Application Brief

TI DLP® Pico™ Technology for AR Glasses

Augmented reality (AR) glasses and headsets use display modules that blend the digital and physical worlds. These display modules have demanding requirements for performance, size, and power. TI DLP® Pico technology enables small, high-performance, low power AR display modules.

Features and Benefits

- High optical efficiency / low power
  - A brighter display on a limited power budget
  - Lower LED power consumption required to reach target brightness levels
- High contrast
  - On/off contrast ratios of >1000:1 are possible, dependent on optical design tradeoffs, which enable highly transparent backgrounds.
- High speed
  - Digital micromirrors that switch in microseconds enable frame rates of up to 240 Hz, high color-sequential refresh rates and low display latency.

Recommended DLP Pico Chipsets for AR Glasses

The DLP Pico chipset portfolio offers several solutions for AR glasses. The best fit will depend on the target size, power, and field of view, and resolution of the display system.

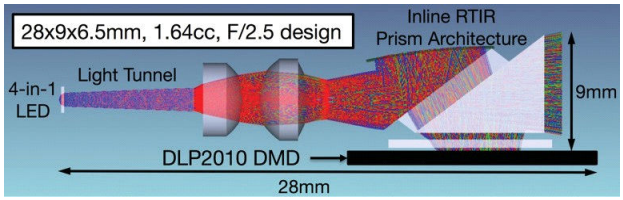
For smaller, lower power display systems, DLP Pico chipsets that include a 0.1" or 0.2”-class micromirror array diagonal are recommended. These solutions enable extremely compact optical systems and the lowest possible power consumption.

For higher-performance display systems, the 0.3” and 0.47”-class of devices enable larger field of view (FOV) and higher resolution.

	DMD	Controller	Resolution
Low Power / Small Size	DLP160CP	DLPC3421	640x360
	DLP2000	DLPC2607	640x360
	DLP2010	DLPC3430	854x480
	DLP230GP	DLPC3432	960x540
Higher Performance	DLP3010	DLPC3433	1280x720
	DLP4710	DLPC3439	1920x1080

DLP Pico controllers and PMIC/LED driver chips enable compact, low power PCBs that can fit in virtually any AR glasses form factor.

Example Small Optical Engine Design



Side-illuminated DLP2010, DLP230GP and DLP3010 DMDs can enable slim, in-line designed optical engines that are good fits for compact AR glasses with either near-temple or near-eyebrow display system locations.

Additional Technical Resources

- *DLP Technology for Near Eye Display*
- *DLP2010 DMD Optical engine reference design*
- Watch the Wearable displays with TI DLP Pico technology training video
- Contact Optical engine suppliers
- Order DLP Pico evaluation modules (EVMs)
- Download DLP Pico reference designs
- DLP160CP AR Glasses Eyepiece Optical Reference Design
- DLP® Pico™ Products Ultra-Compact Optical Reference Design
- DLP3010 AR Glasses Eyepiece Optical Reference Design
- Three ways DLP® technology can enable augmented reality experiences
- *Support for Augmented Reality (AR) and Power-Sensitive Applications on 343x*

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