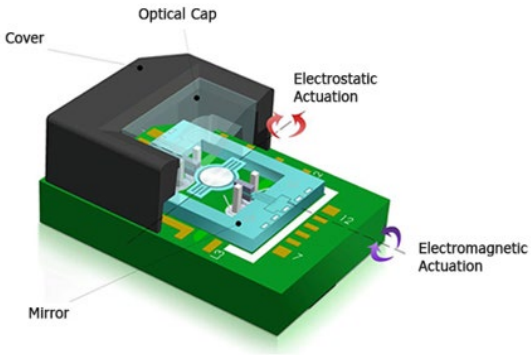
MAR1100.E | 2D MEMS LASER SCANNING MIRROR

The MAR1100.E 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_E 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

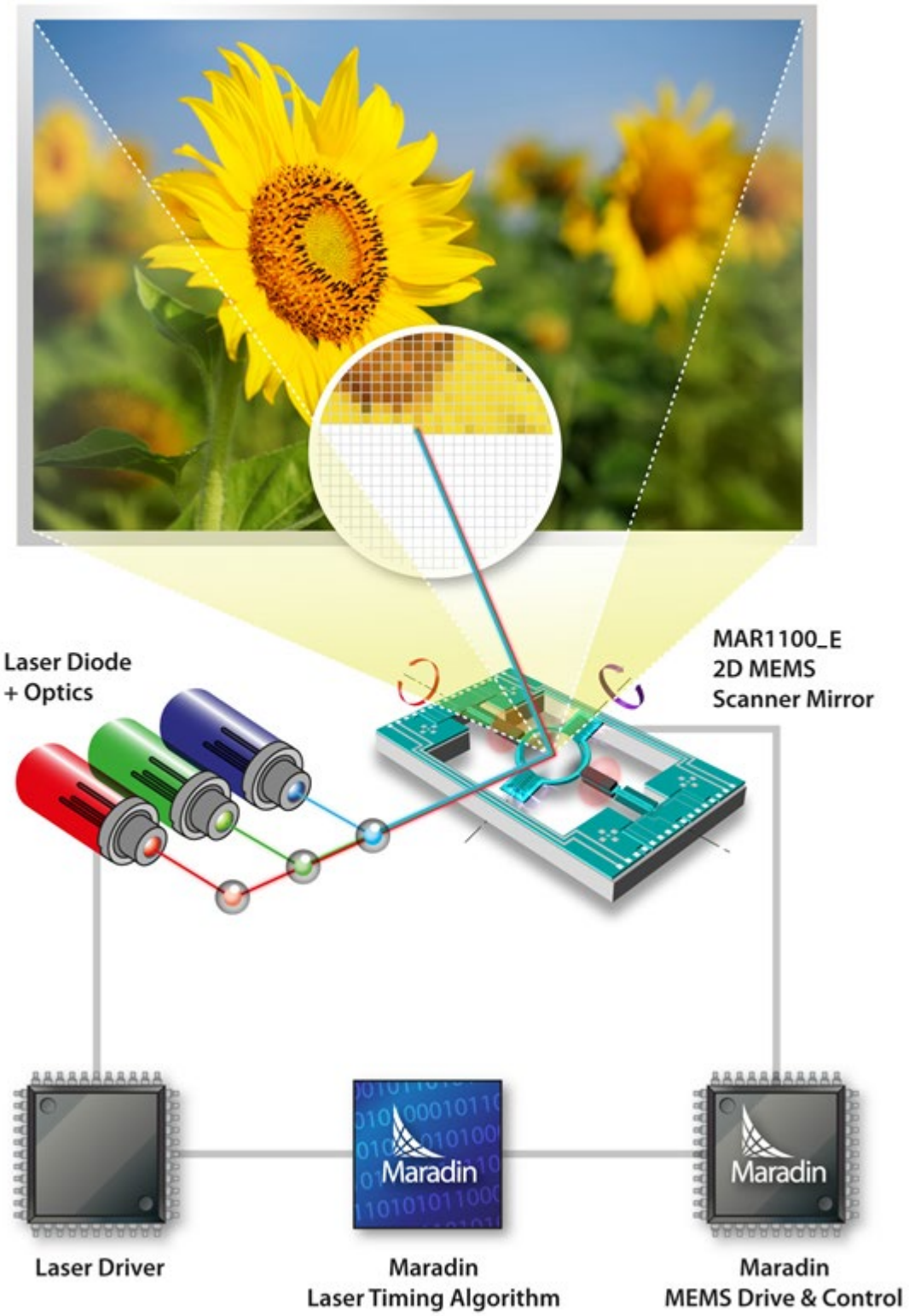


Figure 1: System Block Diagram

SYSTEM CHARACTERISTICS

	Parameter	Min	Typical Value	Max	Unit	Remarks
General	HFOV - Horizontal Optical angle	12		45	Deg.	
	VFOV - Vertical Optical angle	3	17	30	Deg.	
	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		10x5.5x4.6		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	17	22	Deg.	
	Mirror reflectance	90		99.5	%	Wavelength dependent
	Overall reflectance	84		94	%	Mirror and Optical window
	Wavelength range for reflection	400	450-700	1550	nm	Any wavelength upon request
	Laser spot size on mirror			0.7	mm	

OPTO-MECHANICAL INTERFACE

Scanning module

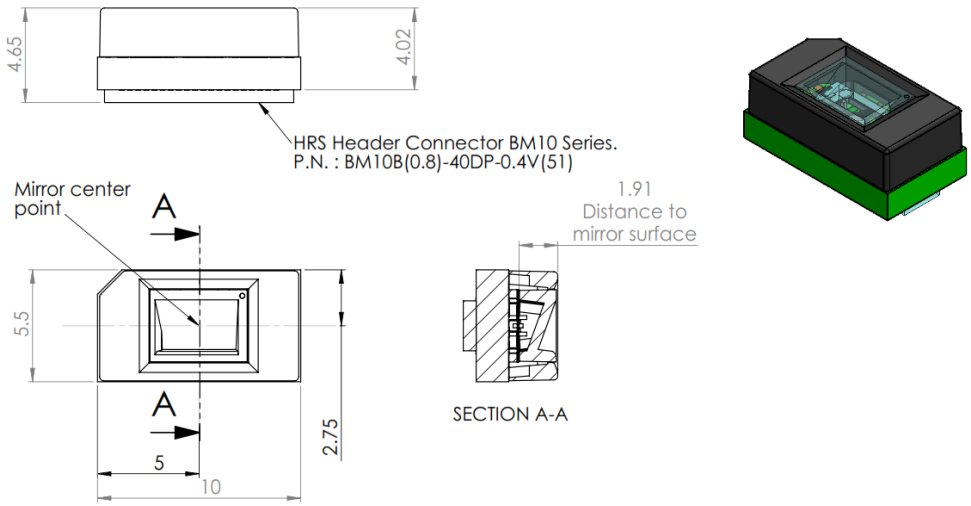


Figure 2: Scanning Head Module General View

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_E enables typical projection of a 45[deg]x17[deg] FOV. The laser should be positioned according to the instructions detailed in Figure. For higher projection angles this should be modified accordingly.

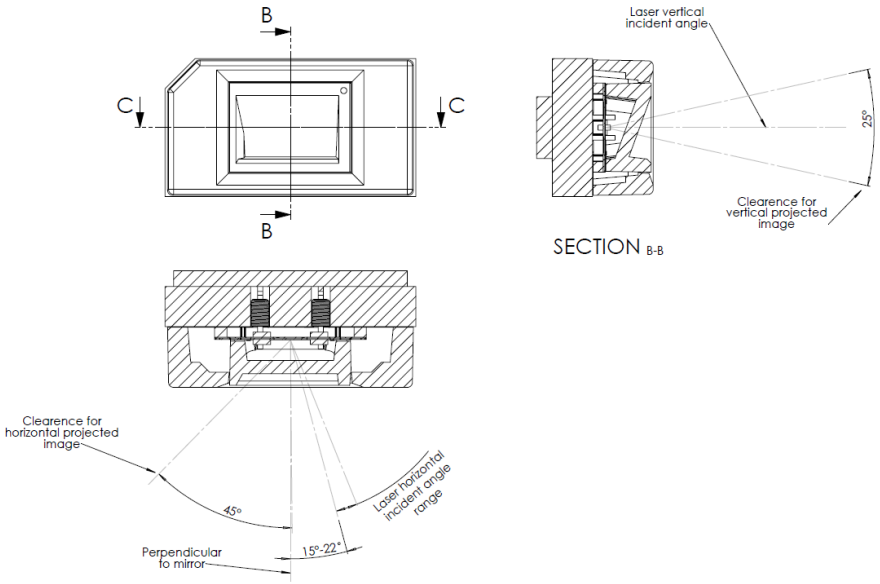


Figure 3: Scanning Head Module General View

IMPORTANT NOTE

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