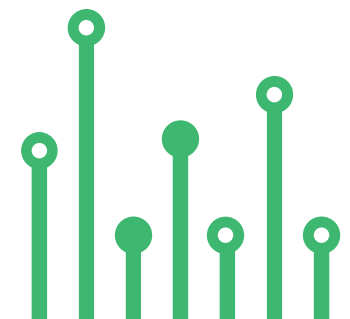


THE
electronics-lab
.com
from ideas to
boards

[electronics-lab - Projects](#) | [Embedded News](#) | [Online Community](#) | [e-Shop](#)

Open Source Hardware Electronics Projects

[electronics-lab.com /projects](https://electronics-lab.com/projects)





” RC Radio Controlled Switch with Relay



SKU: EL136338

RC Radio Controlled Switch with Relay



This RC Relay project enables control of large current devices using a Radio Control (RC) System. This RC switch converts hobby radio control (RC) pulses to control the on/off state of the Relay. On board LED indicates the output. The board is Arduino compatible and the example code can be modified as per user requirements. The relay ON/OFF threshold can be set as per user requirements. The Arduino sample code enables momentary ON/OFF control of the relay, but this can be modified for Latch output. The relay can handle a load up to 7A – 30V DC or 7 Amps 230AC Loads such as bulbs, LEDs, motors, fans, heaters etc. The project can be connected to an unused RC channel. It operates with 5V DC and draws 60mA current when the relay is ON. 3 Pin male header helps the user to connect the RC receiver. The project is Arduino compatible and can be programmed using Arduino IDE with the help of an onboard programming connector. The project consists of an Atmega328 microcontroller, programming/bootloader connector, relay, BC847 BJT transistor to drive the relay, freewheel diode for protection from the relay, and U2 PC817 provides isolation between the microcontroller and relay. D1 LED indicates output, D3 LED power LED. connector CN2 relayswitch connection, connector CN1 5V supply input.

Note: This board will work with any standard RC remote. In this project, we tested it with HOTRC DS-600 6CH 2.4GHz Radio System. Standard RC radio outputs is 50Hz – 1mS(1000uS) to 2mS(2000uS)

Arduino Code Credits: Tech Home You Tube

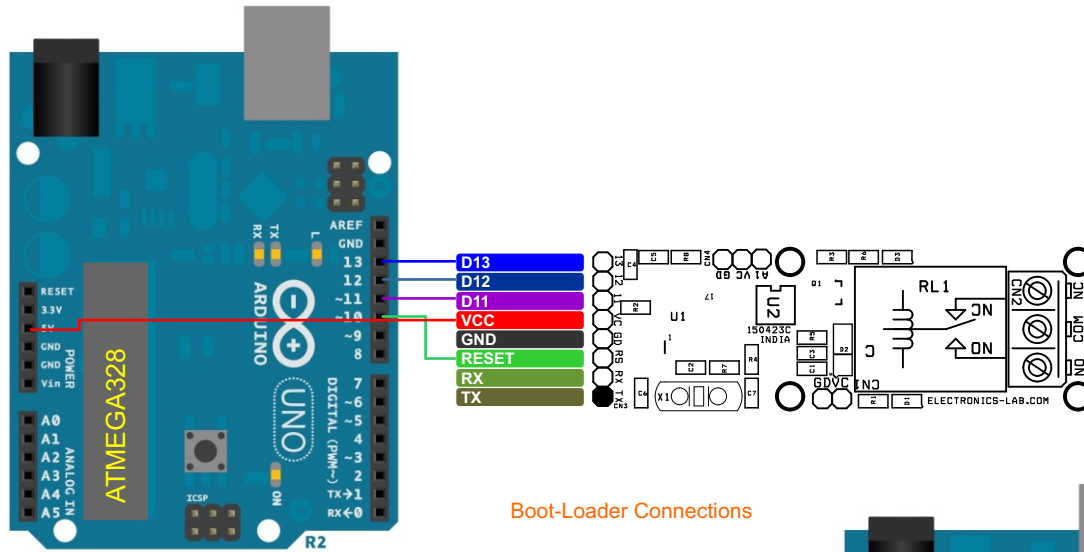
Features

- Supply 5V DC
- Current 60mA when Relay is On
- RC Signal 1000 to 2000 uS
- Relay Switch Activate Threshold Time 1460 – 1090uS
- Relay Output-Load 230V AC Up to 7Amps, 30V DC up to 7Amps
- On Board Power LED
- On Board Output LED
- Header Connector for RC Receiver Interface
- 4 x 2.5mm Mounting Holes
- PCB Dimensions 66.68 x 22.23mm

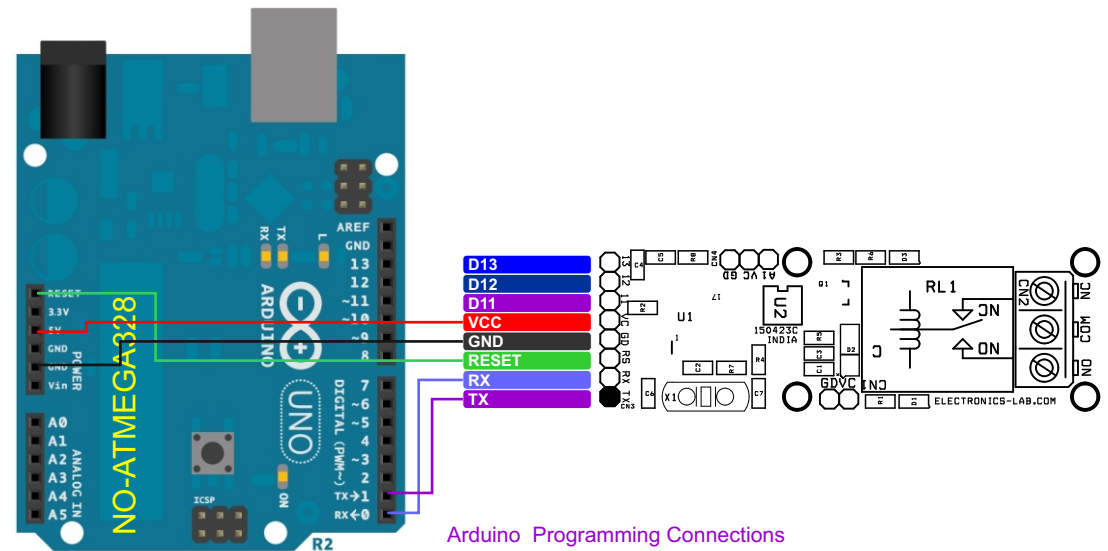


ARDUINO PROGRAMMING

Arduino Code is available as a download below. The user will be able to operate the Relay while the RC radio joystick is pulled down and the pulse width is between 1460–1090uS. The user may change this value in the code. Connector CN3 is provided to burn the bootloader and upload the Arduino code. Please refer to the connection diagram for programming.



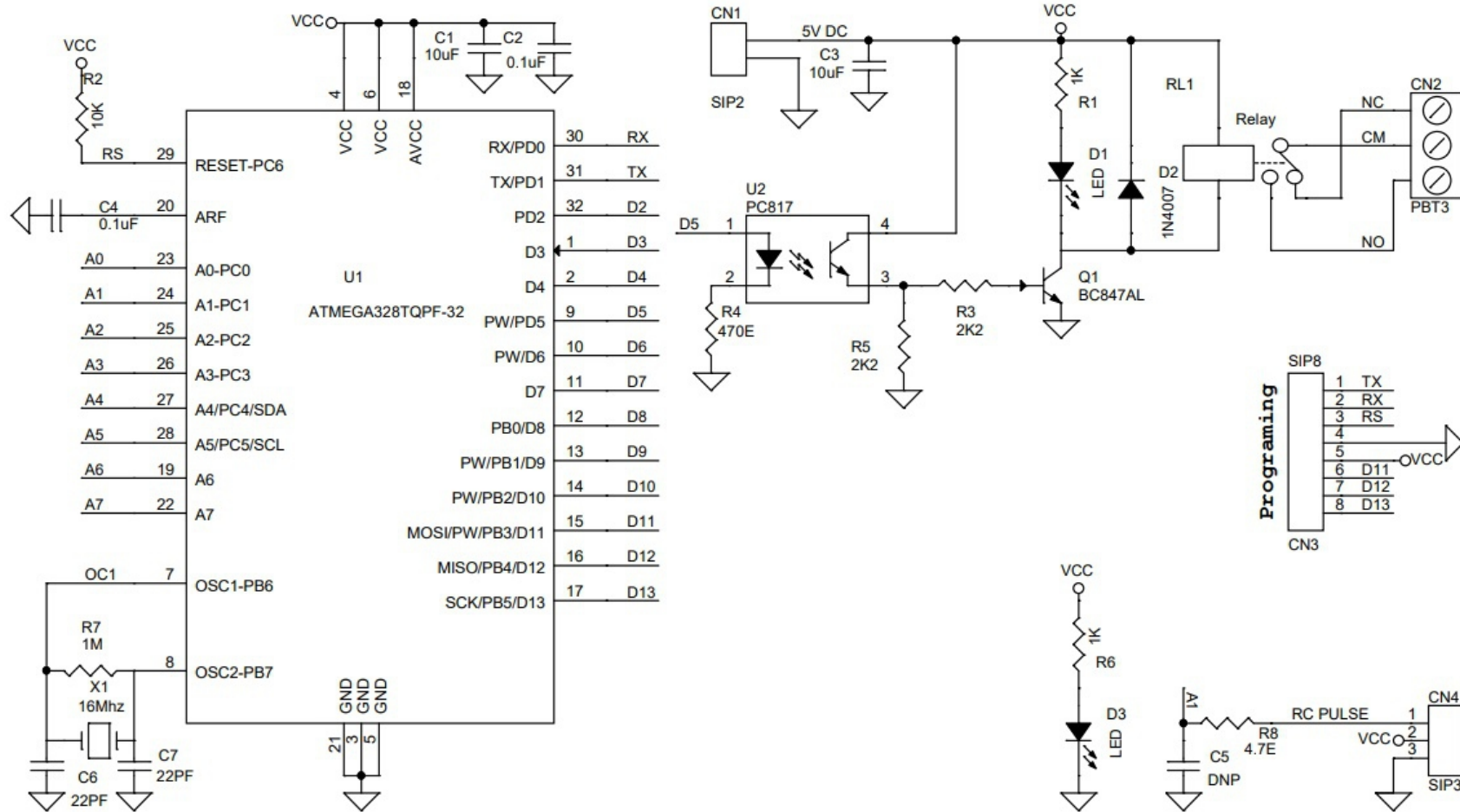
Boot-Loader Connections



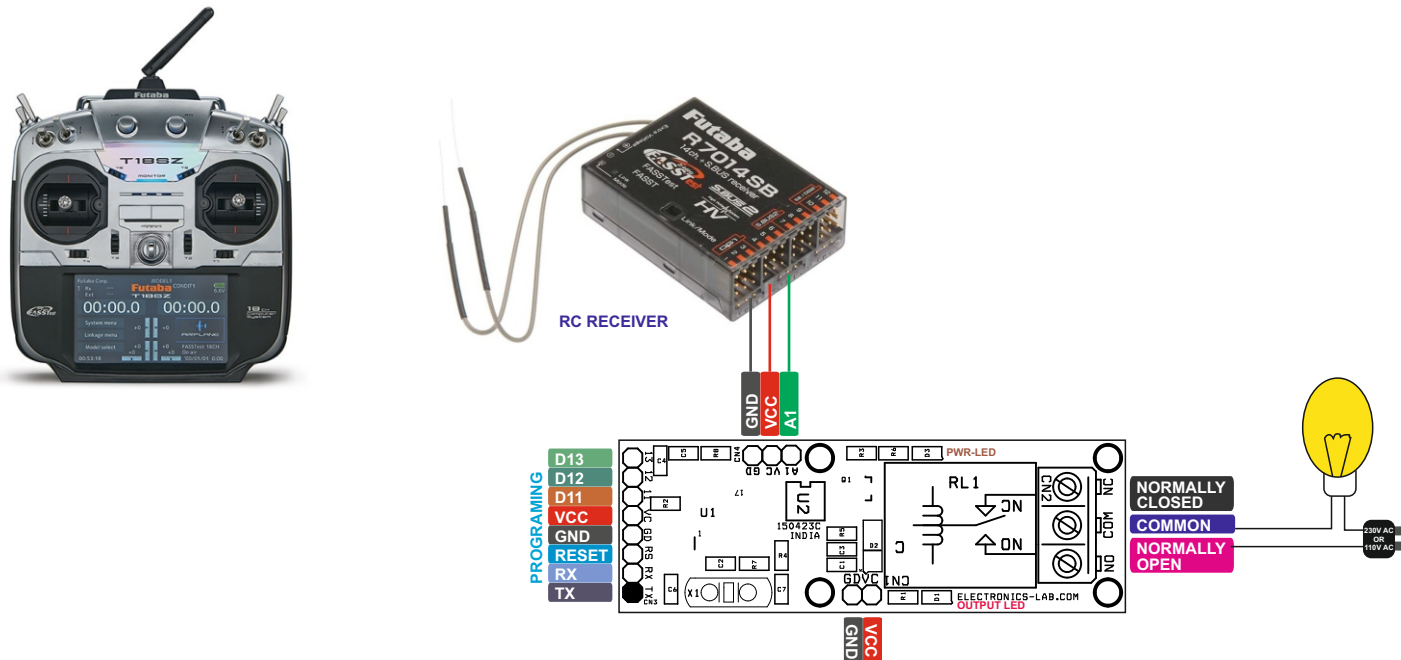
Arduino Programming Connections

More info about new Atmega328 chip programming: <https://docs.arduino.cc/built-in-examples/arduino-isp/ArduinoToBreadboard>

Schematic



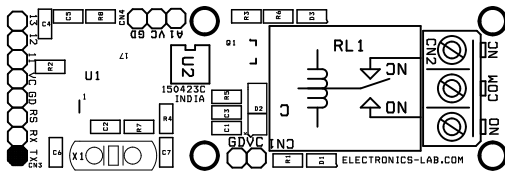
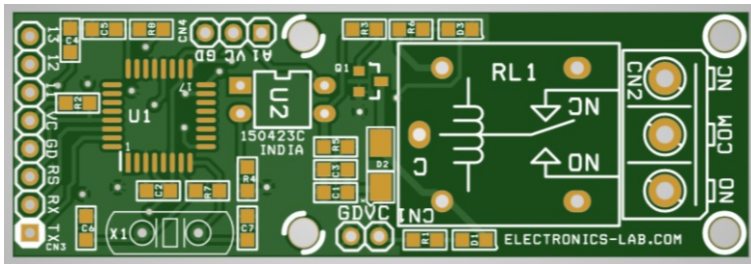
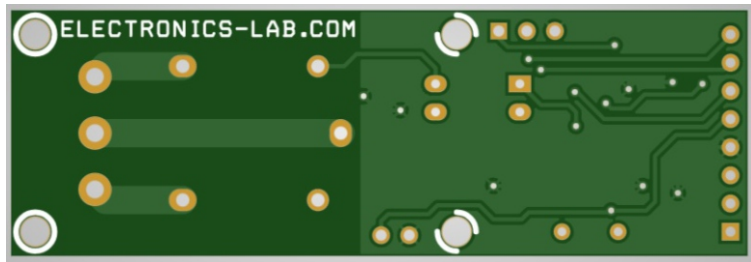
Connections



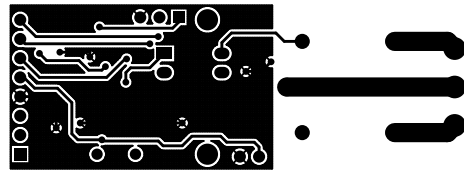
Connections and other Details

- CN1: Pin1 = VCC, Pin2 = GND
- CN2: Relay Switch/Output Pin1 = Normally Closed, Pin 2 = Common, Pin 3 = Normally Open
- CN3: Programming Connector Pin1 = TX, Pin 2 = RX, Pin 3 = Reset, Pin 4 = GND, Pin 5 = VCC, Pin 6 = D11, Pin 7 = D12, Pin 8 = D13
- CN4: RC Receiver Pin1 = RC Pulse Input, Pin2 = VCC, Pin3 = GND
- D1: Relay Output LED
- D3: Power LED

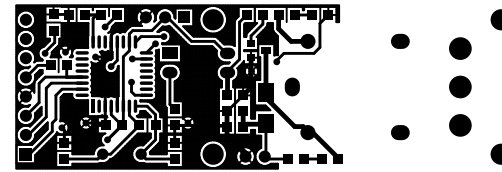
PCB



SILK SCREEN TOP



BOTTOM LAYER



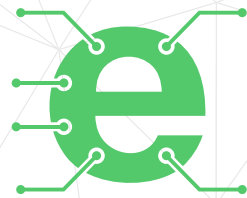
TOP LAYER

PCB DIMENSIONS 66.68 X 22.23 MM



Parts List

BOM						
NO	QNTY	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER'S PART NO
1	1	CN1	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
2	1	CN2	3 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1248-ND
3	1	CN3	8 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5321-ND
4	1	CN4	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
5	2	C1,C3	10uF/16V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
6	2	C2,C4	0.1uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	1	C5	DNP			
8	2	C6,C7	22PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
9	2	D1,D3	LED RED-GREEN SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
10	1	D2	1N4007 SMD DIODE	DIODE INCORP.	DIGIKEY	S1MBDITR-ND
11	1	Q1	BC847AL SMD SOT223	NEXPERIA	DIGIKEY	1727-2924-2-ND
12	1	RL1	Relay 5V	CIT RELAY	DIGIKEY	2449-J107F1CS125VDC.36-ND
13	2	R1,R6	1K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	1	R2	10K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
15	2	R3,R5	2K2 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
16	1	R4	470E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
17	1	R7	1M 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
18	1	R8	4.7E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
19	1	U1	ATMEGA328TQPF-32	MICROCHIP	DIGIKEY	ATMEGA328PB-AURCT-ND
20	1	U2	PC817 DIP4	AMERICAN BRIGHT	DIGIKEY	BPC-817(BBIN)-ND
21	1	X1	16Mhz	ECS INC	DIGIKEY	X1103-ND



Keep
In touch..

electronics-lab
.com

info@electronics-lab.com
www.electronics-lab.com

from ideas to **boards**

