



DepthQ<sup>®</sup>

3D

By Lightspeed Design, Inc.

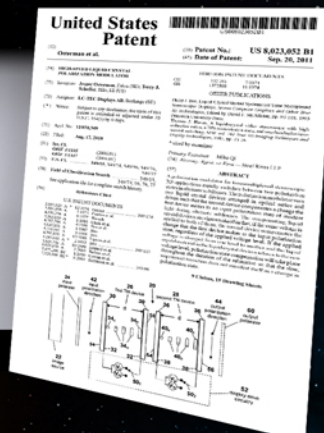
## PASSIVE POLARIZATION FOR 3D DIGITAL CINEMA



# Fast. Stunning. Future-Proof.

Newly patented technology\* makes DepthQ® the world's fastest polarization switch for 3D digital cinema. With a powered, symmetrical 50 microsecond switching time between the eyes, DepthQ® easily ensures bright, low-crosstalk operation - even at the upcoming 3D HFR (high frame rate) targets of 192 FPS, 240 FPS...and beyond.

When combined with a silver screen, the DepthQ® Polarization Modulator allows your digital cinema projector to display stunning stereoscopic 3D films, viewable using inexpensive industry-standard passive glasses. Compatible with high-power lamp or laser-based projectors, DepthQ® provides a spectacular large screen 3D experience.



\*LC-Tec Displays AB U.S. Patent Number 8023052 B1, issued Sept. 2011

## Ease of Installation

DepthQ® is easy to set up, and includes everything you need:

- An actuator to quickly switch between 2D and 3D movies.
- Compact, pre-configured drive electronics.
- All the parts for three different mounting configurations.
- Advanced heat protection, for high power & large 3D screens (19.2m, 63ft with 30K lum lamp; larger with up to 56K lum Laser).
- Compatibility with all industry-standard, circular polarized passive 3D glasses.

DepthQ® can also be mounted mere inches from your lens, fitting easily in the existing space between lens and port glass.



## Reliability, Quality & Speed

DepthQ® is a solid-state device, delivering low cost/maintenance and dependability. There are no moving or spinning parts involved in switching polarization states.

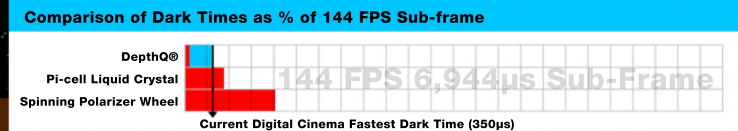
DepthQ® is clear and flat with high extinction - allowing sharply focused, bright, low-ghost 3D images.

DepthQ® switches states nearly instantaneously, and in both directions. Competing technologies are significantly slower, requiring longer dark times (less brightness).

Current projector technology does not yet take advantage of our extreme switching speed. The fastest they switch today is approximately 350 microseconds ( $\mu$ s).

But at 50 $\mu$ s DepthQ® easily and completely switches states within this 350 $\mu$ s. **Competing products simply cannot.**

**DepthQ® provides the smallest effective dark time in the world.**



## Embraced Worldwide

DepthQ® has been successfully reviewed by executives from six major Hollywood studios and is listed on the Walt Disney Studios Motion Pictures Approved Equipment List.

DepthQ® has been installed in over **2750 theaters worldwide.**

Locations include Washington, Oregon, Alaska, Michigan and California in the US as well as India, Dubai, Germany, Norway, Switzerland, Israel, Australia, UK, Turkey, Argentina, China, the Czech Republic, Thailand, Malaysia and the Philippines.

- ✓ **Simple to install**
- ✓ **Solid-state switch**
- ✓ **NEW patented technology**
- ✓ **High Frame Rate (HFR) ready**
- ✓ **Hollywood approved**



## Future-Proof

### Speed

#### 3D High Frame Rate (3D HFR)

Peter Jackson's *The Hobbit* and James Cameron's *Avatar* prequels will require high-end projectors to run at 192 frames per second (FPS) and possibly up to 240 FPS.

Not to worry.. With the world's fastest switching speed, **DepthQ® is already capable of 400 FPS.**

### Brightness

Moreover, at 3D HFR speeds, competing technologies will consume 10-12% (and more) of your projector's light in dark time.

DepthQ® on the other hand, even with current projector technology, will only require 6.7-8.4% 3D HFR dark times.

If, however, future projector dark times are reduced below 350µs, **DepthQ® 3D will actually increase your brightness, as it only requires approximately a 1% dark time for 3D HFR.**

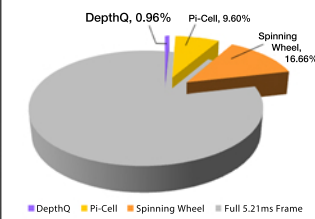
### Longevity

Our competitors use an unprotected plastic polarizing element which will yellow and degrade from **thermal heating** over time.

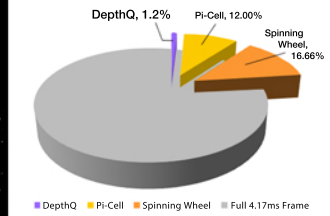
In comparison, DepthQ® adds a nano-scale metal-on-glass pre-polarizer to ensure longevity; and we therefore confidently provide our customers with a 3D Cinema **Five Year Optical and Three Year Electronics/Mechanical Warranty.**

**At 50µs, DepthQ® is 10 to 20 times faster than competing technologies. They are simply not optimized for HFR speeds.**

Potential Dark Time as % of 192 FPS Frame



Potential Dark Time as % of 240 FPS Frame



## Technology Comparisons

	DEPTHQ®	Pi-cell Liquid Crystal	Spinning Polarizer
<b>Switching Time</b>	50 microseconds	500 microseconds	1,157 microseconds @ 144FPS
<b>Possibility for Excess Ghost</b>	No, faster than fastest projector dark time	Yes, slower than fastest projector dark time	Yes, slower than fastest projector dark time
<b>Pre-Polarizer</b>	YES, Metal on Glass	NO	NO
<b>Uses Moving Parts to Switch</b>	NO	NO	YES
<b>Optimized for High Frame Rates</b>	YES	NO	NO





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