



MX2-8x8-HDMI20-Audio

HDR, Dolby Vision and Apple TV

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What is HDR...and What is Dolby Vision Supported by the 5th Generation Apple TV?

The hottest new trend in video technology is the recent introduction and the surrounding hype around High Dynamic Range - HDR. But do you really know what these technologies are for and what improvement in video image quality can we achieve with them?



There are two main competing formats right now: HDR10 and Dolby Vision.

When a TV says it supports “HDR” then you’ll have to assume that it most probably supports HDR10 content. HDR means better contrast, greater brightness levels and a wider color palette. It is about making videos look a bit more like real life: the viewer’s eyes can perceive brighter whites and darker blacks, greater dynamism.

Firsthand experience usually reveals that a video with HDR is typically more appealing to the viewers than the same video in larger resolution, but without HDR.

While HDR10 is an open source format which requires no license fees to be paid, Dolby Vision is a proprietary HDR standard created by Dolby Laboratories. It promises to be a step above HDR10 content.

Technically, Dolby Vision content is mastered with a 12-bit color depth, while HDR10 content is usually mastered with a 10-bit color depth. Dolby Vision content includes frame-by-frame metadata to tell the display exactly how to display each frame of video, while HDR10 does not. To take advantage of it, you need Dolby Vision-mastered content played through a Dolby Vision-compatible player and outputted to a Dolby Vision-enabled display.

Dolby Vision and Apple TV 5th Gen.

While several streaming media products support HDR, including some of the latest Roku and Chromecast products, Dolby Vision is not supported by most of them.

On the other hand, one of the most popular streaming media player platforms is Apple TV: its recent, 5th generation edition rather uniquely supports 4K, HDR and also Dolby Vision. Furthermore, Apple’s iTunes online store offers numerous titles available in stunning 4K resolution and with Dolby Vision. This is also a positive piece of news as it is not easy as yet to find appropriate content in 4K and Dolby Vision.





Regular

HDR/Dolby Vision

Displays and TVs with HDR and Dolby Vision

There are display sinks available supporting both formats, but typically the HDR format is way ahead yet, as far as availability concerned, for both hardware and available media.

To sum it up, the following properties can be expected by viewing an HDR content:

- Brighter, deeper, more real-world colors
- Brightness much more varied
- 4K with HDR has more colors than without
- Basically everything you watch looks better and more lifelike

The Dolby Vision playback process consists of two distinct functions: decoding and display mapping.

Decoding always happens in source devices before HDMI transmission. HDMI always carries decoded video, never a bitstream in the case of video. Therefore, it is necessary to perform the decoding function also for Dolby Vision in the Blu-ray player, set-top box, game console etc.

The display mapping happens in the device with the display. This is where dynamic range and color gamut of the incoming content get mapped to the capabilities of the display. Every TV set is different, which is why this function cannot be performed in the source device while preserving artistic intent and color accuracy.

The Lightware Solution for HDR and Dolby Vision Video Signals

Lightware's MX2-8x8-HDMI20-Audio matrix switcher supports both HDR10 and Dolby Vision in the HDMI signal at a component bit depth of 10 or 12 bits, respectively, within its frame bandwidth of 18 Gbps maximum. This product is a state of the art representation of contemporary video technology standards, compatible with HDMI 2.0 and providing uncompromised Full 4K resolution at 60 Hz and 4:4:4 color space.

