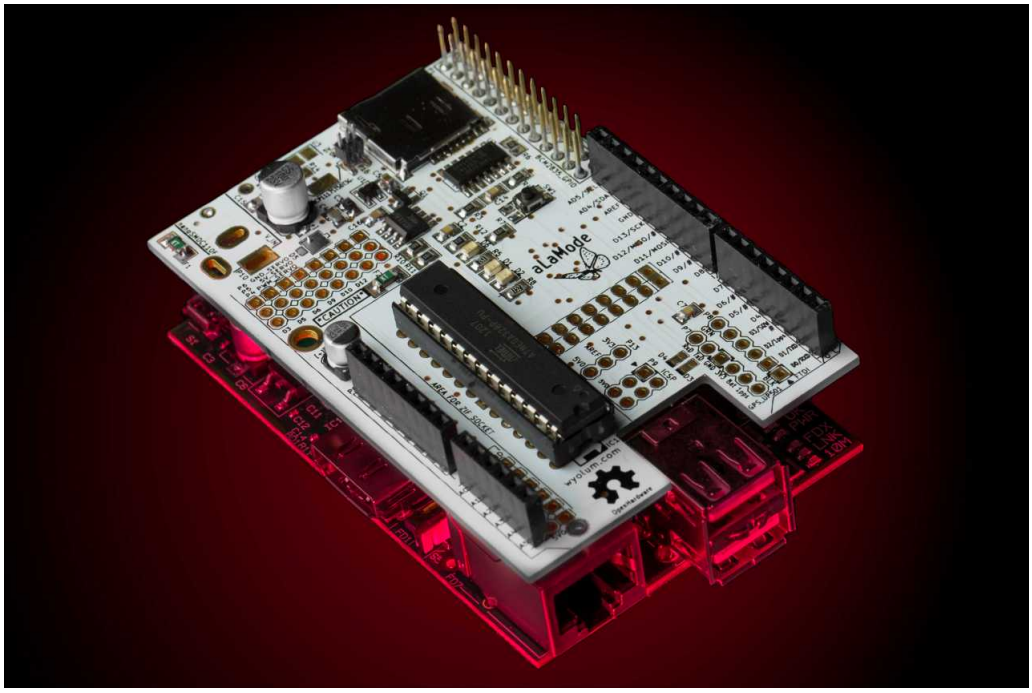


AlaMode

An Arduino compatible board for the Raspberry-Pi®

brought to you by

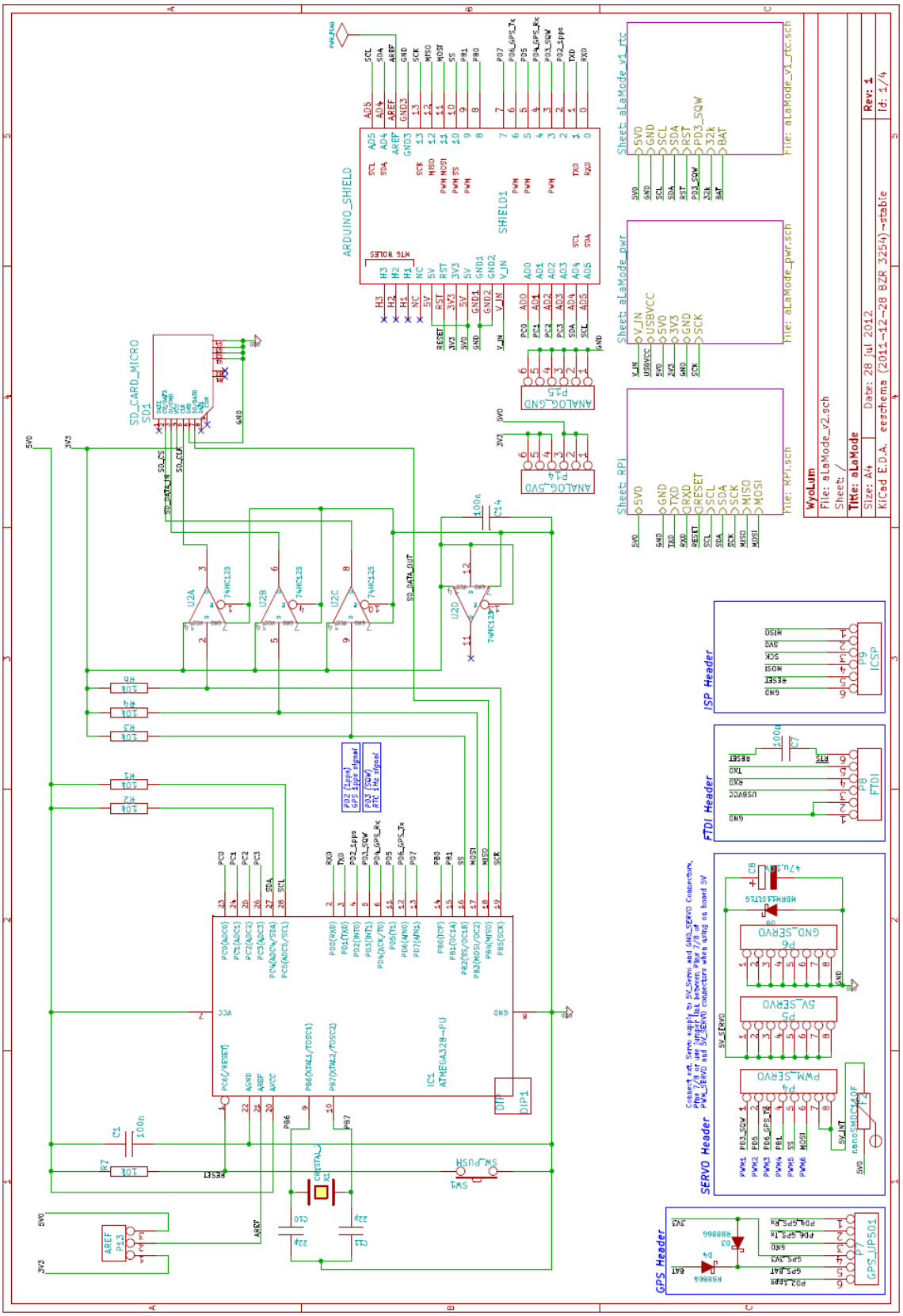
Features

- micro SD card reader
- Temperature controlled, precision Real Time clock, with battery backup
- GPS interface for the Fastrax UP501 module
- Arduino compatible, with standard shield headers
- General purpose blink LED on port D13
- Interfaces with Raspberry-Pi® via the GPIO header
- Communicates with Raspberry-Pi via I2C, SPI or Serial UART
- Analog reference can be set to either 5V0 or 3V3
- Analog header has 5V0, 3V3 and GND headers, to allow interfacing 3 wire sensors directly.
- Servo header with 5V0 and GND connections to allow interfacing 3 wire servis directly
- Servo's can be powered via on-board 5V0 or from external 5V
- FTDI and ISP headers for programming and sketch loading
- Power via external 5V to micro-USB socket, or directly from Raspberry-Pi
- 5V0 and 3V3 indicator LEDs

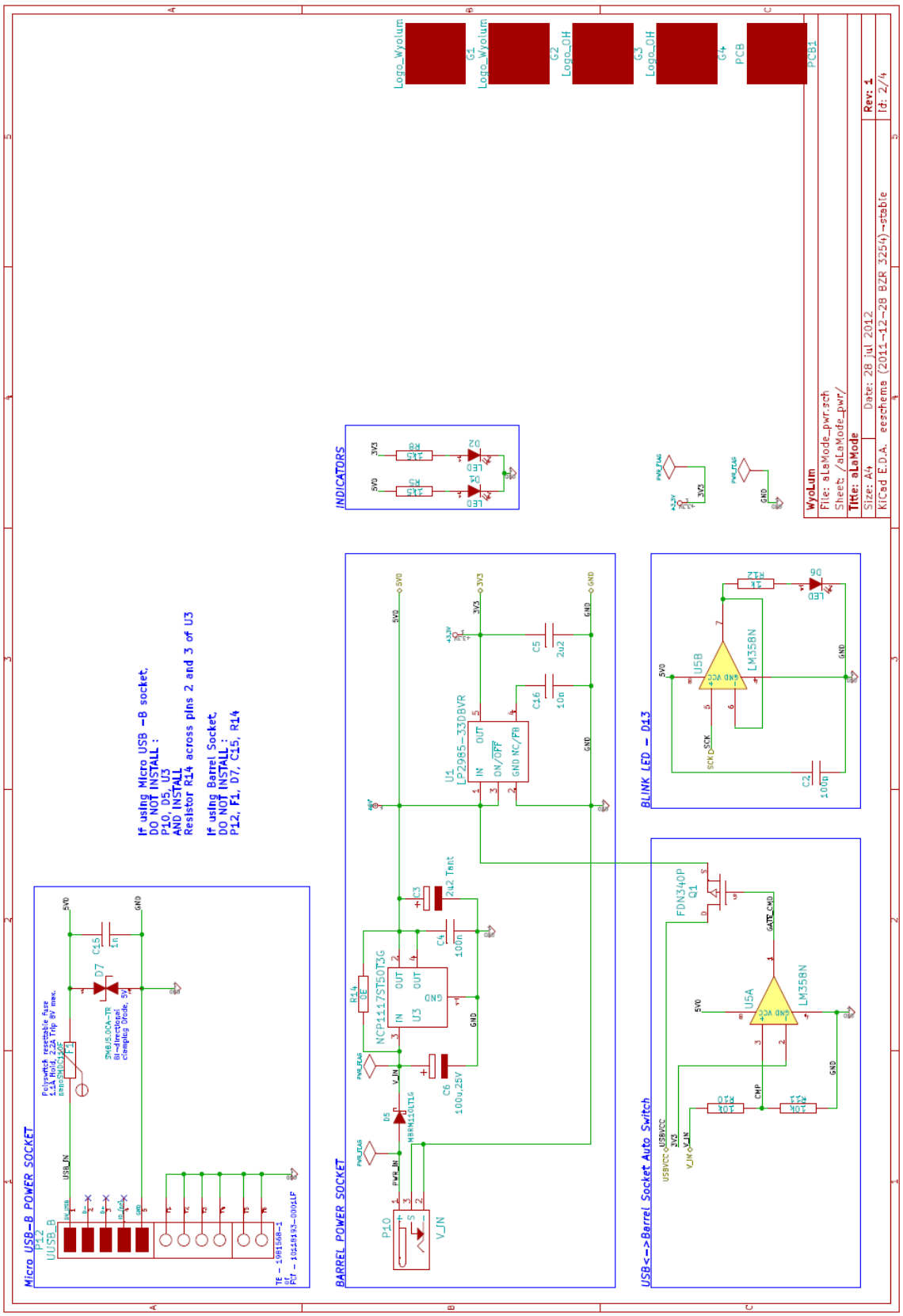
Potential Uses

- Stand-alone data logger
- Simple-to-use, persistent storage
- Program loader for separate Arduino compatible

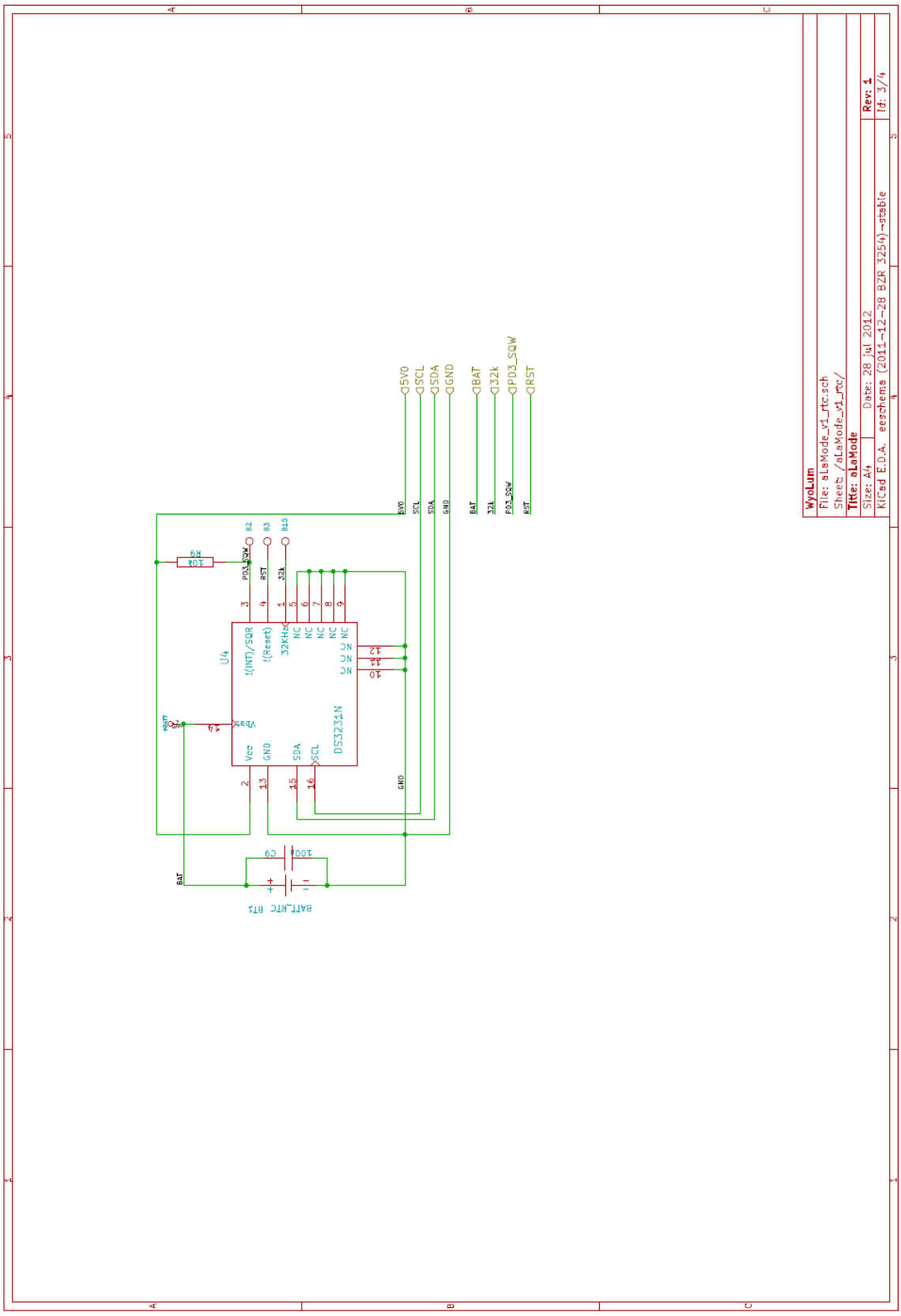
Schematic, #1


ARDUINO_SHIELD
SHIELD1
SD_CARD_MICRO
SD1
U2A
U2B
U2C
U2D
74HC125
IC1
ATMEGA328-PU
DIP1
SW_PUSH
CRYSTAL
ANALOG_GND
ANALOG_5V0
ISP Header
ICSP
FTDI Header
FTDI
SERVO Header
GND_SERVO
5V_SERVO
PWM_SERVO
GPS Header
GPS_UP501
Sheet: aLaMode_v1_rtc
File: aLaMode_v1_rtc.sch
Sheet: aLaMode_pwr
File: aLaMode_pwr.sch
Sheet: RPi
File: RPi.sch
File: aLaMode_v2.sch
Sheet: /
Title: aLaMode
Size: A4
Date: 28 jul 2012
KiCad E.D.A. eeschema (2011-12-28 BZR 3254)-stable
Rev: 1
Id: 1/4
WyoLum

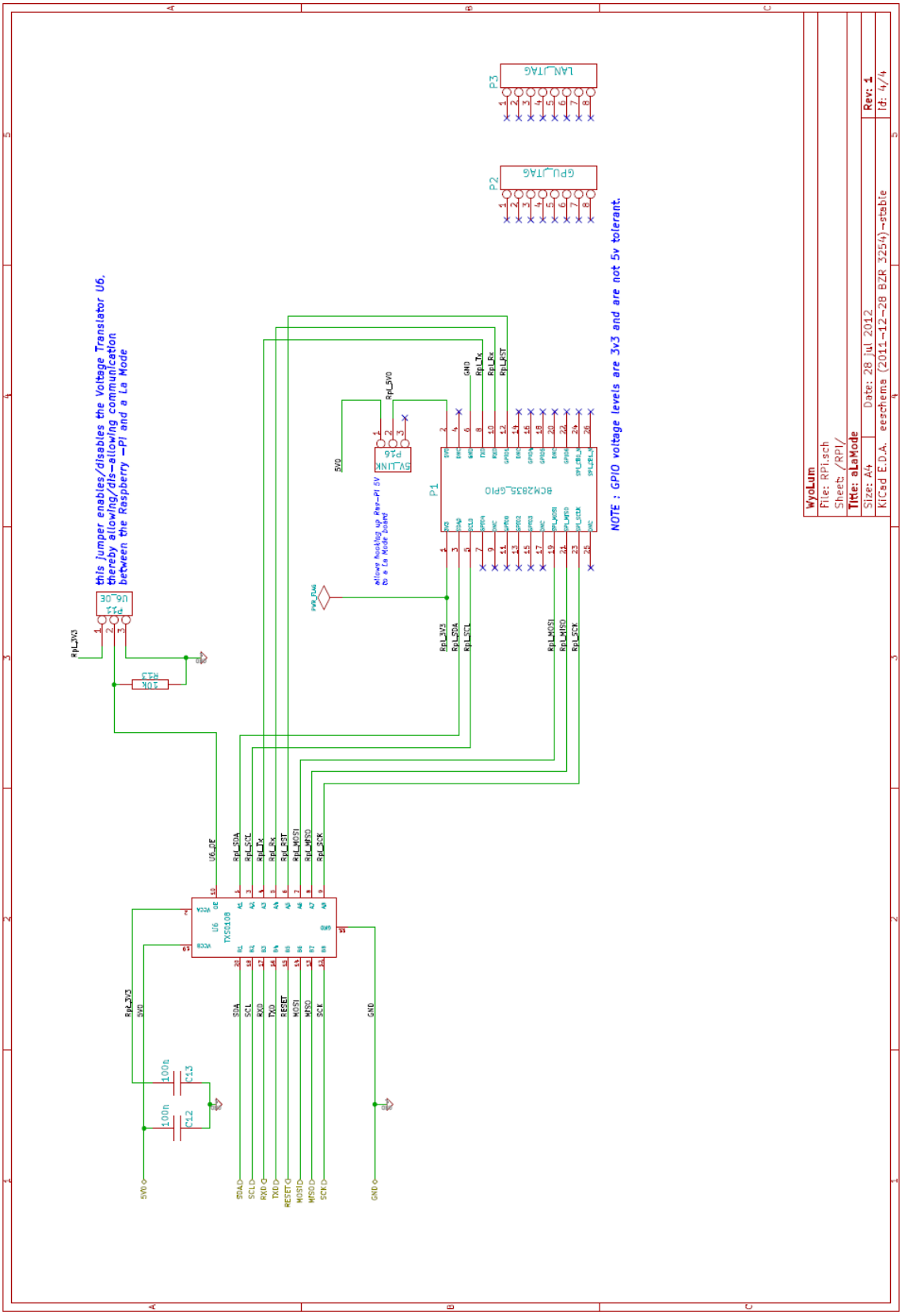
Schematic, #2


Micro USB-B POWER SOCKET
BARREL POWER SOCKET
BLINK LED - D13
USB<->Barrel Socket Auto Switch
INDICATORS
If using Micro USB -B socket,
DO NOT INSTALL :
P10, D5, U3
AND INSTALL
Resistor R14 across pins 2 and 3 of U3
If using Barrel Socket,
DO NOT INSTALL :
P12, F1, D7, C15, R14
WyoLum
File: aLaMode_pwr.sch
Sheet: /aLaMode_pwr/
Title: aLaMode
Size: A4
Date: 28 jul 2012
KiCad E.D.A. eeschema (2011-12-28 BZR 3254)-stable
Rev: 1
Id: 2/4

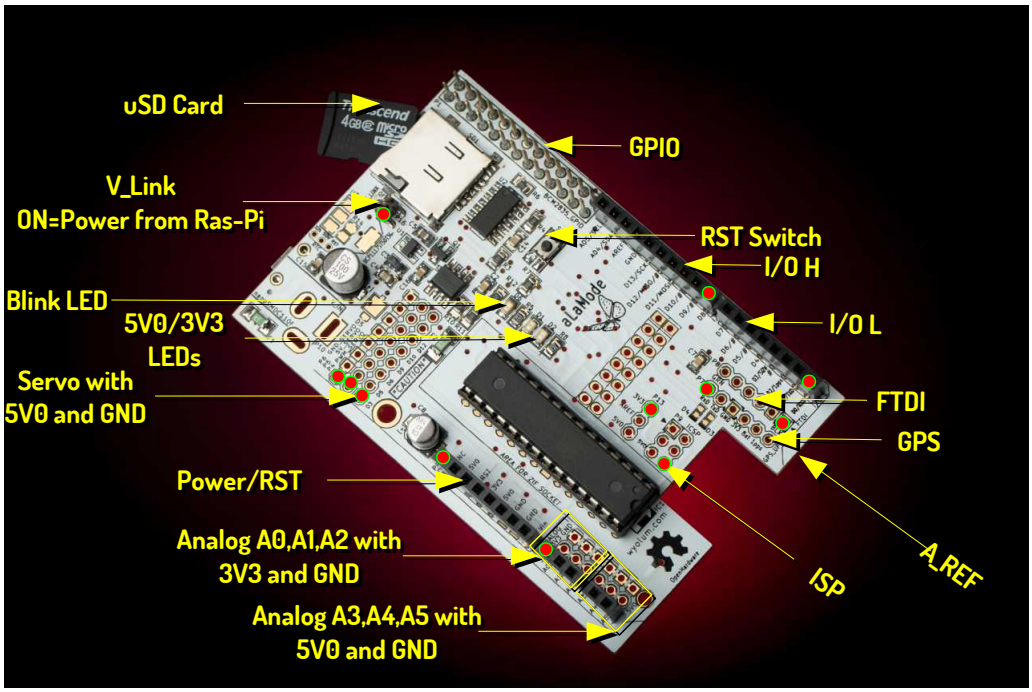
Schematic, #3


5V0
SCL
SDA
GND
BAT
32k
PD3_SQW
RST
WyoLum
File: aLaMode_v1_rtc.sch
Sheet: /aLaMode_v1_rtc/
Title: aLaMode
Size: A4
Date: 28 jul 2012
Rev: 1
KiCad E.D.A. eeschema (2011-12-28 BZR 3254)-stable
Id: 3/4
DS3231SN
BATT_RTC
C9
100n
R9
10K

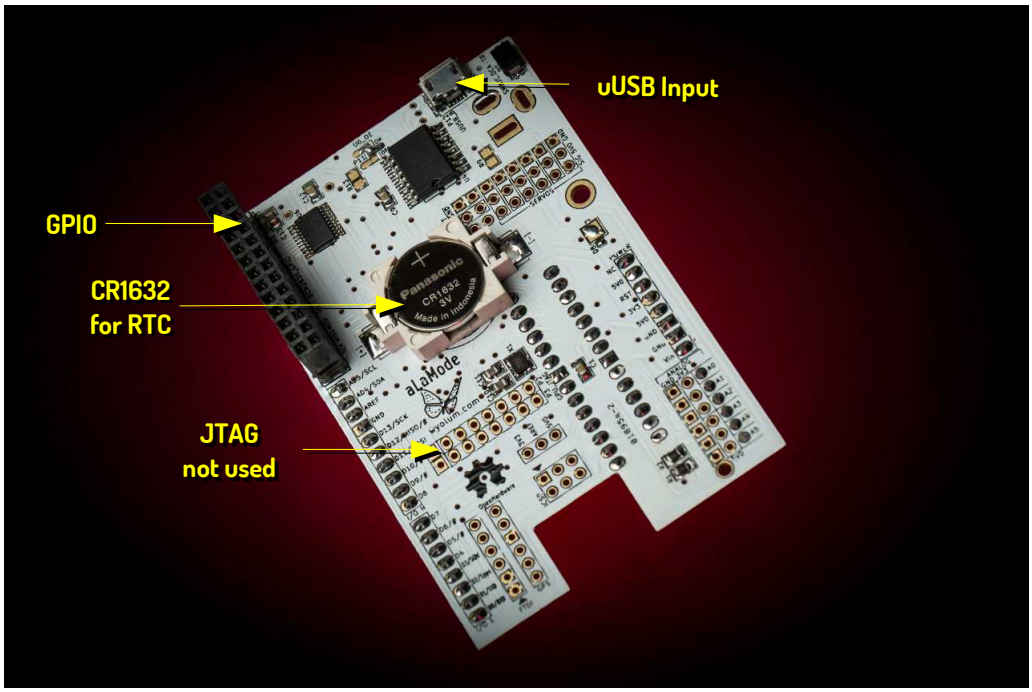
Schematic, #4


this jumper enables/disables the Voltage Translator U6,
thereby allowing/disallowing communication
between the Raspberry -Pi and a La Mode
NOTE : GPIO voltage levels are 3v3 and are not 5v tolerant.
allows hooking up Pwr-Pi 5V
to a La Mode board
WyoLum
File: RPI.sch
Sheet: /RPI/
Title: aLaMode
Size: A4
Date: 28 jul 2012
Rev: 1
KiCad E.D.A. eeschema (2011-12-28 BZR 3254)-stable
Id: 4/4

Physical Interfaces

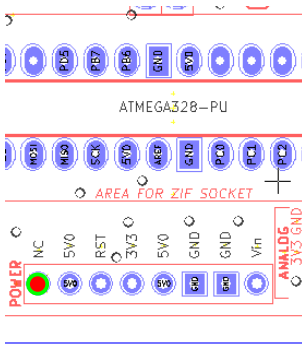
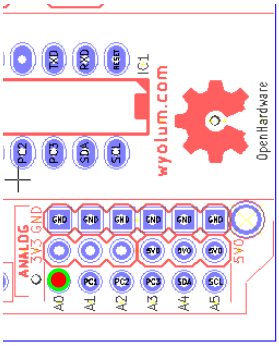
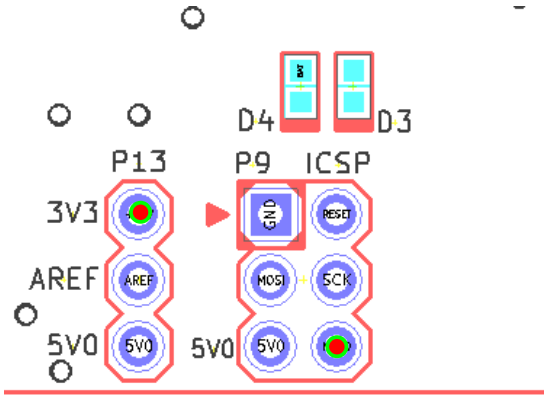


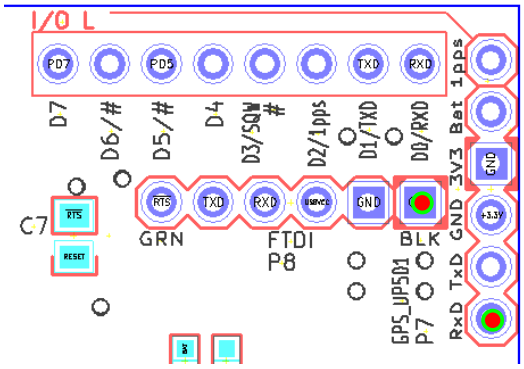
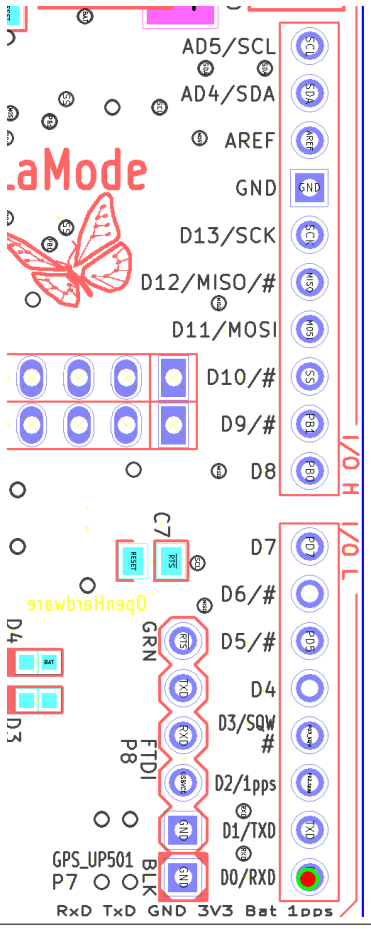
NOTE : Picture shows the prototype Beta boards. Final production boards do not have the cutout, and GPS header is re-positioned.

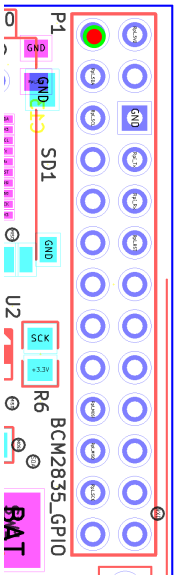
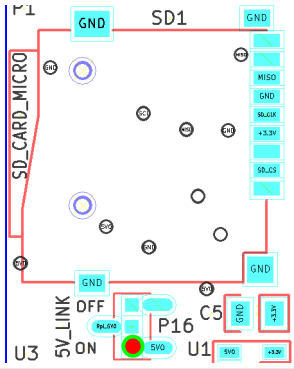


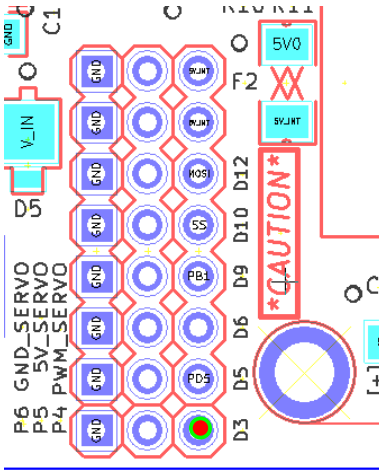
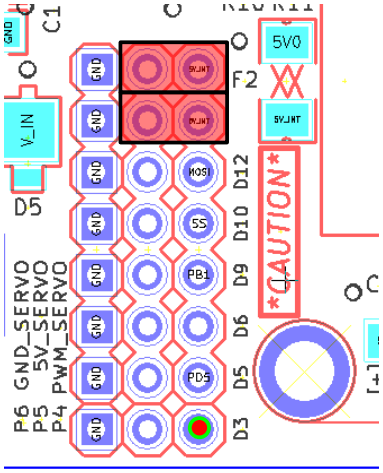
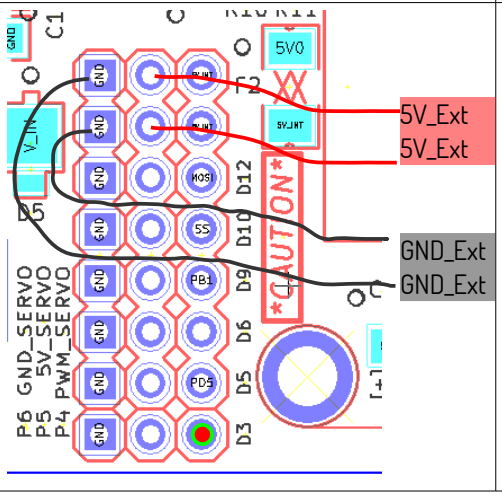
Physical Interfaces, Description

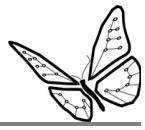
(**RED** Markers point to Pin # 1 of each header)

HEADER POWER	
	1. NC 2. 5V0 3. RST 4. 3V3 5. 5V0 6. GND 7. GND 8. Vin (Note : 5V only)
HEADER ANALOG	
	1. A0 : 3V3 : GND 2. A1 : 3V3 : GND 3. A2 : 3V3 : GND 4. A3 : 5V0 : GND 5. A4 : 5V0 : GND , SDA 6. A5 : 5V0 : GND , SCL
HEADER's ISP and AREF	
	1. MISO 2. 5V0 3. SCK 4. MOSI 5. RST 6. GND 1. 3V3 2. AREF 3. 5V0

HEADER's GPS and FTDI	
	1. GPS_Rx , PD4 (Arduino digital pin 4) 2. GPS_Tx , PD6 (Arduino digital pin 6) 3. GND 4. 3V3 5. GPS_BATT (backup for GPS, from RTC 3V batt.) 6. 1pps , PD2 (Arduino digital pin 2) 1. GND (BLACK) 2. GND 3. 5V0 4. RXD , PD0 (Arduino digital pin 0) 5. TXD , PD1 (Arduino digital pin 1) 6. RESET (GREEN)
HEADER's I/O L and I/O H	
	1. PD0 , RXD 2. PD1 , TXD 3. PD2 , 1pps (GPS) 4. PD3 , SQW (RTC) , # (PWM1) 5. PD4 , GPS Rx 6. PD5 , # (PWM2) 7. PD6 , GPS Tx , # (PWM3) 8. PD7 , 9. PD8 , 10. PD9 , # (PWM4) 11. PD10 , SS # (PWM5) 12. PD11 , MOSI, # (PWM6) 13. PD12 , MISO 14. PD13 , SCK 15. GND , 16. AREF , 17. AD4 , SDA 18. AD5 , SCL

HEADER GPIO	
	1. Rpi_3V3 3. Rpi_SDA , SDA0 5. Rpi_SCL , SCL0 7. NC , GPIO4 9. NC 11. NC , GPIO 0 13. NC , GPIO 2 15. NC , GPIO 3 17. NC 19. Rpi_MOSI 21. Rpi_MISO 23. Rpi_SCK 25. NC 2. Rpi_5V0 4. NC 6. GND 8. Rpi_Tx 10. Rpi_Rx 12. Rpi_RST , GPIO 1 14. NC 16. NC , GPIO 4 18. NC , GPIO 5 20. NC 22. NC , GPIO 6 24. NC , SPI_CE0 26. NC , SPI_CE1
MICRO HEADER 5V-LINK	
	1. 5V0 2. Rpi_5V0 3. NC If ON, AlaMode is powered via Rpi 5V0 If OFF, AlaMode needs to be powered via P12, u-USB socket

HEADER SERVO	
	1. PWM1 , PD3 5V_SERVO GND_SERVO 2. PWM2 , PD5 5V_SERVO GND_SERVO 3. PWM3 , PD6 5V_SERVO GND_SERVO 4. PWM4 , PD9 5V_SERVO GND_SERVO 5. PWM5 , PD10 5V_SERVO GND_SERVO 6. PWM6 , PD11 5V_SERVO GND_SERVO 7. 5V_INT 5V_SERVO GND_SERVO 8. 5V_INT 5V_SERVO GND_SERVO **ERRATA : PWM6 = PD11 , MOSI (NOT PD12)**
	To power Servos via AlaMode 5V0 supply (internal mode), fix shorting links/jumpers between Pin 7 (5V_INT) and 5V_SERVO and Pin 8 (5V_INT) and 5V_SERVO as marked here (red rectangles) (Note : Single jumper will work too. Dual jumpers allow higher current capacity)
	To power Servos via External 5V supply (external mode), connect 5V_SERVO to 5V_Ext 5V_SERVO to 5V_Ext and GND to GND_Ext GND to GND_Ext as marked here (red / gray rectangles) (Note : Single connections will work too. Dual connections allow higher current capacity)



LINKS

- website : www.wyolum.com
- e-mail : info@wyolum.com
- forum : http://wyolum.com/forum/forumdisplay.php?fid=14
- Git Repo : https://github.com/wyolum/alamode
- Arduino : http://www.arduino.cc/