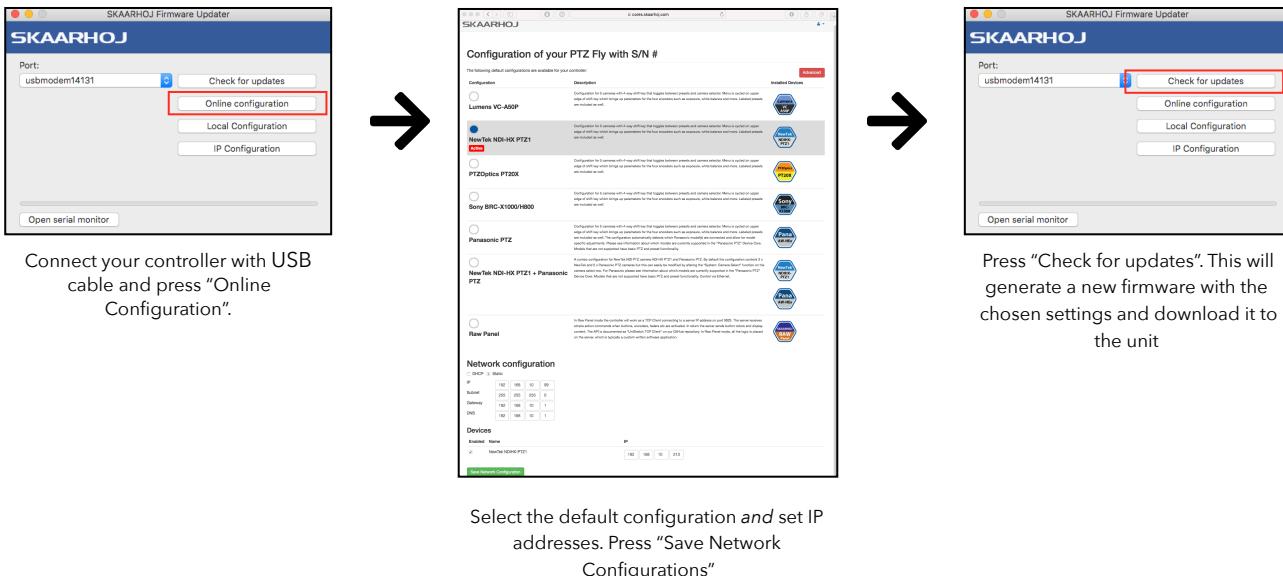


# PTZ Control

## Select Default Configuration

Our controllers such as the PTZ Pro and the PTZ Fly comes with a range of default configurations. In order to select the one suited for your camera brand please use the **"Online Configuration"** functionality in our Firmware Application. You must connect your device to your computer with the USB cable and have internet access as well. For more details about using the Application and selecting the right Port please see the Installation and Operation Manual at [www.skaarhoj.com/support/manuals/](http://www.skaarhoj.com/support/manuals/)



## Setting IP for a Device Core / How our "Camera Selector" Works

For PTZ Control our Device Core works by setting a "Master IP" and the IP addresses of your cameras needs to be **consecutive**. You do **not** need to add additional Device Cores. The controller will automatically connect to the additional cameras provided they are given consecutive IP addresses.

In this case just one NewTek Device Core is set to 192.168.10.213 which means the controller will connect to:

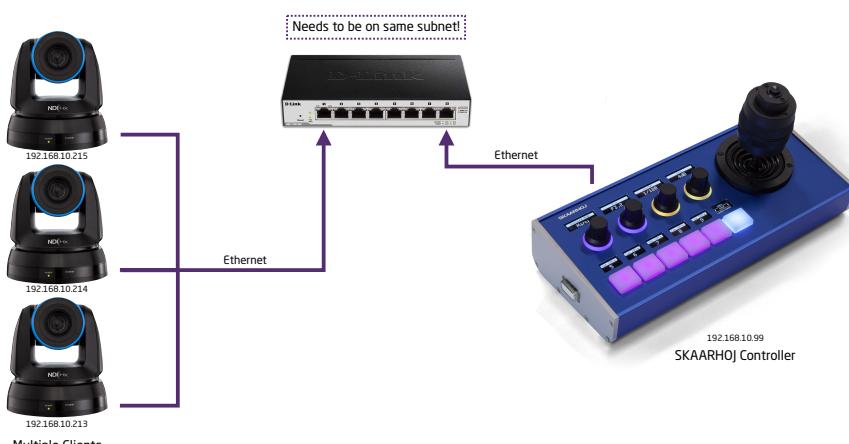
Cam 1 on 192.168.10.213

Cam 2 on 192.168.10.214

Cam 3 on 192.168.10.215

And so forth

Controller IP Settings							
IP:	192	.	168	.	10	.	99
Subnet Mask:	255	.	255	.	255	.	0
Gateway:	192	.	168	.	10	.	1
DNS:	192	.	168	.	10	.	1
<b>NewTek NDIHX-PTZ1</b>							
<input checked="" type="checkbox"/> 192 . 168 . 10 . 213							



Avoid setting IP addresses so the PTZ range will interfere with either the controller it self or other clients connected. This could be if IP of the controller is set to 192.168.10.215 when a PTZ IP range starts from 192.168.10.213.

### Camera Selector on Camera - NewTek & Lumens

Make sure the camera address selector is set to 0 on all cameras connected to our controller



### Connected Cameras on PTZ Pro

When a PTZ Pro connects to cameras the buttons on the camera selector row will light up.

In this case Camera 1 and Camera 3 are connected.

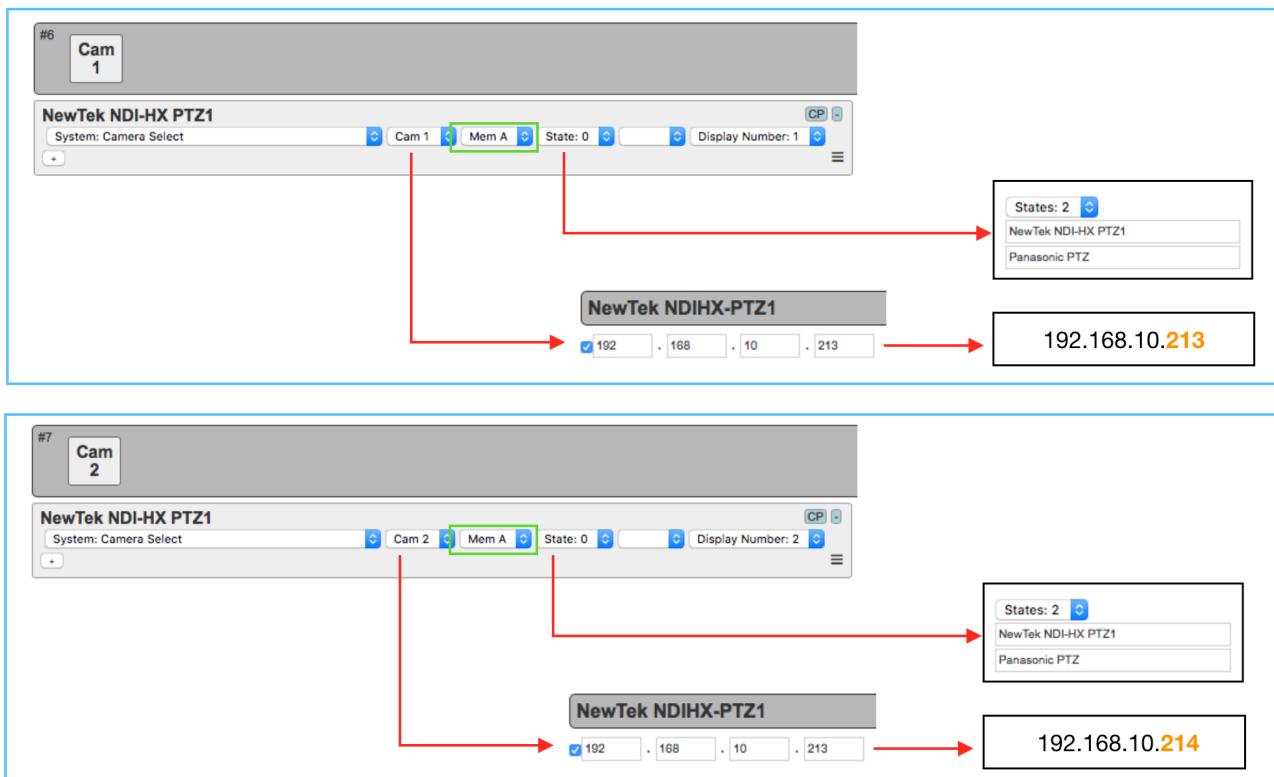


## Configurations with Multiple PTZ Brand

For default configurations such as "**NewTek NDI-HX PTZ1 + Panasonic PTZ**" and "**PTZOptics + Panasonic PTZ**" on the PTZ Pro the generic system action "System: Camera Select" are utilised instead of camera select on the specific Device Core level. Care must be taken in understanding how IP settings are set in UniSketch OS and how the system action works to make sure you can connect to your cameras. A example are given below for the "NewTek NDI-HX PTZ1 + Panasonic PTZ" default config:

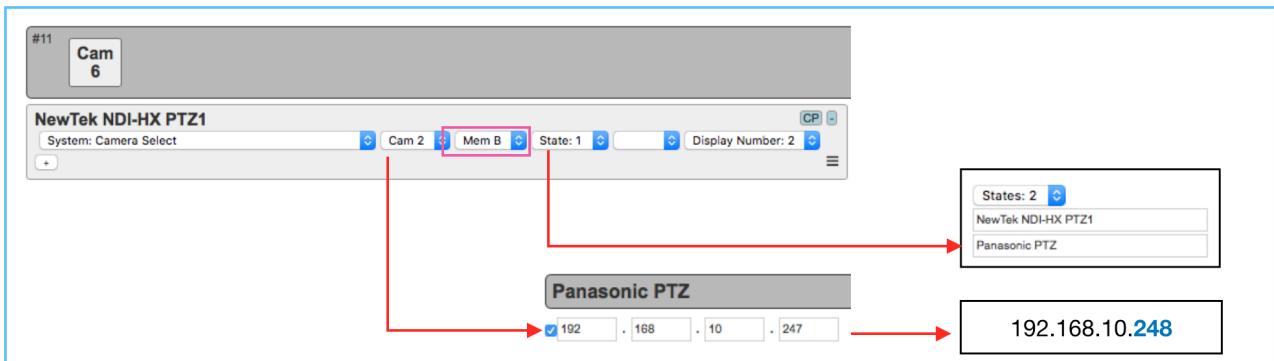
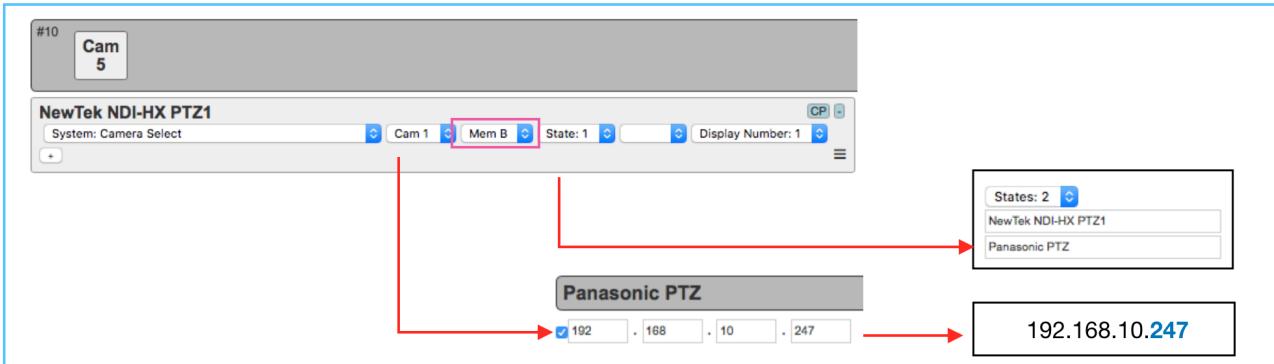
Two states are utilised - each state control the different camera brand. In this case the first state (state 0) is NewTek whereas the second state (state 1) is Panasonic. The IP scheme is the same as a controller with just one Device Core installed (as explained in the section "Setting IP for a Device Core / How our "Camera Selector" Works".

Below two examples for Cam1 and Cam2 for NewTek camera



## SKAARHOJ PTZ Control

Below two examples for Cam1 and Cam2 for Panasonic camera.



## Connection Stability and NDI

Background: People are moving to NDI video on a large scale and while it's a fantastic technology, it can lead to frustrating network issues which may first appear as faults on specific and seemingly unrelated devices like a SKAARHOJ controller. In general, the problem is that NDI used on a poorly configured network that is not "NDI ready" will lead to flooding of NDI video data to devices that doesn't want it and can't handle it. For a SKAARHOJ controller this means that the essential control data connection is killed by all the irrelevant video data it receives. Even a single lost control package can lead to poor connection stability or the use of a joystick. In the worst case the control won't even connect. These cases can be frustrating because they are tipping-point issues where a small change cascades into large consequences.

In general: For any network control system to work - and certainly for a SKAARHOJ controller - you need to consider that your network is configured so that neither the SKAARHOJ controller nor the devices it communicates with and no link in between are congested with network traffic that can result in predictably poor performance. No matter how much error correction we build into a controller, lost communication information will lead to poor performance. When NDI video data and other Multicast data is shared on a network it will congest the network unless proper guidance have been taken. Use proper managed network switches with something called IGMP snooping enabled so the lovely NDI data is only sent to the devices that wants to receive it. If not - and this is the default unfortunately - all devices including your SKAARHOJ controllers will receive it too and spend incredibly amount of resources to filter it out.

Below you will find our recommendations as this present time. Please be aware suggestions might get updated as we get to understand and test further.

**If you use our controllers on a network with NDI sources (Multicast) it is absolutely imperative to configure your network properly to ensure a stable connection.**

## Network Guidelines

Besides having taken proper network switch considerations such as Gigabit Ethernet on all network switch ports we recommend the following settings on your Managed Switch when possible:

- Enable IGMP Snooping (mDNS is automatically blocked by many switches when snooping is enabled – refer to documentation from your switch vendor)
- Enable Flow Control as Asymmetrical or simply as On
- Disable Quality of Service
- Disable Jumbo Frames
- CONFIGURE IGMP Querier and Query Interval for each switch in multi-switch networks when using multicast

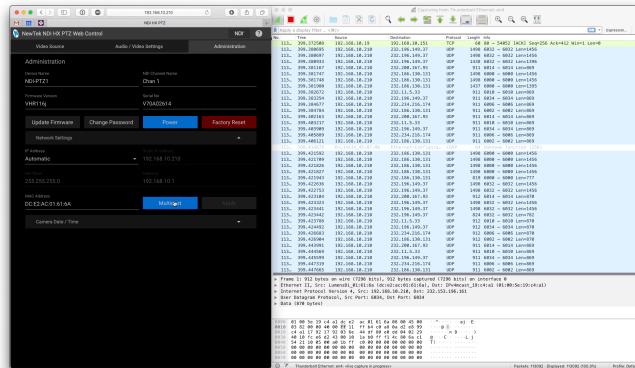
## Additional Resources

- **NewTek:** [NDI Network Guidelines](#)
- **PTZOptics:** [Setting up a Ubiquiti Network for use with PTZOptics Products](#)
- **NewTek Network Settings:** [https://support.newtek.com/hc/en-us/articles/115001705074-NETWORK-SETTINGS?mobile\\_site=true](https://support.newtek.com/hc/en-us/articles/115001705074-NETWORK-SETTINGS?mobile_site=true)

## Multicast Data on Network

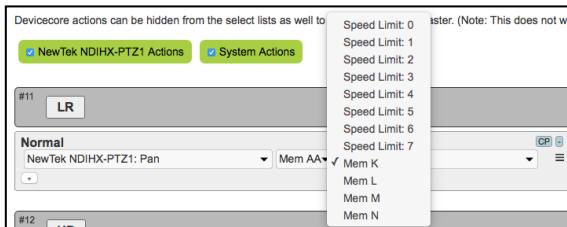
If you are unsure if Multicast data is present on your network we recommend using a network protocol analyzer such as Wireshark. Many tutorials can be found online to filter to Multicast data on the network.

See a example [here](#).



## Speed of PTZ on Joystick

Two options exist for setting a Speed Limit for PTZ actions. Either a fixed value (between 0-7) where 0 have no reduction of the maximum speed and 7 have the highest reduction of the maximum speed. The alternative is setting the Speed Limit to a Memory parameter where the Speed Limit can be adjusted by a encoder or button controlling that specific Memory parameter. This is the case for many default configurations. In the example below the Pan action on the NewTek Device Core is set to "Mem K"



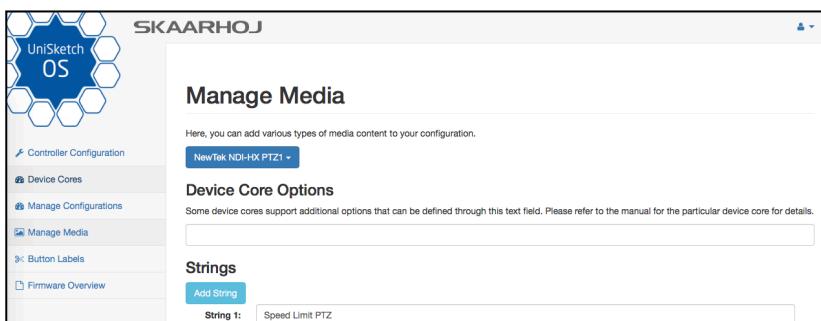
The "Mem K" is adjusted with the action "Speed Limit Mem K" on a rotary encoder so the limit can be adjusted on the fly.



You can apply a "Local Label" to change the naming from "Spd Lim K" to something easier to understand.



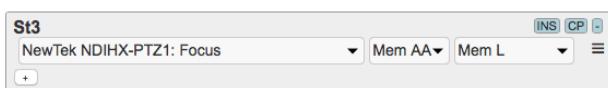
The "System: Local Label 1" will take the naming from "String 1" in the "Manage Media" tab on the config page



Many PTZ cameras we have integrated with uses VISCA as a control protocol, and natively in this protocol is speed limits between 0 and 7. The "Speed Limit" action in UniSketch is shown in percentage values and will jump (not be linear) to match the values between 0 and 7. The limitation is in the camera protocol itself and not in our integration.

## Focus

The same methodology for "Speed of PTZ" applies to Focus. You can either set a fixed value to determine the amount Focus should be adjusted or you can assign it to a memory parameter so you can adjust it on the fly. In the example below the amount of Focus is adjusted by the parameter "Mem L". This is assigned to a rotary encoder adjusting "Mem L".



Action for adjusting Focus



Action for adjusting "Mem L"

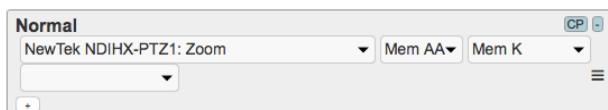
By default focus adjustment are integrated with small steps with focus near/focus far where the stepsize is either set to a fixed value between 0 and 7 or set to a Memory parameter adjusting the stepsize between 0 and 7 on the fly.

If you prefer to initiate a focus near/focus far adjustment and stop the focus adjustment by turning the focus knob back to neutral position/holding down the focus knob, this can be achieved by using the action "System: Force HWC Type - Speed" prior to having the Focus action like below. This allows for very fine focus adjustments if the speed limit is sufficiently low.



## Zoom with Joystick

The same methodology for "Speed of PTZ" applies to Zoom. You can either set a fixed value to determine the speed zoom should be adjusted or you can assign it to a memory parameter so you can adjust it on the fly. In the example below the speed of zoom is adjusted by the parameter "Mem K". This is assigned to a rotary encoder adjusting "Mem K".



Action for adjusting Zoom



Action for adjusting "Mem K"

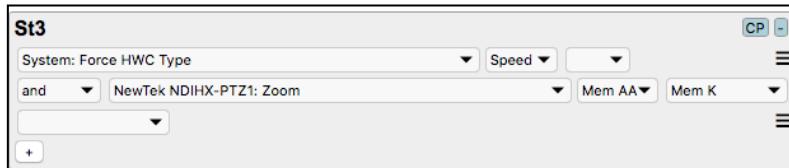
## Zoom with Encoder - in steps

Zoom can also be controlled from an encoder instead of a Joystick. By just having the Zoom action you will zoom in/out in steps where the stepsize is determined by a fixed step size or by adjusting the stepsize on the fly using a memory parameter.



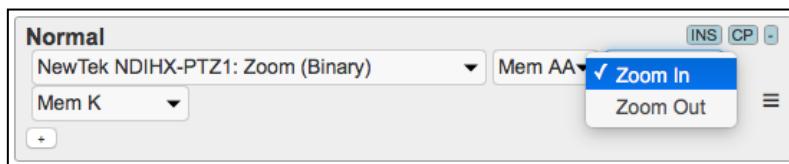
## Zoom with Encoder - initiating zoom in/out (creep zoom)

By utilising the action "System: Force HWC Type - Speed" like in the Focus description you can change the zoom behaviour to initiate a zoom in/out until you have rotated the encoder back to neutral position/by holding it down.



## Zoom with Buttons

If you want to assign zoom functionality on a button you should use the "Zoom (Binary)" action instead of just the "Zoom" action.



## Reverse Movement on Joystick

If you want to reverse movement on a joystick for pan/tilt/zoom you can for most Device Cores use the option "Reverse movement" for the Pan, Tilt and Zoom actions.

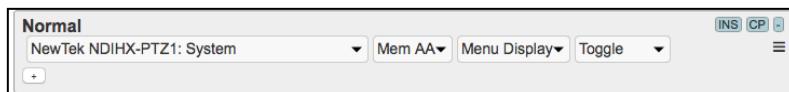


If this option does not exist on the Device Core you can use the action "System: Force HWC Type" - leave the type blank but choose "Invert" like below.



## Access to OSD via Encoder

Often access to the OSD can be found in the Device Core action "System - Menu Display". Depending on how the manufacturer have implemented the VISCA command there are different ways to navigate the menu. In the case of the NewTek NDI-HX PTZ1 when the below action is assigned to an encoder the OSD is brought up by turning clockwise. With the joystick you can navigate up and down in the menu. By turning it clockwise again you enter the chosen menu. By turning anticlockwise you go back a menu layer and ultimately exit the OSD.



## Access to OSD via Button

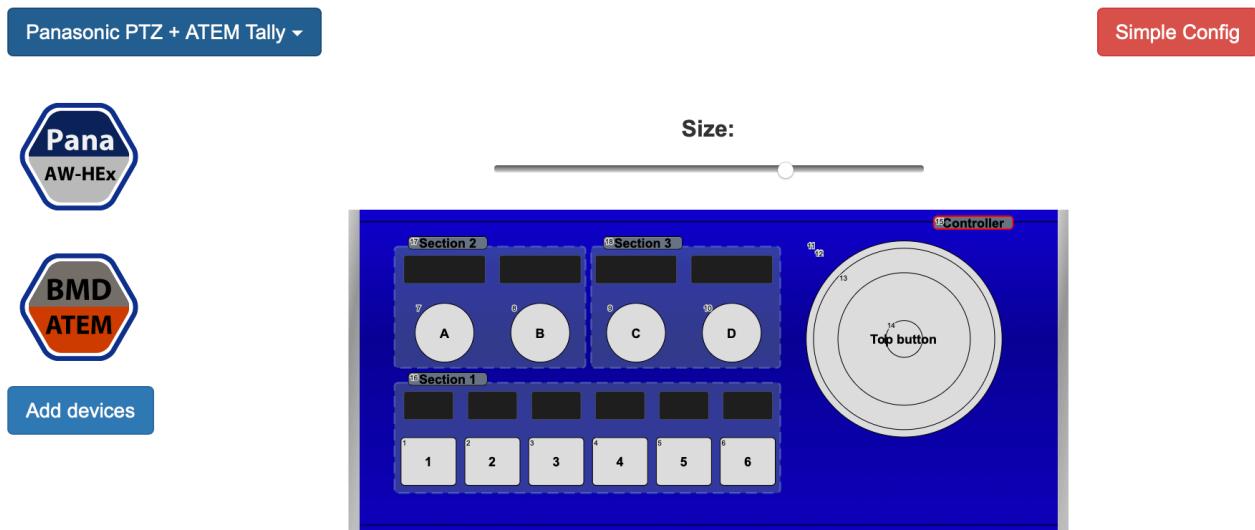
Again - variances can exist but if the OSD action is assigned to a button the OSD for NewTek NDI-HX PTZ is brought up by pressing the button. By pressing a second time you enter the menu. By pressing a third time you go back a menu layer and ultimately you exit the OSD.

## Tally

In some cases it can be desirable to route tally to the PTZ cameras based on tally from a video switcher. This can to some degree be done from the hardware interface often called "Controller" on our panels. This interface is constantly evaluated. There is a limit to how many actions can be assigned onto this interface, but we are working on a way to expand this.

In the case of a PTZ Fly and ATEM Tally it would be done the following way:

- Add the ATEM Device Core and set IP Setting



- On the Controller Interface add the below actions. This instructs the system to enable tally on Cam 1-4 based on ATEM Program 1-4 . The mapping can be differently.

#15	Controller	Controller		
<b>Normal</b>				
BMD ATEM: Program Src	M/E 1	1	Hold Down	CP
and	System: Synthesized Trigger	Binary	Prev. action	≡
and	Panasonic PTZ: Set Tally	Cam 1	Hold Down	≡
and	BMD ATEM: Program Src	M/E 1	2	Hold Down
and	System: Synthesized Trigger	Binary	Prev. action	≡
and	Panasonic PTZ: Set Tally	Cam 2	Hold Down	≡
and	BMD ATEM: Program Src	M/E 1	3	Hold Down
and	System: Synthesized Trigger	Binary	Prev. action	≡
and	Panasonic PTZ: Set Tally	Cam 3	Hold Down	≡
and	BMD ATEM: Program Src	M/E 1	4	Hold Down
and	System: Synthesized Trigger	Binary	Prev. action	≡
and	Panasonic PTZ: Set Tally	Cam 4	Hold Down	≡
+				