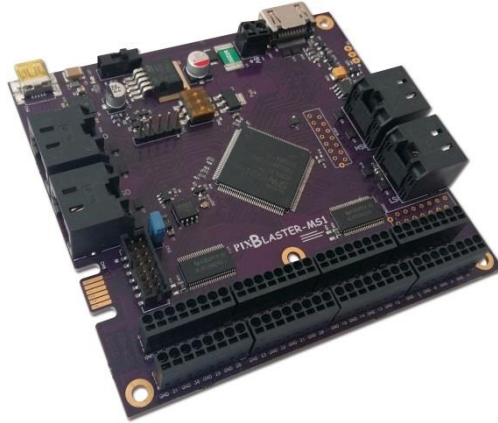# Pixblasters™ Video LED Strips Controller

ENABLES AFFORDABLE DIGITAL SIGNAGE FOR EVERYONE

The Pixblasters MS1 video LED controller connects to any computer and any operating system as an ordinary monitor to display the user-selected portion of the monitor image on up to 16,384 RGB LEDs at 60 frames per second (FPS). Multiple MS1 controllers can be easily chained to drive immense video displays built of hundreds of thousands of perfectly synchronized LEDs[1]. The Pixblasters MS1 displays any visual content with absolutely no programming required and with no burden on the driving computer that is free to run digital signage players, media players, and other software at the full speed. The LED displays controlled by the Pixblasters MS1 can be remotely managed anywhere in the world by virtually any digital signage software. With the MS1 LED controller, even those with minimal technical skills can build giant LED displays with no soldering and by using only simple tools like pliers, wire cutters and screwdrivers.

ANY COMPUTER & ANY OS

Raspberry Pi, PC, media boxes, phones… – connects to any computer as an ordinary monitor.

NO PROGRAMMING

Plug-in the monitor cable and the controller will smoothly drive LEDs at the maximum frame rate of 60 fps.

DISPLAY MANAGEMENT

Use any Digital Signage Software and add layered screen divisions, text, animations, video, RSS...
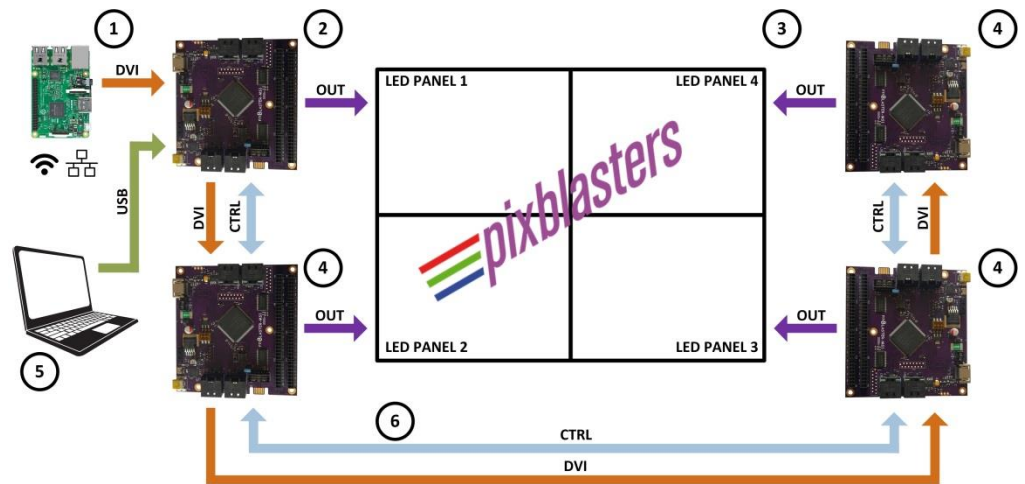
REMOTE CONTROL

Control it remotely anywhere in the world through network interfaces of the driving computer.

- Based on the Xilinx® Spartan®-6 XC6LX9-3 FPGA chip
- Includes the DVI® compatible video input with the on-board EDID flash and accepts the standard monitor cable
- Currently supports popular WS2811, WS2812, WS2812B, and SK6812 LED driver chips
- Supports different video input resolutions (max. 720p - 1280x720@60) and the RGB666 (256K colors) color format
- Drives up to 16,384 LEDs through 32 digital outputs that drive up to 512 LEDs each
- Supports wide range of output resolutions (H x V): 512 x 32 (native), 256 x 64, 128 x 128, 180 x 96 and others
- Integrates video input cropping and mirroring, multiple lines per output mode and LED gamma corrections
- Displays any graphics and video content – no limits on font types, animations, image and movie formats…
- Chained controllers can drive more than 200,000[1] of perfectly synchronized LEDs arranged in giant video displays
- Maximum LED display frame rate (60 FPS for WS2812B) is not affected by a number of controllers and attached LEDs
- Use common UTP cables (Ethernet) for video and control links between chained controllers
- Validated with different computers and different OSes: Raspberry Pi, PC, media boxes, phones and tablets…
- Can be remotely controlled anywhere in the world through the network interfaces of the driving computer
- The driving computer is free of LED controls and the size of the LED display does not influence its performance
- The driving computer can run digital signage players, media players, web kiosk applications, custom software, etc.
- Display content can be designed and remotely administrated by any Digital Signage Software[2]
- On-board Microchip PIC18F26J50 microcontroller enables updates and permanently stores the display configuration
- Fully configurable through a configuration menu on the PC connected via the USB cable
- New features can be added to deployed controllers through a simple firmware upgrade procedure
- Single MS1 can be easily configured as a master or as a slave controller by on-board DIP switches
- Snap-action connectors enable easy wiring of the complete display with no need for any soldering
- The LED power supplies need to be wired separately to enable power and current requirements of giant LED displays
- Board dimensions: 95 x 100 mm

[1] Estimated through simulations
[2] Assumed compatible digital signage player running on the controlling computer

System Connections Example

- A single LED driving computer (**1**) generates the video for the LED display, and with the standard monitor cable, connects to the DVI compatible video input of the master Pixblasters MS1 video LED controller (**2**).

- The computer (**1**) can be locally or remotely controlled through different network interfaces. It can run any video display application, including digital signage players that automatically connect to online digital content services.

- The master (**2**) controls slave controllers (**4**) through the video link and an optional control[5] link. Each slave controller displays the exact portion of the video image on the attached LED panels (**3**) built of up to 16,384 RGB LEDs.

- The video and the control links (**6**) between the chained Pixblasters MS1 controllers use ordinary Ethernet cables to enable simple and flexible display wiring. The links guarantee automatic and perfect LEDs synchronization.

- Each controller (**2**, **4**) is configured for Master/Slave mode by on-board DIP switches. Other configuration parameters are setup only once for each board through a simple configuration menu on the PC (**5**) connected with the USB cable.

- Display's configuration parameters, such as LED timing parameters and the video input image part for display on the attached LEDs, are permanently stored in the on-board microcontroller that also controls the LED system's boot-up.

- Example: four LED panels (**3**) built of 60 LED/m strips form the 18.8 m^2 LED display[3] that can be differently arranged to support various video (W x H) resolutions, e.g. 1024 x 64, 256 x 256 and many others.

- Separate +5V DC power supplies must provide sufficient power for the complete display.

DISPLAY SIZE

A single MS1 can control[3] 4.7/17.7 m^2 display built of 60/30 LED/m. Chained controllers can control displays measuring tens and hundreds[1] of m^2.

DISPLAY SPEED

LEDs work at their maximum speed and perfectly synchronized, no matter the number of LEDs, chained MS1 controllers, or the display size.
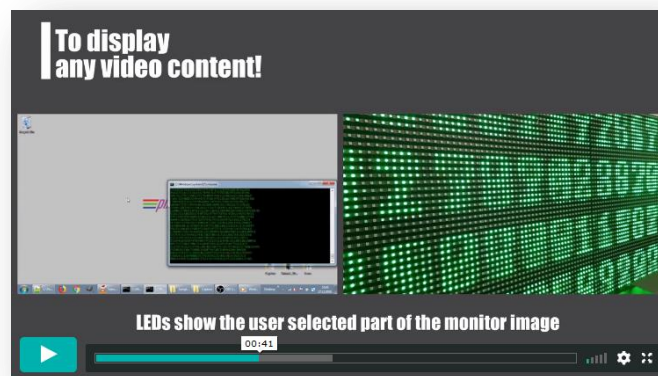
DISPLAY CONTENT

Anything that shows on a computer monitor shows on the LEDs as well. No need for special software for anti-aliasing, fonts, image processing…

OPEN-SOURCE FPGA DEMO[4]

Use the hardware platform for experimenting with and learning about RGB LED diodes.

VISIT OUR CROWDFUNDING PAGE:
https://www.crowdsupply.com/pixblasters/video-led-controller

[3] Assumed square pixel
[4] Supports a subset of the functions available within the Pixblasters MS1 controller
[5] Optional future expansions

CONTACT INFORMATION

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