Wintech®

A Texas Instruments Authorized DLP®
Design House

# PRO4500MV

## Machine Vision Optical Engine

Wintech's Production Ready Optical Engine for Machine Vision (PRO4500MV) is the first light engine from Wintech to specifically target the structured light markets. These markets include machine vision, AOI, and general metrology. The PRO4500MV is based on Wintech's wildly successful PRO4500 platform but has been reengineered and optimized for cost sensitive structured light applications. While keeping value in mind, Wintech was able to retain all of the top-quality components, including all glass optics and all metal mechanicals, found in the original PRO4500.

The PRO4500MV is based on Texas Instrument's DLP® LightCrafter 4500 that utilizes the DLP4500 0.45" WXGA DMD and is compatible with both the s241 (150 lumens) and s310 (500 lumens) DMDs. The DLP4500 can be operated in either video mode with a resolution of 1280x800 or in pattern sequence mode at the DMDs native resolution of 912x1140. Pattern sequence mode allows for precise control of each pixel in the DMD array. With a form factor of only 120x75x55mm, the PRO4500MV is ideal for confined spaces that are typically required in 3D Measurement and machine vision applications. The PRO4500MV's modular architecture allows for quick, low cost modifications to the base Engine that minimize both expense and time to get to series production.

The PRO4500MV provides monochrome projection and will accept various Luminus Devices LEDs including the PT-39, PT-40, and also several Osram LEDs. An all glass optical architecture was chosen and optical coatings are optimized for visible projection. Optics are 100% offset and incorporate field swappable projection lenses, similar to all of Wintech's PRO-series light engines. Thermal management is provided by heat sinking and a single fan which is adequate for high duty cycle LED usage. Liquid cooling adaptations are also available.

The PRO4500MV incorporates individual DMD and LED driver PCBs. This maintains modularity for the system and ensures low cost modifications to the PCB. The DMD-driver PCB includes 12V locking power connection, HDMI port for image transfer, $I^2C$ and USB 2.0 ports for system control, and support for two I/O triggers. The system utilizes a single channel LED driver for monochrome display.

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The PRO4500MV is based on the LightCrafter 4500's DLPC350 chipset, performance and control are identical. The PRO4500MV utilizes the DLP® LightCrafter 4500 firmware and software. The PRO4500 will allow for 2,880Hz binary streaming frames per second and 120Hz 8-bit grayscale streaming frames per second over mini-HDMI. Predetermined patterns stored in the 32MB onboard memory provide up to 4,255Hz binary and 120Hz 8-bit grayscale frames per second.

**System Highlights**

- Modular all in one DLP®-based production ready industrial projector
- Attractive pricing at any volume
- DLP4500 WXGA (912x1140) diamond pixel DMD
- All glass 0% offset optics, optimized for visible light
- Desirable form factor of only 120x75x55mm
- Various Luminus LED (PT-39 and PT-40) and Osram LED compatibility
- Compatible with s241 and s310 DMDs
- Includes LightCrafter 4500 GUI and API

**PRO4500MV Optical Specifications**

| | PRO4500MV LED Wavelengths (nm) | | |
|---|---|---|---|
| | **460** | **525** | **613** |
| **Application(s)** | 3D Measurement | 3D Measurement | 3D Measurement |
| **Guaranteed Minimum System Output Power** | 500mW | 200lm | 60lm |
| | **PRO4500MV Lens Option** | | |
| **Available Lens Working Distances (mm)** | 92 | | 184mm |
| **Field of View (mm)** | 65.6x41 | | 131.2x82 |
| **Projected Pixel Size (um)** | 50 | | 100 |
| **Contrast Ratio** | 800: 1 | | 800: 1 |
| **Uniformity (%)** | > 95 | | > 95 |
| **Distortion (%)** | < 0.1 | | < 0.1 |
| **Light Engine Tilted Angle θ** | 30° | | 49.1° |

Wintech Digital Systems Technology Corporation is a Texas Instrument's DLP® Authorized Design House with locations in both China and the US. We are a full-service engineering company that can design and manufacture all aspects of DLP® systems including electronics, optics, thermal management, light sources, firmware, and software.