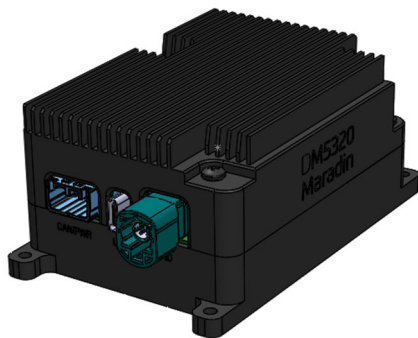


# DM005320\_CC110

## MARADIN 2D MEMS BASED LASER PROJECTION EVALUATION KIT FOR CUNSUMER APPLICATION

The DM005320\_CC110 is the industry's first MEMS-based laser projection evaluation kit, supporting an all-in-one digital controller for laser scanner and video. The laser projection evaluation kit utilizes a high resolution designed MAR1200 MEMS scanning mirror, compact RGB laser module and electrical interfaces.

The MAR1200 MEMS family has a high refresh rate of up to 120mHz and a wide optical field of view (FOV), which makes it a suitable choice for LBS systems that need large images or large scanning areas.



The MAR5320 laser projection evaluation kit revolutionizes MEMS and video controllers, to be a single chip solution, utilizing more accurate and flexible control schemes than current state of the art controllers, resulting in improved projection performance and image quality. The MAR5320 all-digital controller produces unprecedented operational

stability despite temperature changes and MEMS manufacturing tolerances.

The DM5320\_CC110 is provisioned with a full Light Engine comprised of MAR1200 and RGB lasers in a compact package.

### THE KIT INCLUDES:

- MAR5320 unify digital controller for MEMS and video + EL000350.X MEMS extender
- Light Engine module - MAR1200 MEMS scanner optically packed with RGB lasers
- API for direct system control
- Windows demo control application

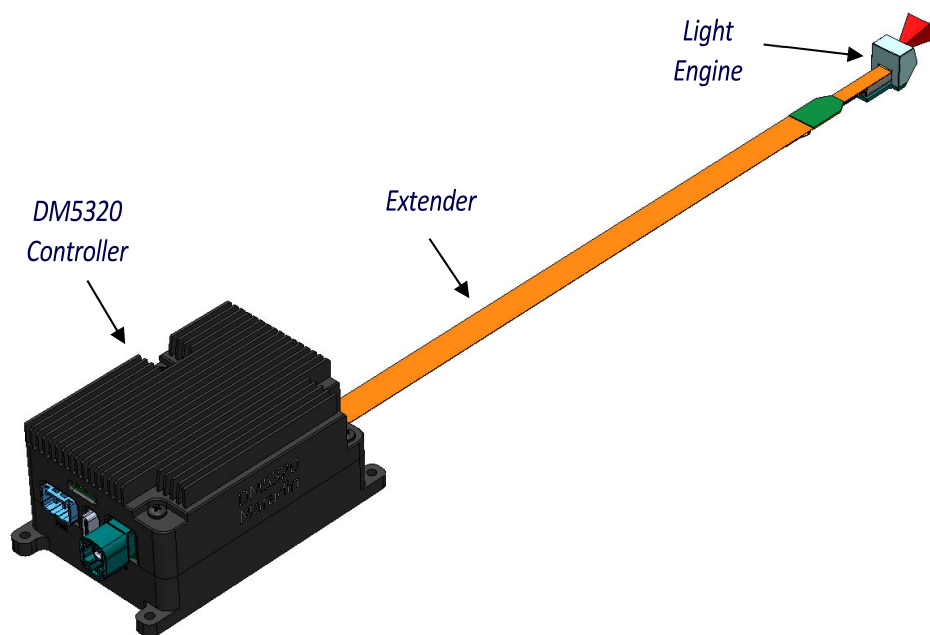


Figure 1: DM5320\_CC110 – General View

## SYSTEM CHARACTERISTICS

#	Parameter	Min	Typical Value	Max	Unit	Remarks
General	Scan type		Raster, Progressive			
	Frame rate	10	60	200	Hz	
	Video input type		LVDS			Via FPD link III
Image	Resolution (H)	1	1280	1440	Pixel	Horizontal
	Resolution (V)		720		Pixel	Vertical
	Optical angle (H)		40	50	Deg.	HFOV – image size
	Optical angle (V)		30	30	Deg.	VHOV – image size
	Throw ratio		1.2	1		Distance/diagonal FOV
	Color resolution		24		bit	RGB
	Position error			+/-0.5	Pix. (typ.)	Both vertical and horizontal

Table 1: Image Properties

#	Parameter	Min	Typical Value	Max	Unit	Remarks
Controller	LxWxH		110x66x46.6		mm	
	Mounting Holes diameter		3.4		mm	X4
Light Engine	LxWxH		23.6x13x17.7		mm	
	Mounting Hole diameter		2.4		mm	
	Mounting Threads		M1.6x0.35		mm	X2
MEMS (MAR1200)	LxWxH		11.4x6x6.1		mm	For additional info see MAR1200 datasheet
	Effective mirror size (H)		1		mm	
	Effective mirror size (V)		1.1		mm	Vertical direction for Y torsion bar
MEMS Extender (FPC EL000350.X)	length		300		mm	
	Width			11.5	mm	Available models: V, RA, and H

Table 2: Physical Properties

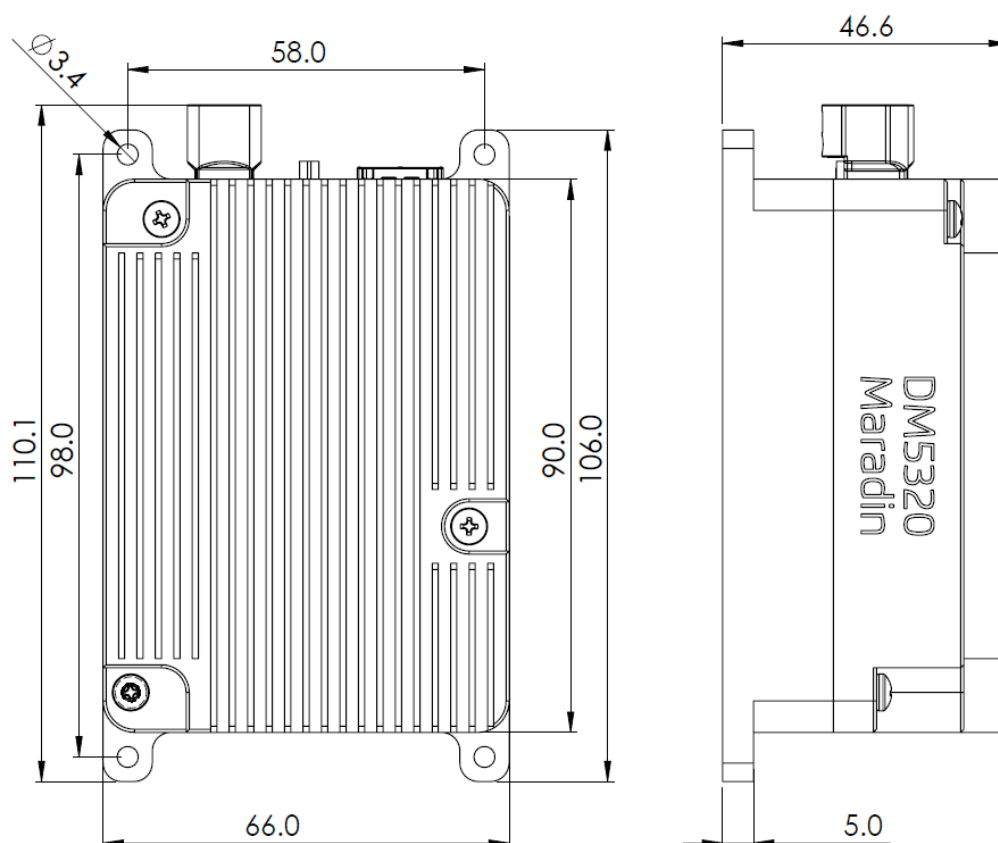


Figure 2: Controllers Package Mechanical Drawing

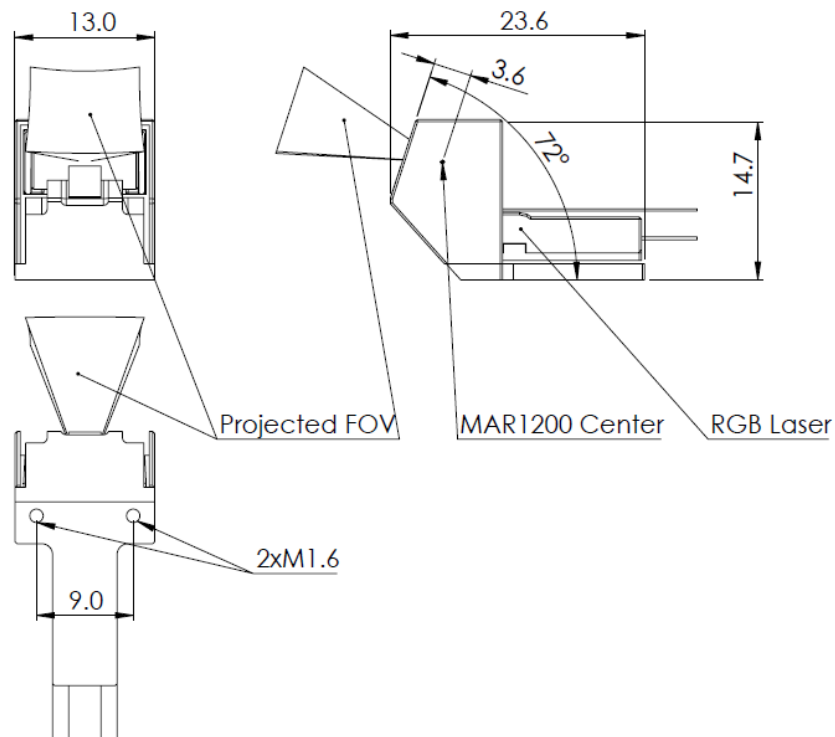


Figure 3: Light Engine Mechanical Drawing

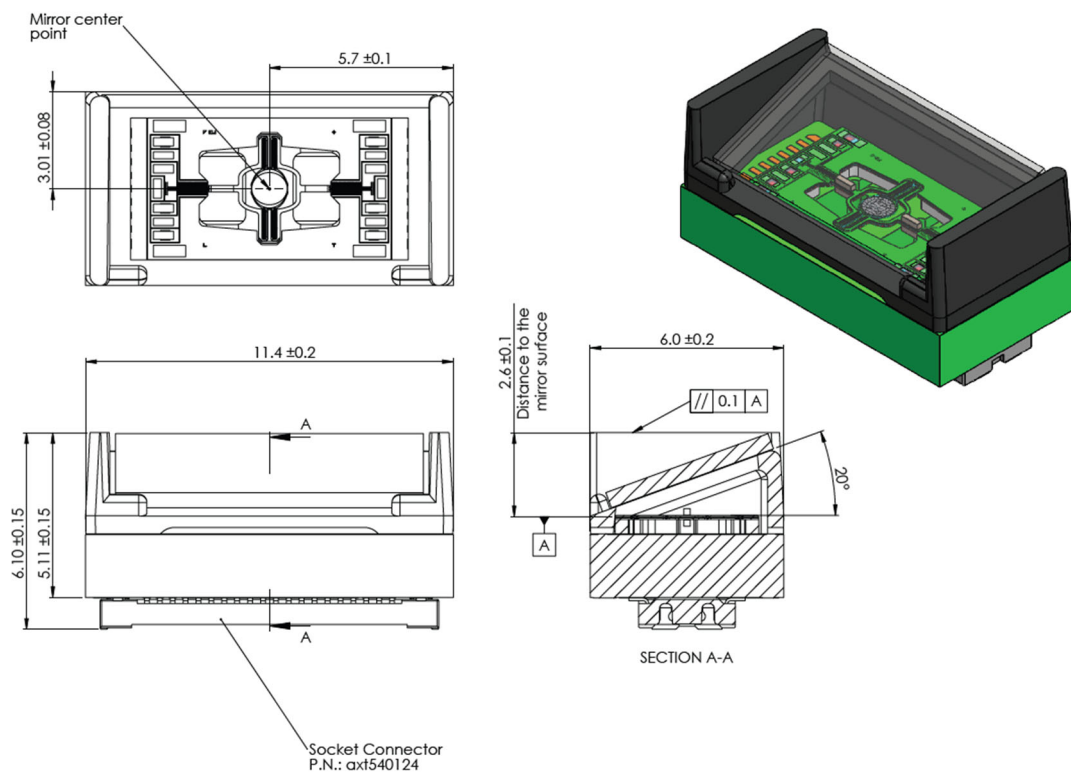


Figure 4: MAR1110.E Mechanical Drawing

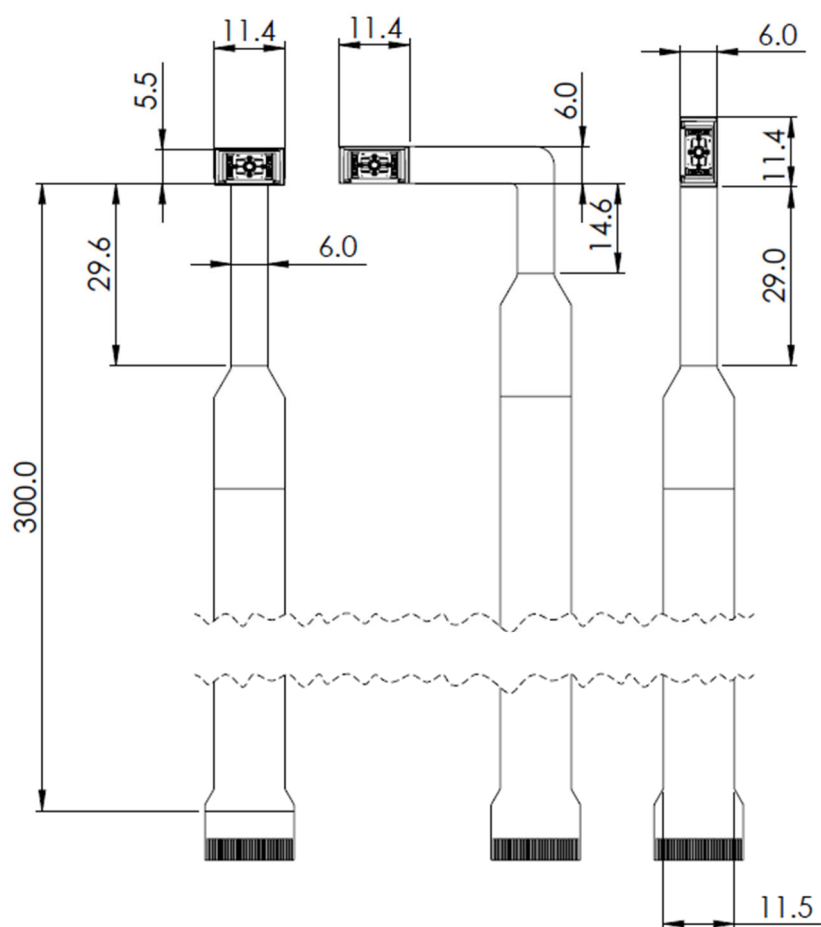


Figure 5: EL000350.X Mechanical Drawing (models from left to right: V, RA, and H)

#	Parameter	Min	Typical Value	Max	Unit	Remarks
Light Engine	Laser illumination		10	15	lm	
	Lasers wavelength (RGB)		635, 520, 455		nm	
MAR1200 Optical Characteristics	Mirror reflectance		90	98	%	For 400~700nm
	Overall reflectance	83		94	%	Including package
	Wavelength range for reflection	400		700	nm	
	Laser input diameter		0.7	0.8	mm	

Table 3: Optical Properties

#	Functionality	Interface details
PWR	Power supply	12V/2A; MX81A004NF2R300 – 4 pins connector
USB	System control communication via UART	Demo parameters configuration USB type C connector
Video interface	Video input data via LVDS – FPD III	Input resolution: Typical 1280x720; Maximal 1920x1080 FAKRA high-speed data 4POS connector
Laser diodes	Laser diodes connection	Drive and control 3 different laser diodes – RGB

Table 4: Electrical Interfaces

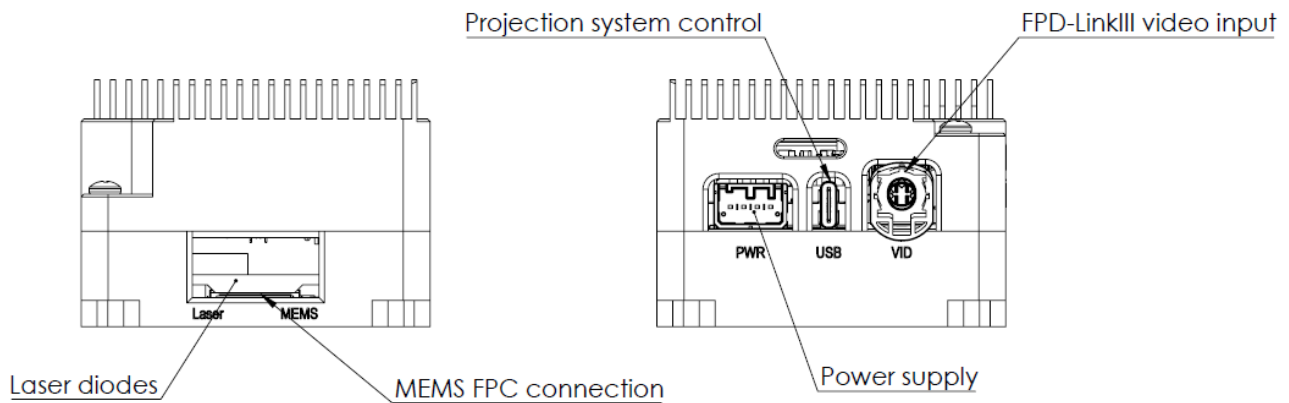


Figure 6: Controllers Electrical Interfaces

**\* Upon special request, Maradin can quote and provide HDMI to FPD Link converter**

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