

# Device: SONY LANC or Canon RC-V100 Device Cores with ETH-LANC Link

## Introduction

Our device ETH-LANC Link is used to translate commands from ethernet to the remote port of the camera. The ETH-LANC Link can be configured to either use the LANC protocol or the Canon RC-V100 protocol. This document will give you an introduction on how to configure a system and details about the the LANC and the RC-V100 Device Core Actions. Notice: in order to communicate with the ETH-LANC Link you need a UniSketch OS powered controller with either the "CCU LANC" or the "Canon RC-V100" Device Core installed.

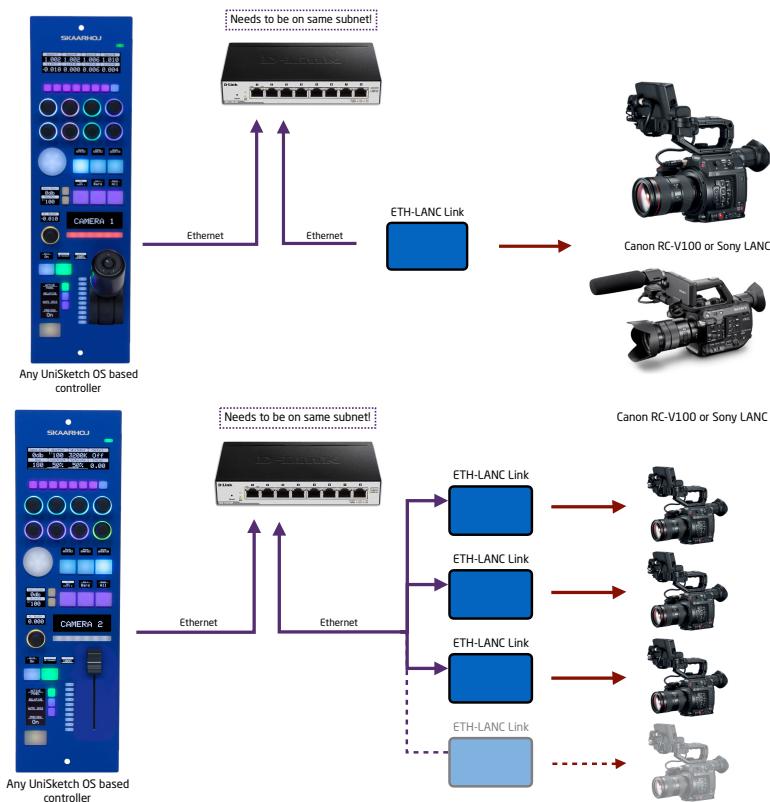
Please notice the LANC and the Canon RC-V100 protocols are "simple protocols" that only allow limited amount of feedback to our controllers. You will not be able to see specific values rendered in our displays as much of the communication is 1-way. Some things such as power indication and record state are reflected back to our controllers but many settings are set *in the blind*. You cannot expect a true RCP experience with these protocols.

Especially take notice if you want to map iris control on an analog component such as a Joystick or slider. As it is not possible to set either a specific iris value *or* to get iris feedback from the cameras settings iris on an analog component will always be a workaround.

The product called ETH-SERIAL Link have been superseded by the ETH-LANC Link.

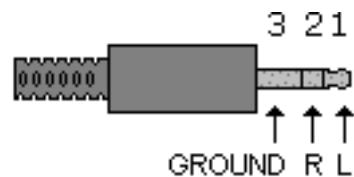


Principal setups for the ETH-LANC Link.



## Pinout

The LANC port cable needs to be a simple 2.5mm Connector without any cross out in the cable



## ETH-LANC Link Configuration

The ETH-LANC Link must be configured with a IP address for a SKAARHOJ UniSketch OS controller to connect to it. The IP address of the device will change depending on the DIP switch on the device.

When you set the IP of the unit you set the **base IP address**. If you have multiple ETH-LANC Link in the same setup make sure to set them to the same base IP address.

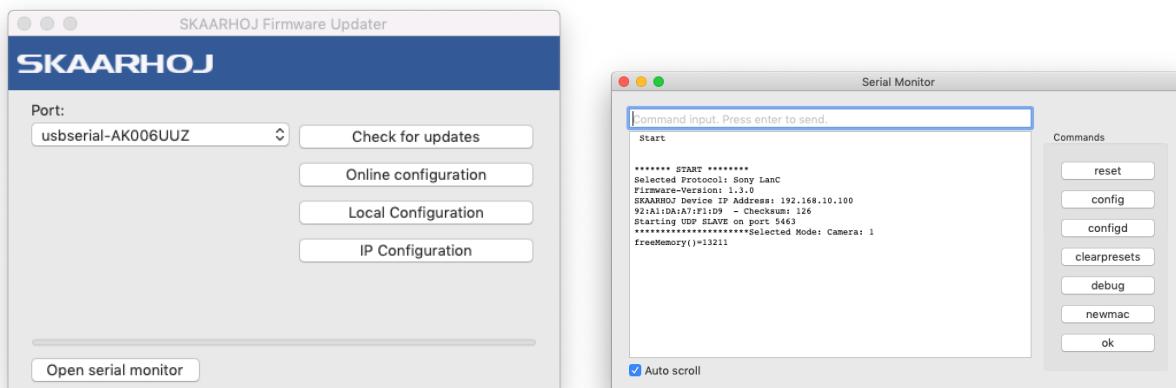
If you move the DIP selector to a higher number the IP on the ETH-LANC Link will increment. Here is a example:

ETH-LANK Link Base IP: 192.168.10.100	
Dip Selector #	Equals IP address #
1	192.168.10.100
2	192.168.10.101
3	192.168.10.102
4	192.168.10.103
5	192.168.10.104
6	192.168.10.105
7	192.168.10.106
8	192.168.10.107

There are two ways of configuring the **base IP address** of the ETH-LANC Link

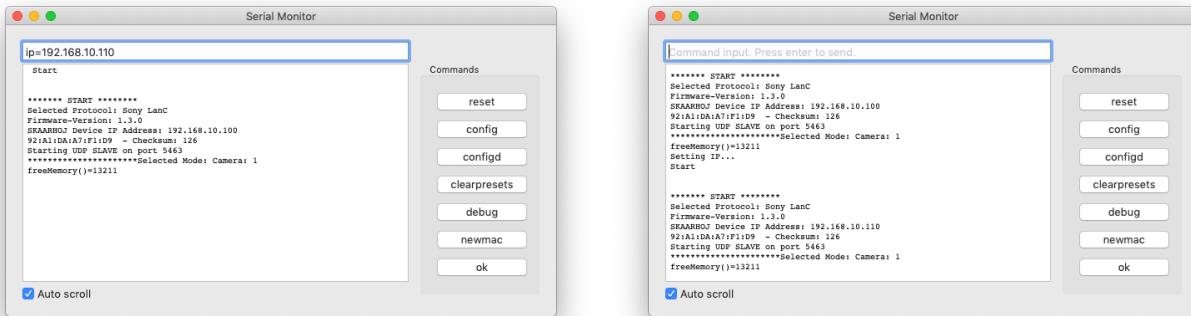
1) Connect the ETH-LANC Link with the USB Programming cable to your computer. Open the Firmware Updater Application and open the **Serial Monitor**. In the serial monitor you will get a overview of the

- Selected Protocol (Sony LANC or Canon RC-V100)
- SKAARHOJ Device IP address
- Selected Mode: Camera: 1-8

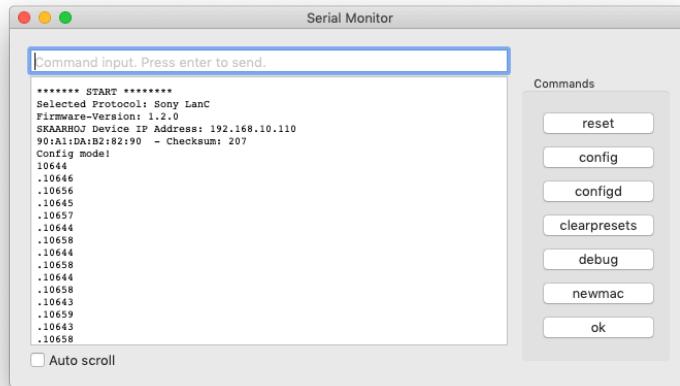


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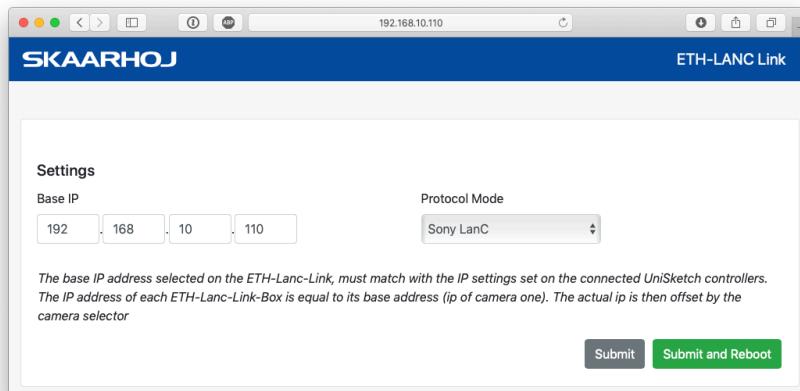
By using the command *ip=A.B.C.D* in the serial monitor you can set the IP address.



2) Set the IP address on the web interface of the ETH-LANC Link it self. In order to access the web interface press and hold the "config" button on the device. The status LED will blink red and the serial monitor will report "Config mode!". Alternatively press "config" in the serial monitor.

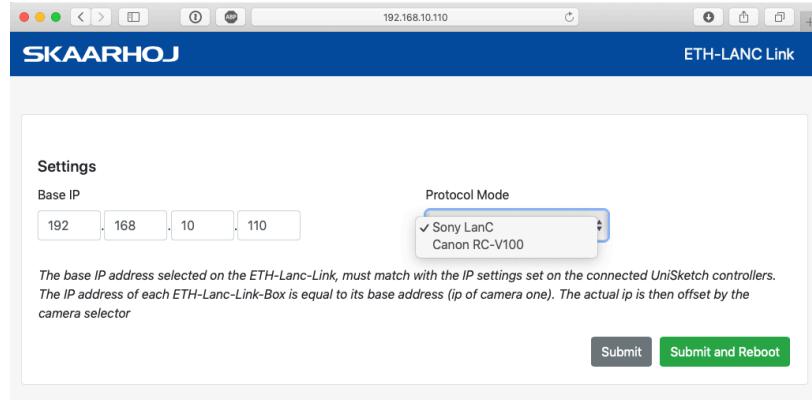


Open a browser and enter the web interface by using the base IP address of the ETH-LANC Link.



## Select: Sony Lanc or Canon RC-V100 Protocol

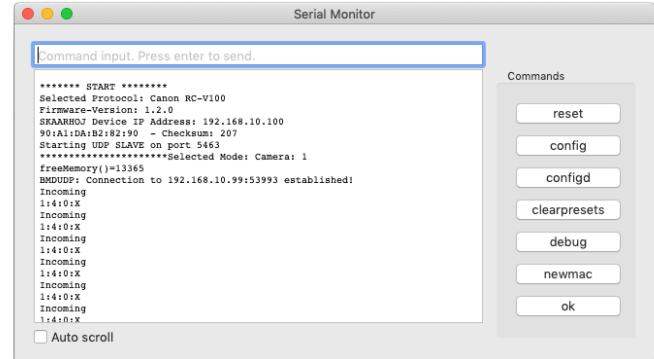
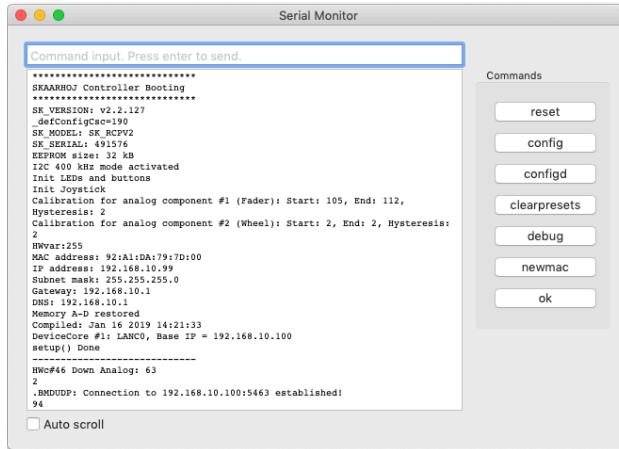
To select the protocol type go to the web interface (see section above) and chose between "Sony Lanc" or "Canon RV-V100". Press "Submit" or "Submit and Reboot" to save the settings.



Our ETH-LANC Link is ready. All that is left to do is to connect a camera.

## Confirm Connection

You can use the serial monitor on either device to confirm if connection have been established between a UniSketch OS controller and the ETH-LANC Link.

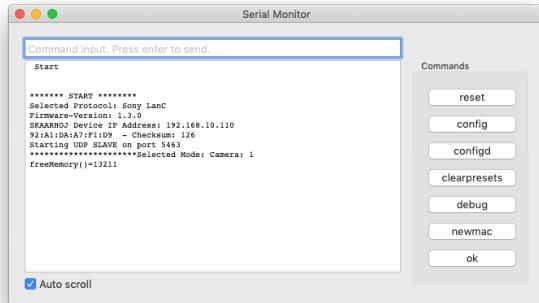
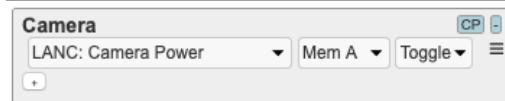


Serial Monitor on ETH-LANC Link confirming connection from RCPv2

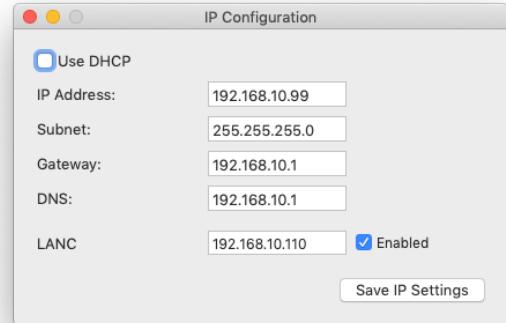
Serial Monitor on RCPv2 confirming connection to ETH-LANC Link

## Confirm Connection to Camera for Sony LANC

It is recommended to use the action "Camera Power" to confirm connection to the camera have been established. This is an easy way to visually confirm if everything is set properly.



Make sure you have set proper IP on the ETH-LANC Link. In this case 191.168.10.110 and CAM1



Confirm the LANC IP address matches the IP address of the ETH-LANC Link



See the video here for demonstration: [https://github.com/kasperskaarhoj/SKAARHOJ-Open-Engineering/raw/master/Manuals/Files/ETH-LANC\\_Link\\_PowerDemo.MOV](https://github.com/kasperskaarhoj/SKAARHOJ-Open-Engineering/raw/master/Manuals/Files/ETH-LANC_Link_PowerDemo.MOV)



# Device Core: CANON RC-V100



The Canon RC-V100 control panel usually uses the LANC Port of a Canon camera but speaks the RC-V100 Protocol, enabling many more features of the camera.

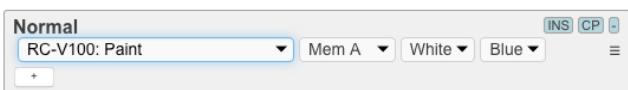
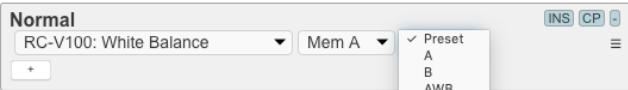
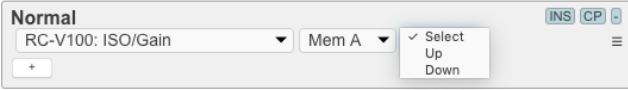
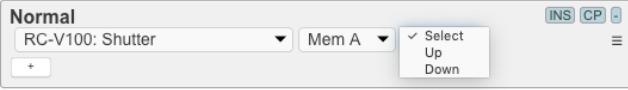
## Supported Cameras:

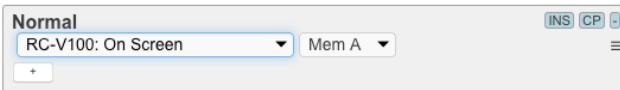
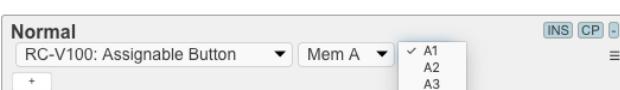
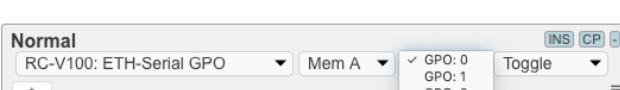
- Canon C Series
- Canon XF Series
- Canon ME Series

This is a table of actions for Canon RC-V100 Device Core

<b>Focus</b>	<p>Change the focus of the Camera</p> <p>Focus allows different Speeds. Either set 5, 10 or 15 or use a Memory to set the Speed using a different Knob</p>
<b>Iris</b>	<p>Change the Iris of the Camera</p> <p>Iris allows different Speeds. Either set 5, 10 or 15 or use a Memory to set the Speed using a different Knob</p>
<b>Iris Absolute</b>	<p>Iris Absolute makes it possible to map the Iris in RC-V100 to an analog input like eg the Iris Joystick on the RCP-Mini</p> <p>This works by sending the right amount of up and down commands to Move the Iris from its smallest to its biggest value.</p> <p>Set the Iris steps in the camera menu to <b>Fine</b> (if possible) and try counting the amount of steps from fully open to fully closed using the encoder wheel on the camera. If this is not possible you will have to estimate. 40 seems to be a good starting point for the beginning.</p>

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<b>Paint</b> 	<p>Paint controls the paint section of the camera. There are 4 values that can be chosen:</p> <p>White Blue, White Red, Black Blue, Black Red</p> <p><b>Note:</b> All these features need a Custom Picture profile (no flat profile) to be active in the camera</p> <p>This also applies to the functions:</p> <p><b>Master Pedestal</b> <b>Knee Point</b> <b>Knee Slope</b> <b>Black Gamma</b> <b>Sharpness</b></p>
<b>White Balance</b> 	<p>The White Balance function can be mapped to a button or encoder.</p> <p>When mapped to a Button: Use the dropdown to select what mode is triggered on a button press</p> <p>When mapped to an encoder:</p> <p><b>left/ right</b> for switching setting between A / B / Preset (K/3200/5600)</p> <p><b>long press in preset</b> to cycle through preset modes (K/3200/5600)</p> <p><b>long press in A or B</b> to trigger a WhiteBalance Measurement</p> <p><b>short press</b> for selecting WB in preset mode (When selected use left right to increase/decrease)</p>
<b>ISO/Gain</b> 	<p>The ISO/Gain function can be mapped to a button or encoder.</p> <p>When mapped to a Button: Use the dropdown to select what mode is triggered on a button press</p> <p>When mapped to an encoder:</p> <p><b>left/ right</b> for up/down, <b>short press</b> for select</p>
<b>Shutter</b> 	<p>The Shutter function can be mapped to a button or encoder.</p> <p>When mapped to a Button: Use the dropdown to select what mode is triggered on a button press</p> <p>When mapped to an encoder:</p> <p><b>left/ right</b> for up/down, <b>short press</b> for select</p>
<b>Menu Move</b> 	<p>The Menu Move function can be mapped to a button or encoder.</p> <p>When mapped to a Button: Use the dropdown to select what function is triggered on a button press</p> <p>When mapped to an encoder:</p> <p><b>long press</b> to enter/exit the menu <b>left/ right</b> for moving, <b>short press</b> for enter</p>

<b>On Screen</b>	<p>On screen allows an operator to enable on screen display with a single button press remotely. This is great for changing things in the menu and then switch the camera back to a clean output again for live production.</p>  <p>If it does not work right away please check the "Display out" setting in the camera menu. This has to be enabled first for the panel to control this feature.</p>
<b>Assignable Button</b>	<p>This action triggers one of the Camera's assign buttons.</p> <p><b>Note:</b> RC-V100 only allows the control of the first 4 assign buttons. LanC mode allows to control the first 6</p> 
<b>ETH-Serial GPO</b>	<p>The ETH-Serial Box has 4 GPOs on its connector (For Pinout see below) These can be triggered using this function.</p> <p>Note: ETH-Serial Link Firmware 1.1.0 is required, for update instructions see here:</p> <p><a href="https://www.skaarhoj.com/support/firmware-updater/">https://www.skaarhoj.com/support/firmware-updater/</a></p> 
<b>Camera Power</b>	<p>Camera Power toggles or sets the power of the Camera</p> <p>This needs the camera's hardware power switch to stay on ON</p> 
<b>Other Functions</b>	<p>There are several other functions which are not documented yet. Most of them can easily be understood when checking out the original Dokumentation of the RC-V100 Panel</p>

# Device Core: CCU LANC



The LANC Protocol is usually used for camera accessories like the Manfroto Zoom controllers. In their RM-30BP Panel Sony introduced a handy little controller for their own cameras. In addition to covering all the basic LANC functions we can also do everything the RM-30BP can do, including Sony's Tally feature

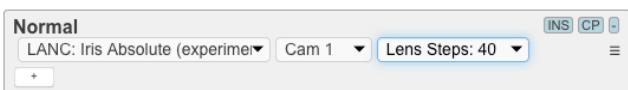
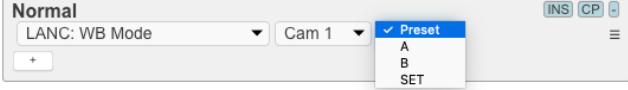
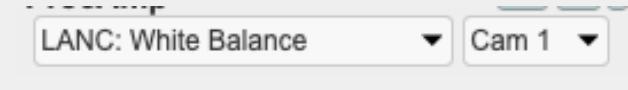
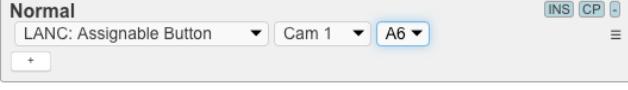
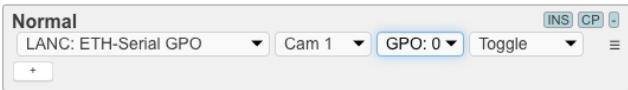
## Supported Cameras:

Basically all Cameras that support LANC in one or another way are supported. Of course not all features will work on all cameras. The best support is for Sony Cameras. Check the RM30-BP compatibility guide if you want find out if a particular feature is available on a specific Sony camera

[https://pro.sony/s3/2017/11/09110526/RM30BP\\_compatibility\\_Rev7.pdf](https://pro.sony/s3/2017/11/09110526/RM30BP_compatibility_Rev7.pdf)

This is a table of actions for CCU LANC Device Core

<b>Focus</b>	Change the focus of the Camera  Focus allows different Speeds. Either set 5, 10 or 15 or use a Memory to set the Speed using a different Knob
<b>Iris (Button)</b>	Change the iris of the camera using a button  Choose the direction using the dropdown
<b>Iris (Encoder)</b>	Change the iris of the camera using a Encoder

<b>Iris Absolute</b>	<p>Iris Absolute makes it possible to map the Iris in LanC to an analog input like eg the Iris Joystick on the RCP</p>  <p>This works by sending the right amount of up and down commands to move the Iris from its smallest to its biggest value.</p> <p>Set the Iris steps in the camera menu to <b>Fine</b> (if possible) and try counting the amount of steps from fully open to fully closed using the encoder wheel on the camera. If this is not possible you will have to estimate. 40 seems to be a good starting point for the beginning.</p> <p>Movement with either a joystick or a slider should <i>not</i> be too rapid otherwise the camera will not pick up the change.</p>
<b>WB Mode</b>	 <p>The white balance mode buttons can be mapped to a button or encoder.</p> <p>When mapped to a Button: Use the dropdown to select what mode is triggered on a button press</p> <p>White Balance (see below) is needed to be activated in order to set the different WB modes.</p>
<b>White Balance</b>	 <p>Equivalent to pressing the "White Balance" button on the camera. Works on a button press. The White Balance mode on the camera is needed to setting the WB Mode (above)</p>
<b>Gain</b>	<p>The Gain function is meant to be mapped to a button and does exactly the same as the Gain button on the RM30BP would do. It selects gain. Then you can adjust it using the Menu Move function.</p> <p>Commands with a similar behaviour are:</p> <p><b>Shutter</b>  <b>White Balance</b>  <b>Select</b>  <b>Picture Profile</b>  <b>Thumbnail</b></p> <p>If you are unsure about their exact function check Sony's Documentation</p>
<b>Menu Move</b>	<p>The Menu Move function can be mapped to a button or encoder.</p> <p>When mapped to a Button: Use the dropdown to select what function is triggered on a button press</p> <p>When mapped to an encoder:</p> <p><b>long press</b> to enter/exit the menu  <b>left/ right</b> for moving,  <b>short press</b> for enter</p>
<b>Assignable Button</b>	<p>This action triggers one of the Camera's assign buttons.</p> <p><b>Note:</b> LanC allows to control the first 6 assign buttons of the camera.</p> 
<b>ETH-Serial GPO</b>	<p>The ETH-Serial Box has 4 GPOs on its connector (For Pinout see below) These can be triggered using this function.</p> <p><b>Note:</b> ETH-Serial Link Firmware 1.1.0 is required, for update instructions see here:</p> <p><a href="https://www.skaarhoj.com/support/firmware-updater/">https://www.skaarhoj.com/support/firmware-updater/</a></p> 

<b>Camera Power</b>	Camera Power toggles or sets the power of the Camera  This needs the camera's hardware power switch to stay on ON
<b>Counter Reset</b>	This function resets the internal timecode Counter on the Camera. It can be used to sync several camera's timecode
<b>Sony Tally</b>	The Sony Tally action allows you set a color boarder (green or red) inside the viewfinder of certain cameras. It can be used like a normal tally function and linked to other actions or virtual hardware component
<b>NDFilter</b>	ND Filter allows the control of the Variable ND Filters in some Sony Cameras using an encoder.
<b>Custom Code</b>	Custom Code can be used to trigger a custom selectable LanC code with a button. Select the Header Byte using the first selector (18/28/D8) and the command byte using the second. (First byte is hex, second is decimal)  Some great documentation about LanC can be found here: <a href="http://www.boehmel.de/lanc.htm">http://www.boehmel.de/lanc.htm</a>
<b>Player Play/Pause/Stop</b>	LanC also supports a few player commands that can control some Camera's built in player. This might be useful for on the fly play-out hacks
<b>Other Functions</b>	There are several other functions which are not documented yet. Most of them can be understood when checking out the original documentation of the RM 30 BP