

The ATEM Mini video switcher

a complete studio in a box

by Chris North M.M.Inst.V.

Could you expand your business and speed up your workflow with the BlackMagic ATEM Mini ?

Being able to do instant video switching or mixing between cameras and other HDMI sources for live-streaming or recording can add another dimension to your business which could quickly pay for itself and get you more work, even in these Covid times. Whether you do weddings, funerals, corporate or stage shows (even without audiences !) or do one man ops, you could probably work more efficiently and effectively with a video switcher/mixer. With Covid attendance restrictions at events there is a growing demand for live streaming as well as edited video for YouTube etc. That demand will not go away - it will be the new normal. That's where BlackMagic's low priced ATEM Mini video switchers come in.

A fully fledged Audio and Video Mixer

BlackMagic's ATEM Minis are more than just video switchers - they are mini studios in a box - and a very small box at that. Their output is seen by other devices as a web cam. The Mini Pro and Mini ISO versions can also livestream and record to an external HDD or USB stick plugged directly into the unit. Switching and cross-fading between sources is only the start. There is also a sophisticated audio mixer, a stills player and the ability to do professional level chroma key.

The ATEM Minis are cut-down versions of BlackMagic's studio mixers. They have the same quality electronics and software as their big brothers but without all the physical knobs, faders and joysticks, so they can be sold at a fraction of the price. They work in exactly the same way but

only deal with HDMI signals and only output up to 1020p - irrespective of the source input resolution. It is all sorted in the ATEM automatically.

Three versions

The basic Mini costs around £300 - it does not allow recording or direct live streaming from the unit itself - it just outputs as a web cam. The Mini Pro (£600) adds multi-view of all inputs (to a separate monitor screen) plus live streaming directly from the unit (no other streaming device or software required) and you can also record your live output at up to 1020p on an external HDD or USB stick plugged directly into the Mini's

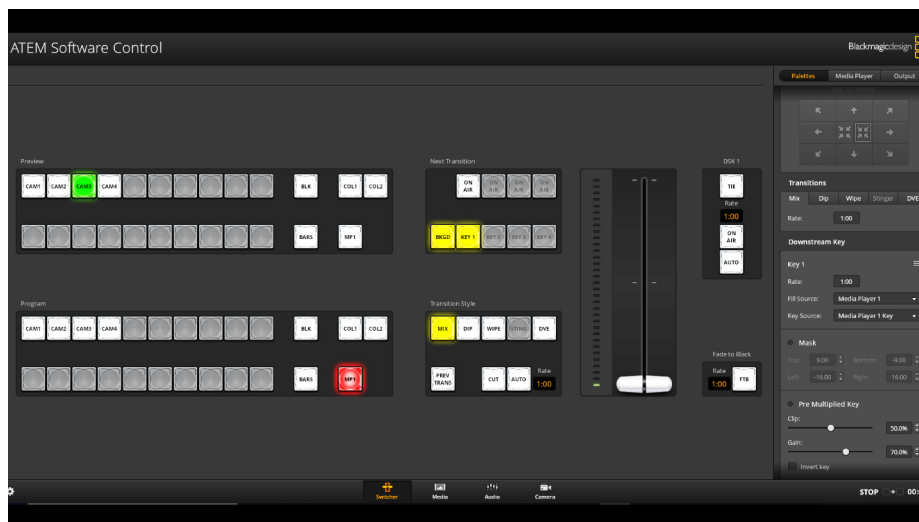


USB C webcam output. In addition, the Mini ISO (£900) also allows recording of **all** the inputs separately, as well as live output / streaming - all at the same time. The recordings all go to the same file, which you can then edit in DaVinci Resolve (free software) - if you need to amend your live-cut track. Or you can compile an ordinary edit in your normal editing program.

Hardware and Software

The ATEM Minis are based on a combination of the Mini hardware with its physical buttons along





preview the selected channel, in which case you have to press the cut or fade (auto) button to make the selected channel go live. The multi-view screen option is invaluable here, enabling you to see what is coming in on each HDMI camera or media feed before you switch. You also have both an upstream and a downstream keyer but only one media 'player' which will hold up to 20 still pictures or graphics.

with the sophisticated professional software used with the broadcast range of ATEMs. The Mini and the software can both be used live and in combination at the same time, to make life easier. The software has a main switching interface which is mirrored in part on the ATEM Mini's buttons. There's a media player screen for stills and graphics, and the renowned Fairlight audio mixer/processor. You can have different control screens open on different computers at the same time - so someone can control the switching, someone else can control the audio and a third person can swap the graphics or stills - all live. And if you have BlackMagic Cinema Cameras there is a screen to control their main functions remotely including zoom, focus, exposure, colour wheels etc.



Loading or changing graphics is simply drag-and-drop so changing a graphic is instant - even when it is going direct to the live output. You can save as many media player set-ups as you wish, each with its 20 stills, so you can load the collection you want when you open the player.

You can also do a single resizeable picture-in-picture in any corner of the screen and there are also vertical and horizontal wipes as well as straight cuts, dissolves (mix) or dip-to-white or fade to black, all activated from the buttons on the ATEM Mini.

Chroma Key

You can also indulge in the magic of professional quality chroma key to put a presenter in front of a still or moving video background using the upstream keyer. You have all the detailed chroma key adjustments found on the BlackMagic broadcast equipment - but limited to 1020p. I found getting a good realistic chroma key much

Video Mixing & Effects

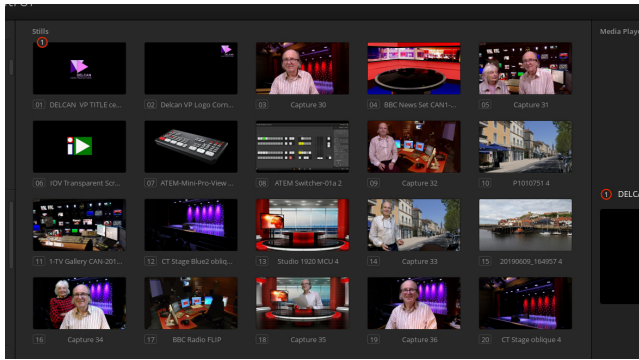
The switcher can be set to switch or cross-dissolve video/audio sources as soon as one of the four channel buttons is pressed - or it can be set to



Multi-View shows all input sources + preview and live views



easier than I expected because of the degree of control you have - provided, of course, you can light a green screen uniformly behind your presenter. If you want to use both the upstream and downstream keyers at the same time you need to use one of the HDMI inputs for the



The Media Player can hold 20 stills

background or graphic, since there is only one media player - as you would if you wanted to have one of the keyers with moving video behind your main screen image. Of course you can add your chroma key background in post - but it is far better to see the key live so that you can get a good sharp edge and balance the foreground and background - and be certain that you have the correct lighting to get the best key.

Key confusion

Since there is only one media player for stills and graphics you have to decide whether to use it with the upstream or downstream keyer. If you set both keyers to link to the media player you will get the same image on both - one will show as the chroma key background and the other as a full screen picture. This can cause a problem if you click the downstream keyer button in the software because it will put the background still over the live foreground e.g. the presenter - who will disappear! As I have explained you can, of course, use both keyers with different sources, e.g. one with an HDMI source and one with the built-in software media player.



Usefully, if you are using the upstream keyer for chroma key with HDMI sources for both the background and key you can punch in a full screen

still from the media player by clicking the DSK (downstream key) 'ON AIR' button in the software. This is not the same as the 'On Air' button on the ATEM Mini, which puts the Mini's output live on air, if you have set that up for live streaming. Hmmm!

Audio

Audio is where the ATEM Minis excel. Unlike much video gear, the audio side is not neglected here - in fact you get, what is in effect, a 12 channel audio mixer with each channel having its own Parametric Equalizer, Expander/Gate,



Compressor and Limiter. So you can tailor the sound of your mics or audio inputs to get the tone and timbre you want for each person or source. I have used the Expander/Gate very effectively to hold back fan noise and level up the audio so that the gating-out of unwanted background noise is not noticeable to the listener.



There are some 'physical' compromises of course. Camera or video playback audio comes down the HDMI cable and is split off automatically in the unit to stereo but you can go further and separate the stereo channels to independent L/R mono for each input. The concept of independent L/R mono is important since it means you can get two separate audio inputs from each stereo channel if you feed them separately at source. So the four HDMI inputs can be split into eight separate (and separately processable) mono audio signals.



The two stereo 3.5mm audio inputs on the back of the Mini can be set in the software to take mic or line level. The mic setting automatically delivers 3v to power lapel mics. I have also discovered (although it is not mentioned in the Manual) that these inputs too can be split into separate L and R mono channels - even at mic level with 3v power still being provided to the L and R split - so you could feed 4 mics into these 2 sockets and have full control of all four including individual processing. I am not keen on plugging mics directly into 3.5mm sockets which do not have locking threads, so I prefer to plug professional mics into an audio mixer and take a line out from that. I set the mics to L and R on my external mixer and pan L to the tip of the 3.5mm plug and R to the ring and then set those channels on the ATEM to output 'centre'. A mixer or pre-amp is also essential to get good sound from dynamic mics since the ATEM 3.5mm sockets are not really intended for dynamics.

One quirk is that the audio from the ATEM's 3.5mm jacks arrives ahead of the video (because it takes longer to process the video) so you have to apply a delay to the audio from these 2 jacks - which you set in the software mixer. The audio down the HDMI cable is always in sync with its video of course, so no problem there. Or you could feed your mic or mixer audio direct to a



camera so that it arrives at the ATEM via HDMI in sync with the video.

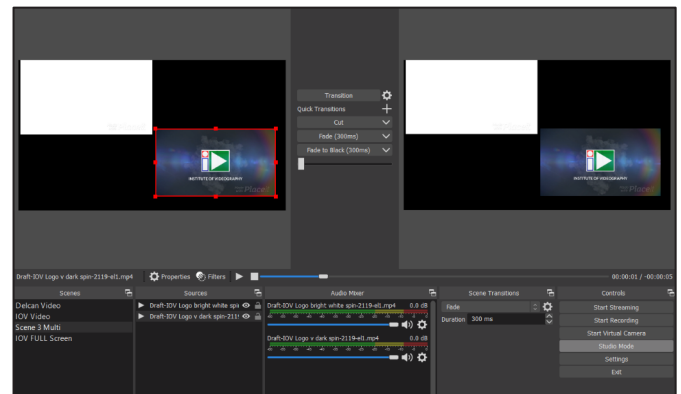
The biggest omission on the ATEM Mini is the lack of an audio out / headphone socket - so you cannot monitor your audio mix directly from the ATEM. The solution is to buy an inexpensive HDMI audio extractor which connects to the HDMI output between the ATEM and your second monitor. (The Neoteck from Amazon at about £19 will do the job) - or you can plug your headphones into your video monitor's headphone output if it has one.

Audio switching

You can route the audio in several different ways. Audio can be set to switch when the video switches (AFV audio follows video) or be set to remain on from all or some HDMI sources - or only from your audio input jacks etc. You can adjust audio levels and set audio to follow video (AFV) on each channel from the buttons on the Mini but you have more control in the software.

Expanding the ATEM Mini with OBS

Since the ATEM's USB C output is seen by other devices as a single web cam it can be used with other software such as OBS, the free Open Broadcast System. So you can set up scenes and



video clips in OBS to include the output from the ATEM. Alternatively you can use OBS to provide a simple way to play video clips into the ATEM. First open a scene in OBS to play back a video file. Then set up an input on the ATEM to show your computer screen and drag the OBS video playback window onto your second monitor (which shows the multi-cam view) and expand it to 'full screen'. Or you can introduce a layer of titles or graphics by chromakeying a green background in a similar way (see H2R Graphics link below).

Round-up

There's a lot more to the ATEM Minis than I have covered here. The manual runs to 160 pages.

They are at the same time both simple and complex devices, depending on how far you want to push their capabilities. Simple switching or cross-fading between the 5 sources (4 external HDMI inputs and 1 built-in stills media player or generated coloured background) and the use of keyed-in graphics is quite easy. But you can also set up precise chroma key effects and multiple inputs with other devices and software such as OBS. On the audio side you can tweak the sound of your mics with the parametric equalizer and bolster the output with the Expander/Gate and Compressor/Limiter in the audio interface to get just the sound you want - that is if you know, or are prepared to learn, the generic principles of

such processors. It's either plug-and-go or tweak as much as you wish. In either case, you have professional broadcast quality output.

With more and more content being delivered on line and live, the ATEM Minis will open up new possibilities for your business. I would recommend the Pro version with the live streaming and recording option at a sensible price - but if you are doing a lot of multi camera work which you intend to edit then the more expensive Mini ISO would be the way to go - providing you with an easy 're-edit' via BlackMagic's free DaVinci Resolve or the option to use the separate H264 recordings in your normal editing program. You cannot use the USB-C output as a webcam and for recording at the same time but you can, of course, record the main output as a single track in OBS.

Don't get left behind !



Useful links for ATEM Mini information, features and set up :

BlackMagic Design : <https://www.blackmagicdesign.com/products/atemmini>

Alex Pettit on You Tube <https://www.youtube.com/channel/UCaMIUU7RBGlzeAP6VK5QErQ>

H2R Graphics (Free) <https://www.heretorecord.com/apps>

OBS Studio (Free) <https://www.obsproject.com/>

HDMI Audio Extractor £19

<https://www.amazon.co.uk/dp/B07D7M8LDN?tag=sa-symuk-21&linkCode=osi&th=1&psc=1>



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