Device: BMD ATEM

Introduction

A larger number of functions on the ATEM series of switchers can be controlled from a SKAARHOJ control panel and we have integrated with the ATEM switchers for a long time. A few things to notice with the current integration (for UniSketch OS controllers)

- Control of ME1 and ME2 is available but not 3ME and 4ME yet
- ATEM Firmware version 7.5.2 is supported but not version 8.0. Work in progress.
- Since we support version 7.5.2 currently a maximum number of sources to be selected is 20 (and not 40 like on the ATEM Constellation).

When using the ATEM Device Core our controllers can connect to the ATEM Switcher directly without the need of running ATEM Software Control Panel on your computer. But you can, and any change made either way will be reflected on each device.

You can connect to multiple ATEM Switchers from the same SKAARHOJ interface but limitations apply. The different ATEM Switchers varies in how many clients can be connected at the same time. For details see https://www.youtube.com/watch?v=ApYouYfX5G4

About ATEM Audio, Video and Camera Sources

Whenever you can select audio, video and camera sources you will find special options in the drop down:

- Whenever you see "Mem A"-"Mem D" it means the source selected will be the one from the list which the given memory register value currently points to, starting the counting from zero. For example, if Mem A is 21, the source will be "Bars" because it's element number 22 in the list (and the first element, "Black", has number 0).
- For video sources, selecting AUX1-6 means the source will be whatever source is currently on AUX1-6. This will be dynamically evaluated.
- For video sources, selecting MVx/y means the source will be whatever source is currently on the multiviewer "x" (1 or 2) in window number "y". This will be dynamically evaluated.
- For camera sources, "Mem A"-"Mem D" will not point to the list, but simply refer to the camera number.

Device Configurations

Device configuration options exist:

- Index 0: **Sensor Gain / Camera Gain Setting Range**
  - If "0" = default
  - If "1" = Extended -12dB/12dB Range
  - If "2" = Original 0db/18dB Range

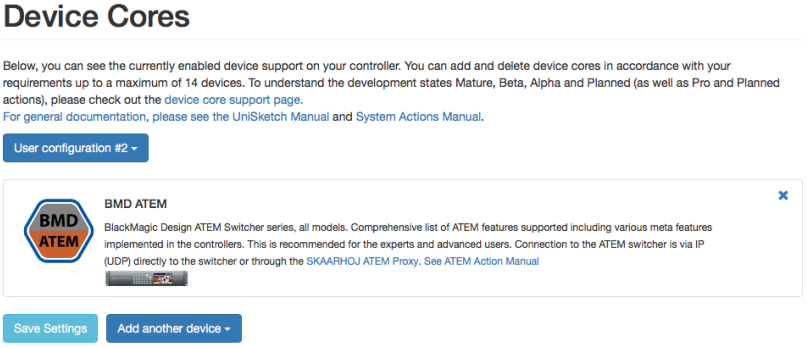
Example:

Enabling "Sensor Gain / Camera Gain Setting Range" with the extended could look like this device configuration code: "D0:0=1" where the general form would be "Dx:0=1" where "x" is the number of the device core as installed on the controller (starting with zero for the first device core).

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:

```
Memory A-D restored
Compiled: Dec 18 2017 15:17:32
DeviceCore #0: ATEM0, IP = 192.168.10.240
ATEM: Extended CCU Sensor gain range
setup() Done
----------------------------
Sending connect packet to ATEM switcher on IP 192.168.10.240 from port
55548
ATEM _hasInitialized = TRUE
171
```

Example: If the ATEM device core is the first like below:



Then settings the extended rage would be set by this configuration under “Manage Media” on cores.skaarhoj.com:

This is a table of actions for Blackmagic Design ATEM Switchers

Program Src 	Sets Program Source on the given M/E row. *Binary triggers:* Sets the selected source on Program. If Hold Down is selected, the source will fall back to the previous source whenever the trigger is released. Toggle will select the source, but on a subsequent trigger, it will fall back to the previous value. If Cycle mode is selected, a trigger will set the next source on Program (corresponds to a single pulse input). Hold Group A+B works like "Hold Down" but adds the previous source to a queue from which the fall back value is pulled when the button is released. *Pulse inputs:* Will cycle through and set the possible sources for Program limited by the selected source and not including Black, unless Black is selected as source in which case all possible sources are traversed. *Binary outputs:* On when actual Program Src matches selected source (or when trigger is held in Cycle mode) *Button colors:* Will be red when Program Src matches selected source, otherwise dim. In Cycle mode color will be highlighted when button is held down.
Preview Src 	Sets Preview Source on the given M/E row. *Binary triggers:* Sets the selected source on Program. If Hold Down is selected, the source will fall back to the previous source whenever the trigger is released. Toggle will select the source, but on a subsequent trigger, it will fall back to the previous value. If Cycle mode is selected, a trigger will set the next source on Program (corresponds to a single pulse input). Hold Group A+B works like "Hold Down" but adds the previous source to a queue from which the fall back value is pulled when the button is released. *Pulse inputs:* Will cycle through and set the possible sources for Preview limited by the selected source and not including Black, unless Black is selected as source in which case all possible sources are traversed. *Binary outputs:* On when actual Preview Src matches selected source (or when trigger is held in Cycle mode) *Button colors:* Will be green when Program Src matches selected source, otherwise dim. In Cycle mode color will be highlighted when button is held down.
Prv/Prg Src 	Set Preview Source on the given M/E row and if the trigger is held down for more than 1 second, it will perform a Cut action too. *Binary inputs:* Sets the select source on Preview. If Cycle mode is selected, a trigger will set the next source on Preview (corresponds to a single pulse input) when released unless the button is held until a Cut is performed in which case no new Preview source is selected. *Pulse inputs:* Will cycle through and set the possible sources for Preview limited by the selected source and not including Black, unless Black is selected as source in which case all possible sources are traversed. *Binary outputs:* On when actual Preview source or Program source matches the selected source (or when trigger is held in Cycle mode) *Button colors:* Will be red or green when Program or Preview Src matches selected source, otherwise dim. In Cycle mode color will be highlighted when button is held down. For mono-color buttons, the button will blink when the source is on preview (normally green on a multicolor button).

AUX Output Src

Set AUX source on the given AUX bus.

Binary inputs: Sets the select source on the AUX bus. If Hold Down is selected, the source will fall back to the previous source whenever the trigger is released. Toggle will select the source, but on a second trigger, it will fall back to the previous value. Hold Groups will fall back to a previous source for a group of triggers using a queue system and finally to the first previous value before any trigger in the group was activated. If Cycle mode is selected, a trigger will set the next source on the AUX bus (corresponds to a single pulse input).

Pulse inputs: Will cycle through and set the possible sources for AUX limited by the selected source and not including Black, unless Black is selected as source in which case all possible sources are traversed.

Binary outputs: On when actual AUX bus source matches selected source (or when trigger is held in Cycle mode)

Button colors: will be highlighted when AUX bus source matches selected source, otherwise dim. In Cycle mode color will be highlighted when button is held down.

Upstream Keyer

Turns upstream keyers on and off

Binary inputs: If Toggle mode, the given upstream keyer is turned or/off successively. If On or Off the upstream keyer is set On or Off respectively. Hold Down will turn the keyer on as long as the trigger is held. Auto will fade in the keyer (still pending as of June 2016)

Pulse inputs: Will turn on/off

Binary outputs: Follows highlighted button color.

Button colors: Will be highlighted if the keyers state corresponds to the selected mode. For most modes except "Off" this means the color will be highlighted (but for Off a button is highlight in case the keyer is actually off)

Upstream Keyer Fill

Selects the fill source for Upstream Keyer

Binary inputs: Sets the selected source.

Pulse inputs: Cycles through the available sources. Press and hold will reset to the selected source.

Binary outputs: On if current keyer source is the selected source.

Button colors: Will be highlighted if current keyer source is the selected source.

Upstream Keyer Key

Selects the key source for Upstream Keyer

Binary inputs: Sets the selected source.

Pulse inputs: Cycles through the available sources. Press and hold will reset to the selected source.

Binary outputs: On if current keyer source is the selected source.

Button colors: Will be highlighted if current keyer source is the selected source.

Downstream Keyer

Turns downstream keyers on and off

Binary inputs: If Toggle mode, the given downstream keyer is turned or/off successively. If On or Off the downstream keyer is set On or Off respectively. Hold Down will turn the keyer on as long as the trigger is held. Auto will fade in the keyer.

Pulse inputs: Will turn on/off

Binary outputs: Follows highlighted button color

Button colors: Will be highlighted if the keyers state corresponds to the selected mode. For most modes except "Off" this means the color will be highlighted (but for Off a button is highlight in case the keyer is actually off)

Downstream Keyer Fill

Selects the fill source for Downstream Keyer

Binary inputs: Sets the selected source.

Pulse inputs: Cycles through the available sources. Press and hold will reset to the selected source.

Binary outputs: On if current keyer source is the selected source.

Button colors: Will be highlighted if current keyer source is the selected source.

Downstream Keyer Key

Selects the key source for Downstream Keyer

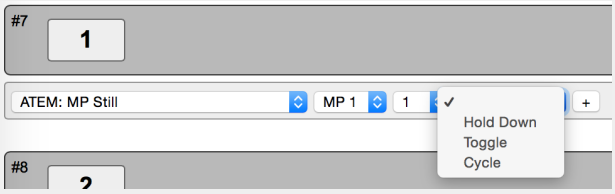
Binary inputs: Sets the selected source.

Pulse inputs: Cycles through the available sources. Press and hold will reset to the selected source.

Binary outputs: On if current keyer source is the selected source.

Button colors: Will be highlighted if current keyer source is the selected source.

MP Still

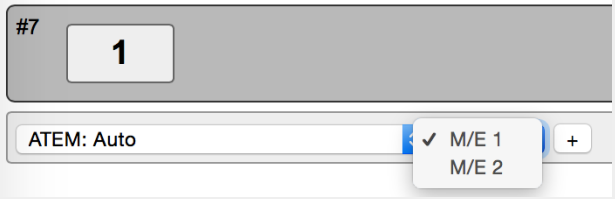


Have been implemented - description coming soon

CUT

Have been implemented - description coming soon

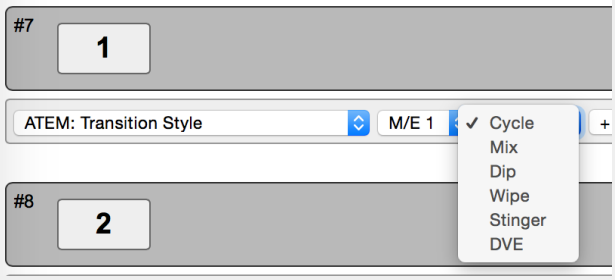
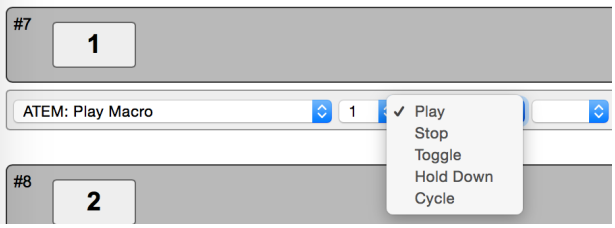
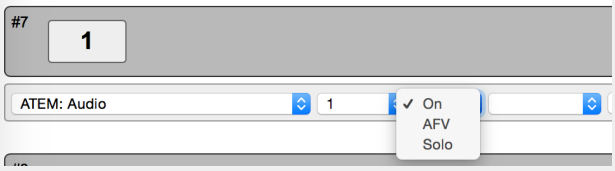
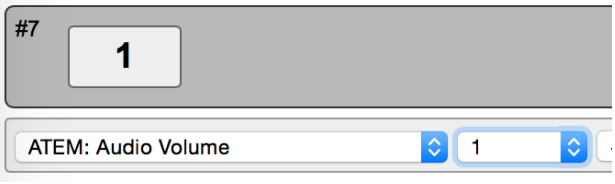
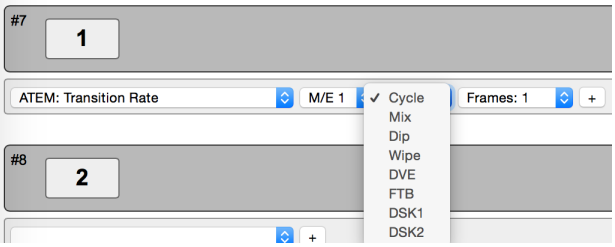
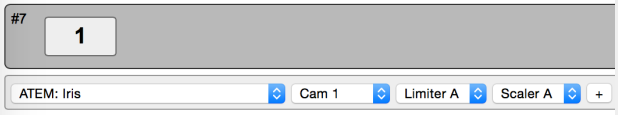
AUTO

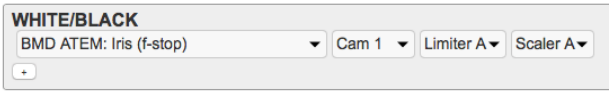
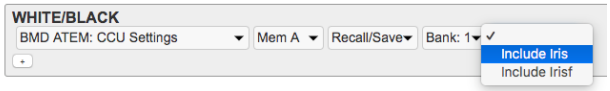
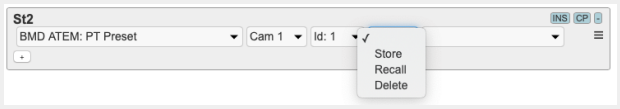
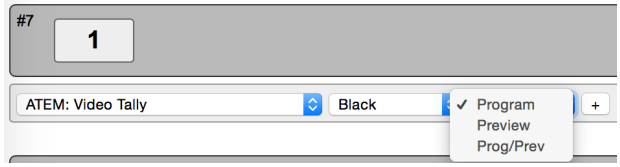


Have been implemented - description coming soon

Fade to Black (FTB)

Have been implemented - description coming soon

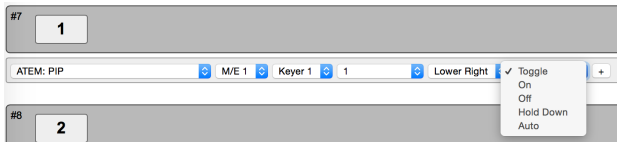
Transition Style 	*Have been implemented - description coming soon*
Macro 	*Have been implemented - description coming soon*
Audio 	*Have been implemented - description coming soon*
Audio Volume 	*Have been implemented - description coming soon*
Audio Balance 	*Have been implemented - description coming soon*
Transition Rate 	*Have been implemented - description coming soon*
Iris 	Changes iris value for the selected camera Iris range: 0-100% - will ***not*** reflect change in ATEM Software Control Panel but still transmit iris data. *Binary inputs:* Will trigger auto iris *Pulse inputs:* Changes the value up/down. *Analog inputs:* Set the value between 0-100% *Displays:* Will show the current value Values: - Select Camera 1-10. If you choose Mem A-D, the camera value will be taken from the value of this memory register.

Iris (f-stop) 	Changes iris value for the selected camera Iris range: f1.4-f22 - will reflect change in ATEM Software Control Panel. *Binary inputs:* Will trigger auto iris *Pulse inputs:* Changes the value up/down. *Analog inputs:* Set the value between f1.4-f22 *Displays:* Will show the current value Values: - Select Camera 1-10. If you choose Mem A-D, the camera value will be taken from the value of this memory register.
Focus	*Have been implemented - description coming soon*
Sensor Gain	*Have been implemented - description coming soon*
Shutter	*Have been implemented - description coming soon*
White Balance	*Have been implemented - description coming soon*
Lift	*Have been implemented - description coming soon*
Gamma	*Have been implemented - description coming soon*
Gain	*Have been implemented - description coming soon*
Hue	*Have been implemented - description coming soon*
Contrast	*Have been implemented - description coming soon*
Saturation	*Have been implemented - description coming soon*
Bars	*Have been implemented - description coming soon*
Detail	*Have been implemented - description coming soon*
CCU Reset	*Have been implemented - description coming soon*
CCU Settings 	Save, Recall or Save/Recall CCU Settings (color parameters) *Binary inputs:* If Save mode, the given CCU settings will be saved to the chosen bank. Iris can be included if wanted. In Recall mode the CCU settings will be recalled. The button will blink for 10 seconds and if you push the button again within this period of time settings will revert back to the settings prior to the recall. If Recall/Save mode the two functions are combined. Press and hold will Save. One press will recall. *Displays:* Will show File 1-6 Values: - Select Camera 1-10. If you choose Mem A-D, the camera value will be taken from the value of this memory register. A total of 6 banks can be selected, not per camera but in *total*. The function originates from the RCP implementation.
PT Preset 	Save, Recall or Save/Recall Pan/Tilt Settings (zoom and focus not included) *Binary inputs:* If Save mode, the given Pan/Tilt settings will be saved to the chosen bank. In Recall mode the Pan/Tilt settings will be recalled. In Recall/Save mode (the blank option) the two functions are combined. Press and hold will Save. One press will recall. *Displays:* Will show Cam x: Set/Pre/Rec/Del Values: - Select Camera 1-10. If you choose Mem A-D, the camera value will be taken from the value of this memory register. A total of 6 banks can be selected, not per camera but in *total*. The function originates from the RCP implementation.
Video Tally 	*Have been implemented - description coming soon*

Audio Tally

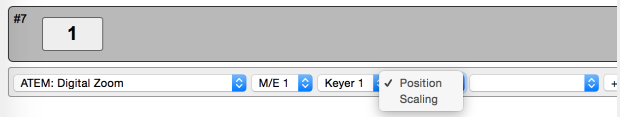
Have been implemented - description coming soon

Picture-In-Picture (PIP)



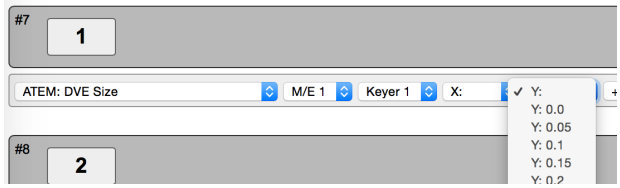
Have been implemented - description coming soon

Digital Zoom



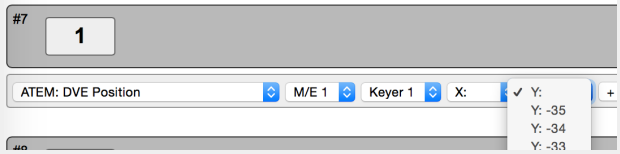
Have been implemented - description coming soon

DVE Size



Have been implemented - description coming soon

DVE Position



Have been implemented - description coming soon

DVE Boarder

Have been implemented - description coming soon

DVE Fill Source

Have been implemented - description coming soon

Hold Group Defaults

Configuration of a fixed Hold Group default source - the source that a Hold Group queue will fall back to.

If you are using Hold Groups with very quick triggers you may experience that the original source was not correctly picked up due to the timing gap between a command is sent and to the ATEM reports back the new value. With this configuration value you are guaranteed that the fall back will always be a particular source.

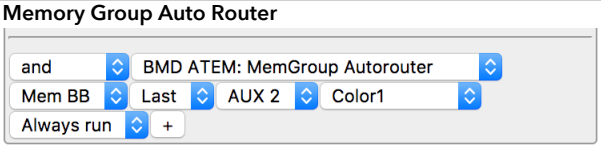
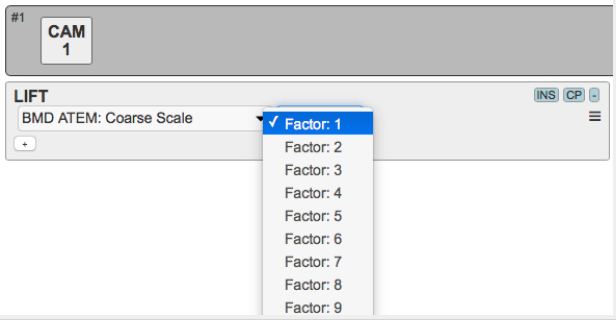
This action does not depend on any trigger from the HWC, it will always be evaluated if inside the proper state and shift levels.
Has a transparent return value.

AUX Follow Mode

Forces an AUX channel to follow the Program output of an M/E (bus linking).

The Mapping function allows you to exclude certain sets of sources. "Map A,B,C to D" means the sources entered in the following 3 drop downs (1,2, and 3 in the screenshot) will map to the forth source (10 in the screenshot). "Map A to B, C to D" means that the first source maps to the second and the third to the forth (in the example screenshot this would be 1 -> 2 and 3 -> 10).

This action does not depend on any trigger from the HWC, it will always be evaluated if inside the proper state and shift levels. The way you could enable / disable this function is by placing it in a given shift level or state.
Has a transparent return value.

Memory Group Auto Router 	Will monitor the selected memory group for its values (first or last) and if it changes it will set this value as the input for the selected aux output. If the value in the memory group is 0 (the group is empty) it will set the selected input source as input on the aux output. The Memory Group Auto Router will run either always or when a particular selected system flag is set. This action does not depend on any trigger from the HWC, it will always be evaluated if inside the proper state and shift levels. Has a transparent return value. This action is well suited to be placed in the Controller virtual HWC.
Coarse Scale 	Will change the steps for coarse adjustments. The parameter cannot be adjusted via binary/pulse/analog inputs. The action just need to added somehere on the controller and it will take effect.