configuration
- Add actions to the Hardware Component "Controller" like illustrated below (remember to set "Hold Down"

The following additional states are enabled in the configuration below. States can be hidden to ease the configuration.

Matrix  Exp  WB/Detail  Gamma  Color  Zoom/Focus

Devicecore actions can be hidden from the select lists as well to make configuration faster. (Note: This does not work in Safari)

Panasonic EVA1 Actions  BMD ATEM Actions  System Actions

#48 Controller

**Black**

BMD ATEM: Program Src M/E 1 1 and  
System: Synthesized Trigger Binary Prev. action  
and Panasonic EVA1: Red Tally Cam Mem A Hold Down

Save Settings

It is also recommend to enable Tally feedback on the "ID Tally" bar via the following action:

**Black**

BMD ATEM: Video Tally 1 Prog/Prev

Save Settings