

## VP10 LCD Controller

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

### VP10 LCD Controller

The VP10 LCD Controller provides a direct connection between analog and digital DVI video sources and a wide range of AMLCD display modules.

### Enhancements

The VP10 includes several enhancements over our flagship VP7 series. In particular, the VP10 offers:

- Resolutions up to WUXGA,
- RoHS compliance, and
- Improved re-sizing
- Dual TMDS inputs
- NTSC and PAL inputs are standard

### 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 VP10 for your unique application.

### Supports Standard and Custom Video

In addition to converting analog RGB and DVI for TFT panels, the VP10 supports interlaced video formats such as RS-343, RS-170, and STANAG. The VP10 can also be programmed to support custom or non-standard video formats.

### Powerful Configuration Utility

The VP10 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 VP10 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 VP10 will switch to the higher priority DVI input mode.*

#### Video Conversion and Synchronization

- Digitization of computer-generated video sources with separate syncs or sync-on-green
- Drives commercial AMLCDs (up to WUXGA) and inverters
- Non-interlaced and interlaced RGB inputs and outputs
- Dual DVI (TMDS) inputs
- Digitization and de-interlacing of consumer video formats, including NTSC and PAL
- Frame rate conversion; free running or frame synced outputs

#### Scaling, Windowing, and Area-of-Interest Control

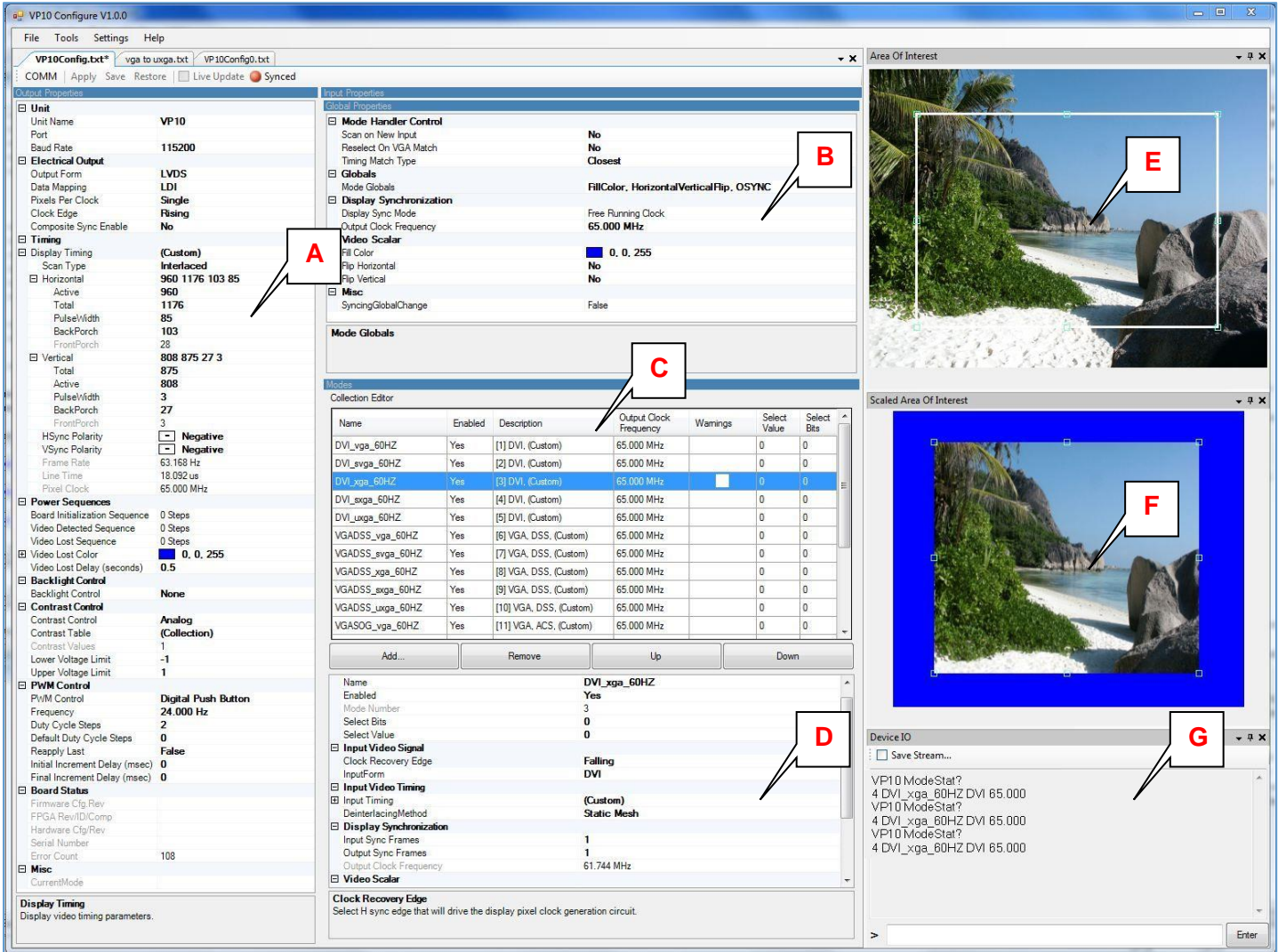
- Unlimited, independent horizontal and vertical scaling
- Programmable image position within larger background area for both input and output
- Incoming video gain and offset adjustments
- Image can be reversed left to right and flipped top to bottom

#### 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

## VP10 Configuration

The VP10 Configuration utility is supplied to customers and installs on Windows platforms. The utility connects to the VP10 via an available RS-232 serial cable.



Section	VP10 Configuration Utility Description
A	Display Properties
B	Global Properties
C	Modes
D	Mode Editor
E	Area of Interest
F	Scaled Area of Interest
G	Device I/O

# VP10 LCD Controller

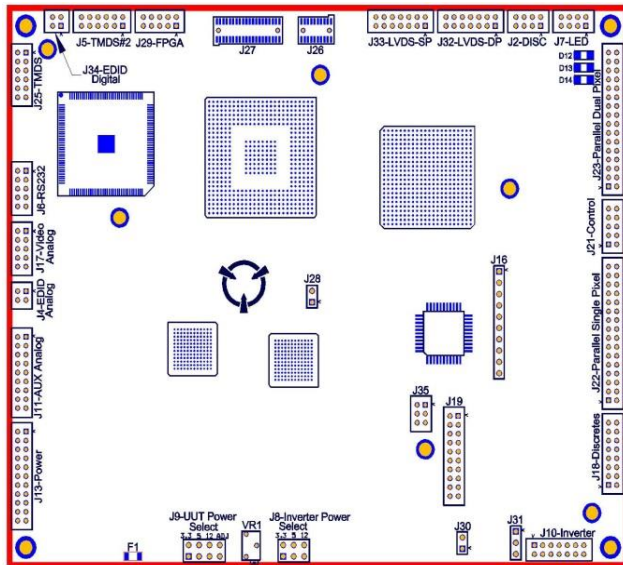


Figure 1: VP10 Connector Diagram

## Spec Summary

Physical Dimensions	5.9" x 4.9" 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 WUXGA resolutions @ 60Hz - Analog Input (162 MHz) DVI Input (165 MHz) - Standard and custom timing - Syncs (Digital Separate, Digital Composite, Analog Composite) NTSC and PAL
Video Outputs	Single (24 bit panel): Dual (48 bit) bus panels: Single / Dual LVDS outputs Pixel rate single = 87.5 MHz Pixel rate dual = 162 MHz
Input Power	+12 VDC, 10 Watts
Control Interface	RS-232

## VP10 Connectors

Connector	Type	Description	Connector	Type	Description
J2	08 Pin Hirose DF11	Discrete Input	J21	10 Pin Hirose DF11	Parallel Video Out Control
J4	04 Pin Hirose DF11	Analog EDID	J22	32 Pin Hirose DF11	Parallel Video Out Single Pixel Data
J5	12 Pin Hirose DF11	TMDS In, Channel #2	J23	32 Pin Hirose DF11	Parallel Video Out Dual Pixel Data
J6	10 Pin Hirose DF11	RS-232	J25	12 Pin Hirose DF11	TMDS In, Channel #1
J7	08 Pin Hirose DF11	LED Interface	J26	Factory Use Only	Factory Use Only
J8	06 Pin 0.1" Header	Inverter Power Select	J27	Factory Use Only	Factory Use Only
J9	08 Pin 0.1" Header	UUT Power Select	J28	Factory Use Only	Factory Use Only
J10	14 Pin Hirose DF11	Inverter Interface	J29	Factory Use Only	Factory Use Only
J11	18 Pin Hirose DF11	Analog Video In	J30	02 Pin 0.1" Header	Inverter Voltage Select
J13	22 Pin Hirose DF11	Power In	J31	3 Pin 0.1" Header	Inverter Potentiometer Select
J16	Factory Use Only	Factory Use Only	J32	14 Pin Hirose DF11	LVDS Output Single Pixel
J17	10 Pin Hirose DF11	VGA Video In	J33	14 Pin Hirose DF11	LVDS Output Dual Pixel
J18	16 Pin Hirose DF11	Discrete I/O	J34	4 Pin Hirose DF11	Digital EDID
J19	Factory Use Only	Factory Use Only	J35	Factory Use Only	Factory Use Only

## VP10 Operation

Typically, the VP10 operates as follows:

1. Upon power up, the VP10 configures itself based on its internal BIOS
2. When a valid video input mode is detected, the VP10 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 VP10 will re-configure to capture the new video input.
4. If video is lost, the VP10 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](http://www.westardisplaytechnologies.com)

## Contact Us

Call us for additional product info and pricing.

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