

# VIEWPixx™

*Display toolbox optimized for vision researchers*



## OVERVIEW

The VIEWPixx is a complete display toolbox which has been conceived specifically to replace CRTs in vision science labs. The VIEWPixx features high-performance industrial LCD glass, and a panel controller which has been custom designed to support vision research. Our innovative LED backlight design features superior display uniformity, and a wide color gamut exceeding that of any CRT. In addition the VIEWPixx includes an array of peripherals which often need to be synchronized to video during an experiment, including a stereo audio stimulator, a button box port for precise reaction-time measurement, triggers for electrophysiology equipment, and even a complete analog I/O subsystem. Because we implemented the video controller and peripheral control on the same circuit board, you can now successfully synchronize all of your subject I/O to video refresh with microsecond precision.

## FEATURES

- 12-BIT RGB INTENSITY
- 1920 x 1200 DISPLAY RESOLUTION AT 120 Hz
- DETERMINISTIC TIMING BETWEEN RECEPTION OF VIDEO SIGNAL AND UPDATE OF DISPLAY PIXELS
- SCANNING LED BACKLIGHT WITH DIRECT RGB LED ARRAY
- FAST 16-BIT DATA ADCs/DACs
- STEREO AUDIO INPUT/OUTPUTS
- 24 TTL TRIGGER INPUT/OUTPUTS
- ALL ANALOG AND DIGITAL INPUTS / OUTPUTS FEATURE MICROSECOND SYNCHRONIZATION TO VIDEO REFRESH

## SOFTWARE

Software support includes a low-level ANSI C API, PsychToolbox MATLAB / Octave libraries for Mac OS X, Windows and Linux, and HID support (PsychoPy, E-Prime, Presentation). The VIEWPixx is also supported by the VPixx program.



[www.vpixx.com](http://www.vpixx.com)

# VIEWPixx SPECIFICATIONS

## LCD SPECIFICATIONS

- Display resolution: 1920(H) x 1200(V) pixels
- 22.5 inch display size (diagonal)
- Pixel pitch: 0.252(H) x 0.252(V) mm
- Pixel arrangement: RGB (Red dot, Green dot, Blue dot) vertical strip
- Active matrix LCD
- 12 bits of resolution on each of the RGB channels
- 100Hz to 120Hz refresh rate with zero latency stimulus presentation
- 60Hz to 100Hz refresh rate with internal frame buffering
- Grey-to-Grey response time :
  - 1ms typical in scanning backlight mode
  - 7ms typical in normal backlight mode
- Luminance:
  - 100 cd/m2 in scanning backlight mode
  - 250 cd/m2 in standard backlight mode
- Uniformity: 95% over 95% of display area
- Contrast ratio: Typical 800:1
- Viewing angle: 176° (Horizontal), 176° (Vertical)
- Polarizer surface: Antiglare

## BACKLIGHT SPECIFICATIONS

- Scanning LED backlight
- Direct RGB LED array
- Wide gamut LED
- Factory white point D65

## VIDEO PROCESSING

- Video input: 1920 x 1200 pixels, 60 to 120 Hz, 24 bits (Dual link DVI)
- Deterministic timing between reception of video signal and update of display pixels
- Completely bypass all image processing “enhancements” prevalent in standard consumer LCD panels
- Multiple displays can be synchronized, showing copies or subsets of original video

## POWER

- Power consumption: 180W
- Input voltage: 48Vdc – 3.75A
- International AC adaptor input: 90Vac – 264Vac (47Hz – 63Hz)

## VIEWPixx STAND

- Mounting standards: VESA MIS-D/E, MIS-F
- Hole pattern: 100 x 100mm & 75 x 75mm

| Lift        | Tilt | Pan       | Rotation | VESA             |
|-------------|------|-----------|----------|------------------|
| 5"<br>13 cm | 30°  | Base 360° | 90° P/L  | MIS-D/E<br>MIS-F |

## ANALOG TO DIGITAL CONVERTER

- Number of channels: 16 (or 8 differential), on DB-25 connector
- Converter resolution: 16 bits
- Maximum sampling rate: 200 kSPS per channel
- Frequency programming modes:
  - Samples per second
  - Samples per video frame
  - Nanoseconds per sample
- Simultaneous sampling across all channels
- Input range:  $\pm 10V$
- Input impedance:  $1.6 \times 10^8 \Omega // 3pF$
- Absolute maximum input tolerance:  $\pm 12V$

## DIGITAL TO ANALOG CONVERTER

- Number of channels: 4 on DB-25 connector
- Converter resolution: 16 bits
- Maximum sampling rate: 1 MSPS per channel
- Frequency programming modes:
  - Samples per second
  - Samples per video frame
  - Nanoseconds per sample
- Simultaneous output updates
- Output range:  $\pm 10V$
- Drive capability:  $\pm 25mA$ , 250mW per channel

## AUDIO CODEC

- Audio line in, microphone in, speaker out, on 3.5mm jacks
- Stereo microphone input amplifier resistance: 20k $\Omega$
- Microphone sampling rate: 96kHz
- Programmable microphone bias voltage range: 2.0V to 3.1V
- Stereo DAC sampling rate 96kHz

## DIGITAL INPUT

- Number of digital inputs: 24 on db-25 connector
- Input termination: >20k $\Omega$  pullup to 3.3V
- Input tolerance: 5V

## DIGITAL OUTPUT

- Number of digital outputs: 24 on db-25 connector
- Output drive stage: 5V through 25 $\Omega$  series resistor
- Maximum output current:
  - Source: 15mA
  - Sink: 12mA

## ORDERING INFORMATION

DESCRIPTION: VIEWPixx  
P/N: VPX-VPX-2001C

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