

## AC Load ON/OFF Using Infra-Red Remote

Driving an AC high voltage and current load using an Infrared remote is very easy with this project. This is an open-source Arduino compatible hardware that is based on ATMEGA328 microcontroller, SSR (Solid-state Relay), Infrared Receiver TSOP1838, and analog input interface. We have used KSD215AC3 optically isolated solid-state relay to drive AC loads. We have tested this board with 200W/230V AC lamp, however, the load capacity of SSR is 15A. A snubber circuit is provided across the SSR-Triac which helps driving inductive loads. The heatsink on SSR is not required for loads up to 200W, however, for higher loads, it is advisable to mount SSR on a heatsink. Analog input can be used in applications such as motor speed control feedback, Heater controller, Feedback switch, Closed-loop control system etc. Connector CN3 is provided for Arduino Boot Loader burning and Code programming with Arduino IDE.

Arduino Pin configurations: D9>>SSR Relay, Analog Input>>A2, D2>>TSOP1838 Infrared Sensor

Application: IR Lamp ON/OFF, AC Lamp Flasher, Remote Fan ON/OFF, IR Heater ON/OFF, closed loop Heater controller with analog temperature sensor, Solenoid driver, AC Motor Control, and valve Control.

This board can accommodate other SSR like **S216S02** from sharp or CPC1998 SSR from IXYS. SSR **KSD215AC3** available from http://www.cosmo-ic.com/

After hardware assembly new Atmega328 chip needs Boot-Loader Burning and code programming, more info on boot-loader/Arduino programming available here:

https://www.electronics-lab.com/project/installing-the-arduino-bootloader-on-the-atmega328p-microcontroller/ https://www.electronics-lab.com/project/programming-atmega328p-microcontroller-with-arduino-ide/

I have used MP3 player IR remote to test this circuit, but other remote also can be used. It is important to pair the IR remote with this circuit, More info on pairing remote and decoding IR transmitter available here: <a href="https://randomnerdtutorials.com/arduino-ir-remote-control/">https://randomnerdtutorials.com/arduino-ir-remote-control/</a>

## Features

- Operating Supply DC circuit 5V DC @ 20mA
- Operating Supply AC Supply 230V AC
- Load up to 500W (SSR Current rating 15Amps)
- TSOP1838 IR Receiver for Remote Control Application
- Analog Sensor Input for speed control of Motor/Feedback/temperature Control
- Snubber Circuit across the SSR-Traic to Drive Inductor load
- PCB Dimensions 85.09MM X 31.91MM











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BOTTOM LAYER



SILK SCREEN TOP

(d)

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TOP LAYER PCB DIMENSIONS 85.09MM X 31.91MM

BOM				
SR.	QNTY.	REF	DESC	VENDOR/DIGIKEY/MOUSER
1	1	CN1	2PIN SCREW TERMINAL 5.08MM	DIGIKEY 277-1247-ND
2	1	CN2	3PIN SCREW TERMINAL 5.08MM	DIGIKEY 277-1248-ND
3	1	CN3	8 PIN MALE HEADER 2.54MM	DIGIKEY S1011EC-40-ND
4	3	C1,C3,C10	0.1uF/50V SMD SIZE 0805	YAGEO
5	1	C2	10uF/10V SMD SIZE 0805	YAGEO
6	4	R4,C4,C6,C9	DNP	OMIT
7	1	C5	0.01/275VX2 PITCH-15MM	DIGIKEY 399-11811-ND
8	2	C7,C8	22PF/50V SMD SIZE 0805	YAGEO
9	1	Q1	BC847AL	DIGIKEY 1727-2924-2-ND
10	1	R1	470E 5% SMD SIZE 0805	YAGEO
11	1	R2	39E/2W 5%	DIGIKEY BC4800CT-ND
12	2	R3,R8	10K 5% SMD SIZE 0805	YAGEO
13	1	R5	2K2 5% SMD SIZE 0805	YAGEO
14	1	R6	1M 5% SMD SIZE	YAGEO
15	2	R7,R9	10E 5% SMD SIZE 0805	YAGEO
16	1	U1	ATMEGA328TQPF-32	DIGIKEY ATMEGA328PB-AURCT-ND
17	1	U2	KSD215AC3/IXYS CPC1998J	http://www.cosmo-ic.com/
18	1	U3	TSOP1838	MOUSER
19	1	U4	3 PIN MALE HEADER 2.54MM PITCH	DIGIKEY S1011EC-40-ND
20	1	X1	16Mhz CRYSTAL	DIGIKEY X1103-ND











www.electronics-lab.com







Code Programming Connection







