

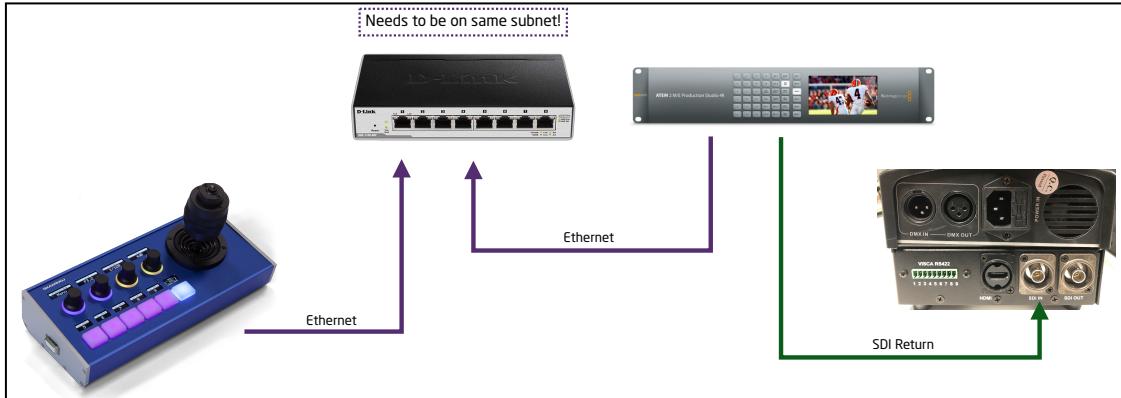
Device: RUSHWORKS PTX + BMD Micro Studio Camera 4K Combination



Introduction

Our controllers work with the RUSHWORKS PTX1 and the Blackmagic Micro Studio Camera 4K combination. This setup can be controlled two ways:

- Via the BMD CamCtrl Device Core (using the Blackmagic Arduino 3G-SDI Shield) where the control signal originates from the integrated Arduino Shield. This requires a controller fitted with the "SDI" option.
- Via the ATEM Device Core where the control signal originates from the BMD ATEM Switcher



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This is the breakout cable used from the Micro Studio Camera 4K to the Rushworks head.

The signal path is as follows

- SDI signal embedded with ancillary data (control data for the camera + head) originating from SKAARHOJ controller or ATEM are fed into the SDI IN on the Rushworks head (an onwards to the camera)



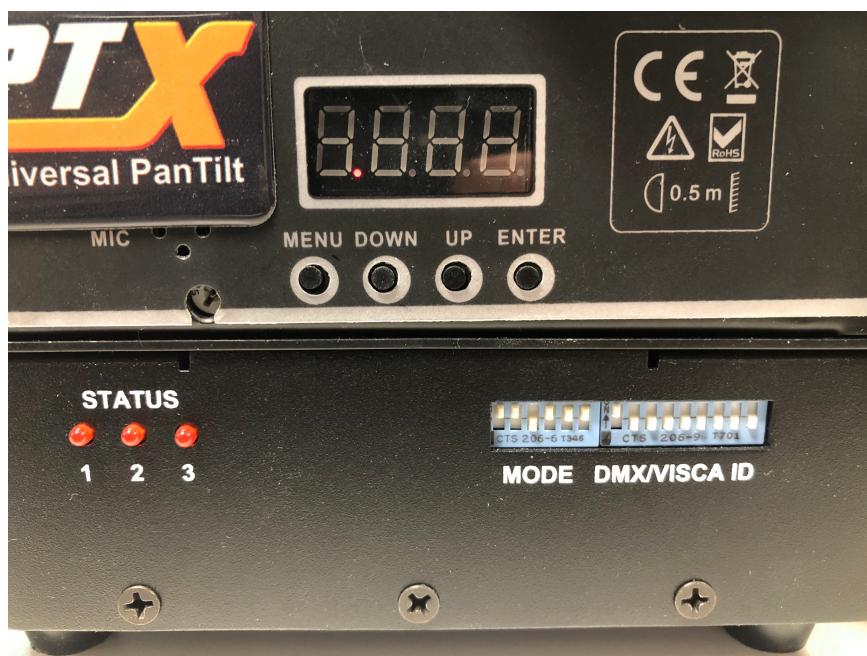
- A breakout cable from the Expansion port on the camera are fed into the "CAM CTRL" plug on the Rushworks head



- SDI In and SDI Out from the Rushworks head unit are connected to the corresponding ports on the camera.



This is how the jumper settings looks like in the setup we have been testing with.



Zoom on the Micro Studio Camera 4K

If a servo zoom lens is put on the camera zoom can be controlled from our controllers as well. See the official Blackmagic note to find a compatible lens:

<https://www.blackmagicdesign.com/support/faq/59009>

Blackmagic Studio and Micro Studio Camera 4K Servo... Blackmagicdesign □

[Which active MFT lenses are zoom servo controllable from the Blackmagic Studio Cameras and Blackmagic Micro Studio Camera 4K?](#)

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Small Demo

See a small demo of the PTZ Fly with SDI + Rushworks in action here:

https://github.com/SKAARHOJ/Support/raw/master/Manuals/Videos/RUSHWORKS_BMD_MicroStudioCamera4K_Demo.MOV



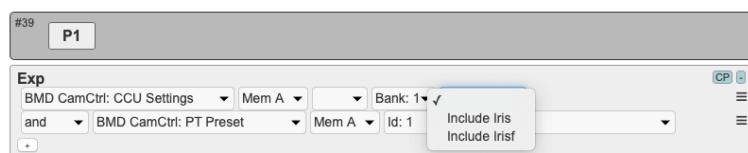
Controlling multiple cameras/PTX Heads

This is possible. The SDI return feed to the camera needs to be distributed from either the SKAARHOJ controller with SDI option or the ATEM. On the BMD camera you need to select proper camera ID.

Notice about saving/recalling presets

When saving/recalling a preset for a BMD camera/PTX head combination one would typically utilize two actions. One saving "CCU Settings" such as white balance, color adjustments and so forth and another action saving pan/tilt presets.

For CCU settings iris can be included or excluded for the preset.

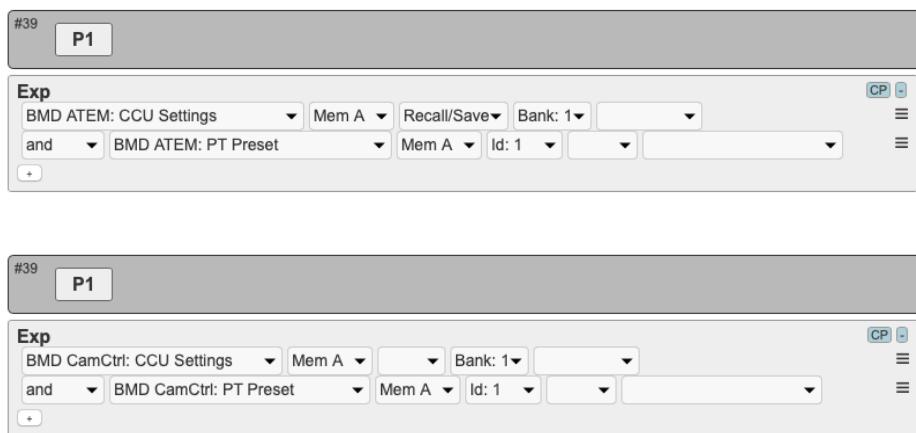


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Please notice *only* a total of 6 banks/IDs are available to save CCU settings/PT Presets. Not per camera but **in total**. The reason being is that the actions was originally developed for the RCP which as designed to control just one camera at a time.



Please also observe zoom and focus are *not* included in either the CCU Settings or PT Presets



Controlling PTX Head without BMD Camera but via VISCA RS422 (Beta)

Please notice the following instruction are in alpha and subject to change.

The PTX Head can also be controlled from a SKAARHOJ panel using the VISCA RS422 port on the PTX head via an Ethernet-Serial converter. We suggest you get a XS1200 from US Converters - <http://www.usconverters.com/serial-rs232-device-server>

In order to control the head the Device Core "Generic VISCA" must be used. The IP address for the Device Core should match the XS1200 converter box. Only the actions Pan, Tilt and Presets on the Device Core will work.

Device Core Option Generic VISCA

Control via Serial instead of IP must be enabled on the Generic VISCA Device Core

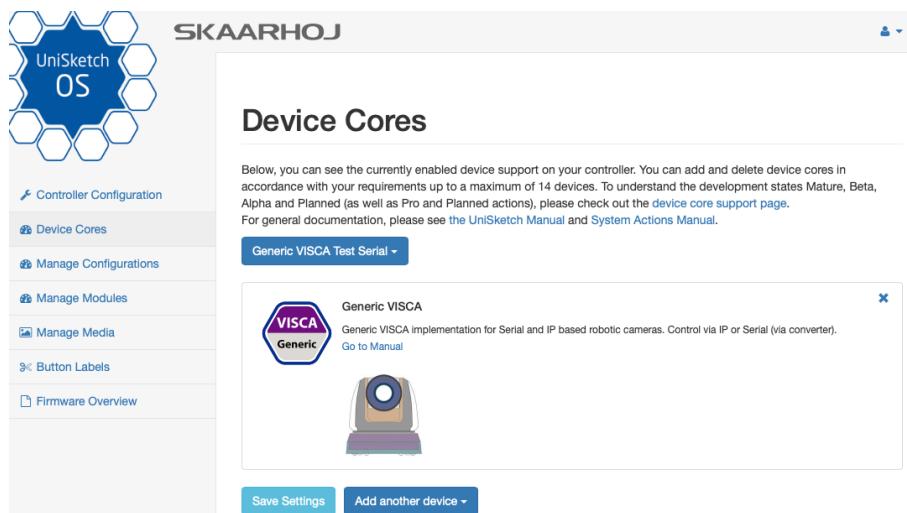
Device configuration options exist:

- Index 0: **VISCA over IP/Serial**

- If "1" = VISCA over Serial

Example:

Enabling VISCA over serial 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. If the Generic VISCA Device Core is the first like below



Setting VISCA over serial would be set by this configuration under “Manage Media” on the configuration page for your controller. Access this by pressing “Online Configuration” in the Firmware Application. Remember to save on the configuration page.

The screenshot shows the SKAARHOJ UniSketch OS interface. On the left is a sidebar with the following menu items:

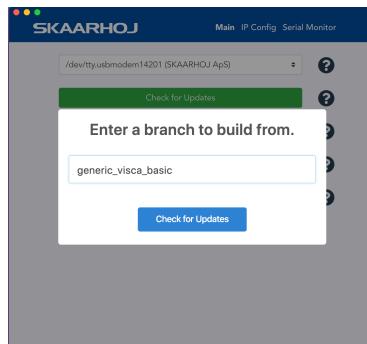
- Controller Configuration
- Device Cores
- Manage Configurations
- Manage Media
- Button Labels
- Firmware Overview

The main content area is titled "Manage Media". It contains the following sections:

- Device Core Options**: A note stating "Here, you can add various types of media content to your configuration." followed by a dropdown menu set to "Sony BRC-H900".
- Strings**: A text input field containing "D0:0=1".
- Images**: Buttons for "Add String" and "Add Image".
- Save Settings**: A button at the bottom left.

Compiling Firmware from Brach

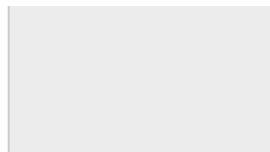
Special note: In order to use the Device Core together with the PTX head a special firmware must be generated from a branch called “**generic_visca_basic**”.



Please acquire information with us directly for instructions on how to compile firmware from this branch.

When both options are matched (VISCA over Serial and branch firmware) the boot up process in the Serial Monitor should state this:

```
^[[1~
DeviceCore #0: GENERICVISCA0, IP = 192.168.10.32
CLIENTVISCAserialIP: _deviceIdx: 0
CLIENTVISCAserialIP::begin()VISCAbase: DISABLING retransmit
VISCAbase: DISABLING acknowledgements
setup() Done
-----
HWn#11 Down Speed: 0
```



There is a quirk you should know about: The XS1200 only accepts a single TCP connection at a time and it will take some time to realise if a client disconnected silently before it allows a new connection. In essence this means if the SKAARHOJ controller was connected and is rebooted without disconnecting, the XS1200 Server may not realise this before after some time. Therefore you may need to powercycle it along with the SKAARHOJ controller to make sure it will accept a connection.

Connection to the XS1200 can be confirmed with the message ".Connected to serial converter"



Below you will find screenshots of how to configure the XS1200 converter (found in the web interface of the XS1200).

The screenshot shows the configuration interface for a SERIAL TO ETHERNET CONVERTER P/N: XS1200 WWW.USCONVERTERS.COM. The interface is version 3.6.1 (18/08) and includes a Logout link. It features tabs for Basic, Advance, and Security, with the Basic tab selected. The configuration is divided into two main sections: Serial Settings and Network Settings.

Serial Settings

Device Name	DSM1
Data Baud Rate	9600
Data Bits	8
Data Parity	None
Stop Bits	1
Flow Control	None
Serial Type	RS422 (Master)

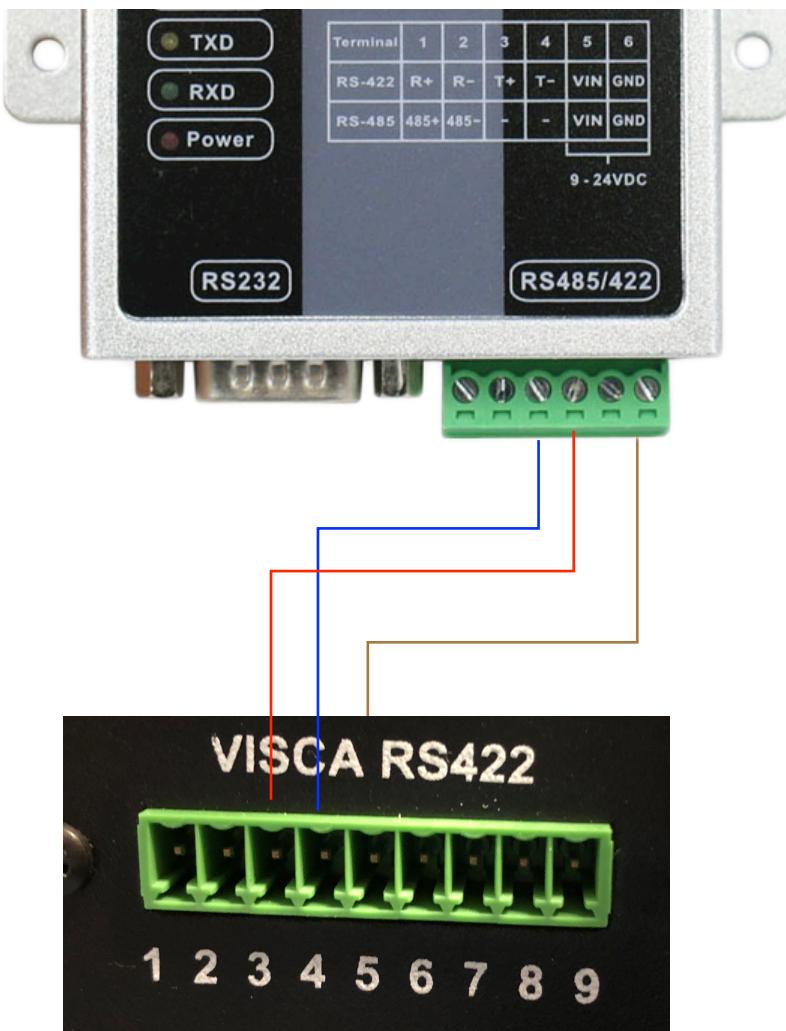
Network Settings

DHCP Client	Disable	
Static IP Address	192.168.10.32	
Static Subnet Mask	255.255.255.0	
Static Default Gateway	192.168.10.1	
Static DNS Server	168.95.1.1	
Connection Type	TCP	
Transmit Timer	10	<i>Please enter an integer between 10~65535 ms</i>
Server/Client Mode	Server	
Server Listening Port	5000	<i>Please enter an integer between 1~65535</i>
Client Destination Host Name/IP	192.168.2.2	<i>Please enter host name or IP address</i>
Client Destination Port	5000	<i>Please enter an integer between 1~65535</i>

At the bottom of the interface are four buttons: Apply, Cancel, Reboot, and Restore default.

Make sure to set up an IP address in your range here. This is the IP address you must also set up inside the SKAARHOJ controller for the Device Core! Here it is set to 192.168.10.32 and corresponding subnet mask.

Cabling to the XS1200 is via the RS-422 connector. 3 wires are necessary. GND and then T+ and T-.



The coloration between these and the XS1200 is the following:

XS1200	PTX
GND (pin 6)	GND (pin 5)
T+ (pin 3)	RxD In - (pin 4)
T- (pin 4)	RxD In + (pin 3)

MODE SWX			VISCA RS422
SW	ON	OFF	
1	VISCA	DMX	1 TxD In +
2	VISCA	L/P	2 TxD In -
3	38400	9600	3 RxD In +
4	422/485	232	4 RxD In -
5	422	485	5 GND
6	NORM	FW	6 TxD Out +
			7 TxD Out -
			8 RxD Out +
			9 RxD Out -

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The dip switches on the PTX heads should be set to the following:

3 should be off for baud rate of 9600.



A quick and dirty video of the setup can be seen here: https://github.com/SKAARHOJ/Support/raw/master/Manuals/Videos/RUSHWORKS_VISCA_RS422_Control_Beta.mov