



VERSION 8.0.1.XXX - DEVELOPED BY: AVOLITES MEDIA LTD. POWERED BY: SALVATION (TM)  
HARRISON DIGITAL MEDIA INC. DRIVEN BY: DAVE GREEN, TREY HARRISON, STEVE WARREN, J.B.  
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GREG, ADAM, OLIE, ALL AT AVOLITES AND YOU. SPECIAL THANKS MARK CALVERT. LETS ROCK!

# Sapphire Media Controller

## VERSION 8.X

**By Arran Rothwell-Eyre December 2014**

with Additions by Dave Green & Ciaran Abrams

## ***Sapphire Media Controller***

A unique industry first, the Sapphire Media console offers video operators an intuitive live, hands on, show control surface enabling seamless integration of all visual elements.



The Sapphire Media control surface connects to Ai Media servers and highlights include 2 generous, wide screens, touch surfaces for easy access to the User Interface and Salvation Engine control.

Additionally, 4 switchable and assignable, touch preview monitors are available to the system operator. These preview monitors may be mapped to any inputs, outputs or video layers.

The system also features:

- 15 motorised faders for live control
- Smooth T-Bar for traditional vision mixing
- Direct access buttons, pre-assigned to popular features and functions
- All consoles may be user configured to produce fully customised functionality

## **Connecting The Sapphire Media Controller to your Ai Server**

Connect the video preview monitors, the touch screens and the USB cable to the Ai media server.

### **Connecting the main touch screen monitors**

To connect the main touch screen monitors on the Sapphire, connect your Output 1 and 2 from your server to Input Left (1) and Right (2) on the Sapphire.

## Connecting the preview screens

To connect the preview monitors on the Sapphire, connect your Outputs 3, 4, 5, 6, 7 and 8 from your server to Inputs 1, 2, 3, 4, 5,

## Connecting Sapphire Media Console to Ai Server via USB

After connecting the Sapphire Media to the server using the provided USB cable, you can monitor the communications between the Sapphire Media Console and the Ai Server by running the USB Expert program.

This can be found in *Program Files (x86)/Avolites/UsbExpert/UsbExpertConsole*.

Click on the Tools menu and choose *Acw Service* and *Start*. After a moment, the connection should be made. This can be verified by moving a fader or pressing a button – values should then appear in the middle pane. You can now close the UsbExpert software.

The ACW service will be automatically run by the Ai server program so this step is not a requirement for general operation.

With the connection made, you can now load Ai and your Sapphire Media should be connected. A number of the Sapphire Media's functions should already be pre-mapped to the software, meaning you can use it straight out of the box. However, some functions (such as the faders) will need mapping manually. This will require accessing Salvation and creating a few basic connections. Salvation is the powerful node-based programming system that allows full customisation of the Ai software.

## Calibrating the Touch Screens for Sapphire Media Console

With the Sapphire Media console attached to the computer, go to the start menu in Windows, click on All Programs and click on Pen Mount Universal Driver, then Utility and choose Pen Mount Control Panel.

Click on the multiple monitors tab and check the box marked Multiple Monitor Support, then press Map Touch Screens. It will inform you to touch the panels as indicated on the following screens, then click OK.

Press the indicated screen on your Sapphire, then the next one. Press the S key on your computer keyboard for any screens connected that do not have touch support, e.g. the top preview screens.

Then go to the device panel, double click the first icon on the left, and then click Standard Calibration.

Simply touch and hold as prompted on the right screen of your Sapphire – it will ask you to touch and hold in each corner of the screen.

Finally it will ask you to touch in the indicated area in the middle of the screen.

Back in the device panel, click ok and then double click the second screen (the icon on the right) and choose Standard Calibration. Repeat the process as above to calibrate the second screen. Once completed, your touch screens should be calibrated and working correctly.

## **Sapphire Media Functionality**

Out of the box, the Sapphire Media Controller will communicate with the Ai software, giving you a large amount of control over various parameters. In the next section, we will describe the function and application of the controller.

### ***Optical Encoders***

(Stage Construction Page)

The ultra-smooth optical encoders allow us to move our fixtures around in the 3d space without having to use the mouse or trackpad of your computer/laptop. The three encoders relate to the X, Y and Z planes of our 3d space, and can allow us to move position or rotate our fixture smoothly and accurately. Simply select the fixture you wish to move in Ai, and turn the optical encoder to see the changes in realtime. To rotate the fixture, simply click the *Pos/Rotate* button once next to the encoder – now the encoder will rotate the fixture in 3d space. Press the *Pos/Rotate* button twice and this will allow you to change the position of the fixture. If you hold the *Pos/Rotate* button, this will change the size of the fixture.

Sensitivity of the movements can be adjusted using the *Sensitivity* buttons. This can allow for a finer degree of control. Pressing the Sensitivity Up once will allow increments of 0.1; pressing Sensitivity Up twice will move in 0.01 increments.

Blend Mode Buttons

(Performance Page)

These can be used to change the blend mode on the current layer, allowing for different visual styles with other media playing. There is a choice of Alpha, N.A.M., Luma, Lighten, Add, Difference, Wipe, Multiply, Darken, Screen, Subtract & Custom.

Layer Select Buttons:

(Performance Page)

These allow us to choose which layer we want to work on. Simply hit the layer you require and you can then use other modes on your chosen layer, such as the Blend Mode Buttons or FX Buttons.

### ***Scene View Buttons***

(All Pages)

The view buttons jump to 3 stored viewpoints in the 3d space. You can choose the custom viewpoints by moving the 3d space, then holding the Ai button (on the numeric keypad) and pressing either View 1, 2 or 3. Once stored, you can use the buttons to flick between the viewpoints. The PAN VIEW button interpolates between the 3 stored viewpoints in a fluid motion.

## **16 Interface Function Buttons**

The function buttons allow us quick-access to some commonly used functions within Ai.

*Rotate Scene* – Using this button in conjunction with the mouse will allow you to rotate the 3d world.

*Move Scene* – Holding this button while using the mouse allows you to move (pan) the 3d world.

*Move Hex* – This feature is specific to version 6 and allows you to move the hexagons within a cluster bank.

*Tap Widget* – Brings up the Tap Tempo widget. To set the tempo, either use the tap button (transport controls) or use the mouse to click in the area marked “Tap”.

*Layer Info* – this is a feature from version 6 that allowed you to bring up information about the layer. This is not required in version 7 as the layer information is now in the front end of the GUI.

*Cluster Zoom* – (Motion Page & Performance Page) This button changes the Roller Cue to a Hex Ball and back again.

*EQ Trigger* – (Performance Page) This button brings up an orange EQ display that reacts to an audio input, such as your computer's microphone. This feature is not currently implemented, but will be coming soon.

*Stage Patch* – Brings up the Stage Patch if not already visible.

*F1-F8* - The remaining 8 buttons require patching in to be used as custom buttons. This can be done by using the *Ai Controller Module/Alternate Skin/F1-F8*. For connecting custom buttons and faders, please see the *Connecting The Custom Buttons/Faders* section.

### ***Transport Control Buttons***

STOP button – stops media on currently selected layer.

PLAY button – plays media on currently selected layer.

FF button – sets the play mode to forwards.

REW button – sets the play mode to reverse.

PAUSE button – pauses media on currently selected layer.

REC button – this should be called the “Go” button and it will scroll through and play the media on the currently selected layer.

### ***Numeric Keypad***

(All number entry boxes) Enter numerical values using the keypad.

(Stage Construction Page) CLEAR button deletes a fixture group.

(Performance Page)

ENTER button will pause all playing media on all layers.

CLEAR button will delete currently selected media on Roller Cue.

SET button will pause all playing media on all layers.

(Timeline Page)

ENTER & SET button – both will start/stop playback of timeline.

(Patch Windows)

CLEAR button deletes currently selected patch.

The Ai button works like the Shift key on your computer's keyboard.

The A1 to A8 buttons require patching in to be used as custom buttons. This can be done using the *Ai Controller Module/Alternate Skin/A1-A8*. (See *Connecting The Custom Buttons/Faders* section)

### **Fader Pages**

(Performance Page)

The Page +/- buttons allow you to move up and down through the media banks.

### **FX Buttons 1 to 8**

These buttons are assignable and designed to be used to trigger effects.

### **T Bar**

The T Bar allows for ultra smooth traditional vision mixing. By default, the T Bar is set up to fade to black, but it can be custom mapped to any parameter you wish to control (See *Connecting The Custom Buttons/Faders* section).

### **Trackball & Mouse Controls**

The trackball and mouse controls allow the user to navigate Ai without the need for an external mouse. To activate the trackball simply press and hold the Assign key then press the Left mouse button.

## ***Tap Button***

The Tap button is used in conjunction with the Tap Tempo feature within Ai. Turn on the Tap Tempo widget in Ai either from within the software or using the Tap Widget function button on the Sapphire, then hit the Tap button four times to set the tempo you wish to work with.

## ***Main Faders & Buttons***

Using the Avolites Controller Template Project (found in the project browser of Ai), the Sapphire's 15 faders refer to the currently active row on the Roller Cue and allow the user to trigger and fade in media on the selected layer and fixture.

With the fader set to zero, the blue buttons act as a momentary trigger, starting the media clip and setting the intensity to full. The grey buttons work similarly, but in reverse, e.g. with the fader set to maximum the button will stop the clip and set the intensity to zero.

To custom map the faders and buttons, please refer to the *Connecting The Custom Buttons/Faders* section of this manual.

## ***Preview Monitor Buttons & Preview Menu Buttons***

The preview monitor buttons allow you to switch between the connected inputs. For example, the first preview screen addresses inputs 1 and 5 so using the button the user can easily switch between their input sources.

The preview menu buttons allow the user to change the monitor settings, and include features such as Colour, Image Settings, Position, OSD Menu and Language.

## ***Pre-mapped Interface Instructions***

Out of the box, the Sapphire Media Controller will communicate with the Ai software, giving you a large amount of control over various parameters. In the next section, we will describe the function and application of the controller.

## ***Blend Mode Buttons***

(Performance Page)

These can be used to change the blend mode on the current layer, allowing for different visual styles with other media playing. There is a choice of Alpha, N.A.M., Luma, Lighten, Add, Difference, Wipe, Multiply, Darken, Screen, Subtract & Custom.

### ***Layer Select Buttons:***

(Performance Page)

These allow us to choose which layer we want to work on. Simply hit the layer you require and you can then use other modes on your chosen layer, such as the Blend Mode Buttons or FX Buttons.

## Connecting the custom buttons/faders

**This section will describe advanced functionality for users who wish to customize the operation of their Sapphire Media Console. It is intended for Ai Experts only.**

To connect the assignable faders to the software, you need to first determine what it is you want to control. For example, you may wish to use fader 1 to control intensity (opacity) on your first layer, with fader 2 controlling the speed of the playback media. This can be achieved with a few simple connections, which we shall describe below.

Note: with Salvation, there can sometimes be a number of different ways of accessing required modules. We will show you the simplest route to achieve what you need.

Access the Performance Page in Ai. Select layer 1 on the left-hand side and right-click to enlarge the area. Then double-left-click in the large preview area. This will open up a patch from Salvation called Layer 1. This patch window shows us the Artnet personality for layer 1 and is where we can make our connections.

Layer 1 Personality Screen: We can extend this screen by grabbing the right-hand side of the window and dragging. This will show a number of new modules and connections.

Press the Up Arrow key on your computer keyboard repeatedly to create space at the top of the patch window. Here we are going to add a couple of patches that will get our faders controlling what we want. Right-click in the empty area and choose

*Insert Module/Controller/AiController.*

This will give us a yellow outline that we then left-click into place.

This patch contains the 15 assignable faders and the T Bar of the Sapphire Media.

Also, right-click in a blank area and select *Insert Module/Controller/Auto Select* and place this to the right of the Ai Controller module.

For our example, we want to connect Fader 1 to the opacity of the media. On the ArtNet Inputs module locate the Intensity parameter (by default this is numbered 22) and hover your mouse over the blue out port. This will show where the current connections are going to. As we can see in the picture below, the Intensity of the ArtNet inputs is being sent to the Intensity on the Media Player module and the Intensity of the Strobe module.

We need to connect the Fader 1 output of the AiController module to the In 1 on the Auto Select module. Next, we need to take the output of the Intensity from the ArtNet module and connect that to the In 2 of the Auto Select module. With these in place, we then need to connect the Out of the Auto Select to the Intensity of the Media Player module and the Intensity of the Strobe module (see picture below).

This now means Fader 1 on the Sapphire Media is now connected to the Intensity (Opacity) of Layer 1 in Ai. Trigger some media in Ai and move the fader – you should now see the media change with the fader movements. (Note: currently the layer preview window's Opacity slider does not update with fader movements.)

To setup fader 2 to control the speed of the media, we need to make the following connections:-

With the Layer 1 properties page open, add an Auto Select module as before. Then locate the Play Speed parameter on the ArtNet Inputs module (numbered 7 by default).

Connect the Fader 2 output of the AiController module to the In 1 on the Auto Select module. Next, we need to take the output of the Play Speed from the ArtNet module and connect that to the In 2 of the Auto Select module. With these in place, we then need to connect the Out of the Auto Select to the DMX Speed of the Speed Params module (see picture below).

## Troubleshooting

If your Sapphire Media Console screens seem to not work correctly when connected to the Ai server.

Connect the Sapphire Media console via USB and ensure the outputs from your Ai media server are set up as follows:

Output 1 (Infinity) to Left input (Sapphire)  
Output 2 (Infinity) to Right input (Sapphire)  
Output 3 (Infinity) to 1 input (Sapphire)  
Output 4 (Infinity) to 2 input (Sapphire)  
Output 5 (Infinity) to 3 input (Sapphire)  
Output 6 (Infinity) to 4 input (Sapphire)  
Output 7 (Infinity) to 5 input (Sapphire)  
Output 8 (Infinity) to 6 input (Sapphire)

Open USB Expert.

Click on the Tools menu/ACW Service/Start

Wait a moment and the controller should then be connected. Test this by moving a fader or pressing a button – you should then see values appear in the central panel.

In the right-hand panel, you should see **Inifinity Edid Panel 1** – click on this and then the panel on the right-hand side should change. Select the Edid tab on the panel. (See picture below)

From the drop down menu on the right-hand side, select EDID 1, then click on the Upload button. This should open a Windows dialog. If you navigate to C Drive/Master/Edid you should find some .bin files. If you have a first generation console with 1366 x 768 screens then you need to load up either the [LWR\\_1366x768@50was1364.bin](#) (for 50Hz mode) or [1366x768@60Hzaidefault.bin](#) (for 60Hz mode) . If you have a 2<sup>nd</sup> generation console with 1920 x 1080 screens then you should use the EDID files located here: %Ai Install dir %Distrib\System\EDID Manager\EDID Pool\1920 x 1080\[1920x1080@50p.bin](#) or the 60p variant if you prefer (see notes below).

This should give you the correct resolution for the 2 main display screens on the Sapphire Media Console.

Special Considerations

### **50Hz Operation**

For productions which use cameras synced at 25 frames per second it is often desired to run the media server at 50Hz, therefore on the server all EDID data needs to be loaded as

50Hz. The server has dedicated EDID files for the 1366 x 768 screens both at 50 and 60Hz.

### ***Preview Screens***

The four preview screens can display up to 1920 x 1200 at 50 and 60Hz. The preview screens have a scaler built in that detects the supplied resolution and scales it to the native 800 x 480 resolution of the screen.

If a resolution is not supported, the preview screen will turn black with the screen menu visible and the detected resolution in the bottom. This may be 0 x 0 pixels if the scaler can not determine the resolution.

### ***Power Supply***

PSU is auto-ranging and can operate from 120 – 240V AC. The unit earth connection must be made at all times. The console will power up when connected to the server via USB.

For testing purposes the console can be connected to a PC or laptop with USB Expert to power it up.

For any other problems, please contact [support@avolitesmedia.com](mailto:support@avolitesmedia.com)