MIPI DSI Display Shield/HDMI Adapter

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A controller for LCD/OLED screens with MIPI DSI interface. Arduino shield format, HDMI-to-DSI adapter & built-in framebuffer.

twl

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Step 1

Build the hardware:
- Make/order the DSI Shield PCB.
- Solder it!
- Check the BOM, as not all components should be mounted.
- Make/order/design an adapter board for your screen.
- Connect the two boards together with the LCD. Power the system through USB.
- No smoke indicates probable success.

Step 2

Clone the repository:

```
git clone https://github.com/twl
```

Install an LM32 toolchain. You may find one on Lattice website. There's a pre-built version for Linux (lA32) available here.
Download and install Xilinx ISE 14.7 Webpack from Xilinx website.

Step 3

Build the software:
- edit software/rev1/panels.h and set the panel type you wish to use.

```
$ cd software
```

```
$ make
```

This will produce the boot.ram file that the synthesizer will embed in the FPGA bitstream. The file contains both the panel initialization/HDMI handling code and the bootloader, so the LM32 application can be re-loaded at any time via USB UART.

Step 4

Build the FPGA bitstream:
Open hdl/top/rev1_top.vhd and edit the PLL configuration genrics to match your LCD panel. See Table 1 above the VHDL entity declaration for the values.

```
cd hdl/syn/rev1; ise rev1.xise
```

Click *Generate Programming File*.
After a while, you'll get the bitstream: **rev1_top.bit**.
Program the SPI flash with the bitstream through JTAG.

Step 5

Power-cycle the board. A test screen with the panel info and "No HDMI signal" message should appear. If it doesn't... well, something's wrong. Otherwise, connect the HDMI input. If everything is OK, the PC should detect the display resolution and automatically configure it.

DISCUSSIONS

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toferzim wrote 05/27/2018 at 22:17

Hello! Where can I get the PCB design? Can I flash it with Arduino as a programmer?

Djon wrote 12/17/2016 at 16:59

I can not generate rev1.xise firmware, somebody did it? Thank you!

Djon wrote 12/16/2016 at 16:05

Hello everybody! Does anyone have any ready rev1_top.bit file?

Freezingcold wrote 02/01/2016 at 03:37

I need to buy one of these ready built and that would be amazing. But not as amazing as building the thing in the first place.

I need to build a portable 1080p monitor 5" preferably. E980 looks perfect to use.

Think I need help don't I need hot air soldering iron for these size of components?

5ydc wrote 04/13/2015 at 10:59

How can I order full project hardware? Cuz my circumstance does not allow me to build it!

Gonzalo wrote 03/08/2015 at 15:28

I love your project. I want to know more about this project so I want to know if I can ask more. I want to take this project as reference about how to implement FPGA real application interface, you should work at hardware because what you did is not easy at all. So it's really a study case. Great work!

I would love to interface the same way with a mobile camera module. I'm reading that Raspberry PI has a DSI and CSI2 (Camera Serial Interface), so it should be possible to connect it to a Display without using HDMI, I mean directly with the ribbon cable. And also a camera Module to the CSI2 directly.

Do you think it's feasible? Maybe using the spartan chip can be done both with your card. Doing slight modifications.

How much time did you take to make this project?

pennylane.mini wrote 09/01/2014 at 23:14

Hi just wondering if the board supports touch as well?

I was hoping to use a mobile screen for an odroid

↑ Going up?