MAR2000 – MARADIN MEMS DRIVE AND CONTROL BOARD

The **MAR2000** is a FPGA based Drive and Control board. It is designed for Maradin's **MAR1800S/L** and **MAR1500** 1D MEMS based scanning mirrors, for variety of laser steering applications.

The MAR2000 is a FPGA based drive and control programmable board serves mainly the MAR1800S/L and MAR1500 1D mirrors. It is a versatile, configurable, and enables customization and adaptation for variety of scanning applications.

The MAR2000 has a full controlled, 1D electro-magnetic driving circuit. The driver is based on a full bridge driver, and could serve different scanning regimes as: Sine waveform Oscillations, Ramp, Steps, Point to point etc.

The MAR2000 utilizes the MEMS mirrors' capacitive sense signals for feedback control, with high accuracy. As the feedback control loop is designed within the FPGA, flexibility and versatility of the design is achieved.

The FPGA based controller is programmable, thus easily to comply with different scanning regimes. It also serves as a Digital front end to communicate with the MEMS using a Graphic User Interface (GUI).
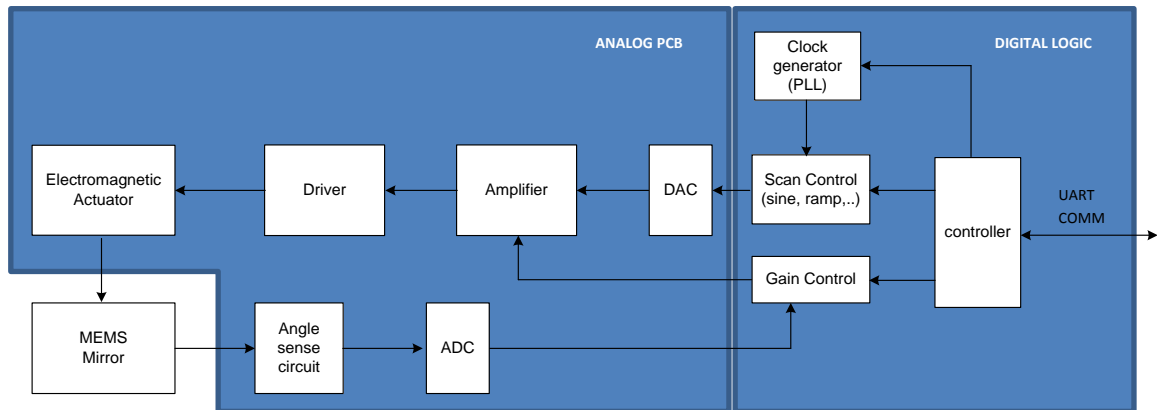
The MAR2000 could be as a 1D Controller or in a "master-slave" configuration for 2D designs. The MAR2000 communication with the Host is through a standard UART interface.
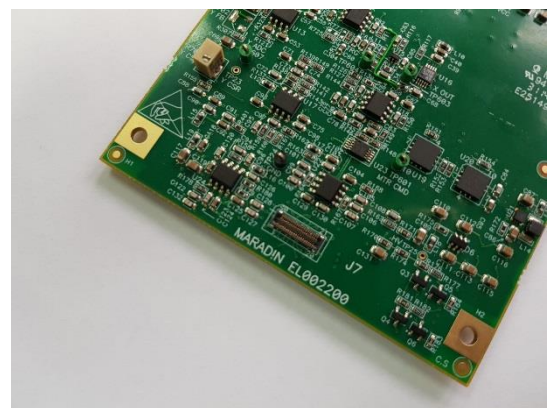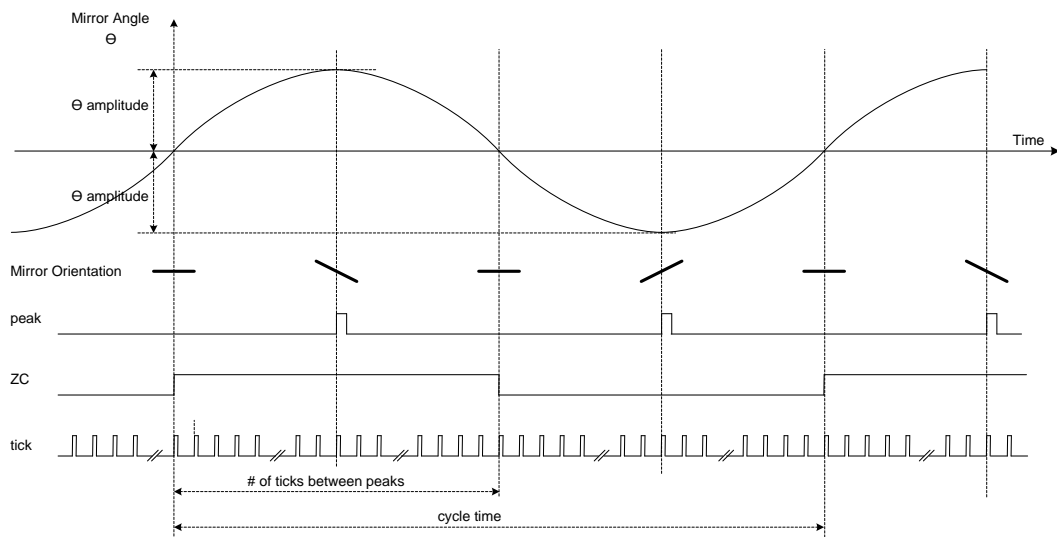
TYPICAL APPLICATIONS

MAR2000 BLOCK DIAGRAM

MAR2000 OCILLATIONS TIMING DIAGRAM

FEATURES

- Powerful Full Bridge Electromagnetic driver
- Closed Loop feedback control capabilities (digital/analog logic)
- Low frequency noise reduction (1/F) by utilizing modulation of sensor signal
- Support different scanning regimes: Sine, Step, Ramp
- Option to have "master-slave" configuration for 2D applications
- Sync signals output flexible design (peak, zero-cross, angle indication, alarm etc.)
- UART/USB interface with external Host
- 5V supply

ELECTRICAL CHARACTERISTICS

Parameter		Min	Typ.	Max	Unit	Remarks
General	Pixel position repeatability	0.2	1		mRad	For MAR1800S/L and MAR1500
	Alarm		1	3	mSec	Sensor failure
	Dimensions		8x12		cm	
	Input Supply Voltage	4.8	5	5.2	V	
	Power Consumption		2		W	
PLL Sense	PLL resonance trucking Frequency of MEMS		±0.5		Hz	
	Modulation Frequency		5		MHz	
	A2D Resolution		13		Bit	
Drive	D2A Resolution		12		Bit	
	Driving current		±500		mA	Full bridge driver
	Programmable LUT					Multiple scan regimes

IMPORTANT NOTE

CONTACT DETAILS

2 HaCarmel St. P.O. Box 56, Yokneam 2609201, Israel

Tel. +972 (4) 627 3653 Fax. +972 (4) 959 0327

info@maradin.co.il

www.maradin.co.il