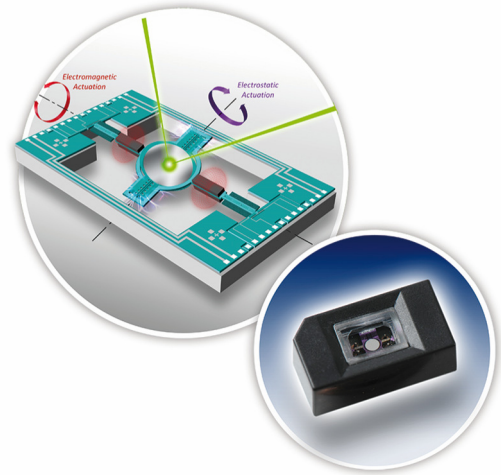


MAR1100 | 2D MEMS LASER SCANNING MIRROR

The MAR1100 is a dual-axis MEMS based scanning mirror targeted for miniature laser projectors and laser steering applications.

It is based on industry-leading MEMS technology with novel and precise actuation schemes. The innovative MEMS device combines a fast electro-static actuator and a powerful electro-magnetic actuator, which yields peak performance under varying conditions.

The MAR1100 scanning mirror, combined with the MAR2100 controller IC, form the projection module of the system. A general block diagram of such systems is depicted in Figure 1.



FEATURES

- A dual axis single mirror
- Resolution up to 1280 (H) x 600 (V) pixels
- Combination of electro-static (H) and electro-magnetic (V) actuators for wide optical field-of-view
- A full, real time FOV control (size and location)
- Accurate and continuous sensing mechanisms for precise mirror control
- Static mirror alarm signal for eye safety
- Non-hermetic plastic package

APPLICATIONS



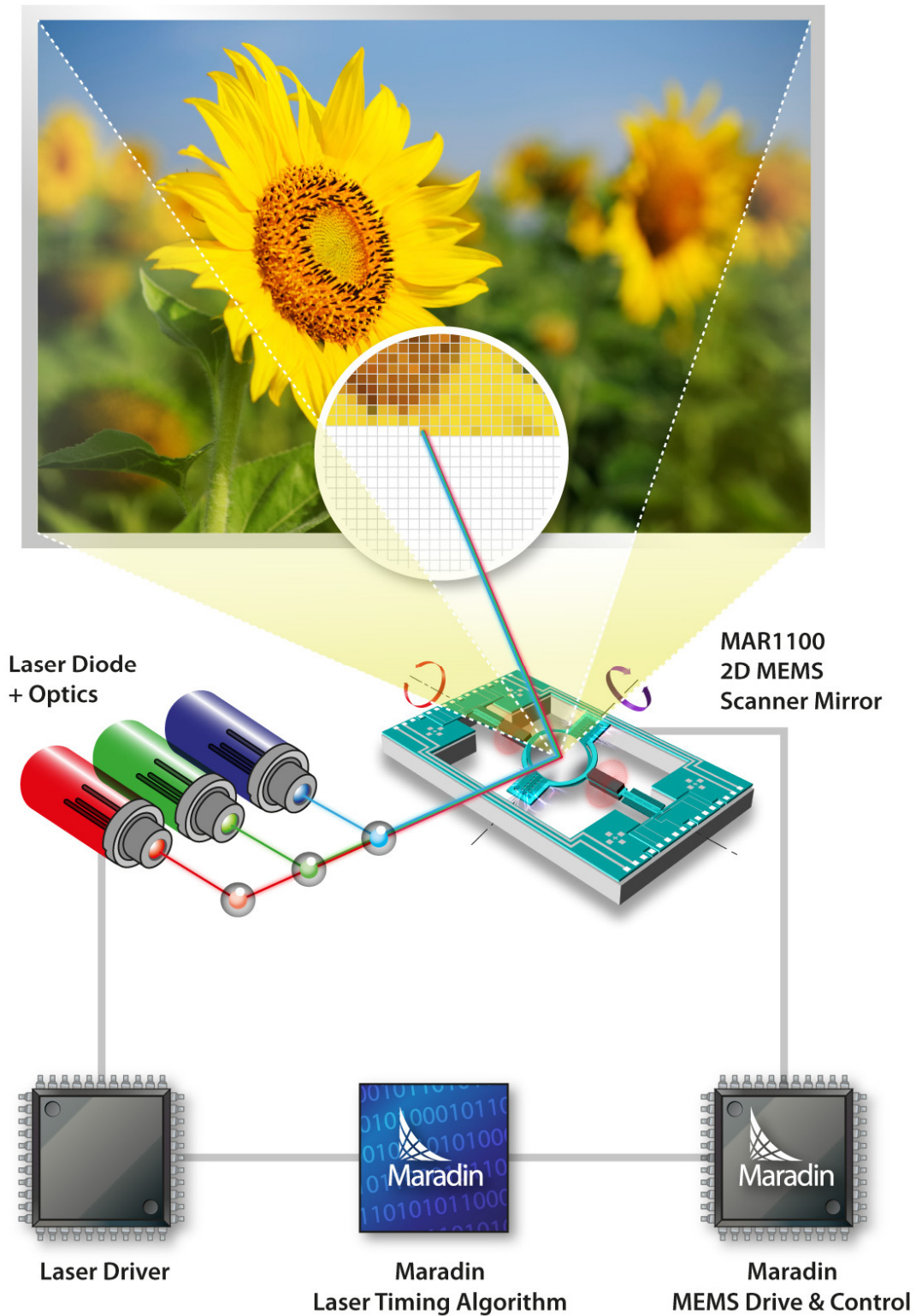


Figure 1: System Block Diagram

SYSTEM CHARACTERISTICS

| | Parameter | Min | Typical Value | Max | Unit | Remarks |
|---------|---|------------|-----------------------|----------|-------|---|
| General | Optical angle (H x V) | | 45x20 | 45x30 | Deg. | HFOV x VHOV |
| | Resolution (HxV) | 1x480 | 1280X480 | 1280x600 | Pixel | |
| | Pixel position error | | ±1/5 | | Pixel | Both vertical and Horizontal |
| | Resonance frequency (H) | 10,000 | 10,250 | 10,500 | Hz | |
| | Resonance frequency (V) | 1600 | 1800 | 2000 | Hz | |
| | Effective mirror size (H) | | 1 | | mm | X Horizontal direction X for torsion bar |
| | Effective mirror size (V) | | 1.1 | | mm | Y Vertical direction Y for torsion bar |
| | MEMS Scanning Module dimensions (L x W x H) | 10x5.5x4.6 | 12 x 6.5 x 5.9 | | mm | Length x Width x Height |
| | MEMS Scanning module power consumption | TBD | 70 | TBD | mW | rms |
| | Package | | Plastic, Non-Hermetic | | | Optional: Ceramic, Hermetic |
| Optical | Throw Ratio | | 1.2 | 1 | | Distance/Diagonal FOV |
| | Incident angle (H) | | 0 | | Deg. | |
| | Incident angle (V) | 15 | | 22 | Deg. | |
| | Mirror reflectance | 90 | | 99.5 | % | |
| | Overall reflectance | 84 | 85 | 86 | % | Mirror and Optical window |
| | Wavelength range for reflection | 440 | | 700 | nm | Any wavelength upon request |
| | Laser max spot size | | | 0.7 | mm | |

OPTO-MECHANICAL INTERFACE

Scanning module

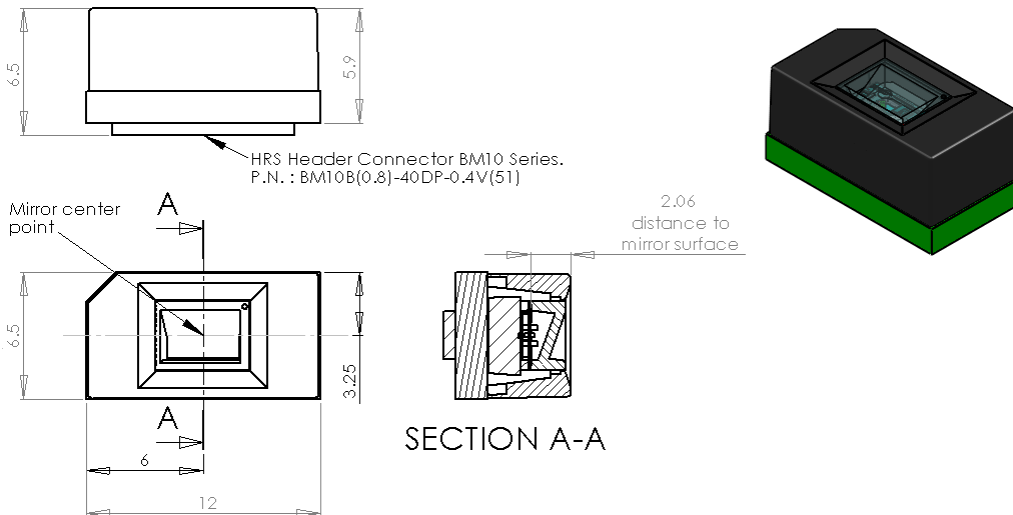


Figure 2: Scanning Head Module General View

Scanning module electrical connection

The scanning module should be connected to the control board by a specified flat printed cable having a receptacle 40pin connector BM10NB (0.8)-40DS-0.4V (51).

Laser Interface

The optical window of the MAR1100 enables typical projection of a 36[deg]x25[deg] FOV. The laser should be positioned according to the instructions detailed in Figure. For higher projection angles this should be modified accordingly.

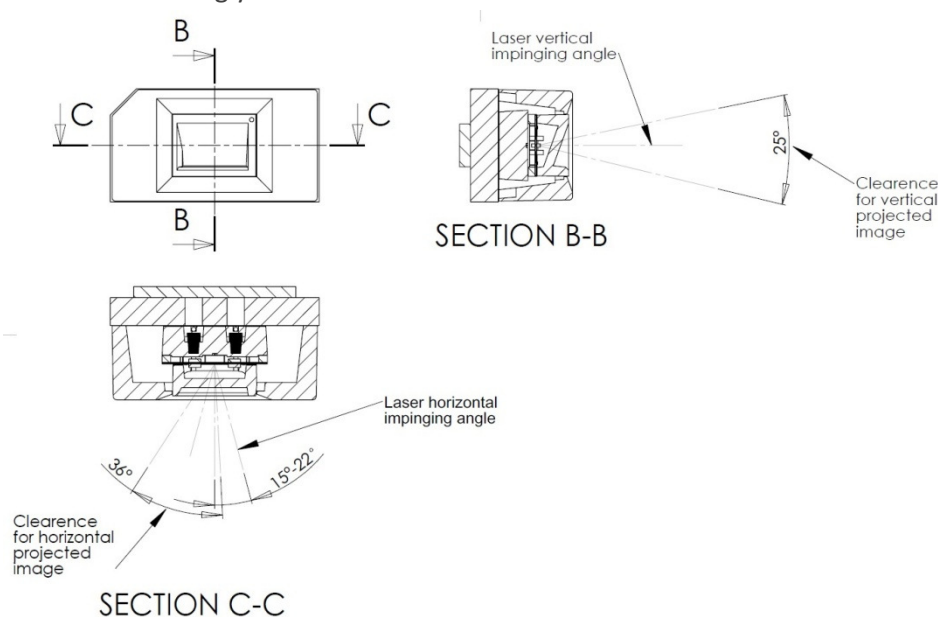


Figure 3: Scanning Head Module General View

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