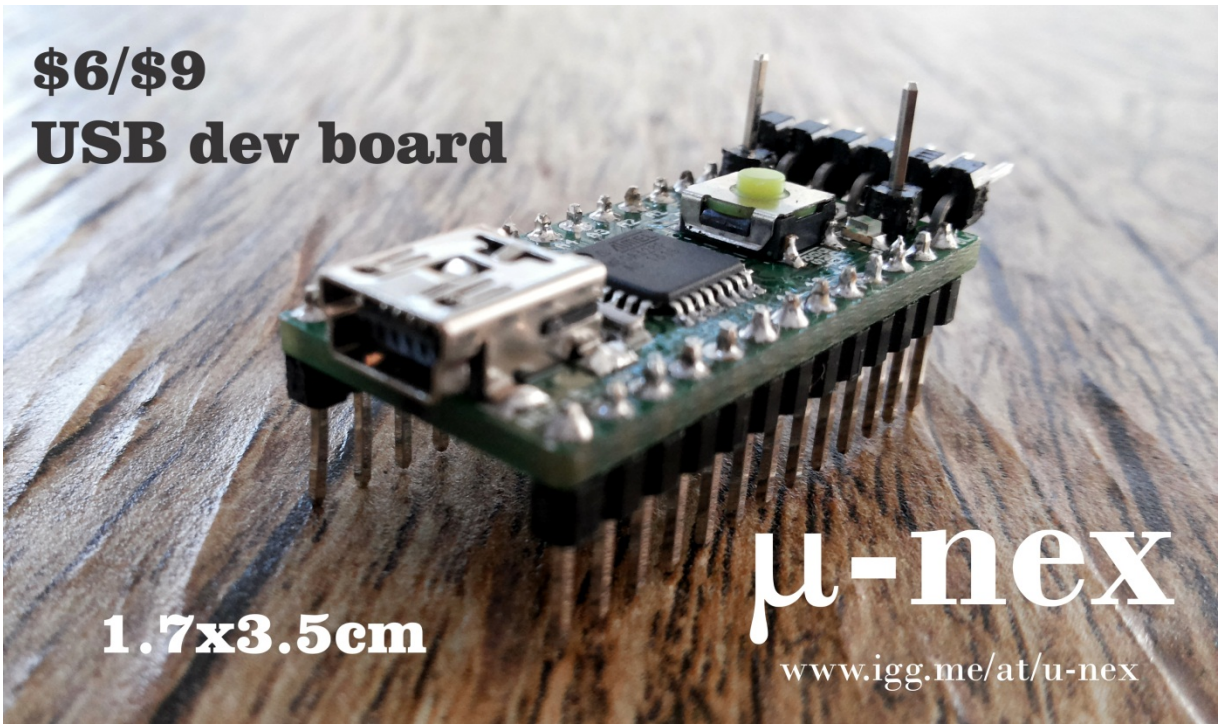
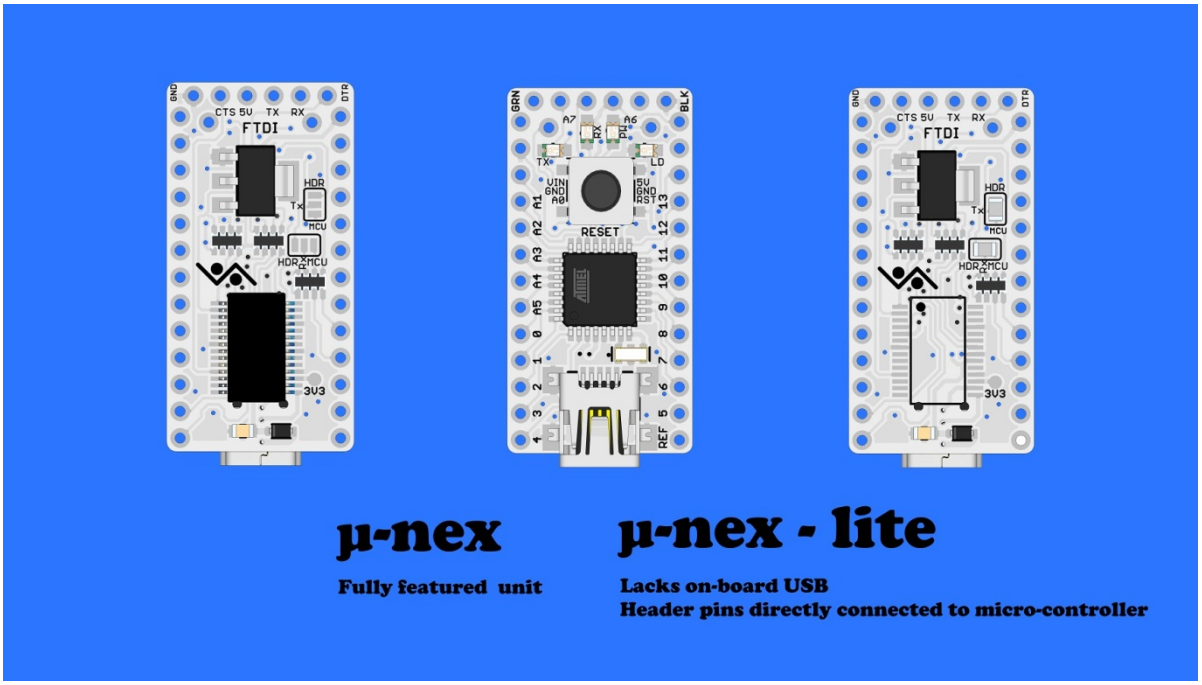

$6/$9
USB dev board
µ-nex
1.7x3.5cm
www.igg.me/at/u-nex

SHIELDS


µ-nex
Fully featured unit
µ-nex - lite
Lacks on-board USB
Header pins directly connected to micro-controller

Contents

Scope:

To support rapid development and integration with existing hardware, we have launched 4 shields along with the u-nex.

This document contains an initial overview of the shields and presents the pin-outs for the same for further design considerations.

Shields:

ICSP shield

The ICSP shield maps the 6 pins, which are needed to program the u-nex using a traditional ICSP device. It features a standard 6pin and 10pin ICSP header interface. Either one of those could be used to program the u-nex.

When the u-nex is placed in the shield, all the pins are exposed using through-hole header pins. You can use these pins to interface external components to the u-nex while still being able to use the shield to program it. This is perfect for bench-testing the u-nex as an AVR development board.

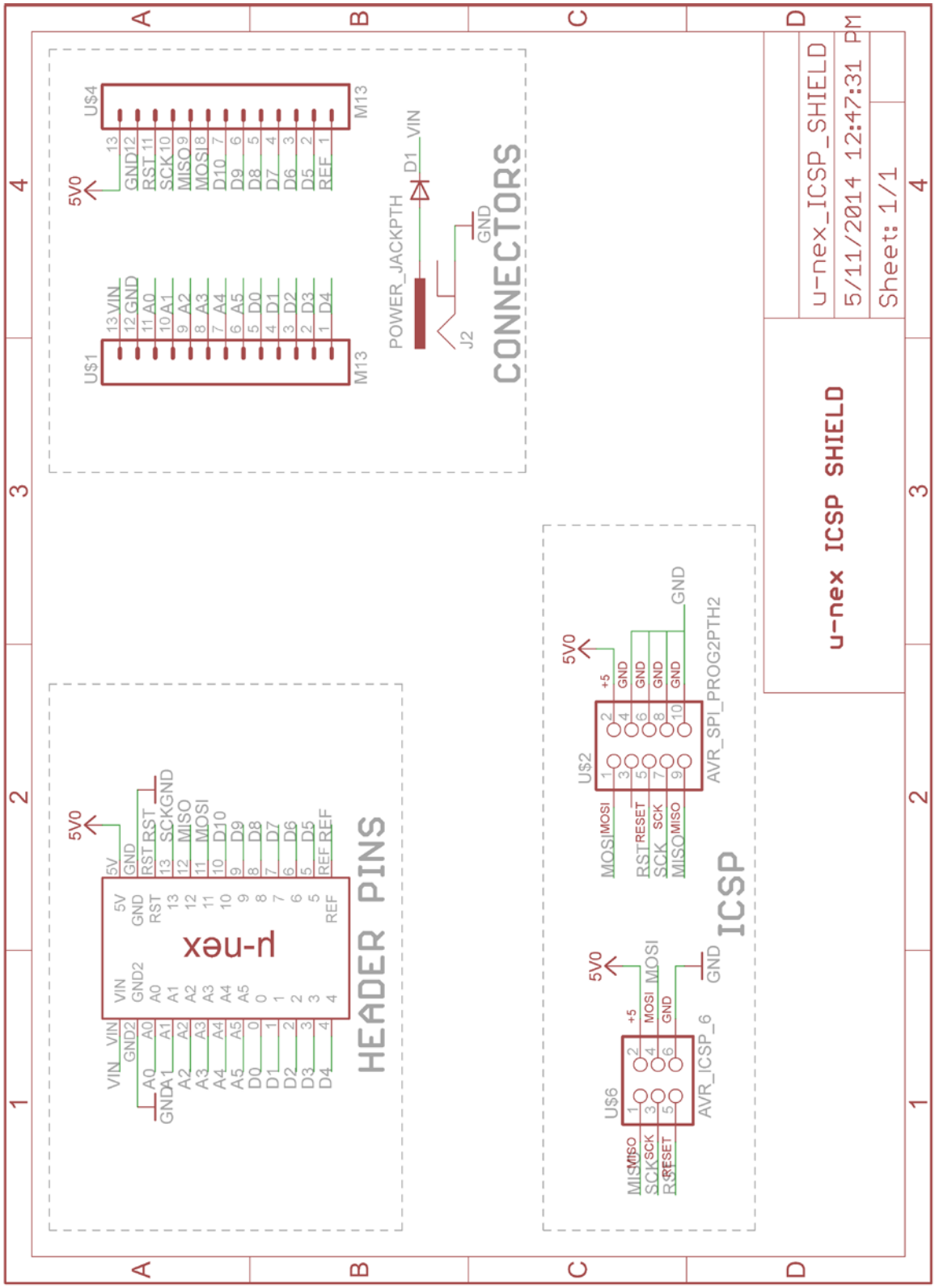
The shield also has a DC barrel jack which can be used to power the u-nex. The inner pin of the connector is positive. It has a diode for polarity protection. The voltage from this pin is fed to the VIN pin of the u-nex which in turn powers the board. Please note that the input supply voltage range is 7-12V.

When the u-nex is not connected, the ICSP shield can also be used as a 6pin to 10pin ICSP header converter.

Specs

- Dimensions: 49x38mm
- Power Jack: Input Voltage DC 7-12V
- Interfaces: 6pin & 10pin Standard ICSP Header
- Expansion Pins For u-nex

Schematic


u-nex ICSP SHIELD
u-nex_ICSP_SHIELD
5/11/2014 12:47:31 PM
Sheet: 1/1
CONNECTORS
HEADER PINS
ICSP
AVR_SPI_PROG2PTH2
AVR_ICSP_6
POWER_JACKPTH
D1 VIN
J2
GND
5V0
U$1
U$2
U$4
U$6
M13

Motor shield

The motor shield enables you to control up to 2 motors with the u-nex. The shield is designed to make use of 4 PWM channels (2 for each motor). This enables you to have precise speed control in either direction.

When the u-nex is placed in the shield, all the pins are exposed using through-hole header pins. You can use these pins to interface external components to the u-nex while still being able to use the peripherals present on the motor shield. This enables you to cascade several shields if you want to drive more than two motors for example.

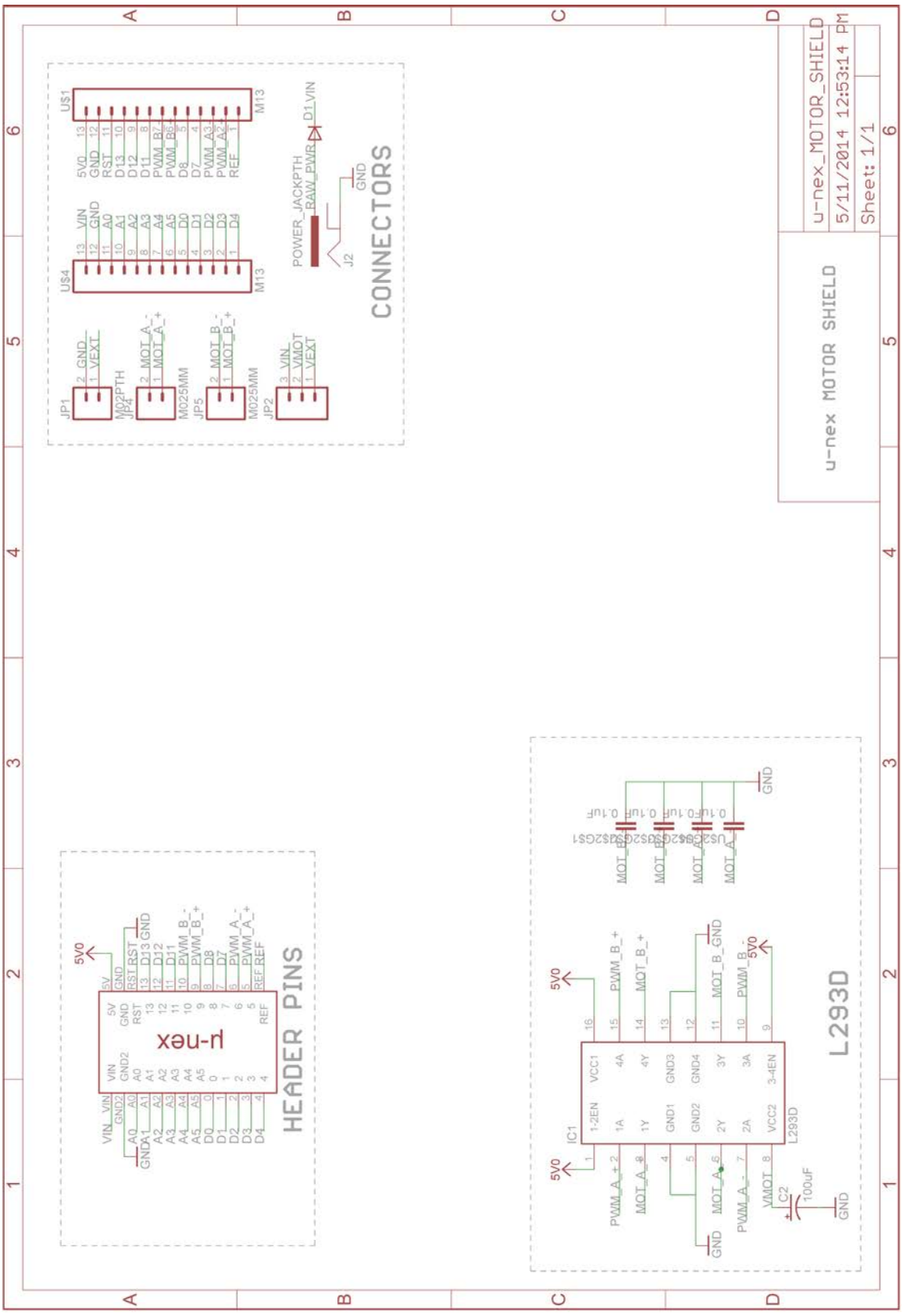
The shield also has a barrel jack connector to power the motors. The inner pin of the connector is positive. A diode is placed for polarity protection. The voltage from this connector is fed to the VIN pin on the u-nex which in turn powers the board. Please note that the input supply voltage range is 7-12V.

The motors can be connected to the screw terminals present on the shield. The motors can be powered either though the Vin supplied by the barrel jack connector (max 12V) or through an external connector marked Vext. By default a solder jumper connects Vin to motor supply.

Specs

- Dimensions: 40x42.5mm
- Power Jack: Input Voltage DC 7-12V
- Separate motor power if needed (max 25V), configurable via jumper
- External Power Screw Terminal
- 2 Motor outputs (MOT_A+, MOT_A-,MOT_B+,MOT_B-)
- Expansion Pins For u-nex

Schematic


u-nex_MOTOR_SHIELD
5/11/2014 12:53:14 PM
Sheet: 1/1
u-nex MOTOR SHIELD
CONNECTORS
POWER_JACKPTH
RAW_PWR
D1 VIN
GND
J2
US1
US4
M13
JP1
JP4
JP5
JP2
M02PTH
M025MM
HEADER PINS
u-nex
L293D
IC1
L293D
C2
100uF
0.1uF
5V0
GND
VIN
VEXT
VMOT
MOT_A_+
MOT_A_-
MOT_B_+
MOT_B_-
PWM_A_+
PWM_A_-
PWM_B_+
PWM_B_-

Relay Shield

WARNING: Be careful when connecting AC devices to the relay. There is a risk of electric shock with AC devices and the results can be fatal.

The relay shield is a compact circuit which enables you to control one relay using the u-nex. It uses one general purpose digital I/O pin (0) for relay control. A transistor is present to handle the current requirements of the relay. This enables you to control AC devices while providing the necessary isolation to the u-nex.

The relay AC terminals are connected to the screw terminal present with the appropriate notation.

When the u-nex is placed in the shield, all the pins are exposed using through-hole header pins. You can use these pins to interface external components to the u-nex while still being able to use the peripherals present on the relay shield. This enables you to cascade several shields if you want to drive control more than two relays for example.

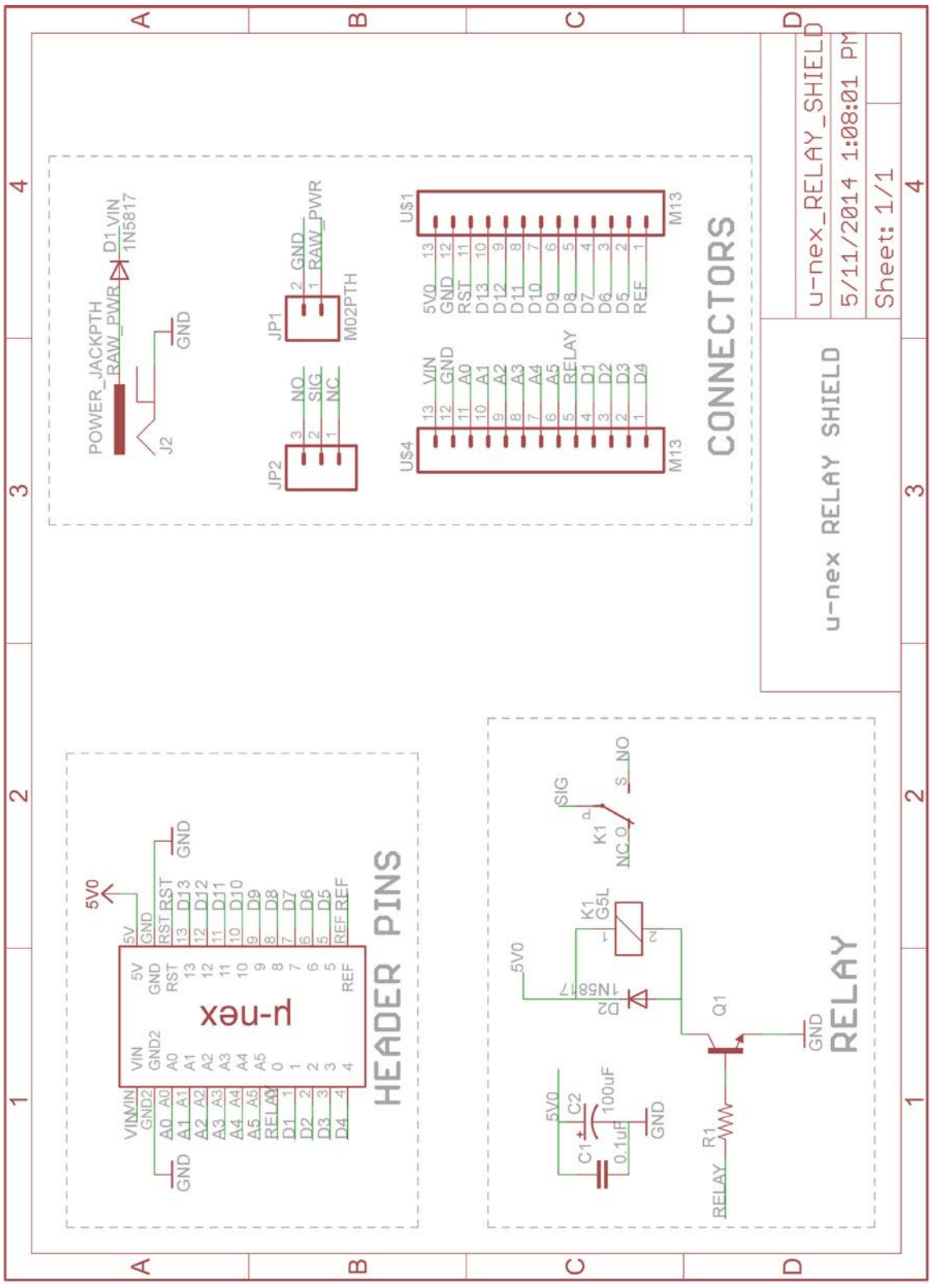
The shield also has a barrel jack connector to power the motors. The inner pin of the connector is positive. A diode is placed for polarity protection. The voltage from this connector is fed to the VIN pin on the u-nex which in turn powers the board. Please note that the input supply voltage range is 7-12V.

The voltage applied to the barrel connector is directly available at the screw terminal marked Vin, alternately the entire board can be powered by supplying appropriate power to this pin.

Specs

- Dimensions: 45x45mm
- Power Jack: Input Voltage DC 7-12V
- External Power Screw Terminal
- 1 relay Control With Outputs (NC,NO,COM)
- Expansion Pins For u-nex

Schematic


u-nex_RELAY_SHIELD
5/11/2014 1:08:01 PM
Sheet: 1/1
u-nex RELAY SHIELD
CONNECTORS
POWER_JACKPTH
RAW_PWR
GND
J2
D1
1N5817
JP1
M02PTH
JP2
NO
SIG
NC
U$1
U$4
M13
HEADER PINS
u-nex
5V0
RST
REF
RELAY
K1
G5L
1N5817
D2
Q1
R1
C1
C2
100uF
0.1uF

Arduino Shield Shield

The Arduino shield shield enables you to attach your existing shields to the u-nex. It features the standard Arduino pin out and enables you to rapidly create your projects without having to buy proprietary hardware from us.

It has an onboard 3.3V regulator to provide the necessary 3.3V voltage which is needed for some shields. The voltage regulator can provide up to 0.8A of current.

When the u-nex is placed in the shield, all the pins are exposed using through-hole header pins. You can use these pins to interface external components to the u-nex while still being able to use your Arduino shields.

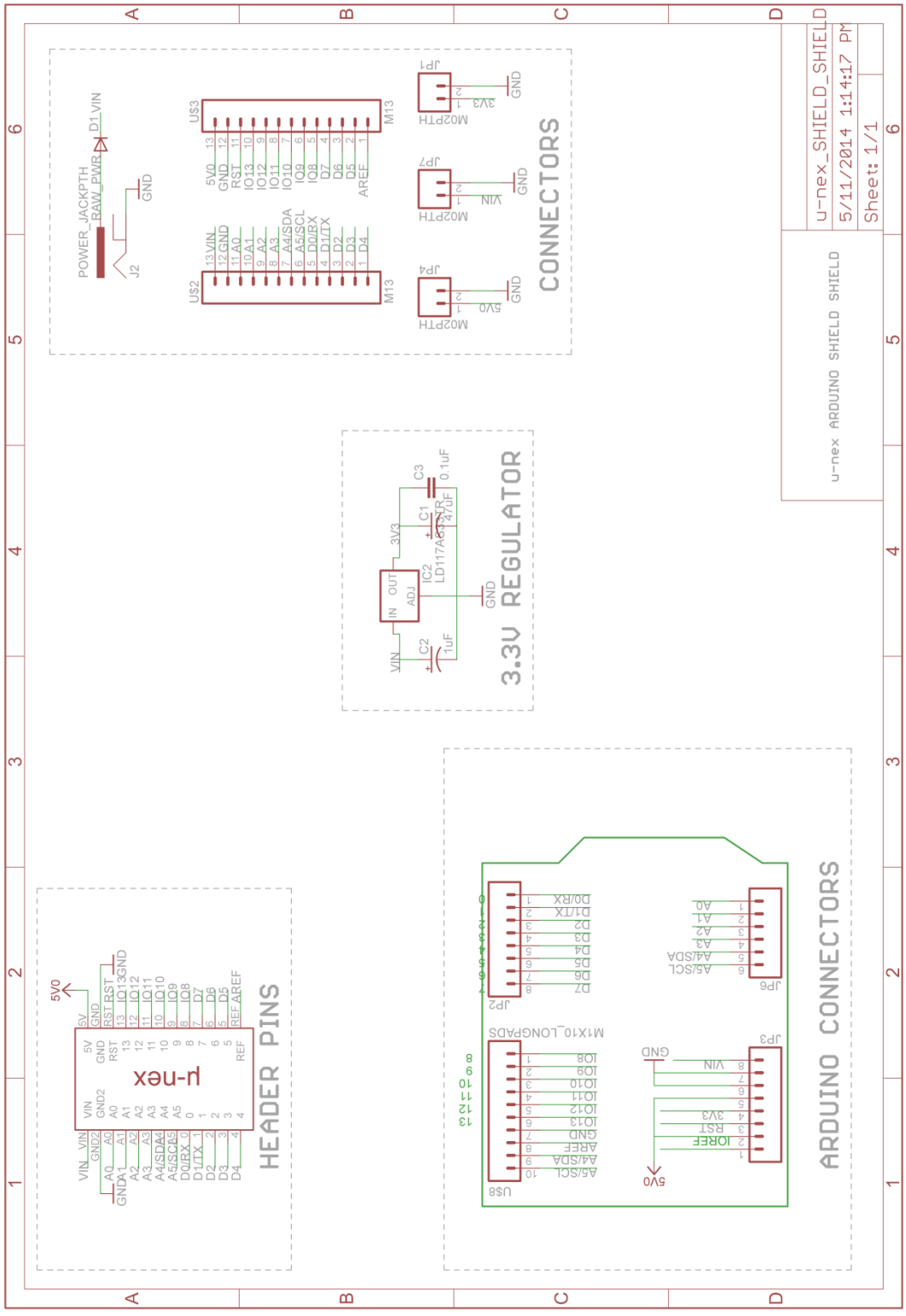
The shield also has a barrel jack connector to power the u-nex and Arduino Shields. The inner pin of the connector is positive. A diode is placed for polarity protection. The voltage from this connector is fed to the VIN pin on the u-nex which in turn powers the board. Please note that the input supply voltage range is 7-12V.

The voltage applied to the barrel connector is directly available at the screw terminal marked Vin, alternately the entire board can be powered by supplying appropriate power to this pin. The 3.3V and 5V outputs from the u-nex are also available for use as header pins on the board.

Specs

- Dimensions: 92.5x53.34mm
- Power Jack: Input Voltage DC 7-12V
- External Power Screw Terminal
- 5V & 3.3V Output Terminals
- Standard Arduino Headers
- Expansion Pins For u-nex

Schematic


CONNECTORS
POWER_JACKPTH
RAW_PWR
D1 VIN
GND
J2
US3
US2
M13
JP1
JP7
JP4
M02PTH
3V3
VIN
5V0
3.3V REGULATOR
IC2
LD117A33CR
C1
C2
C3
0.1uF
4.7uF
1uF
IN
OUT
ADJ
ARDUINO CONNECTORS
HEADER PINS
u-nex
JP2
JP3
JP6
US8
M1X10_LONGPADS
u-nex ARDUINO SHIELD SHIELD
u-nex_SHIELD_SHIELD
5/11/2014 1:14:17 PM
Sheet: 1/1

Document Revision:

Version	Date	Comments
1.0	25th March 2014	Initial Release
1.1	11th May 2014	Updated With Final Designs