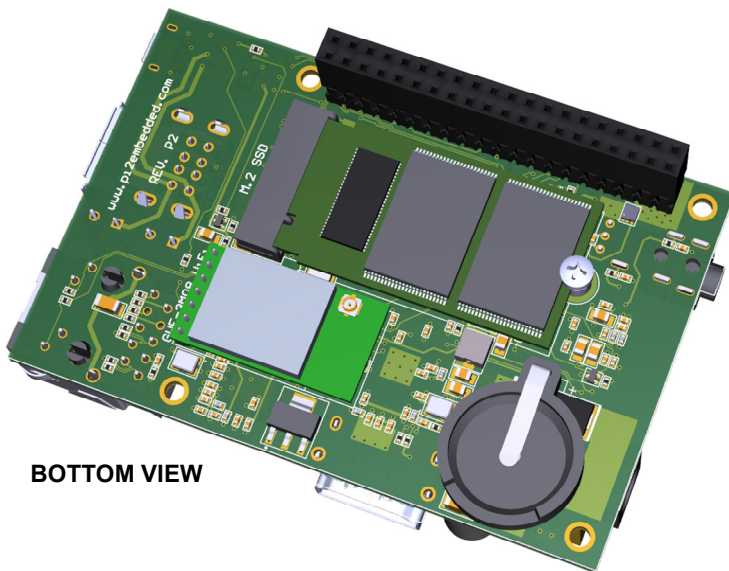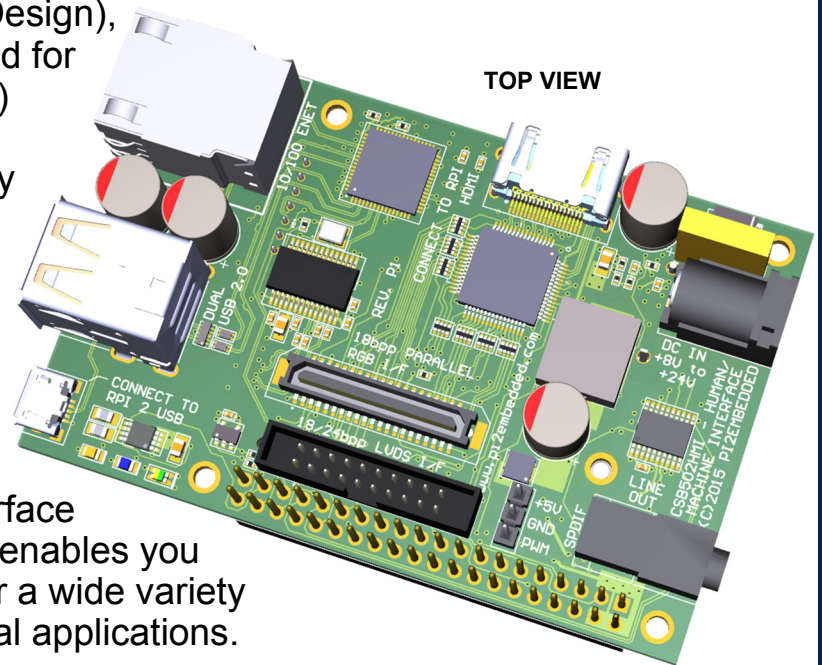# CSB502HMI Raspberry Pi 2 Shield
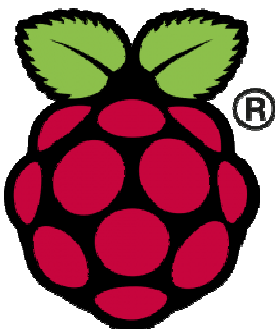
Introduction and Overview

The CSB502HMI, designed and manufactured by PI 2 Embedded (a division of Pi 2 Design), is a professional I/O Shield designed for the low cost Raspberry PI 2 (RPi 2) computer. This shield converts the RPi 2 HDMI out to drive virtually any LCD screen up to 1920 x 1080, along with resistive or capacitive touch technology

Utilizing the popular Raspberry Pi 2 with Quad Core Cortex-A7 CPU, the CSB502HMI creates a high performance, Human-Machine Interface device. This powerful combination enables you to leverage the RPi 2 ecosystem for a wide variety of Embedded, Medical and Industrial applications.
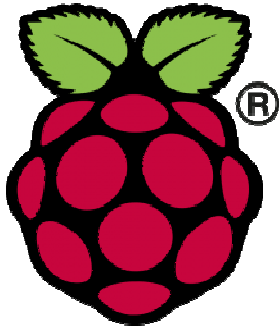
TOP VIEW

BOTTOM VIEW

Specifications and Features

- **FORM FACTOR** – Full Size RPi 2 I/O Shield with 40-Pin mating connector. Stacking and non-Stacking versions are available.
- **10/100 ETHERNET** – LAN9514 Combo 10/100 and USB Hub provides an additional Ethernet port for gateway and bridging applications.
- **DUAL USB PORTS** – USB2.0 Type A for additional USB expansion. High-Retention sockets provide 2.1A peak (1.5A continuous) for high power USB peripherals.
- **SSD** – PL2571 Controller and M.2 (Next Generation Form Factor) Socket for up to 256GB on-board Storage.
- **WiFi** – GWF-3M08 Module (Ralink RT5370) provides 802.11b/g/n for up to 150Mbps. On-Module IPEX connector allows for optimal antenna placement.
- **RTC WITH BATTERY** – DS1339 Real Time Clock with 16mm Coin Cell Backup and Alarm.
- **TEMP SENSOR** – 1-Wire DS18B20 Temperature Sensor mounted under the SSD to monitor health of drive. Additionally the DS18B20 has a unique 64-Bit ID that can be used to identify the shield for advanced Asset Management.
- **50W POWER SUPPLY** – Wide-Input 5V @ 10A power supply powers all peripherals as well as the RPi 2.
- **18-Bit PARALLEL RGB** – AD7623 converts the RPi 2 HDMI output to 18/24-Bit Parallel RGB.
- **24-Bit LVDS** – FAN3385 LVDS Transmitter converts the 24-Bit RGB to Single Channel LVDS
- **AUDIO OUT** – 24-Bit, 48Khz - 192Khz Analog and SPDIF Audio Out using PCM5102A DAC via HDMI I2S Bus.
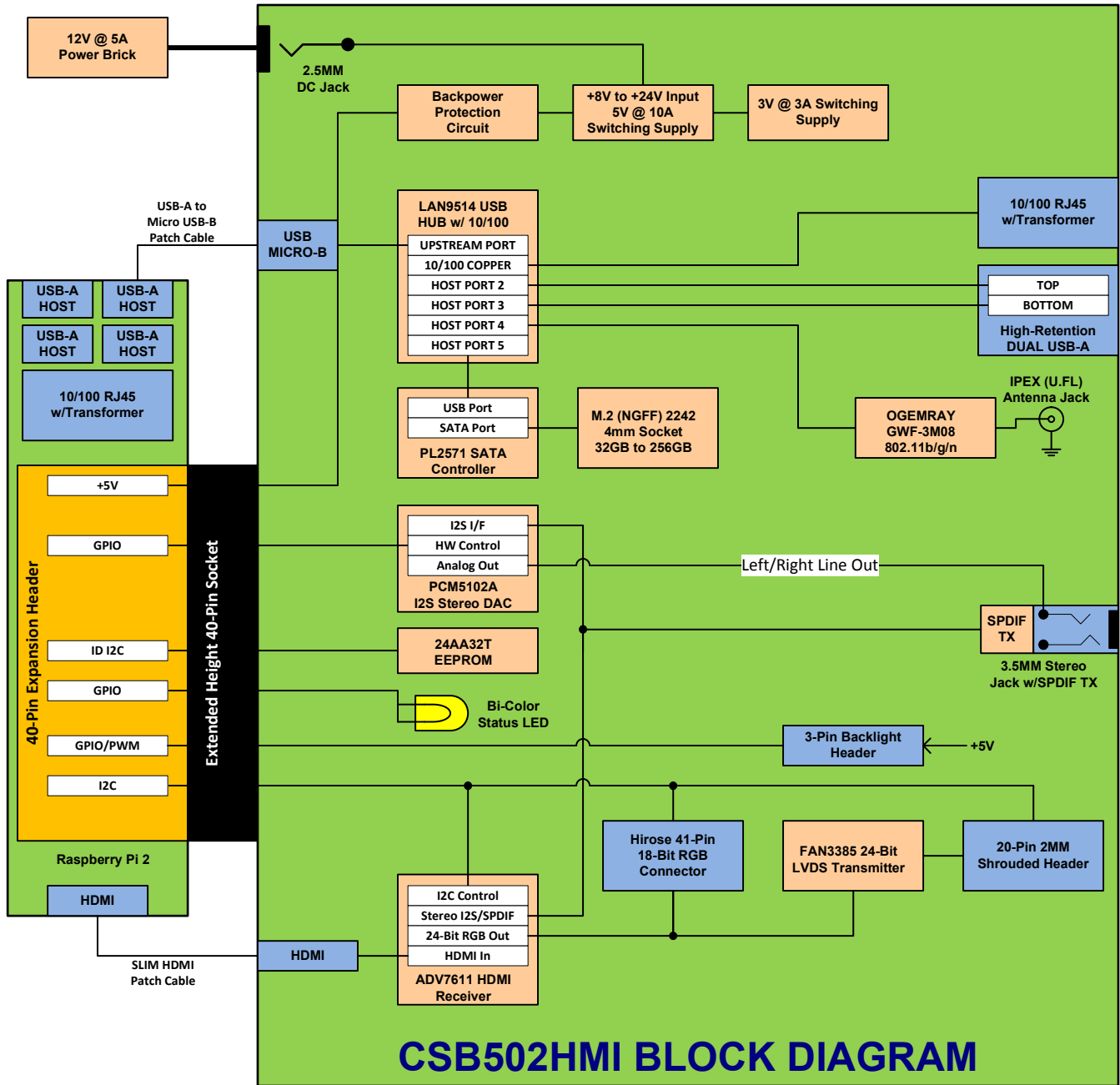
Pi 2 Design

www.Pi2Design.com

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12V @ 5A Power Brick

2.5MM DC Jack

Backpower Protection Circuit

+8V to +24V Input 5V @ 10A Switching Supply

3V @ 3A Switching Supply

USB-A to Micro USB-B Patch Cable

USB MICRO-B

LAN9514 USB HUB w/ 10/100
- UPSTREAM PORT
- 10/100 COPPER
- HOST PORT 2
- HOST PORT 3
- HOST PORT 4
- HOST PORT 5

10/100 RJ45 w/Transformer

TOP
BOTTOM
High-Retention DUAL USB-A

USB-A HOST | USB-A HOST
USB-A HOST | USB-A HOST

10/100 RJ45 w/Transformer

PL2571 SATA Controller
- USB Port
- SATA Port

M.2 (NGFF) 2242 4mm Socket 32GB to 256GB

OGEMRAY GWF-3M08 802.11b/g/n

IPEX (U.FL) Antenna Jack

Raspberry Pi 2

40-Pin Expansion Header

Extended Height 40-Pin Socket

- +5V
- GPIO
- ID I2C
- GPIO
- GPIO/PWM
- I2C

PCM5102A I2S Stereo DAC
- I2S I/F
- HW Control
- Analog Out

Left/Right Line Out

24AA32T EEPROM

Bi-Color Status LED

SPDIF TX

3.5MM Stereo Jack w/SPDIF TX

3-Pin Backlight Header

+5V

Hirose 41-Pin 18-Bit RGB Connector

FAN3385 24-Bit LVDS Transmitter

20-Pin 2MM Shrouded Header

HDMI

SLIM HDMI Patch Cable

HDMI

ADV7611 HDMI Receiver
- I2C Control
- Stereo I2S/SPDIF
- 24-Bit RGB Out
- HDMI In

CSB502HMI BLOCK DIAGRAM