



How to integrate IPAD2 with HDMI output in existing systems

1. How do I achieve the best video quality ?

The IPAD2 offers HDMI Video output with the optional Apple HDMI adaptor. Unfortunately there are some pitfalls and getting the best picture is far more than plug and play !

First it is necessary to know and accept the fact that the HDMI output will always show black bars around your IPAD2 picture. The possible reason for this is the fact that the HDMI video is following the scaling of the IPAD2 and therefore there has to be compromise !

Having black bars around the video is normal and no malfunctioning of any video equipment that is connected to the IPAD2.

In theory you could detect the black bar and remove them and zoom into the active video and scale it to full display resolution, but this is reducing image quality and a difficult task for the 2 possible modes of the IPAD2.

To achieve a crisp and sharp image with the IPAD2 albeit with black bars it is mandatory to understand how the IPAD2 is working. The Apple gizmo is looking for the EDID table in the connected device and outputs the highest possible video resolution that can be found in the sink's EDID table. This could be a native 1080p display that has 1080p EDID as the highest possible resolution.

This would be a perfect configuration and does not require any interaction.

Now let us investigate what happens with the popular 1280 x 800 projectors. They also have an EDID table, but it will not have 1280 x 800 as the highest EDID resolution but probably 1080p or WUXGA (1920 x 1200) for compatibility reasons with BluRay players or high resolution notebooks. The 1280 x 800 projector will display the 1080p output of the IPAD2 but scale it down to 1280 x 800 pixels. That is looking bad !

A perfect quality would have been a 1280 x 800 output of the IPAD2 to the 1280 x 800 of the projector.

Most displays, projectors or scalars on the market offer a wide variety of possible resolutions in their EDID table to be compatible with many sources. Typically the native resolution is part of this EDID table but not necessarily the highest ! Only high resolution displays that have a native resolution of 1080p or 1920 x 1200 will have an EDID table where the highest EDID entry is smaller or equals the native resolution and therefore guarantees a crisp and sharp picture with IPAD2.

2. Controlling the IPAD2 resolution with SPATZ SingleEDID

Now that we understand how the IPAD2 is working we can show him manners. We obviously do not want the IPAD2 to decide what video resolution it outputs to avoid bad picture quality. Fortunately the SPATZ SingleEDID Technologie as it can be found in HDMIFIX, DVIFIX, SWITCH-8, PROSWITCH-8 and HDMI-X1616 can fix this problem for good. The SingleEDID technology allows you to force the HDMI output of the IPAD2 in any resolution that might work best in your setup. This could be 1280 x 720 for projector or a scaler that has an extensive EDID table and is not forcing your IPAD2 in the resolution that works best in your setup. For the fact that SingleEDID is only presenting one possible resolution to the IPAD2 it will not be able to output any other !

3. HDMI video of IPAD2 with SPATZ SingleEDID

A possible configuration would be to install the popular HDMIFIX after the IPAD2 HDMI adaptor to force one of the preprogrammed output resolutions. It got me excited that Apple finally has done it right and is readjusting the video output any time it receives a Hotplug signal from our HDMIFIX. This means any SingleEDID change in the HDMIFIX is instantly executed by the IPAD2 without any user adjustments. This also means that you can now remote control the IPAD2 resolutions using one of our 10 presets in the HDMIFIX by just sending a RS-232 command from any control equipment.

Typically in matrix setups there is a variety of displays with different native resolutions that require different video output resolutions of the IPAD2 to show the best possible picture.

If you now change the display connected to the IPAD2 you also want to change the SingleEDID of the HDMIFIX and reconfigure the IPAD2 output for this particular display.

If you are using a SPATZ SWITCH-8, PROSWITCH-8 or HDMI-X1616 you will not need any additional hardware as we offer per input individual SingleEDID in these devices. They will be automatically recalled when changing the input.

I also want to show my respect to Apple for respecting the need for 50Hz refresh rate video that can be forced by our SingleEDID with 50Hz settings. Any video that has been recorded with 50Hz should not be converted to 60Hz which is the typical refresh rate for most if not all PC displays. European displays with HDMI input will support 50Hz refresh rates but their EDID tables will not. So without SPATZ SingleEDID it is almost impossible to force the IPAD2 into a 50Hz refresh modes, not even in 720 or 1080p.

So your expensive company presentation recorded in 1080i/50Hz would be converted to 60Hz by the IPAD2 and result in jerky motion. This is not the case if you have the IPAD2 configured to e.g. 1080p/50Hz using the SPATZ SingleEDID information.

4. VGA video of IPAD2 with SPATZ Scalers

There is another pitfall with this IPAD2 and its video output. If you want to use it with VGA and our scalers you will need to update the EDID table of the VGA input of our scalers. You can either do this by yourself if you already own a HDMIPAT or send the unit in to us or to one of your distributors to make this change. An indication of a necessary update is wrong colors using the APPLE VGA adapter !

There is one more thing I have to tell you !

The VGA will also show black bars around the active picture so VGA will not give full screen either !

It should be noted that VGA is not requiring HDCP compatible displays or switchers, so some older installs might be worth to have a VGA adapter instead of HDMI, which requires a fully HDCP compatible signal chain. The IPAD2 is checking for VGA EDID so some older installs that are using RGBHV matrices will not work with the IPAD2 unless you use an EDID manager that has the correct EDID information for the IPAD2.

We have an unit the EDIDFIX that can be loaded with the correct information and is used just after the IPAD2 adaptor and before the matrix or switcher or RGBHV cable.

Conclusion

Integrating an IPAD2 into existing systems or systems that do not use SPATZ SingleEDID can be a difficult task and delivering unsatisfying results. If you have a high resolution display with 1080p or 1920 x 1200 native resolution you might be ok, but only if there is no switcher or scaler in the chain. As soon you have no direct EDID path you may better off controlling the EDID information to the IPAD2 using our SingleEDID technology. I strongly recommend that all installers have a HDMIFIX at hand to verify or investigate which IPAD2 HDMI resolution is delivering the best results. This is a quick check that can make a difference with your customer relationship as he might want his IPAD2 presentation to look as best as possible.

I may also note before I close this essay that the number of displays that have "wrong" EDID tables is rapidly increasing. Some manufacturers are using the same EDID table for all the projector models they manufacturer resulting in odd and false information to the source. It can easily happen that your 1280 x 800 projector has an EDID where XGA (1024 x786) has been marked as native and any source equipment that is looking for the "native" EDID will then output 1024 x 768 instead of the much better looking and right 1280 x 800 pixels !!

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