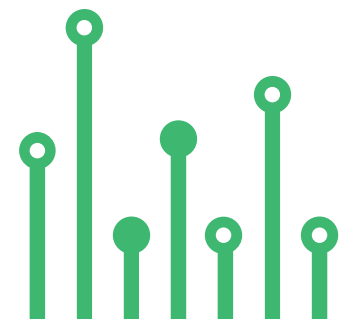


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DC Motor Position Control Using Potentiometer Arduino Compatible



SKU: EL138890

DC Motor Position Control Using Potentiometer Arduino Compatible



The project presented here is an Arduino-compatible motor control board. The board consists of an ATMEGA328 microcontroller, LMD18201 H-Bridge, and 2 x potentiometers. This closed-loop servo system provides position control using a feedback potentiometer mounted on the output shaft of the gearbox and provides position control by turning the shaft of the reference potentiometer, the motor-gearbox output shaft follows the reference potentiometer. The project can also be used in other applications that require Arduino-compatible hardware and H-Bridge.

The project requires a special mechanism, where the DC motor's output shaft is mechanically coupled with the potentiometer shaft using a reduction gear. Approx. reduction ratio 15-50: 1. When the reference pot is turned, the motor shaft follows the position. This will provide a maximum rotation of 270 degrees. Multi-rotation is possible with the help of a multiturn potentiometer.

Note: It is important to tune the PID values in Arduino code to set your DC motor for smooth operations.

FEATURES

- Power Supply Motor 12V to 40V (48V Max)
- Motor Load 3A (Peak 6A)
- Logic Supply 5V DC @ 20mA
- On Board Jumper J1 for Brake, Closed for Normal Operations
- On Board Programming Connector for Arduino IDE
- Screw Terminals for Motor and Power Supply
- 2 X 3 Pin Male Header for Feedback and Reference Potentiometers
- Arduino Compatible
- PCB Dimensions 47.63MM X 42.55MM
- 4 X 3MM Mounting Holes



Arduino Pins Vs H-Bridge LMD18201

- Arduino D5 = PWM
- Arduino D6 = Direction
- Arduino D8 = Brake (Not Used - Optional)
- Arduino A0 Reference Potentiometer, AI Feedback Potentiometer

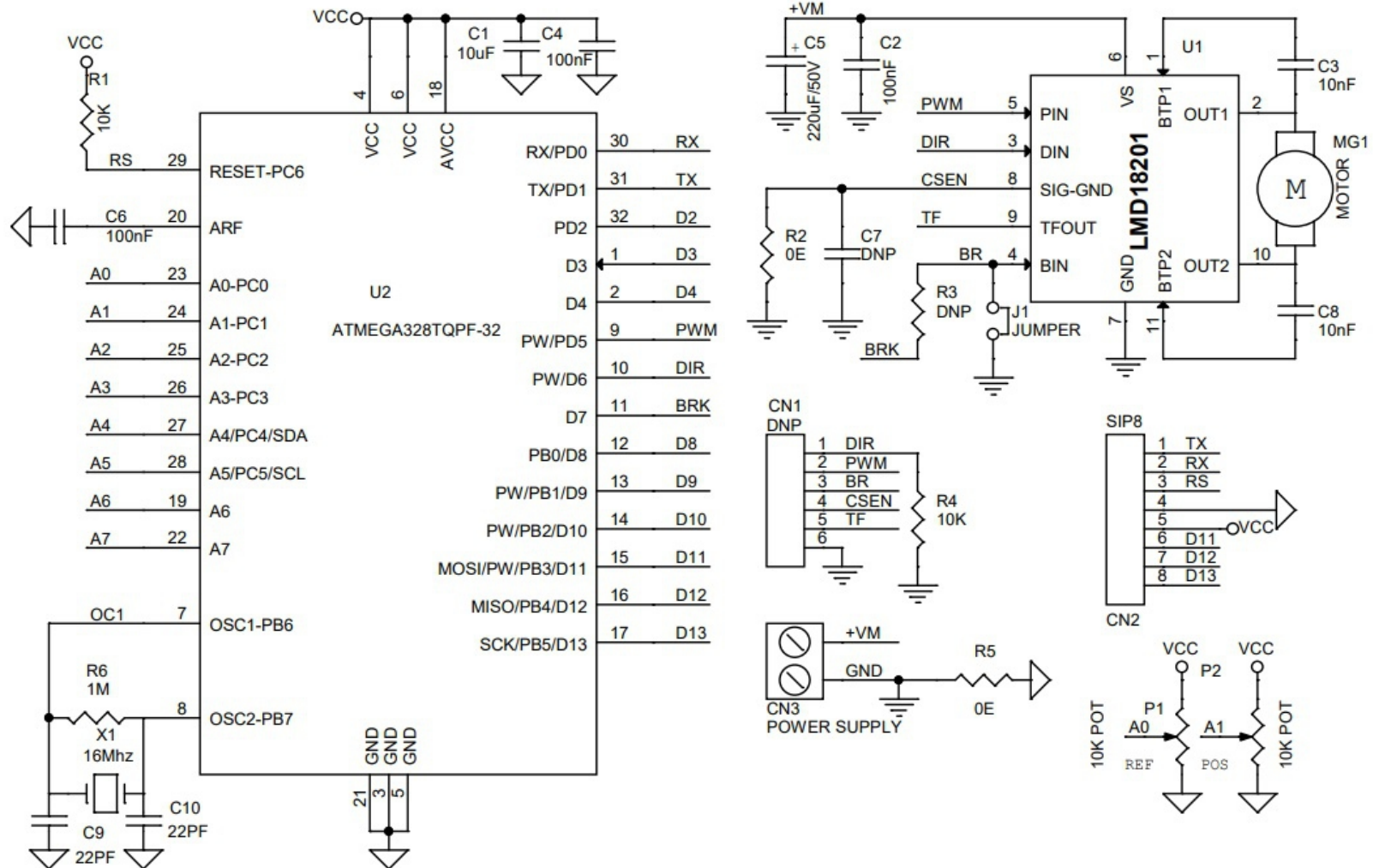
ARDUINO CODE

Arduino example code is available and the board can be programmed using the CN2 connector, the same connector helps burn the boot-loader to a new ATMEGA328 chip.

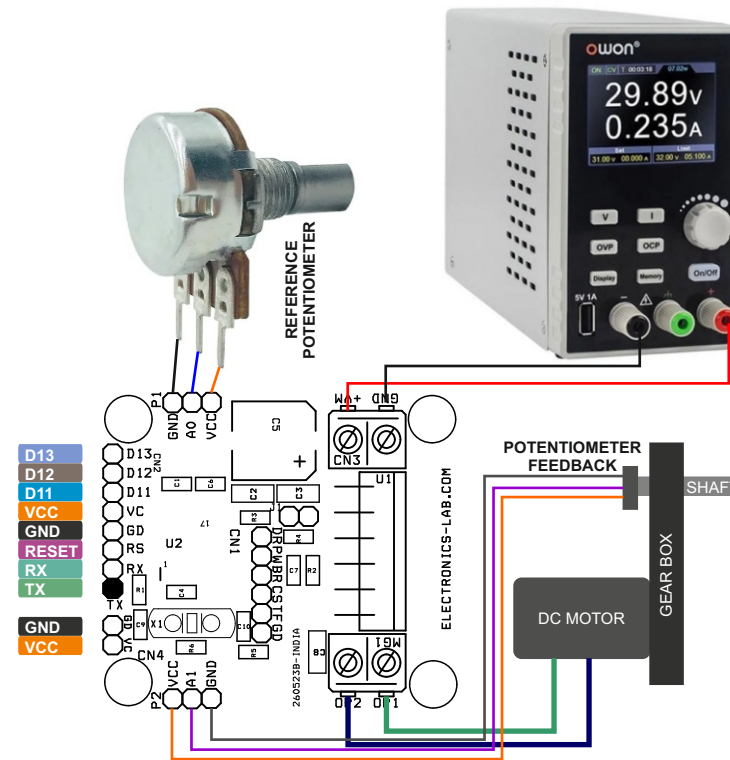
Refer to the following link for more info about Arduino programming:
<https://docs.arduino.cc/built-in-examples/arduino-isp/ArduinoToBreadboard>

This is a modified code, original author of the code:
<http://geekseebee.com>

Schematic



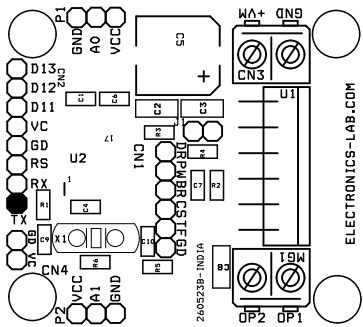
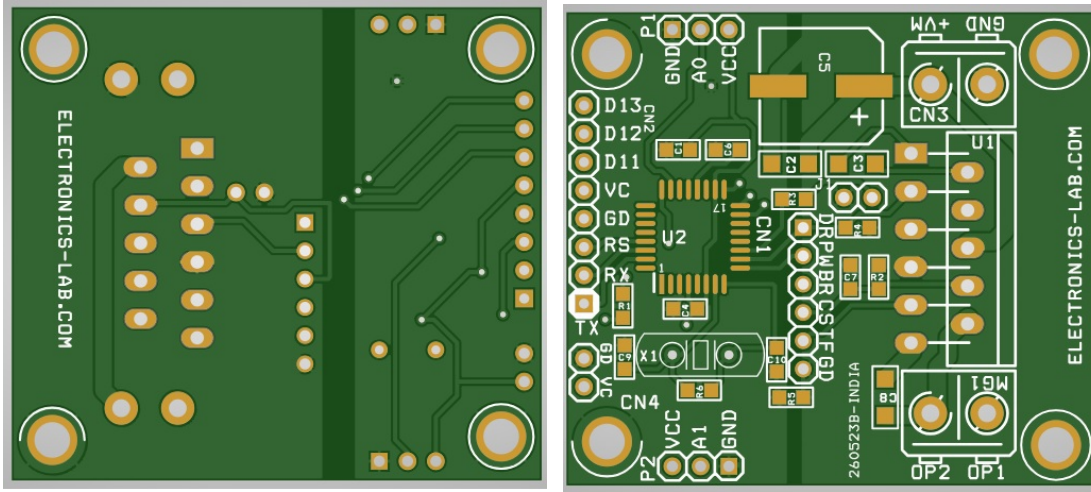
Connections



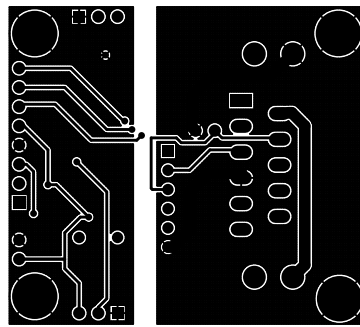
CONNECTION & OTHER DETAILS

- CN1: Optional Do Not Install
- Cn2: Programming Connector Pin 1 = Tx, Pin 2 = Rx, Pin 3 = Reset, Pin 4 = GND, Pin 5 = VCC, Pin 6 = D11, Pin 7 = D12, Pin 8 = D13
- Cn3: Pin 1 = Motor Power Supply, Pin 2 = GND
- Mg1: Pin 1 = Motor 1, Pin 2 = Motor 2
- P1: Reference Potentiometer
- P2: Feedback Potentiometer
- J1: the jumper must be closed to enable the Brake for normal operation.

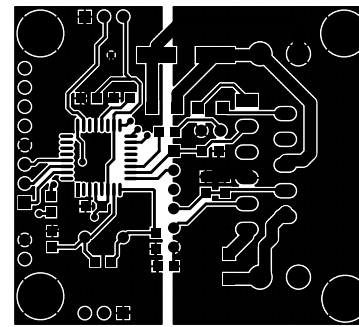
PCB



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 47.63MM X 42.55MM

Parts List

BOM						
NO	QNTY	REF	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	3	CN1,R3,C7	DNP			
2	1	CN2	8 PIN MALE HEADER PITCH 2.54MM	WURTH		732-5321-ND
3	1	CN3	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX		277-1247-ND
4	1	C1	10uF/10V CERMIC SMD SIZE 0805	YAGEO/MURATA		
5	3	C2,C4,C6	100nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA		
6	2	C3,C8	10nF/50V CERAMIC SMD SIZE 1206	YAGEO/MURATA		
7	1	C5	220uF/50V	RUBYCON		1189-1654-1-ND
8	2	C9,C10	22PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA		
9	1	J1	2 PIN MALE HEADER PITCH 2.54MM	WURTH		732-5315-ND
10	1	MG1	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX		277-1247-ND
11	2	P1,P2	10K POTENTIOMETER	CTS ELECTRO		CT2159-ND
12	2	R1,R4	10K 5% SMD SIZE 0805	YAGEO/MURATA		
13	2	R2,R5	0E SMD SIZE 0805	YAGEO/MURATA		
14	1	R6	1M 5% SMD SIZE 0805	YAGEO/MURATA		
15	1	U1	LMD18201	TI		LMD18201T/NOPB
16	1	U2	ATMEGA328TQPF-32	MICROCHIP		ATMEGA328PB-AURCT-ND
17	1	X1	16Mhz	ECS INC		X1103-ND
18	1	JUMP	SHUNT FOR JUMPER J1	SULLINS CONNECT		S9001-ND



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