WinSystems®
STD BUS, CMOS STD BUS

LPM-MDVGA
MCM-MDVGA
SuperVGA & Flat Panel Card

FEATURES

- High-resolution, video controller supports:
  - Color STN, TFT and Dual-Scan Color STN panels with 8, 9, 12, 15, 16, 18, and 24-bit interfaces
  - Super VGA CRT video monitors
- Supports simultaneous CRT and LCD operation
- Hardware and BIOS compatible with VGA standards
- Integrated programmable linear address feature accelerates GUI performance
- Supports Panel resolutions including 800 x 600, 1024 x 768, and up to 1280 x 1024
- SMARTMAP ™ intelligent color to gray scale conversion enhances text legibility
- Text enhancement feature improves white text contrast on flat panel displays
- Supports non-interlaced CRT monitors with resolutions up to 1024 x 768 x 256 colors
- Available with 512KB or 1MB of video RAM
- Onboard EPROM with BIOS extension
- Panel auto-initialization and power sequencing
- Optionally, multiple MCM-MDVGA-M boards can be installed in a system for multiple video support
- Optional flat panel adapter kits are available that include power inverters, BIOS modifications and cables for specific panels
- 16-bit STD Bus interface

The MCM-MDVGA is a versatile Multi-Display VGA controller that supports a wide variety of flat panel LCD and CRT displays on the STD Bus. This module can display the same data on both a flat panel and on a VGA CRT simultaneously.

FUNCTIONAL CAPABILITY

STD Bus Interface - The MCM-MDVGA is the STD Bus and the LPM-MDVGA is the CMOS STD Bus version of the board. Programming, cable pin-outs, bus pin assignments and jumper configurations are identical for both cards. The LPM/MCM prefix indicates the card has the same features and functionality but different bus interface logic, power requirements and operational temperature range.

The LPM/MCM-MDVGA has a 16-bit STD Bus interface for maximum system performance. The LPM/ MCM-MDVGA is both I/O and memory mapped in accordance with PC-AT video standards.

Multiple Boards - As a factory option, up to 15 LPM/ MCM-MDVGA boards can be supported in a single card

cage. Contact the factory for the custom part number, pricing, and software drivers.

Video controller - The LPM/MCM-MDVGA is based upon the Chips and Technologies 65540/545 family of high performance flat panel/CRT controllers. The 65540/545 is fully compatible with the VGA graphics standard at the register, gate, and BIOS level. It provides backward compatibility with the EGA and CGA graphics standards without using NMIs.

Video Memory - An onboard 256KB x 16 DRAM provides 512KB of video memory. The amount of memory is a function of the desired screen resolution and maximum number of colors displayed. An additional 512KB can be installed.

CRT Video Interface - The CRT video output signals are wired to a 15-pin "D" and a 10-pin dual-in-line connector at the edge of the board. Simultaneous operation of the CRT and LCD is supported.

Flat Panel Display Support - The LPM/MCM-MDVGA supports flat panel display technologies including plasma, electroluminescent (EL), and single and dual scan liquid crystal (LCD). The controller will support mono and color displays.

FP-50 Interface - Since there isn't a standard electrical or mechanical interface for flat panel displays,

CRT Mode Resolution	Color [4]	Mono LCD Gray Scales [4]	DD STN LCD Colors [2,3,4]	9-Bit TFT LCD Colors [1,2,3,4]	Video Memory	Simultaneous Display
320x200	256/256K†	61/61	256/226,981	256/185,193	512KB	Yes
640x480	16/256K†	16/61	16/226,981	16/185,193	512KB	Yes
640x480	256/256K†	61/61	256/226,981	256/185,193	512KB	Yes
800x600	16/256K†	16/61	16/226,981	16/185,193	512KB	Yes with 1MB
800x600	256/256K†	61/61	256/226,981	256/185,193	512KB	Yes with 1MB
1024x768	16/256K†	16/61	16/226,981	16/185,193	512KB	Yes with 1MB
1024x768	256/256K†	61/61	256/226,981	256/185,193	1MB	Yes
1280x1024	16/256K†	16/61	n/a	n/a	n/a	1MB

Notes:
1. Larger color palettes and simultaneous color can be display on 12-bit, 8-bit and 24-bit TFT panels via the 65545 video input port.
2. Includes dithering.
3. Includes frame rate control.
4. Colors are described as number of simultaneous on-screen colors and number of unique colors available in the color palette.
† 256K colors assumes DAC output mode is set to 6 bits of R, G, and B. If DAC is set to 8-bit output mode, the number of available colors is 16M.

WinSystems developed a flat panel interface system configuration to work with the different interface signals, timing requirements and connectors that vary between panel technologies and suppliers. This solution consists of a standard 50-pin panel interface called the FP-50, a panel personality module, and cables.

The FP-50 video bus supports panels that require from 8 to 24-bits per pixel. It also has power, timing and control signals for various panel types. Finally, 4 lines are assigned to allow the MCM-MDVGA to read an ID jumper setting on the personality module so as to auto configure the BIOS for the correct panel type.

FPA - WinSystems has defined a personality module called the Flat Panel Adapter (FPA). Each panel requires a different adapter because of signal pin definition, power sequencing of backlight and panel power, contrast controls and cable connections. The FPA tailors the LPM/MCM-MDVGA controller to a specific panel. A FPA module is 3.6" x 3.8" and can be mounted on the LPM/ MCM-MDVGA. Alternatively, it can be mounted near the panel to keep the cable lengths short.

General features of the FPA include trimpots onboard to provide backlight brightness for the active matrix color TFT panels. Also a contrast control is installed for use with the passive color panel. Switching transistors sequence power to the panels. For a list of current panels supported or to request a FPA for your specific panel, contact an application engineer.

SPECIFICATIONS

Electrical
STD Bus Interface: 16-bit
Power: +5V ±5% @ 300 mA typ. (with no panel)
±12V may be required by the FPA board for a specific panel type.

Mechanical
Dimensions: 4.5" x 6.5"

Connectors
CRT: 10-pin on 0.100" grid & 15-pin "D-sub"
Panel: 50-pin dual on 0.100" grid

Environmental
Operating Temperature: 0° to +65° Celsius

ORDERING INFORMATION

LPM-MDVGA-512	CMOS STD Bus SVGA and flat panel controller with 512KB video RAM
LPM-MDVGA-1M	Controller w/ 1MB VRAM
MCM-MDVGA-512	STD Bus SVGA and flat panel controller with 512KB VRAM
MCM-MDVGA-1M	Controller w/1MB VRAM

Contact the factory for the current price, delivery, and status of the LPM/MCM-MDVGA panel interface kits.

WinSystems, Inc.