

Device: Dream Chip - ATOM One



Introduction

ATOM One series from Dream Chip are small POV cameras controlled over serial. Via an ethernet to serial converter you can color control this camera using a SKAARHOJ controller. For more information about the cameras, please go to <https://www.dreamchip.de/products/atom-one-family.html>

Please use the instructions in this manual to make connection between a SKAARHOJ controller and the ATOM One Dream Chip camera.

As a extra resource please also watch this video <https://vimeo.com/328643703> from Dream Chip on how to prepare the camera.



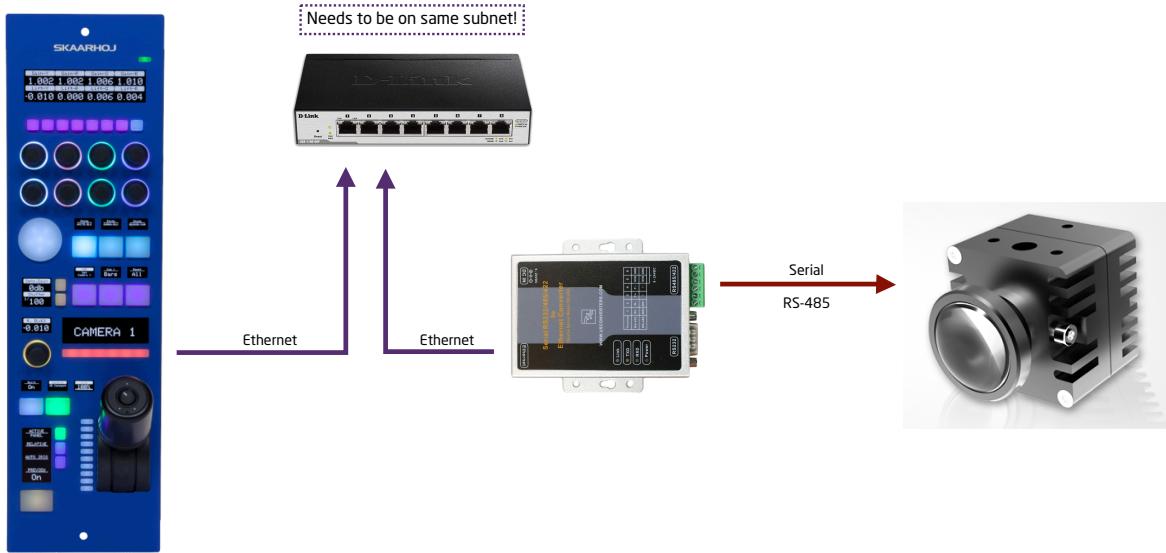
Compatibility in the ATOM One Family

We have tested successfully with the **ATOM one Mini** and the **ATOM one** camera. It us our understanding that the Atom One Mini runs a different firmware version compared to the remainder models in the series.

The ATOM One *should* have the same firmware type as the ATOM one 4K mini 7, ATOM one 4K mini 11 and the ATOM one 4K mini 16 and therefore our integration should work with these models as well *but this have not been tested!*

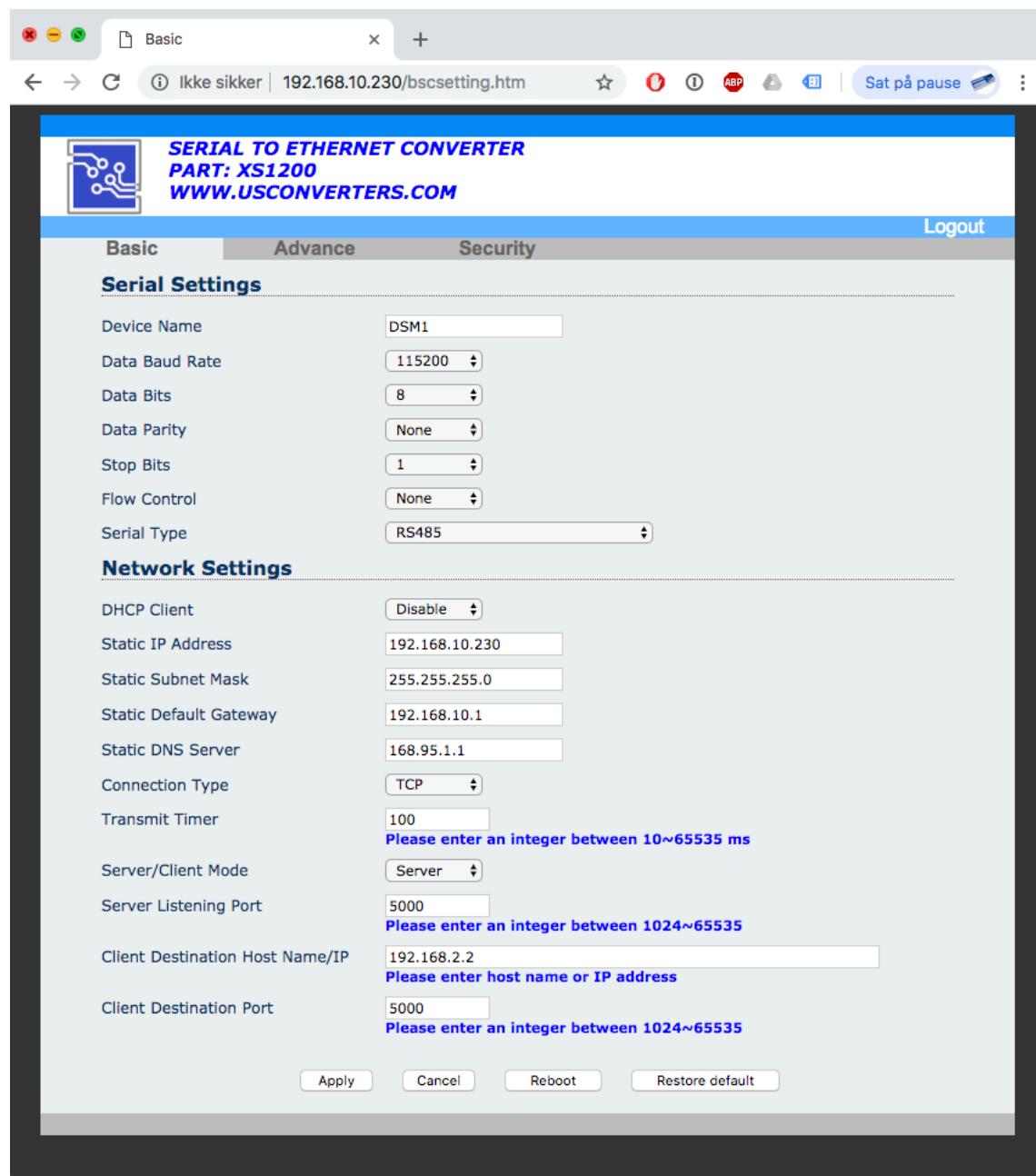
Ethernet to Serial connection

To communicate via serial (RS-485) to the Dream Chip camera you need an Ethernet-Serial converter. We suggest you get a XS1200 from US Converters - <http://www.usconverters.com/serial-rs232-device-server>



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.

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



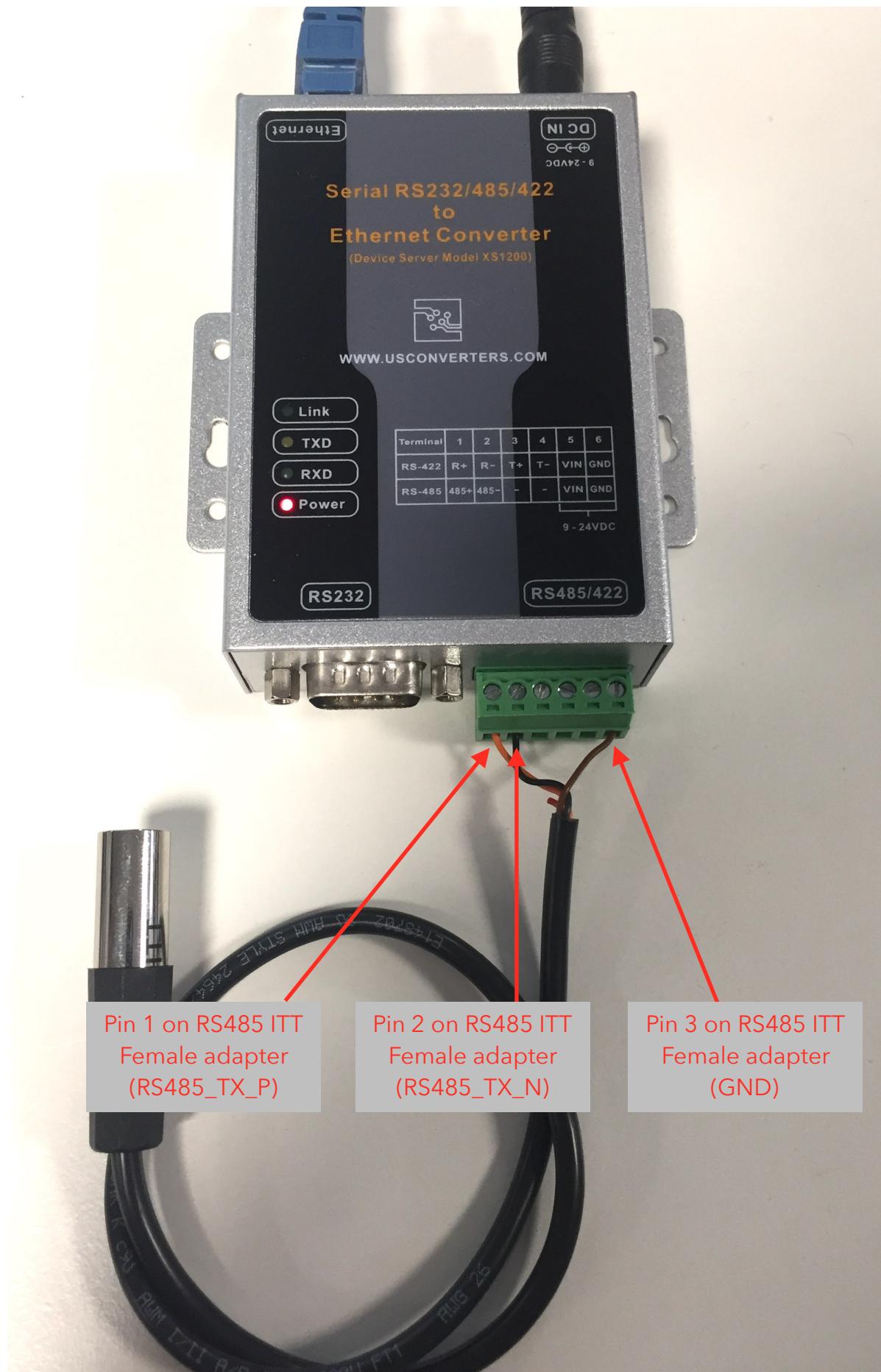
Make sure to set up an IP address in your range here. This is the IP address you must also set up inside the SKAARHOJ controller for the Device Core! Here it is set to 192.168.10.230 and corresponding subnet mask. Please see section "Transmit Timer on XS1200" for adjustments to this value.

For serial commands the default for the ATOM one Mini and ATOM One is 115200 8N1 (from their manual).

Transmit Timer on XS1200

The transmitter timer value on a XS1200 will typically be 100 ms per default. We recommend lowering the value to 10 ms for obtaining a more smooth user experience. In particular brightness adjustment will be more fluent with the value set to 10 ms.

Cabling to the XS1200 is via the RS-485 connector. 3 wires are necessary. GND and then 485+ and 485-.



Look in the ATOM one mini/ATOM One manual for cabling instructions. For the RS485 ITT Female M-XL-3-11L connector the 3 wires are indicated as GND, RS485_TX_N and RS485_TX_P.

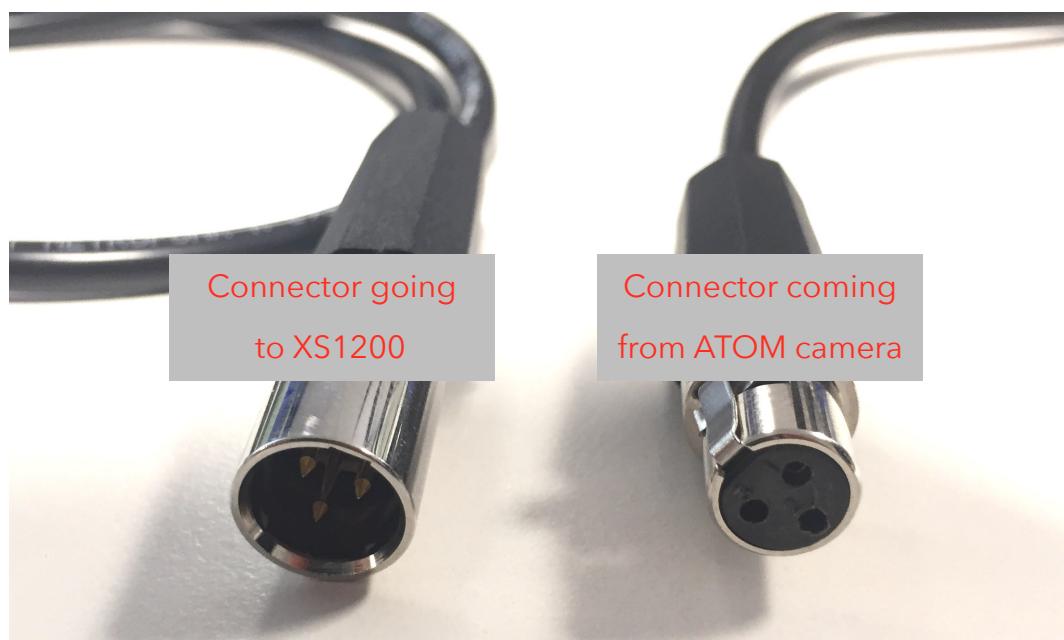
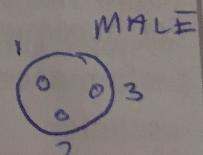
The coloration between these and the XS1200 is the following:

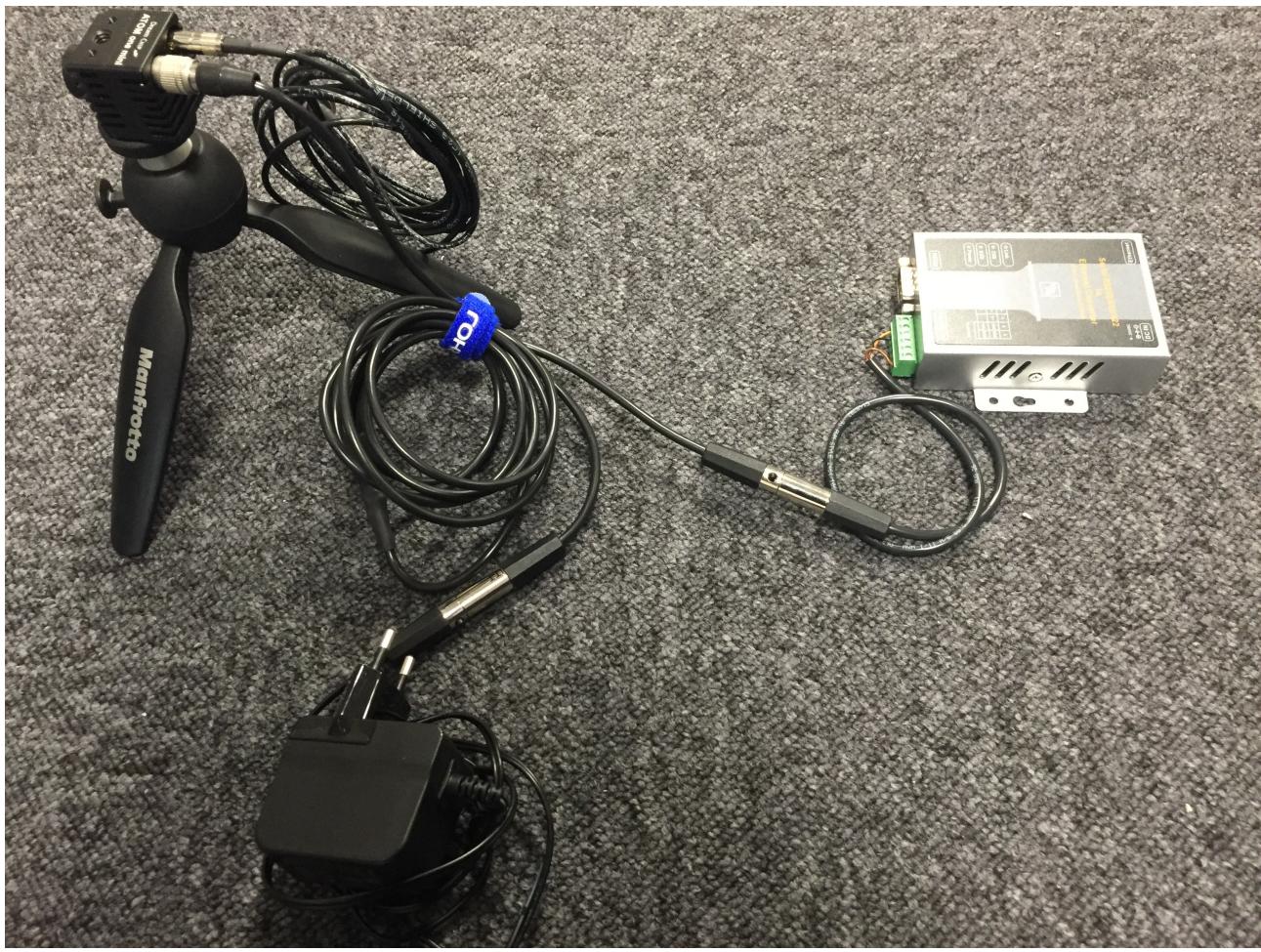
RS485_TX_N = 485-	In the ATOM One manual this is referred as RS485_B
RS485_TX_P = 485+	In the ATOM One manual this is referred as RS485_A

3.1 Power / RS485 Connector				
The power connector is a Hirose male HR10 6 pin connector. The following table shows required plugs. Dream Chip offers a mini XLR adapter.				
	Signal	Dream Chip 4-wire Power Cable	Power ITT Male M-XL-3-12L	RS485 ITT Female M-XL-3-11L
6	Power in	red	1	
5	GND	brown	3	3
4	RS485_TX_P			
3	RS485_TX_N			
2	RS485_TX_N	black		2 brown
1	RS485_TX_P	orange		1 white

3.2 SDI Output

The HD-BNC output is SMPTE 292M / 424M complaint.





Connection to the XS1200 can be confirmed from the serial monitor with the message "DCA SerialConv Connected!". This means connection between a SKAARHOJ unit and the XS1200 have been established, however it does not necessarily mean that connection to the camera have also been established. This can be confirmed if you get feedback in the displays on a controller. An action such as the "CamTemperature C" can be used to monitor connection.

Serial Monitor

Command input. Press enter to send.

```
*****
SKAARHOJ Controller Booting
*****
SK VERSION: v2.2.143
SK defConfigCsc=250
SK MODEL: SK_RCPV2
SK SERIAL: 4097
EEPROM size: 32 KB
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:
2
Preset 1 loaded
HWvar:255
MAC address: 92:A1:DA:62:00:CF
IP address: 192.168.10.96
Subnet mask: 255.255.255.0
Gateway: 192.168.10.1
DNS: 192.168.10.1
Processor: A-1000 Rev: 1
Compiled: Jun 3 2019 12:39:58
DeviceCore #0: DREAMCHIP0, IP = 192.168.10.33
Started Dreamchip Atom Devicecore!
setup() Done
*****
DCA SerialConv Connected!
*****
```

Auto scroll

Commands

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

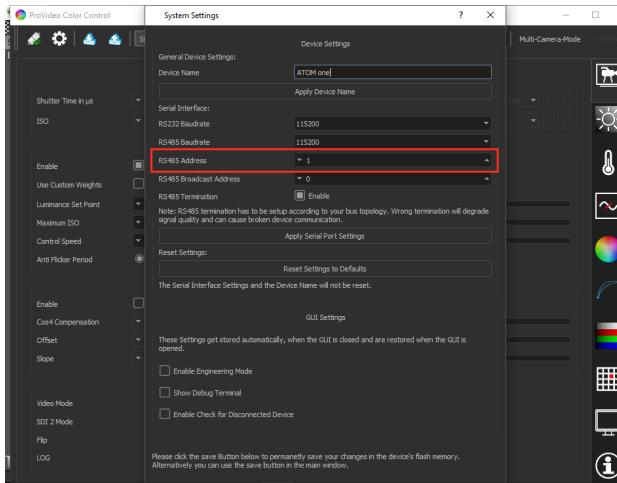
Connection Order

If the SKAARHOJ controller and the XS1200 have been powered prior to the cameras being turned on the XS1200 might not initialise properly and there will be no control of the camera(s). A reboot of the SKAARHOJ controller will typically solve this.

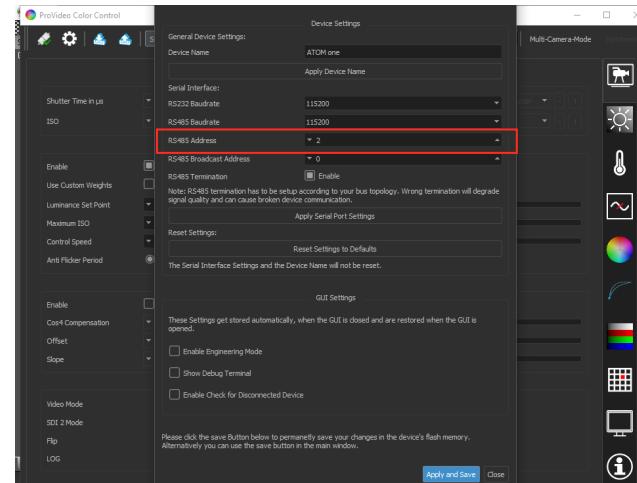
We recommend the Dream Chip cameras being powered prior to turning on SKAARHOJ controller/XS1200.

Controlling Multiple Cameras

We have only tested controlling two ATOM One cameras in a daisy chain configuration. Our implementation allows for control of up to 10 cameras from the same Device Core, but this have never been tested. In order to control multiple cameras the RS485 address on the camera itself must be set by the software provided by Dream Chip. See example below.



RS485 Address: 1



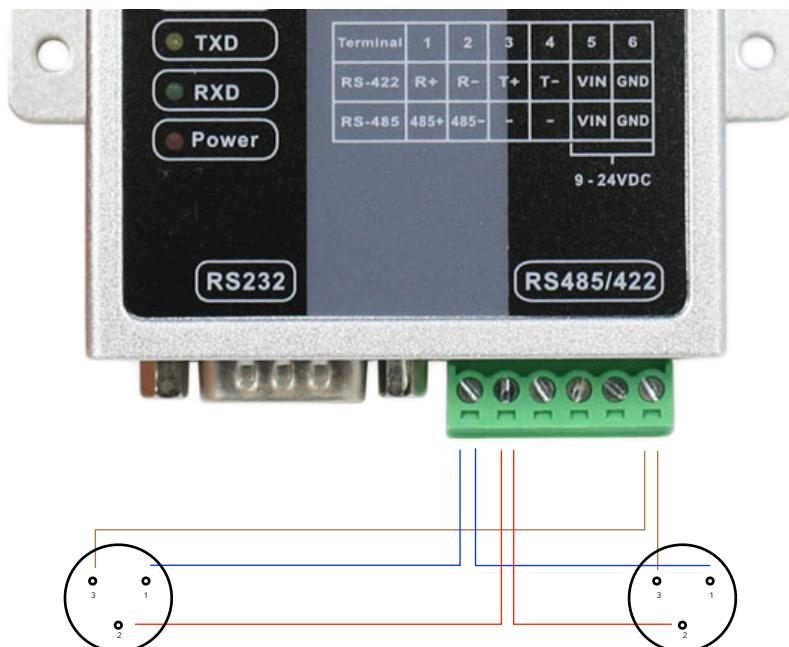
RS485 Address: 2

With the current integration then if connection is lost to a camera that have already been connected to the controller, performance for controlling the remaining cameras are severely degraded. We are working on optimising this.

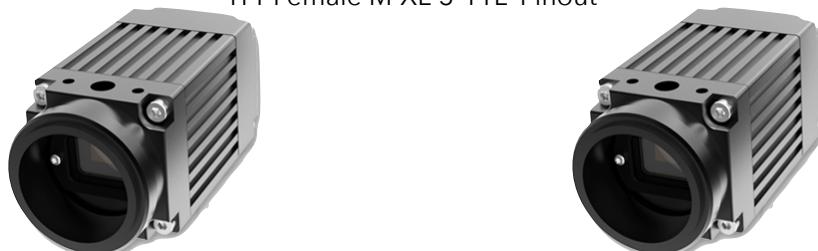
Brightness Adjustment with a Analog Component such as a T-bar

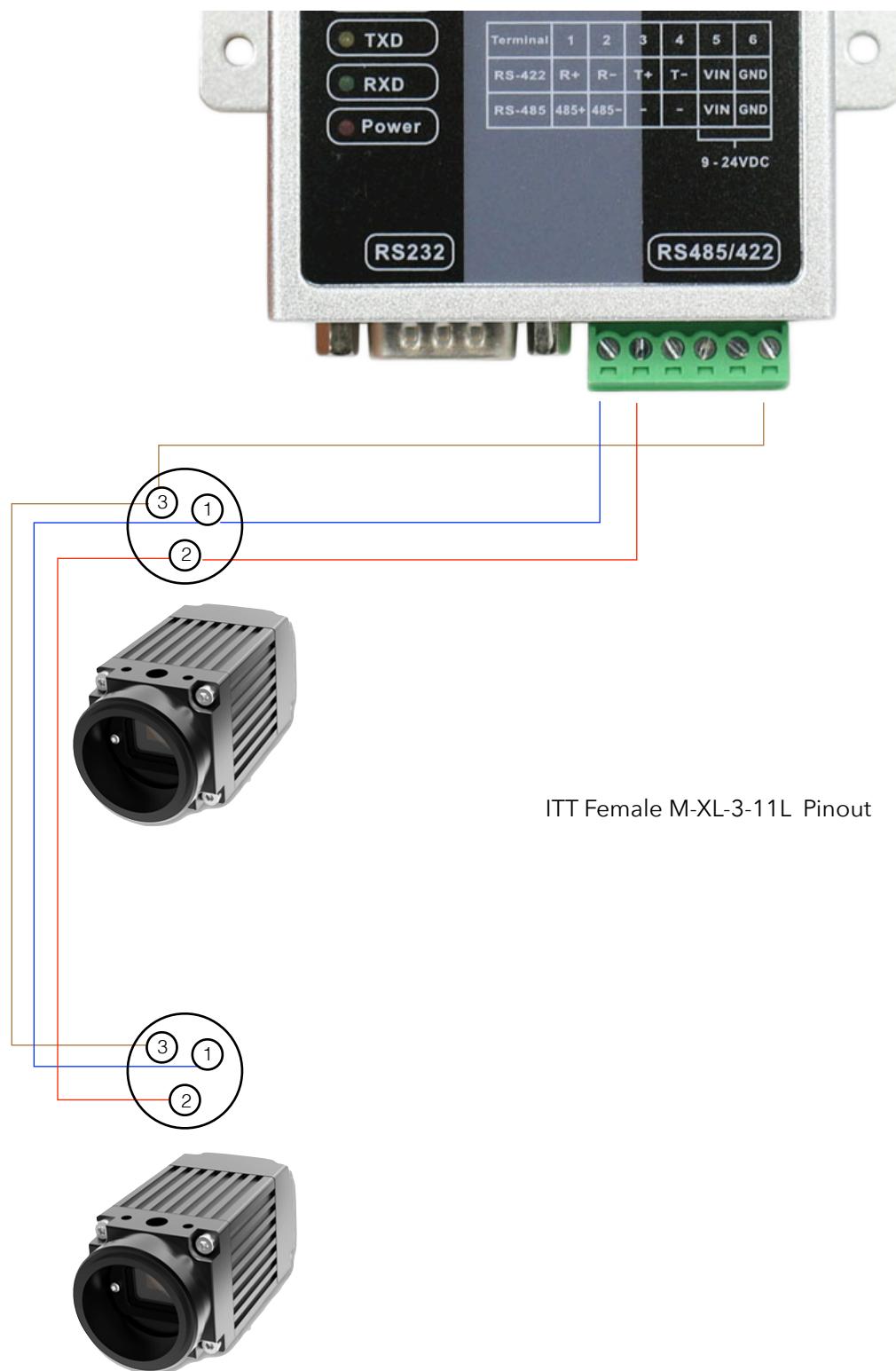
Controlling multiple cameras from a RCPv2 with a Joystick is possible however controlling a parameter such as brightness from a component as a joystick with a fixed psychical position have a drawback. If one is setting brightness to 20% on CAM1 and changing the controller for CAM2 which currently have a brightness of 80%, then when a small adjustment is made on the joystick, the brightness value will jump from its current setting (80%) to ~20%.

For multiple camera control we recommend the RCPv2 with slider/wheel instead. If the RCPv2 with joystick is the preferred way, then assign the brightness action to another another component such as one of the encoders.

Setup for controlling two ATOM One cameras - star configuration from XS1200 Converter

ITT Female M-XL-3-11L Pinout



Setup for controlling two ATOM One cameras - daisy chain configuration from XS1200 Converter

Actions

An excerpt of the actions in the Dream Chip Device Core

```
Dream Chip ATOM1 Mini: Gain
Dream Chip ATOM1 Mini: Image Flip
Dream Chip ATOM1 Mini: Iris Position
Dream Chip ATOM1 Mini: Zoom Position
Dream Chip ATOM1 Mini: Focus Position
Dream Chip ATOM1 Mini: Filter Position
Dream Chip ATOM1 Mini: CamTemperature C
Dream Chip ATOM1 Mini: Exposure time
Dream Chip ATOM1 Mini: SDI Black
Dream Chip ATOM1 Mini: SDI White
Dream Chip ATOM1 Mini: Brightness
Dream Chip ATOM1 Mini: Contrast
Dream Chip ATOM1 Mini: Hue
Dream Chip ATOM1 Mini: Saturation
Dream Chip ATOM1 Mini: Single Shot White Balance
Dream Chip ATOM1 Mini: White Balance Preset
Dream Chip ATOM1 Mini: Continous Auto White Balance
Dream Chip ATOM1 Mini: Auto White Balance Speed
✓ Dream Chip ATOM1 Mini: Color Gain
Dream Chip ATOM1 Mini: Black Master
Dream Chip ATOM1 Mini: Black
Dream Chip ATOM1 Mini: Flare
Dream Chip ATOM1 Mini: Filter Detail
Dream Chip ATOM1 Mini: Filter Denoise
Dream Chip ATOM1 Mini: Filter enable
Dream Chip ATOM1 Mini: Knee Point
Dream Chip ATOM1 Mini: Knee Slope
Dream Chip ATOM1 Mini: Knee WhiteClip
Dream Chip ATOM1 Mini: Knee enable
Dream Chip ATOM1 Mini: LUT Mode
Dream Chip ATOM1 Mini: LUT Preset
Dream Chip ATOM1 Mini: LUT Fast Gamma
Dream Chip ATOM1 Mini: LUT Fixed Mode
Dream Chip ATOM1 Mini: LUT Enable
Dream Chip ATOM1 Mini: Video Mode
Dream Chip ATOM1 Mini: Audio enable
Dream Chip ATOM1 Mini: AutoExposureControl enable
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