

Device: Panasonic AU-EVA1



Introduction

The Device Core "Panasonic EVA1" is used for controlling the AU-EVA1 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.

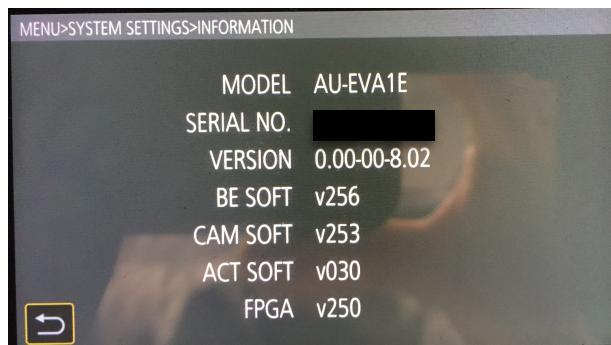
Multicam Control

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

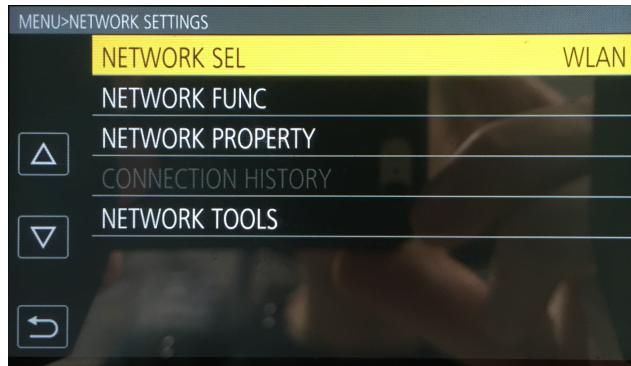
In order to control the camera a USB/Ethernet adapter must be utilized from the USB2.0 HOST port on the camera. All communication between a SKAARHOJ interface and the camera is done via IP. The implementation have been done on version 0.00-00-8.02.

Panasonic recommends to use [Plugable USB 3.0 Gigabit Eathernet Adapter](#) or [UGREEN USB3.0 to RJ45 Ethernet Adapter 20256](#)



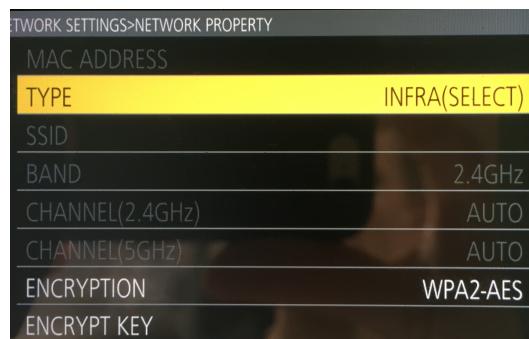
A number of actions are required for a SKAARHOJ controller to communicate with the camera. Please follow these procedures in the MENU → NETWORK SETTINGS. The aim of the procedures is to set a **static IP address** on the camera which the SKAARHOJ controller can connect to and to create a **user account**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

- NETWORK SEL: **WLAN**



- NETWORK FUNC - add a account
 - Account name: **skaarhoj**
 - Account password: **12345678**

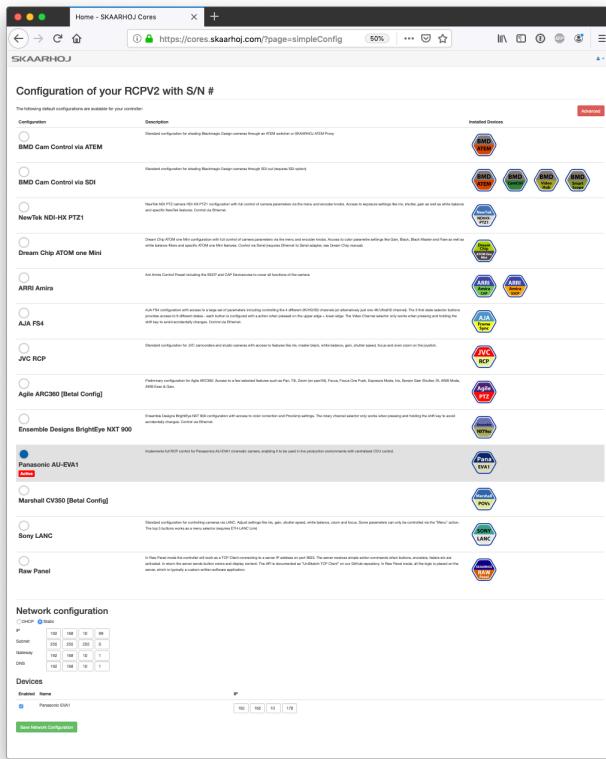
- NETWORK PROPERTY - set static IP
 - TYPE: **INFRA(SELECT)**
 - DHCP: **OFF**
 - IP ADDRESS: **192.168.10.178**
 - SUBNET MASK: **255.255.255.0**
 - DEFAULT GATEWAY: **192.168.10.1**
 - PRIMANRY DNS: **192.168.10.2**



Setting up a RCPv2 controller using the default configuration “Panasonic AU-EVA1”

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

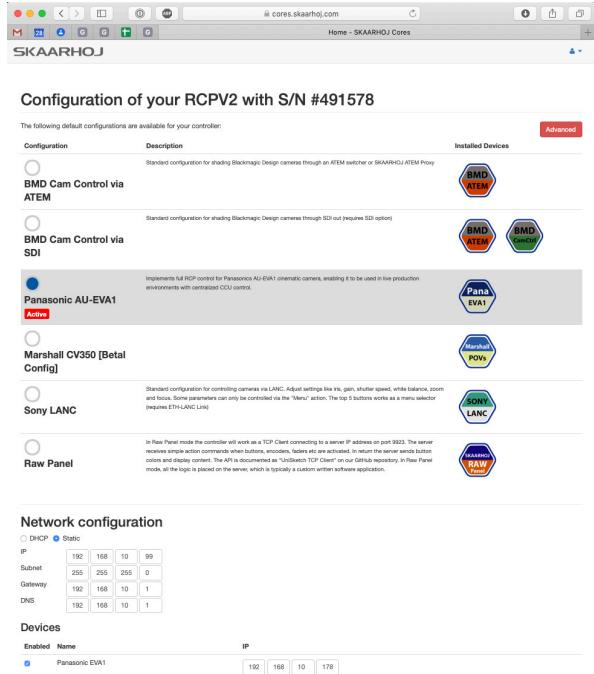
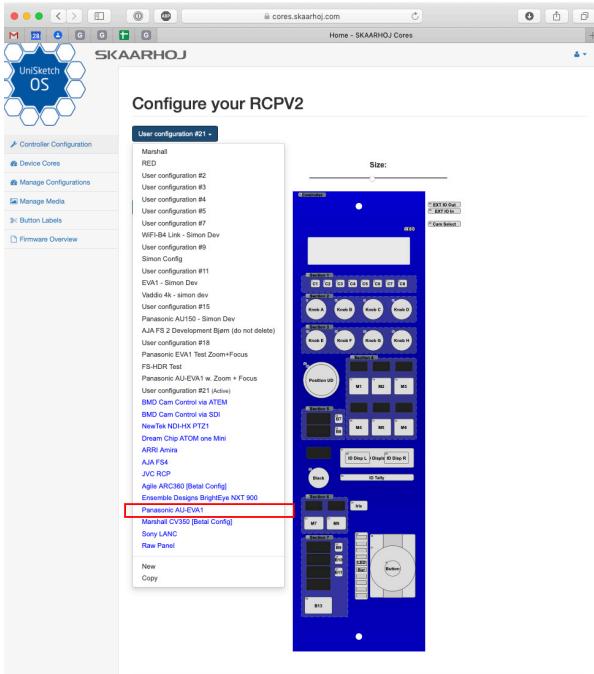
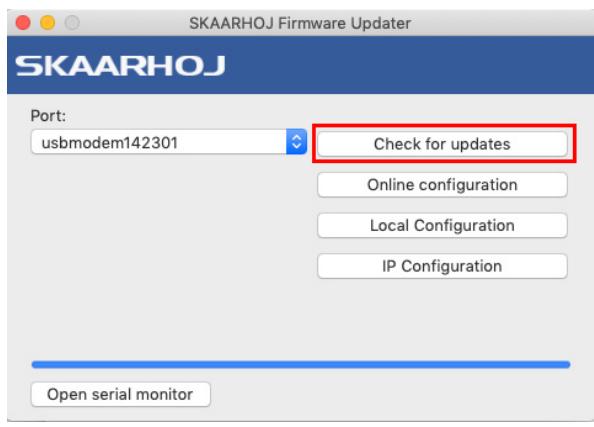
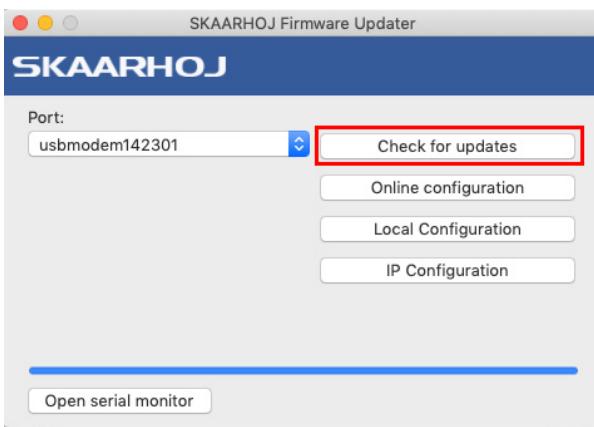
If your RCPv2 has been shipped preconfigured with the “Panasonic AU-EVA1” configuration please go to section **“Confirm Connection”**



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

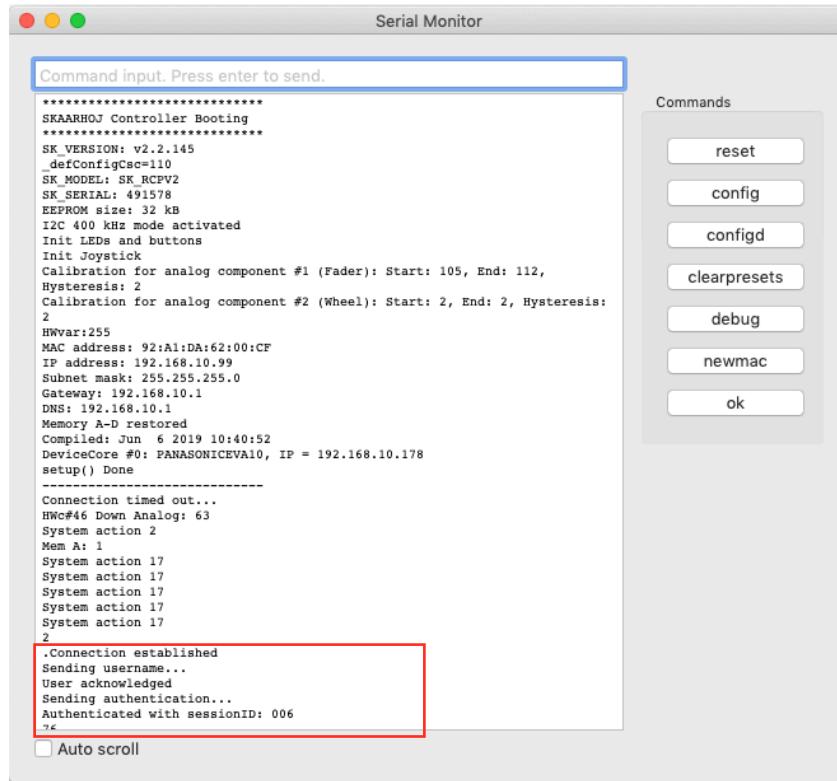
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<p>Direct Selection of Default Config</p> <p>If no custom configurations have been made on the RCPv2 you will be presented with this interface</p>  <p>Select the "Panasonic AU-EVA1" config and then go to the Firmware Application and press "Check for 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>Selection of Default Config</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 https://www.skaarhoj.com/support/manuals/</p>	 <p>Notice on Windows the Port dropdown will display "COM" ports. Please see section "Port selection on Windows" in Installation and Operation manual https://www.skaarhoj.com/support/manuals/</p>

Confirm Connection

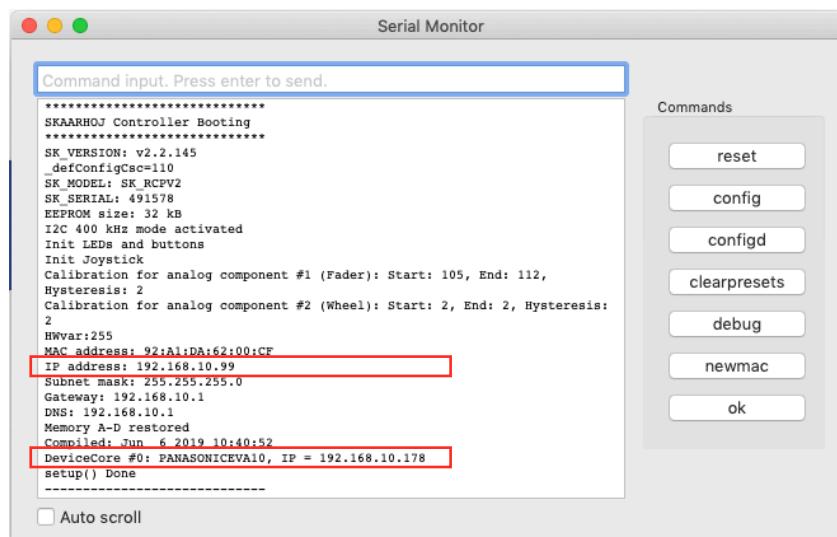
If the RCPv2 have come preconfigured with the Panasonic Configuration or you have just successfully downloaded the Firmware to the RCPv2, then it is ready to control the camera *provided* you have followed the steps in the "Setting up Camera" section. It is important that the IP address you have set on the camera matches the IP address of the Panasonic EVA1 Device Core.

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



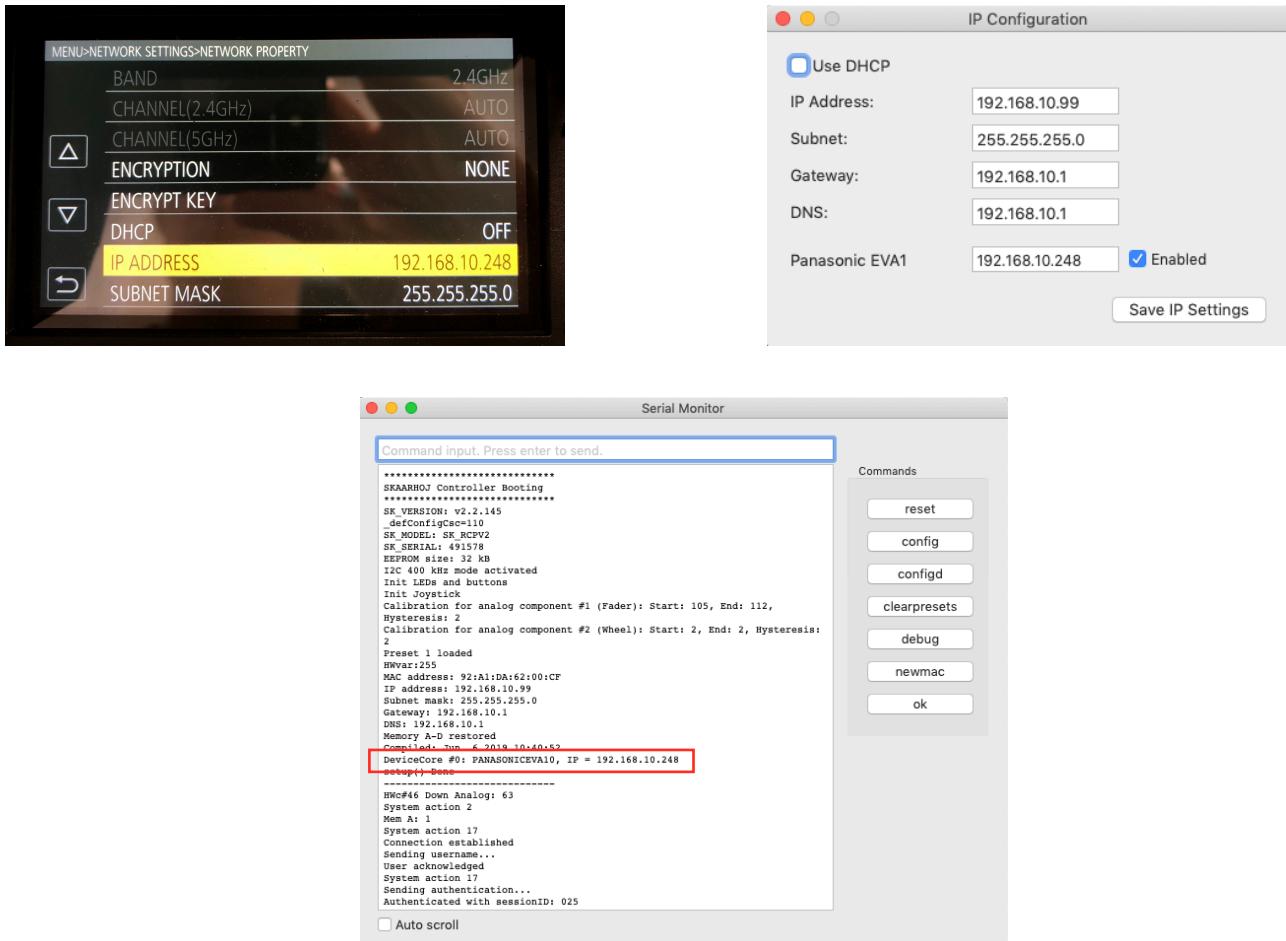
Check IP Addresses on SKAARHOJ Controller

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"



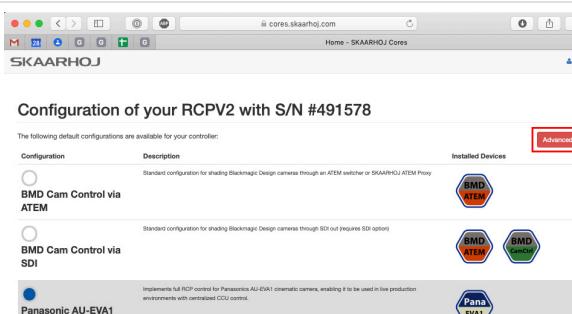
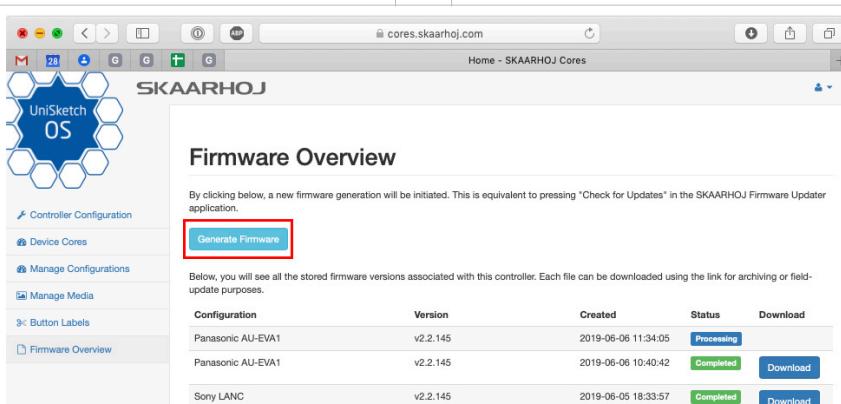
If the Account name is correct but the password is not the Serial Monitor will report "Camera Error: Wrong User" after reporting that the user is acknowledged.



Alternative way of Downloading and Installing the Firmware on a RCPv2

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>Direct Selection of Default Config 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>Selection of Default Config 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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The screenshot shows the SKAARHOJ Firmware Overview page. On the left is a sidebar with icons for Controller Configuration, Device Cores, Manage Configurations, Manage Media, Button Labels, and Firmware Overview. The main area has a title 'Firmware Overview'. Below it, a note says: 'By clicking below, a new firmware generation will be initiated. This is equivalent to pressing "Check for Updates" in the SKAARHOJ Firmware Updater application.' A blue 'Generate Firmware' button is present. Below this is a table with columns: Configuration, Version, Created, Status, and Download. Three entries are listed:

Configuration	Version	Created	Status	Download
Panasonic AU-EVA1	v2.2.145	2019-06-06 11:34:05	Completed	Download
Panasonic AU-EVA1	v2.2.145	2019-06-06 10:40:42	Completed	Download
Sony LANC	v2.2.145	2019-06-05 18:33:57	Completed	Download

After the firmware have been generated press "Download"

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

The screenshot shows two applications side-by-side. On the left is the 'SKAARHOJ App' on Mac, showing a menu bar with File, Edit, Options, Help, and a toolbar with Load firmware from file and Show Log. On the right is the 'SKAARHOJ Firmware Updater' on PC, also showing a menu bar with Options, Help, and a toolbar with Load firmware from file and Show Log. Both windows have their 'Options' tabs selected.

Important to select proper COM port. See "Port selection on Windows" in Installation and Operation manual <https://www.skaarhoj.com/support/manuals/>

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

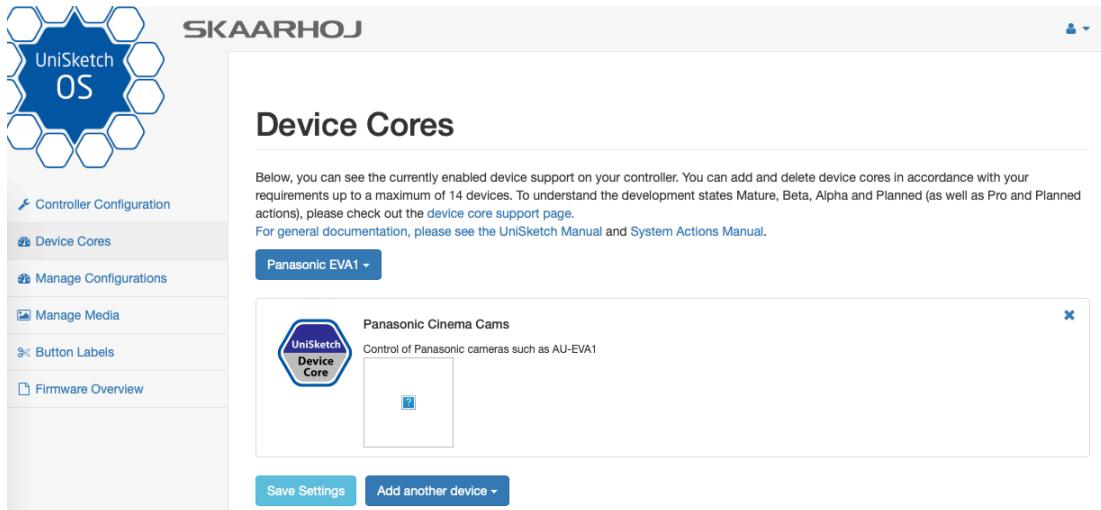
The screenshot shows a Mac file browser window titled 'Downloads' with a file named 'firmware.hex' selected. Below it is the 'SKAARHOJ Firmware Updater' application window. The 'Port' dropdown is set to 'usbmodem142301'. The application displays a message 'Firmware successfully updated!' in a red-bordered box at the bottom. Other buttons in the app include 'Check for updates', 'Online configuration', 'Local Configuration', and 'IP Configuration'.

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

Setting up Controller

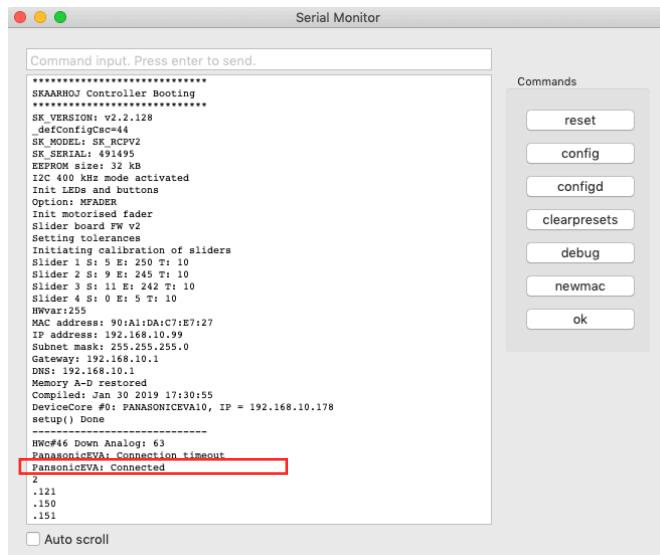
This section is only relevant if you are building a configuration from scratch.

The Device Core "Panasonic AU-EVA1" 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).

Connection to the camera can be confirmed from the Serial Monitor with the command: *PanasonicEVA: Connected*



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

Panasonic EVA1: Iris
Panasonic EVA1: Auto Iris
✓ Panasonic EVA1: Pedestal
Panasonic EVA1: Focus (Creep)
Panasonic EVA1: Focus (Step)
Panasonic EVA1: Focus (Fine)
Panasonic EVA1: Focus (Binary)
Panasonic EVA1: Zoom (Creep)
Panasonic EVA1: Zoom (Step)
Panasonic EVA1: Zoom (Fine)
Panasonic EVA1: Zoom (Binary)
Panasonic EVA1: ND Filter
Panasonic EVA1: Record
Panasonic EVA1: Color Settings
Panasonic EVA1: Variable Shutter
Panasonic EVA1: Shutter Mode
Panasonic EVA1: Shutter
Panasonic EVA1: Variable FR
Panasonic EVA1: Frame Rate
Panasonic EVA1: Auto White Balance
Panasonic EVA1: Color Temperatur
Panasonic EVA1: Auto Black Balance
Panasonic EVA1: Exp Index
Panasonic EVA1: Exp Index Gain
Panasonic EVA1: Gamma Select
Panasonic EVA1: Master Gamma
Panasonic EVA1: Black Gamma Enable
Panasonic EVA1: Black Master Gamma
Panasonic EVA1: Black Gamma Range
Panasonic EVA1: Master Knee Enable
Panasonic EVA1: Knee Point
Panasonic EVA1: Knee Slope
Panasonic EVA1: Chroma
Panasonic EVA1: Linear Matrix Enable
Panasonic EVA1: Linear Matrix
Panasonic EVA1: Color Correction Enable
Panasonic EVA1: Color Correction
Panasonic EVA1: Detail Enable
Panasonic EVA1: Detail Coring
Panasonic EVA1: Detail Master Detail
Panasonic EVA1: Detail Frequency
Panasonic EVA1: White Clip Enable
Panasonic EVA1: White Clip Level
Panasonic EVA1: Menu Display
Panasonic EVA1: Menu Enter
Panasonic EVA1: Menu Navigation
Panasonic EVA1: User Switch
Panasonic EVA1: Bars
Panasonic EVA1: Red Tally
Panasonic EVA1: Camera Select

Multicam Control

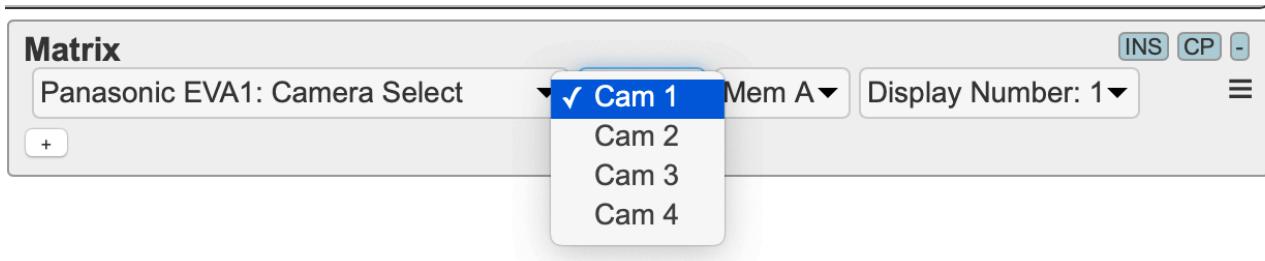
With launch of UniSketch V2.4.xx the Panasonic AU-EVA1 Device Core have been updated with Multicam support. This means by *default* the Device Core will try and connect to up to 4 cameras in a consecutive IP structure like this:

- **Device Core IP (AU-EVA #1):** 192.168.10.92
- **AU-EVA #2:** 192.168.10.93
- **AU-EVA #3:** 192.168.10.94
- **AU-EVA #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.

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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:

The screenshot shows the SKAARHOJ Serial Monitor interface. The main window displays a log of device boot and configuration information. On the right side, there are several buttons: Reset, Config, Debug, Ok, Clear Presets, Scroll down, and Clear. At the bottom right is a question mark icon.

```
*****
SKAARHOJ Controller Booting
*****
SK_VERSION: branch_evalMultiClient
SK_MODEL: SK_RCPV2
SK_SERIAL: 432257
EEPROM Size: 32768
I2C 400 kHz mode activated
Init LEDs and buttons
Init Joystick
Calibration for analog component #1 (Fader): Start: 105, End: 112, Hysteresis: 2
Calibration for analog component #2 (Wheel): Start: 2, End: 2, Hysteresis: 4
MAC address: 92:A1:DA:8A:0D:6C
IP address: 192.168.5.99
Subnet mask: 255.255.255.0
Gateway: 192.168.10.1
DNS: 192.168.10.1
Boots Count: 19
Uptime: 1 hours, 39 minutes
Screen Saver: 0 hours, 0 minutes
Usage Stats Flags: 01
Compiled: Jun 9 2020 10:59:48
D0[0] = 1
DeviceCore #0: PANASONIC_EVA10, IP = 192.168.5.79
Camera Limit = 1
setup() Done
-----
HWC#46 Down Analog: 63
System action 2
Mem A: 1
Setting contrast 5 for all displays 0
Setting contrast 5 for all displays 1
Setting contrast 5 for all displays 2
Setting contrast 5 for all displays 3
System action 17
Connection established 192.168.5.79
Sending username...192.168.5.79
User acknowledged 192.168.5.79, realm: MovieRemote
Querying model...192.168.5.79
>>> handleUDP ping for 192.168.5.79
Sending authentication...192.168.5.79 and 192.168.5.79
Authenticated with sessionID: 004, ip: 192.168.5.79
Error getting/setting "AFcSw", disabling..., ip: 192.168.5.79
Error getting/setting "KneeSel", disabling..., ip: 192.168.5.79
Error getting/setting "MedSts", disabling..., ip: 192.168.5.79
Error getting/setting "WBalSel", disabling..., ip: 192.168.5.79
16
.84
.85
.86
.85
.>>> handleUDP ping for 192.168.5.79
85
.85
```

SKAARHOJ DEVICE CORES

Example: If the Panasonic AU-EVA1 device core is the first like below:

The screenshot shows the SKAARHOJ Device Cores configuration page. On the left, there is a sidebar with the UniSketch OS logo and links for Controller Configuration, Device Cores (which is selected and highlighted in blue), Manage Configurations, Manage Media, Button Labels, and Firmware Overview. The main content area has a title "Device Cores". Below it, a message states: "Below, you can see the currently enabled device support on your controller. You can add and delete device cores in accordance with your requirements up to a maximum of 14 devices. To understand the development states Mature, Beta, Alpha and Planned (as well as Pro and Planned actions), please check out the [device core support page](#). For general documentation, please see the [UniSketch Manual](#) and [System Actions Manual](#)". A blue button labeled "Panasonic AU-EVA1 Device Core Option test" is visible. Below this, a card displays the "Panasonic EVA1 (Camera)" device core, which controls a "Panasonic Super 35 Handheld Cinema Camera AU-EVA1". It includes a thumbnail image of the camera, a "Manuals" link to the "Device Core Manual", and status indicators: "Client limit: 1" and "Core limit: 2-3". At the bottom right of the card is a red "X" icon. A green "Save Settings" button is located at the bottom right of the main content area.

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 configuration page. The sidebar is identical to the previous screenshot. The main content area has a title "Manage Media". Below it, a message says: "Here, you can add various types of media content to your configuration." A blue button labeled "Panasonic AU-EVA1 Device Core Option test" is present. A section titled "Device Core Options" contains the text: "Some device cores support additional options that can be defined through this text field. Please refer to the manual for the particular device core for details." Below this is a text input field containing "D0:0=1". A section titled "Strings" has a "Add String" button and a text input field for "String 1" containing "RELATIVE| ||".

Zoom + Focus

The Zoom + Focus control have been implemented on the base of a CANON CN-E 18-80MM T4.4LIS KAS S

Please notice if a Zoom in/out adjustment have been initiated on a SKAARHOJ controller and one try to zoom directly on the lens when this is in "servo AUTO mode" the SKAARHOJ controller will overrule adjustments being done on the lens directly.

Focus must be set to "AF" on the lens itself if focus adjustments should be done from the SKAARHOJ panel.

If a Focus near/far adjustments have been initiated on a SKAARHOJ controller (while AF is set) the SKAARHOJ controller will overrule adjustments being done on the lens directly.

Iris

Iris must be set to "A" mode on the lens itself if iris adjustments should be done from the SKAARHOJ panel.

This is a table of actions for some of the actions in the Panasonic EVA1 Device Core.

Zoom (Creep)	Initiates a Creep Zoom in/out with speeds between -8 to +8 Binary triggers: Will only reflect the speed of the Creep Zoom value (-8 to +8) Pulse inputs: 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. Displays: "Creep Zm/Speed of zoom"
Zoom (Step)	Zoom in/out with steps defined to a specific value. Used to quickly zoom to a desired range Binary triggers: Will only reflect the current zoom value in mm Pulse inputs: Will zoom in/out with the given speed value Speed Limit 1: Small steps Speed Limit 8: Large steps Displays: "Step Zm/Zoom range in mm"
Zoom (Fine)	Zoom in/out with small steps to a specific value zoom range Binary triggers: Will only reflect the current zoom value in mm Pulse inputs: 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 Displays: "Fine Zm/Zoom range in mm"
Zoom (Binary)	Used to zoom in/out via buttons instead of a encoder Binary triggers: Zoom in/out as long as a button is pressed and held down. Speed of the zoom is determined with the speed limiter. Pulse inputs: Not implemented Displays: "Zoom/[Out,In]"

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Focus (Creep)



Initiates a Creep Focus far/nearer with speeds between -6 to +6

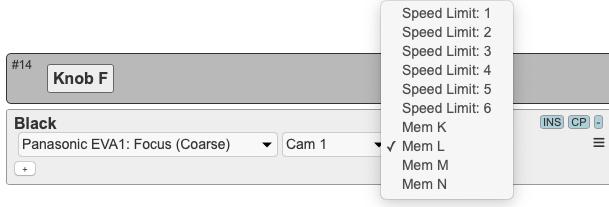
Binary triggers: Will only reflect the speed of the Creep Focus value (-6 to +6)

Pulse inputs: 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.

Displays: "Creep Fcs/Speed of focus"

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

Focus (Step)

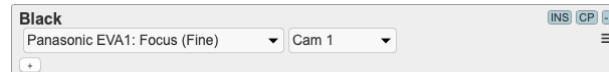


Binary triggers: Will only reflect the current focus value in m

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]"

Wireless Control using the Panasonic AJ-WM50P Wireless Module

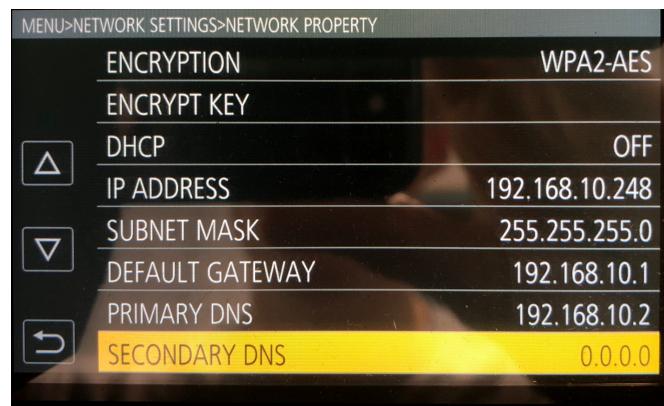
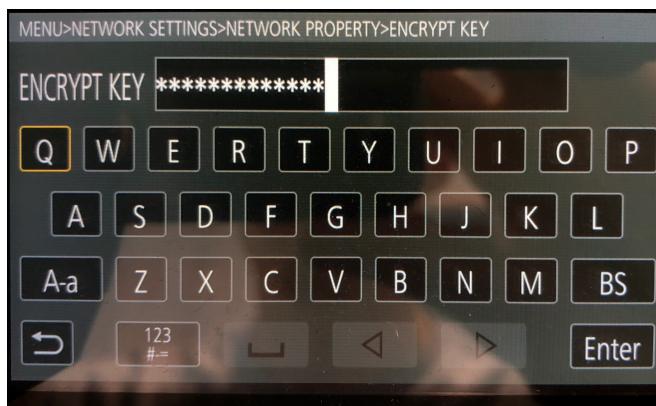
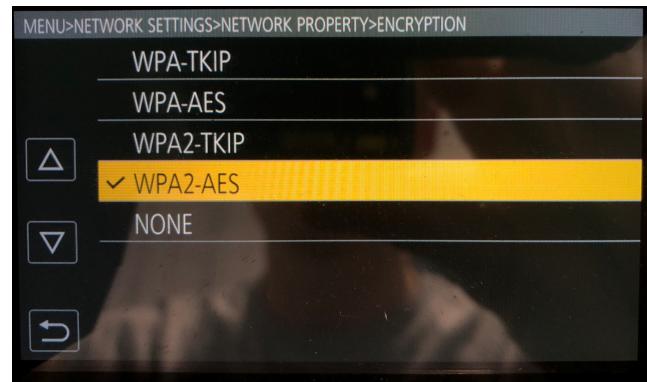


It should be noted that the supported case between a SKAARHOJ controller and the Panasonic AU-EVA1 camera is via a wired ethernet connection. This is to ensure a robust integration and to achieve a good user experience (stable connection, responsiveness etc). The Device Core have been optimised to work on a wired ethernet connection and this is the supported case.

The AJ-WM50P wires module have been tested *briefly* in order to determine if wireless control of the Panasonic AU-EVA1 camera is possible from a SKAARHOJ Controller. It is possible but there are drawbacks. A couple of comments:

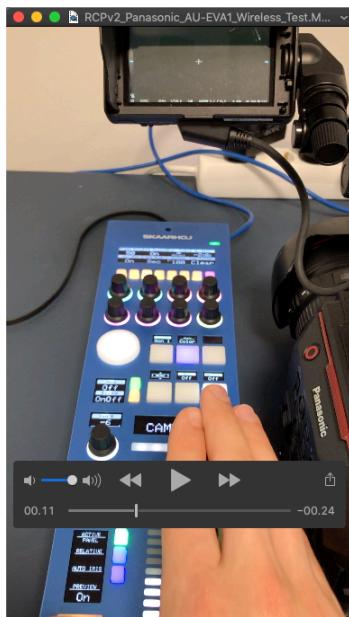
- In the tested setup idle connection to the camera seemed somewhat stable but connection would still be lost even no interaction was done on the SKAARHOJ controller (most likely a timeout issue)
- If SKAARHOJ controller was used to transmit a lot of data such as moving the joystick quickly for iris control, connection would be lost
- Changing iris quickly could resort in feedback to the SKAARHOJ controller being delayed
- Delay in changing parameters on the camera was observed
- If connection was lost it would quickly reconnect

The configuration used for testing are shown below.



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A video of the behaviour can be seen here: https://github.com/SKAARHOJ/Support/raw/master/Manuals/Videos/RCPv2_Panasonic_AU-EVA1_Wireless_Test.MOV



Panasonic have conducted a test themselves following the above method, and experienced a more stable behaviour.

Tally

With the default configuration "Panasonic AU-EVA1" 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	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	<input type="button" value="Save Settings"/>

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

#30	ID Tally	ID Tally
Black	BMD ATEM: Video Tally 1 Prog/Prev	<input type="button" value="Save"/>