VP7-M LCD Controller

Automatic analog and digital input mode detection with mode-independent or mode-specific area-of-interest control, re-sizing, and frame rate conversion for resolutions up to UXGA.

VP7-M LCD Controller

The VP7-M LCD Controller provides a direct connection between analog and digital DVI video sources and a wide range of AMLCD display modules.

User Programmable Modes

Modes define both the electrical form (RGB, DVI, etc) and the timing of a video input. With fully customizable input mode definitions, panel power sequences, and output timing parameters, you can configure the VP7-M for your unique application.

Mechanically identical to the VP-7

The VP7-M is form, fit and function compatible with the VP7 and is similarly well-suited for embedded applications. Its low profile design and locking high-density Hirose connectors make the VP7-M ideal for space-constrained displays.

Supports Standard and Custom Video

In addition to converting analog RGB and DVI for TFT panels, the VP7-M supports interlaced video formats such as RS-343, RS-170, and STANAG. The VP7 can also be programmed to support custom or non-standard video formats.

Powerful Configuration Utility

The VP7-M configuration utility allows you to define:

- A prioritized list of all applicable video input modes that will be automatically detected,
- mode-independent parameters, such as scaled (output) area-of-interest and output synchronization method
- Sequences for power up, loss of video and video detection.

Features

Based on state-of-the-art processing technology, the VP7-M LCD Controller capabilities include:

Automatic video input mode detection

- Detects internally programmed, prioritized input modes and automatically converts and scales the video in 1-2 seconds.
- “Mode dependent” and “Mode independent” conversion parameters are supported.
- User-selectable “electrical form break” allows a mode switch when a higher priority input mode is detected on a different electrical input. *For example, assume that a DVI input mode is higher priority than the currently active RGB input mode. If the DVI interface becomes active with a valid mode, the VP7-M will switch to the higher priority DVI input mode.*

Video Conversion

- Digitization of computer-generated video sources with separate syncs or sync-on-green
- Drives commercial AMLCDs (up to UXGA) and inverters
- Non-interlaced and interlaced RGB inputs and outputs
- DVI (TMDS) inputs
- Digitization and de-interlacing of consumer video formats, including NTSC and PAL (with optional mezzanine board)
- Frame rate conversion

Scaling, Windowing, and Area-of-Interest Control

- Independent horizontal and vertical scaling
- Programmable image position within larger background area for both input and output
- Incoming video gain and offset adjustments
- Image can be reversed left to right and flipped top to bottom

Programmable

- Remote interface for both initial configuration and, if required, operational control
- Programmable power and “loss of video” sequences with user-defined “On Screen Display” Messages
- Fine phase clock adjustment for pixel sampling
- Interfaces to most common inverters

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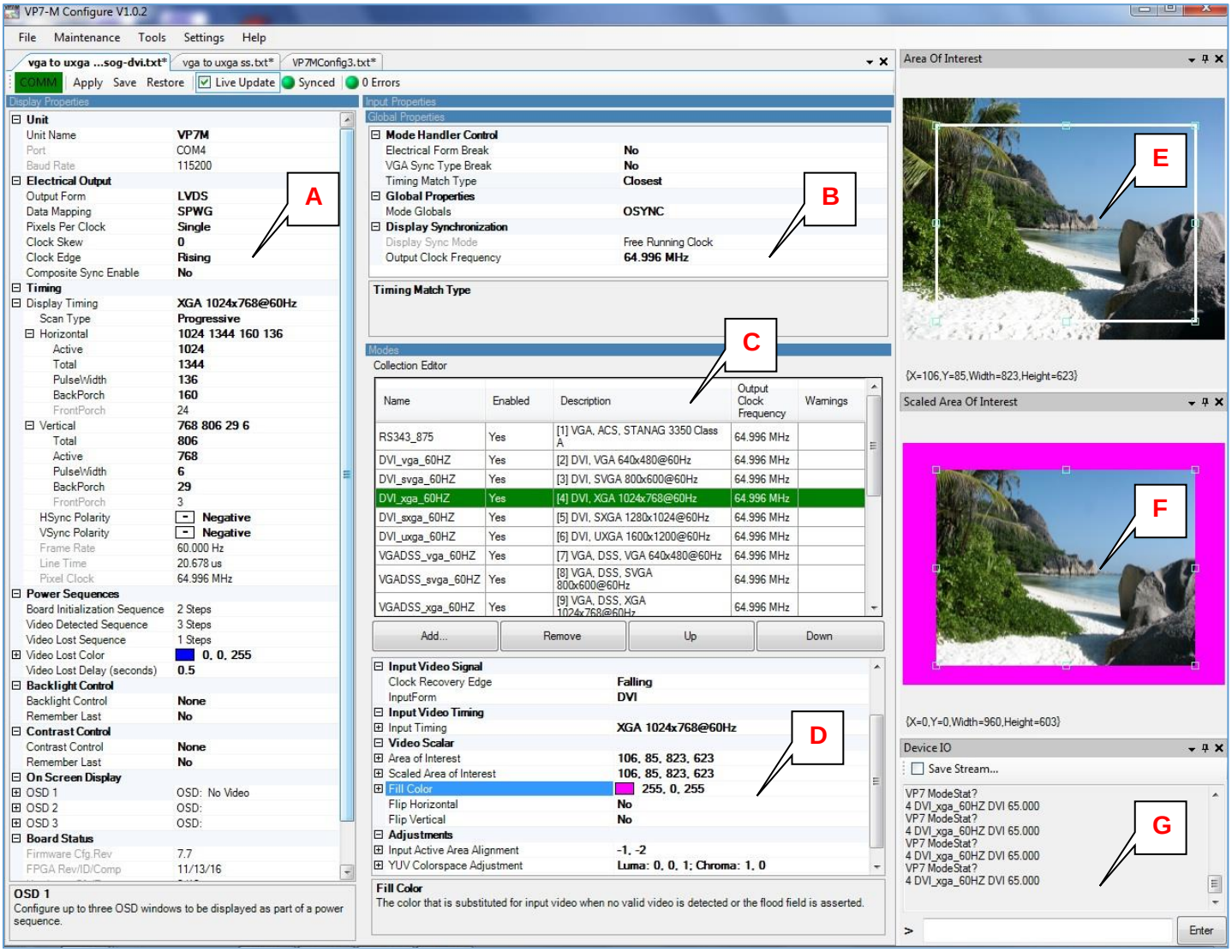
VP7-M Configuration

The VP7-M Configuration utility is supplied to customers and installs on Windows platforms. The utility connects to the VP7-M via an available RS-232 serial cable.



Section		VP7-M Configuration Utility Description
A	Display Properties	Defines electrical format and timing to the attached AMLCD panel. Includes definition of backlight control and power up, power down, and loss of video sequences. Also allows user to set up appropriate On Screen Display messages during various sequences.
B	Global Properties	Definition of mode independent global properties which are applied independently of the current input mode. For example, an independent mode property may include “scaled area-of-interest”, the area within the panel active area to which all input areas-of-interest are mapped.
C	Modes	User defined, prioritized input modes.
D	Mode Editor	Definition of each mode’s conversion parameter, including electrical form (DVI, RGB, NTSC, etc.) input area-of-interest, etc.
E	Area of Interest	Graphical tool to support definition of the input area-of-interest within the active area of the currently selected mode.
F	Scaled Area of Interest	Graphical tool to support definition of the scaled area-of-interest within the active area of the display (attached panel).
G	Device I/O	Debug tool, shows the RS-232 communication between the VP7-M configuration tool and the VP7-M.

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VP7-M LCD Controller

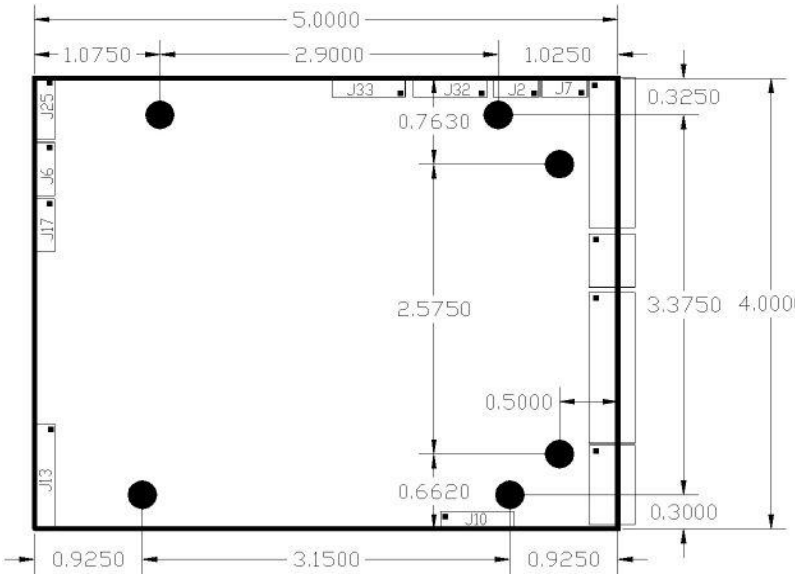

Figure 1: VP7-M Mounting Hole Dimensions

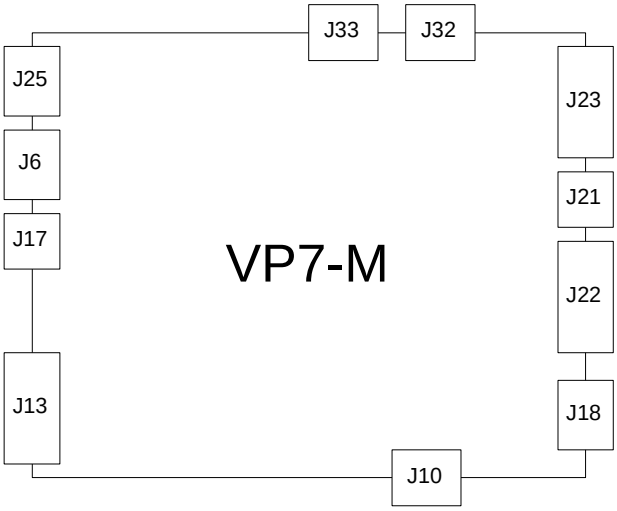

Figure 2: VP7-M Connector Diagram

Spec Summary

Physical Dimensions	5" x 4" x 0.8"
Temperature Range	Operating: 0°C to +70°C (additional data available) Storage: -40°C to +100°C
Video Inputs	Computer - Up to UXGA resolutions @ 60Hz - Analog Input (162 MHz) DVI Input (165 MHz) - Standard and custom timing - Syncs (Digital Separate, Digital Composite, Analog Composite) NTSC and PAL (with optional mezzanine)
Video Outputs	Single (24 bit panel): Dual (48 bit) bus panels: Single / Dual LVDS outputs Pixel rate single = 135 MHz Pixel rate dual = 162 MHz
Input Power	+12 VDC or +5VDC, 5.5 Watts
Control Interface	RS-232

Connector	Hirose	Description
J6	10 Pin DF11	RS-232 Control
J10	14 Pin DF11	Backlight Inverter Control
J13	22 Pin DF11	Power and Contrast
J17	10 Pin DF11	Analog Video Input
J18	16 Pin DF11	Discrete I/O Output
J21	10 Pin DF11	Control Output to Display
J22	32 Pin DF11	Digital Data Output
J23	32 Pin DF11	Digital Data Output
J25	12 Pin DF11	TMDS Input
J32	14 Pin DF11	LVDS Output
J33	14 Pin DF11	LVDS Output

VP7-M Operation

Typically, the VP7-M operates as follows:

1. Upon power up, the VP7-M configures itself based on its internal BIOS
2. When a valid video input mode is detected, the VP7-M applies power to the display per the power sequence defined in the setup BIOS.
3. If a higher priority input mode is detected and "electrical form break" is enabled, the VP7-M will re-configure to capture the new video input.
4. If video is lost, the VP7-M can power down the display, drive a pre-defined color (blue-screen), or some other function as defined in the BIOS created with the configuration utility.

Additional Resources

To view our full line of LCD Controllers or other products, visit our website at:

www.westardisplaytechnologies.com

Contact Us

Call us for additional product info and pricing.

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