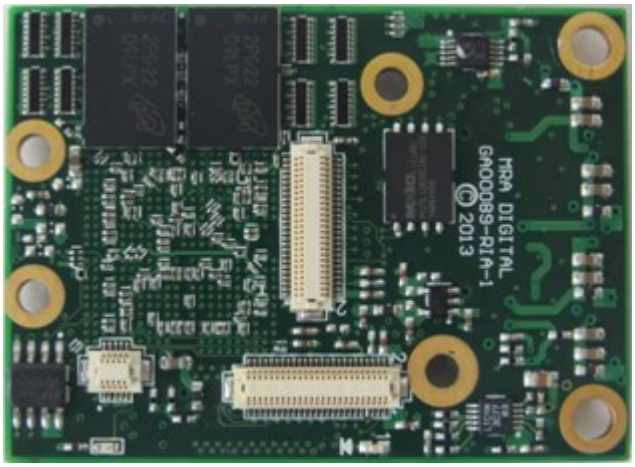
High Performance Low Power DDR2 OLED/Video Driver Board Datasheet *(rev 1.0)*

Features

Altera Cyclone III FPGA in 484-pin FBGA 23 x 23 mm package. Many configuration options.	32-bit DDR2 interface capable of providing 1.2 Gb/sec Bandwidth between FPGA and DDR2 Memory.
Small Form Factor (55.88 x 40.64 mm)	Multiple Video Inputs (HDMI, DVI, Analog RGB, Digital RGB, RS 170, PAL, NTSC, and much more)
32 MB DDR2 SDRAM (32M x 32) memory	128 M-Bit SPI Flash Memory for non-volatile storage
Security EEPROM for IP and Clone Protection	Dual 1 MSPS Analog to Digital Convertors

DDR2 OLED/Video Driver

DDR2 OLED/Video Driver (Top Side)



The DDR2 OLED/Video Driver board is based on Altera Cyclone III EP3C40U484 FPGA, 32Bit DDR2 external memory and is ideally suited for applications which require high performance and low power consumption in a small form factor.

Altera EP3C40 FPGA is a right mix between high performance and low cost. It provides 16K—120K LEs, 126 multipliers, 4 PLLs and 1.1 Mbits of embedded memory. The 32-bit interface between the FPGA and DDR2 memory provides an effective bandwidth of 1.2 GB/s and is ideally suited for applications that requires data buffering along with high speed parallel processing. The DDR2 OLED/Video Driver can be configured with the following FPGA densities, 16K, 40K, 55K, 80K, and 120K LE's. This wide range of configuration options enables it to be the right choice for many embedded applications .

In addition to its technical characteristics, the DDR2 OLED/Video driver board is designed to support one or two eMagin VGA, SVGA, SXGA and WUXGA OLEDs and its positioned to support monocular, binocular and stereoscopic applications. OLEDs can be installed directly on the PCB or remotely located up to 5 feet away using our extension cable. When using the remote option, the interface board for the OLEDs are the same as the OLED; and thus solves the most challenging packaging and space limited requirements.

In conjunction with its outstanding OLED and performance capabilities, the DDR2 OLED/Video Driver is designed to be modular and therefore supports all of our video input modules.

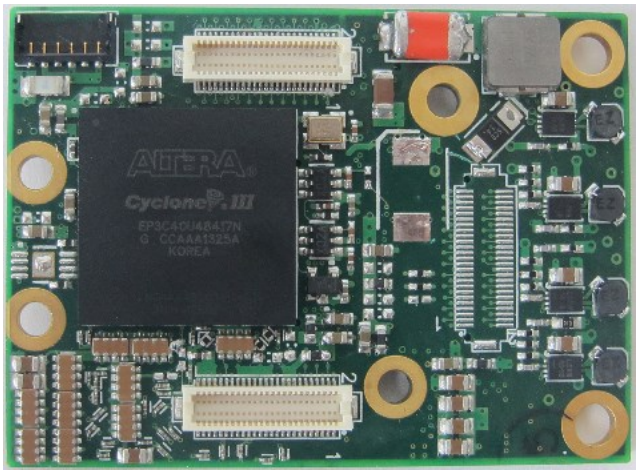
Our video input modules are designed to support direct connectivity to HDMI, DVI, Analog RGB, Digital RGB, PAL, NTSC, RS170, and LVDS. Contact us for video options not listed within this document.

Depending on the configuration, up to 4 HDMI or 8 RS170 video channels can be simultaneously connected and processed by the DDR2 OLED/Video Driver.

The DDR2 OLED/Video is also with a plus options which includes the following capabilities:

1. Frame Rate Conversion
2. Image Cropping and Shifting
3. Content Viewable Screen Saver
4. Video Up-Scaling & Down-Scaling
5. Test Images
6. Custom Video Processing (Picture-in-Picture, Split Screen, etc.)- Contact Us

DDR2 OLED/VideoDriver (Bottom Side)



The built-in micro controller to allows for custom applications features, such as the addition of dials, push buttons and other external devices and interfaces.

Our USB base PC application and configuration cable provides calibration adjustment for, color gain/offset, brightness, image orientation, firmware upgrades and other register values.

Power Consumption

Input Voltage	3.5 – 24V DC
Power Consumption	Depends of Configuration

Input Video Format

HDMI, DVI, Analog RGB, Digital RGB, LVDS	VGA, XGA, SXGA, up to 120Hz refresh rate
RS 170, NTSC, PAL	Interlace or Progressive

EDID

Default	1280x1024, Customizable

Software Configuration

USB - PC Application	Control Brightness
	Gamma Updates
	Firmware Upgrades
	Auxiliary Input/Outputs

Mechanicals

Dimension (L x W)	55.88 x 40.64 mm

www.mradigital.com - sales@mradigital.com 443-224-8955

MicroHDMI as Analog VGA Input	
Pin #	Description
1	Not connected
2	Not connected
3	Red
4	GND
5	Not connected
6	Green
7	GND
8	Not connected
9	Blue
10	GND
11	Not connected
12	Hsync
13	GND
14	Vsync
15	Not connected
16	GND
17	SCL
18	SDA
19	5v Power

Micro USB Pinout	
Pin #	Description
1	
2*	**Tx or Digital IO (3.3V CMOS)**
3*	**Rx or Digital IO (3.3V CMOS)**
4	N/C
5	Ground
***Note**	**Pins 2 and 3 are multiplexed with Digital IO ports. Therefore if they are used for UART communication, then the are not available as Digital IO. If they are used as Digital IO they are not available as UART lines.**

HDMI to Analog VGA Cable Adapter

USB Configuration Cable

Wireless Low Latency Video (WLLV)

Wireless Low Latency Video – Make your OLED based product wireless by using MRA Digital wireless video technology. Transmitting up to 1080p with 1-2 frame of latency at ranges over 100 meters with Wi-Fi and miles using microwave or Wi --Max. Contact us for more info.

Ordering Information

Part Number	Description
WUXGA-1912SM-HDMI-DDR2	Single HDMI Input with Remote WUXGA OLED
WUXGA-1915DM-HDMI-DDR2	Single HDMI Input with Remote Located Dual WXUGA OLEDs
WUXGA-1915DS-HDMI-DDR2	Dual HDMI Input with Remote Located Dual WUXGA OLEDs
SXGA-1012SD-ARGB-DDR2	Single analog RGB Input with SXGA OLED
SXGA-1015SM-ARGB-DDR2	Single analog RGB Input with Remote SXGA OLED
SXGA-1015DM-ARGB-DDR2	Single analog RGB Input with Remote Located Dual SXGA OLEDs
SXGA-1015DS-ARGB-DDR2	Dual analog RGB Input with Remote Located Dual SXGA OLEDs
SXGA-1012SD-HDMI-DDR2	Single HDMI Input with SXGA OLED
SXGA-1015SM-HDMI-DDR2	Single HDMI Input with Remote SXGA OLED
SXGA-1015DM-HDMI-DDR2	Single HDMI Input with Remote Located Dual SXGA OLEDs
SXGA-1015DS-HDMI-DDR2	Dual HDMI Input with Remote Located Dual SXGA OLEDs
SXGA-1012SD-DRGB-DDR2	Single Digital RGB Input with SXGA OLED
SXGA-1015SM-DRGB-DDR2	Single Digital RGB Input with Remote SXGA OLED
SXGA-1015DM-DRGB-DDR2	Single Digital RGB Input with Remote Located Dual SXGA OLEDs
SXGA-1015DS-DRGB-DDR2	Dual Digital RGB Input with Remote Located Dual SXGA OLEDs
Options	Commercial Temp Option (0 — +70 C) add “-CT” to Part number
	Industrial Temp Option (-40 — +85 C) add “-IT” to Part number
	PP—Plus Option (for custom firmware and image processing builds)
NOTE:	Other Configurations are available Contact Us for more info.