

### **1. Power Supply source**

Jumpers **J32** and **J26** allowed Ozy to be powered from the Atlas bus 5VDC rail, the USB cable or the Atlas bus 3.3VDC rail. The TAPR manufactured Ozy default was powered from the Atlas 5VDC rail. These jumpers are removed on Magister, which is always powered from the Atlas 5VDC rail.

### **2. Zero-ohm resistors have been replaced with headers for push-on jumpers**

Ozy **J27** and **J28** zero-ohm resistors were used to connect/disconnect the I2C PROM to Atlas bus pins A20 and A21. These have been replaced with Magister **JP1** and **JP2** headers.

Ozy **J29** zero-ohm resistor was used to optionally connect the POR chip to Atlas bus pin A19. It has been replaced with header **JP3** on Magister.

Ozy **J23** and **J24** zero-ohm resistors were used to select the FPGA load mode. These have been replaced with Magister **JP6** and **JP7** headers.

Ozy **J12** and **J13** zero-ohm resistors were used to enable the LVDS drivers and receivers. These have been replaced with Magister **JP4** and **JP5** headers.

### **3. Some Ozy headers have been removed**

Ozy headers **J5** (I2C EXT) and **J7** (EXT RESET) have been removed.

Ozy header **J21** (EXTERNAL CLOCKS) has been removed.

### **4. The 1-wire bus interface on Atlas bus pin A18 has been removed**

It never worked anyway, as the DS2480B (Ozy **U2**) part is a 5V part connected to 3.3V.

### **5. The RS-232 level converter has been removed**

Ozy RS-232 level converter (**U7**) has been removed. All three serial ports (two from the FX2, one from the FPGA) now connect directly to headers. On Ozy, one serial port was connected to the 1-wire interface and the other was level converted and connected to header **J6**. On Magister, both of these ports go directly to header **P2** with no level conversion. On Ozy, two pins of the FPGA were level converted and connected to header **J6** for use as a serial port. On Magister, the same two FPGA go directly to header **P5** with no level conversion.

## **6. Optional crystal oscillators have been removed**

Ozy optional oscillators **Y2** and **Y3** have been removed, along with their associated zero-ohm jumpers **J10** and **J11**.

## **7. LVDS clock headers have been combined**

Ozy LVDS I/O headers **J2** and **J3** have been replaced with a combined header, Magister **J2**. Ozy LVDS I/O headers **J1** and **J4** have been replaced with a combined header, Magister **J3**.

## **8. Four LEDs have been removed**

Ozy LEDs **D5**, **D6**, **D7** and **D8** have been removed. These were driven by FX2 port pins **PE0**, **PE1**, **PE2** and **PE3**, respectively. These FX2 pins still connect to the same FPGA pins as they did on Ozy, but no longer drive LEDs on Magister.

## **9. GPIO and DB25 connectors have been removed, and DB9 pins are fixed-configured**

Ozy GPIO connector **J17** and associated pull-down resistors have been removed. Ozy DB25 connector **J20** has been removed, along with its associated drivers, R/C filters and pull-up resistors. Ozy FPGA pins **FPGA\_GPIO1** through **FPGA\_GPIO12** and **FPGA\_GPIO17** through **FPGA\_GPIO21** are now left unconnected on Magister.

Ozy FPGA pins **FPGA\_GPIO13** through **FPGA\_GPIO17** and **FPGA\_GPIO22** through **FPGA\_GPIO24** are connected to the same pins on the Magister DB9 connector as they were on Ozy. However, the Magister DB9 outputs on pins 1 - 4 are no longer configurable as either open-collector or totem-pole. Pins 1 and 2 are always open-collector outputs and pins 3 and 4 are always totem-pole outputs. The inputs remain the same, as LVTTL pulled up to 3.3V.

This comparison is between Ozymandias Rev B, 06 Oct 2006 and Magister Rev XA7, 26 Aug 2009. Please refer to the board schematics for further detail.