

# **SERIAL 8 CHANNEL AC 230V SSR AND DIMMER BLUETOOTH INTERFACE**

## **Table of Contents**

OVERVIEW .....	3
SERIAL 8 CHANNEL AC 230V SSR AND DIMMER WITH BLUETOOTH INTERFACE	3
FEATURES .....	4
BTA12400 IC.....	4
MOC 3021 .....	5
FIRING ANGLE.....	7
CONNECTING 230V AC 8 CHANNELDIMMER WITH ELECTRONIC GADGETS.....	8
BLOCK DIAGRAM.....	11
BLUETOOTH.....	12
PROCEDURE TO OPERATE .....	13

## OVERVIEW

### SERIAL 8 CHANNEL AC 230V SSR AND DIMMER WITH BLUETOOTH INTERFACE

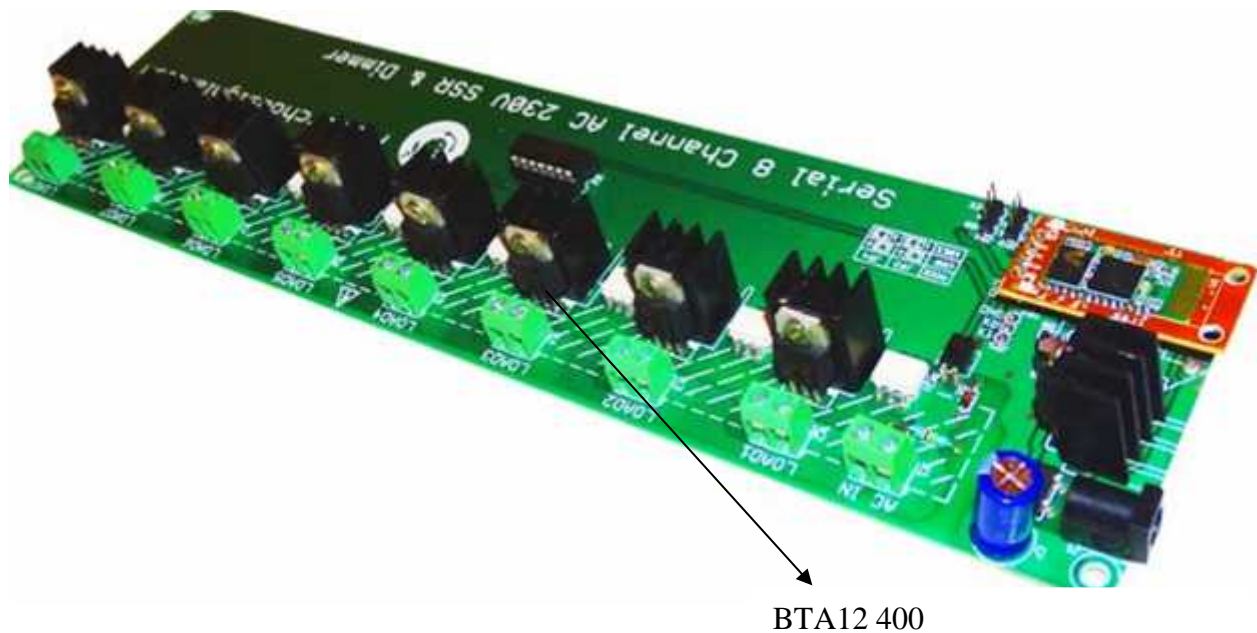


The board can be used in application where dimming of 110-220v AC power is required like dimming of bulb or fan. The board can be controlled with Serial data from any microcontroller 0-100% dimming or ON/OFF control. Main power(230v) is completely isolated from the microcontroller.

## **FEATURES**

- Works on AC power supply 230V.
- Load Capacity 12 Amp AC(Up to 2000 Watt)
- Isolated from mains power
- Works from any microcontroller.
- Serial Control (TTL).
- Simultaneous 8 load control with 0-100% dimming.
- Act as 8 channel solid state relay with ON/OFF and dimming.
- Optional input for Microcontroller or Bluetooth, XBEE, and USB interface pin TX,RX,5V,GND.

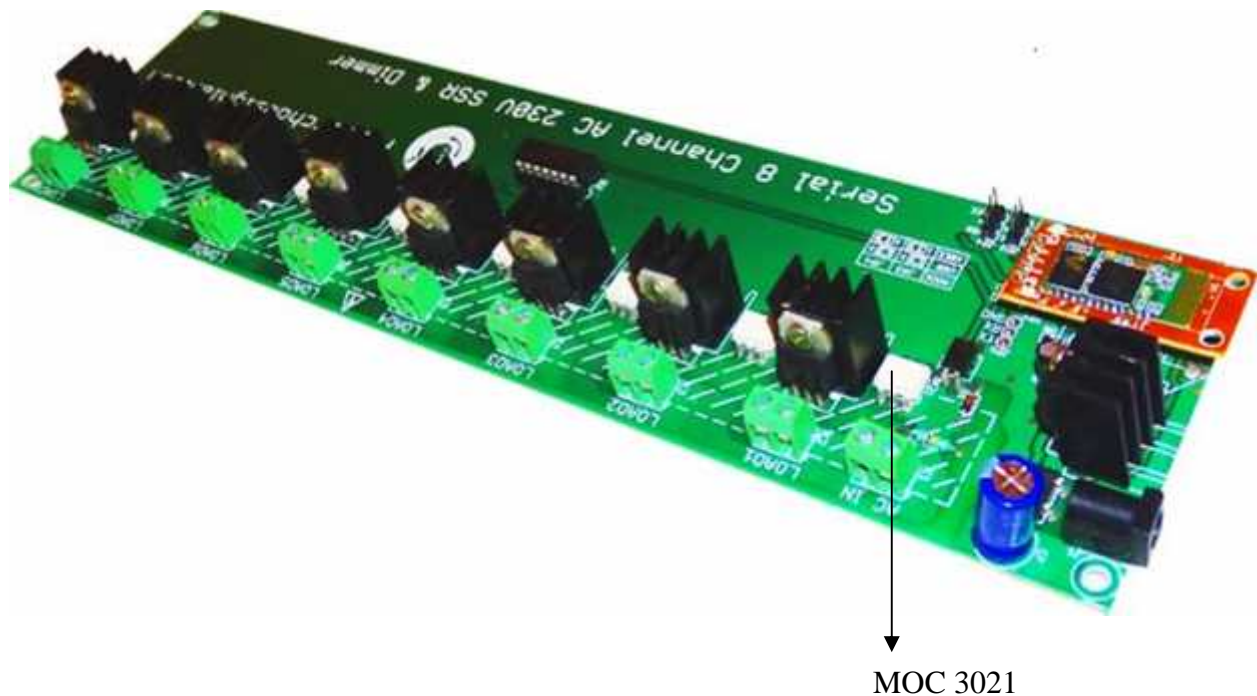
### **BTA12400 IC**



### Electrical Characteristics

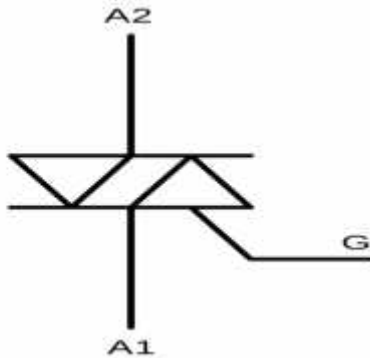
- Average Power Dissipation of 0.5W
- Operating Temperature +120 degC
- Holding Current (maximum)-30mA
- Latching Current(maximum)-60mA

### MOC 3021



It is a 6pin Random Phase optoisolators TRIAC driver output

## **TRIAC**



from Triode for Alternating Current, is a genericized tradename for an electronic component that can conduct current in either direction when it is triggered (turned on), and is formally called a bidirectional triode thyristor or bilateral triode thyristor.

### **Applications:**

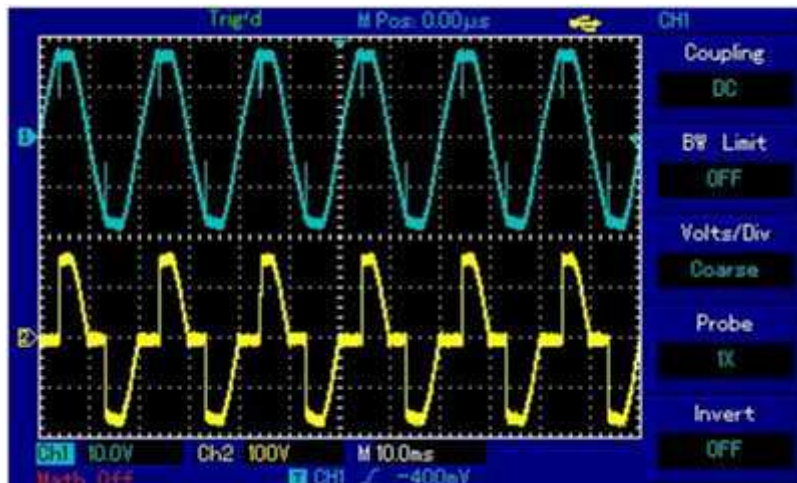
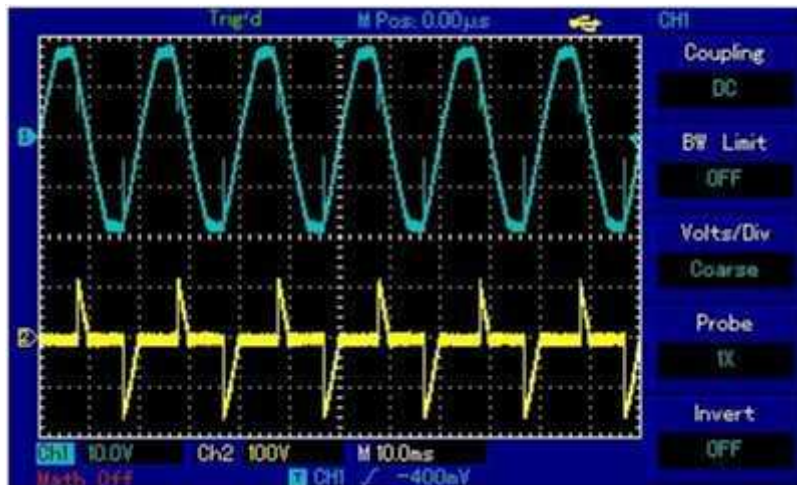
- Solenoid/Valve Controls
- Static ac Power Switch
- Lamp Ballasts
- Solid State Relays
- Interfacing Microprocessors to 115 Vac Peripherals
- Incandescent Lamp Dimmer
- Motor Controls

### **Electrical Characteristics**

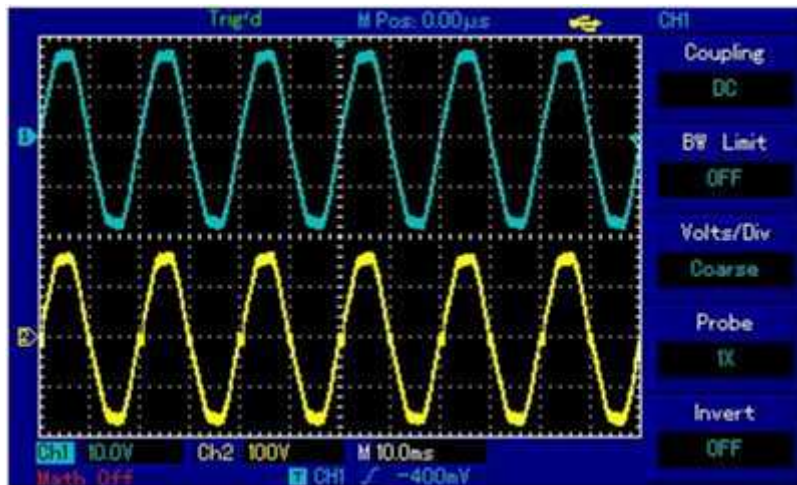
- Total Power Dissipation @ TA is 25° is 4.4mW
- Storage Temperature Range is -40 to +150 degC

## FIRING ANGLE

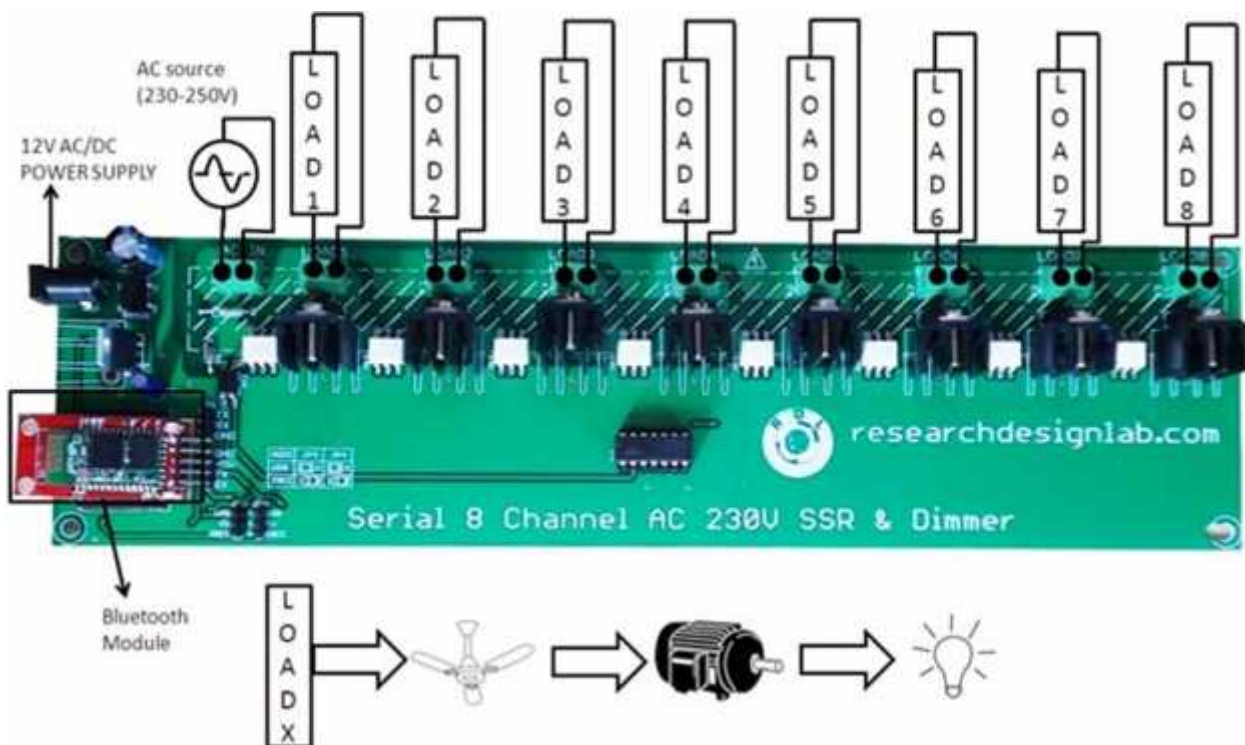
Phase angle of applied voltage at which the Thyristor conduct







## CONNECTING 230V AC 8 CHANNEL DIMMER WITH ELECTRONIC GADGETS





**UART INPUT FOR LOADS**

A=load1      E=load5

B=load2      F=load6

C=load3      G=load7

D=load4      H=load8

S=ALL      OFF      (LOAD1=OFF,LOAD2=OFF,LOAD3=OFF,LOAD4=OFF,LOAD5=OFF  
LOAD6=OFF , LOAD7=OFF, LOAD8=OFF )

N=ALL ON (LOAD1=100%, LOAD2=100%, LOAD3=100%, LOAD4=100%, LOAD5=100%,  
LOAD6=100%, LOAD7=100%, LOAD8=100%)

**Example**

A100= load1 at 100% dimmer level.

A026=load1 at 26% dimmer level.

B065=load2 at 65% dimmer level.

C089=load3 at 89% dimmer level.

**LOAD1**

	UART INPUT	DIMMER LEVEL
1	A100	100%
2	A090	90%
3	A092	92%
4	A050	50%
5	A010	10%

**LOAD2**

	UART INPUT	DIMMER LEVEL
1	B100	100%
2	B090	90%
3	B092	92%
4	B050	50%
5	B010	10%

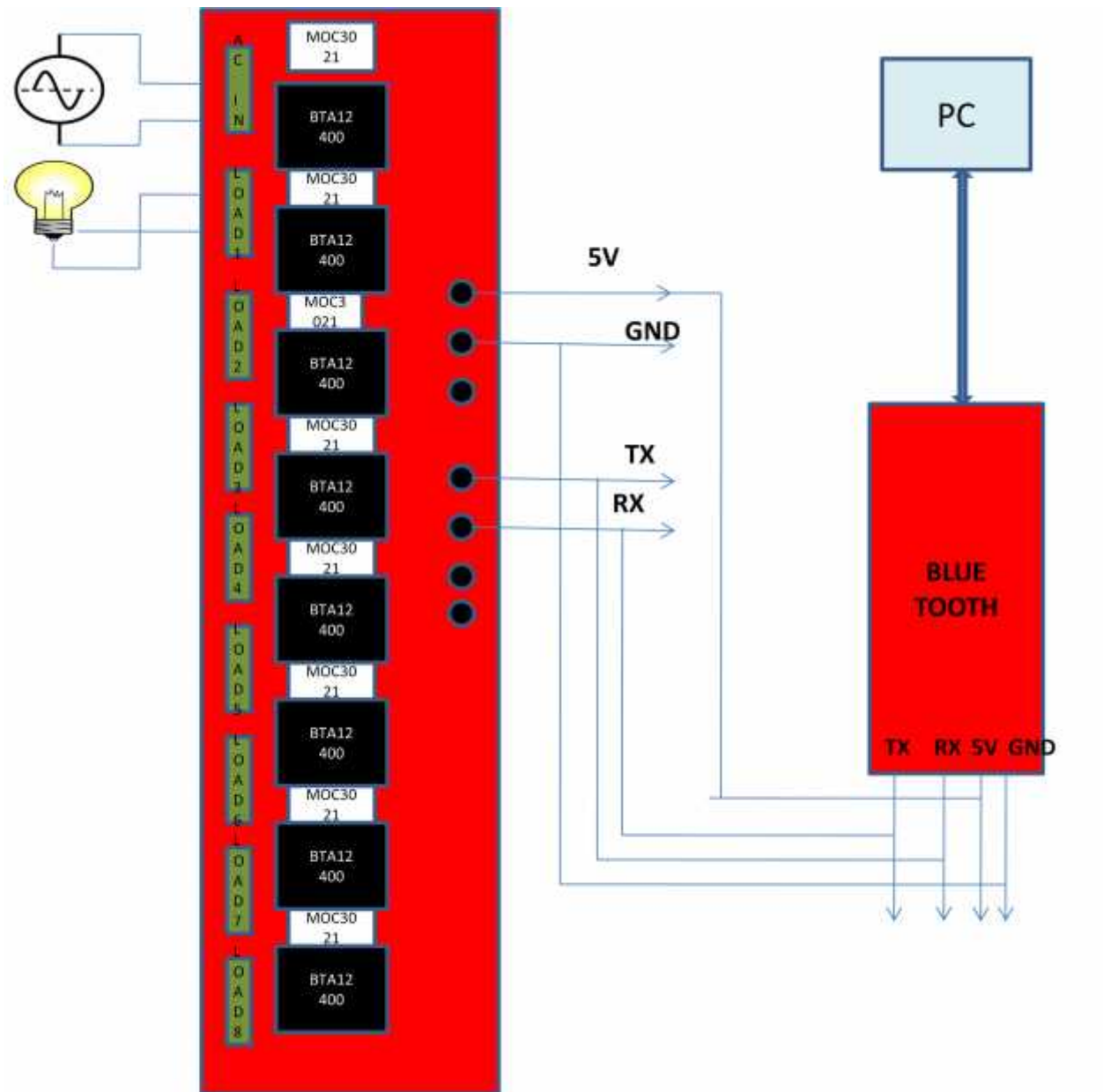
**LOAD3**

	UART INPUT	DIMMER LEVEL
1	C100	100%
2	C090	90%
3	C092	92%
4	C050	50%
5	C010	10%

**All ON and All OFF**

	UART INPUT	DIMMER LEVEL LOAD 1,2,3
1	S	0%
2	N	100%

## BLOCK DIAGRAM



## BLUETOOTH



### Bluetooth Module HC 05 Specifications:

- Bluetooth protocol: Bluetooth Specification v2.0+ED
- Frequency: 2.4GHz ISM band
- Modulation: GFSK(Gaussian Frequency Shift Keying)
- Emission power:  $\approx 4\text{dBm}$ , Class 2
- Sensitivity:  $\approx -84\text{dBm}$  at 0.1% BER
- Speed: Asynchronous: 2.1Mbps(Max) / 160 kbps, Synchronous: 1Mbps/1Mbps
- Security: Authentication and encryption
- Profiles: Bluetooth serial port
- Power supply: +3.3VDC 50mA
- Working temperature:  $-20 \sim +75$  Centigrade
- Dimension: 26.9mm x 13mm x 2.2 mm

### Bluetooth Module HC 05 Application:

- Computer and peripheral devices
- GPS receiver
- Industrial control
- MCU projects

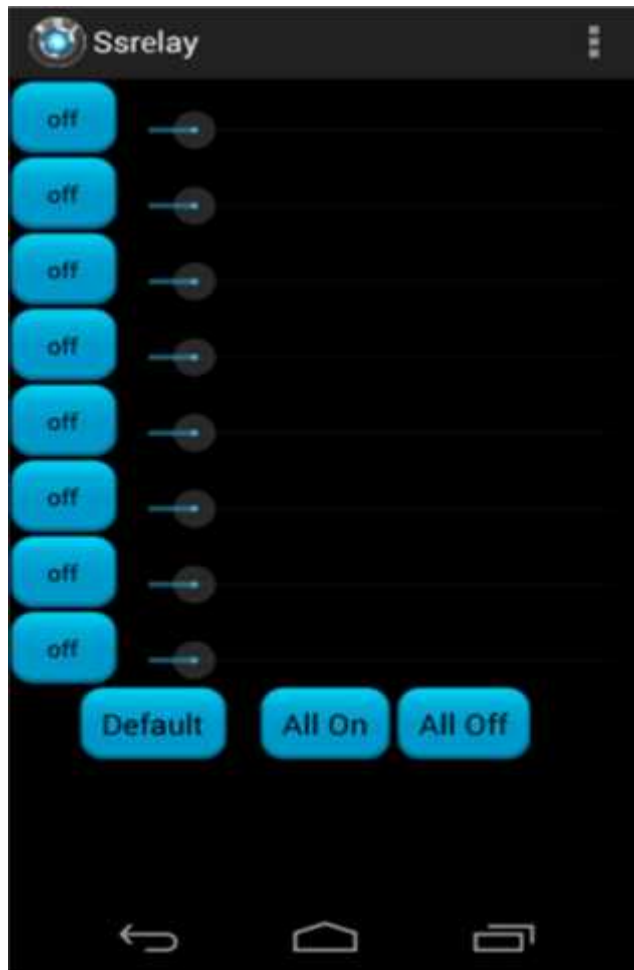
## PROCEDURE TO OPERATE

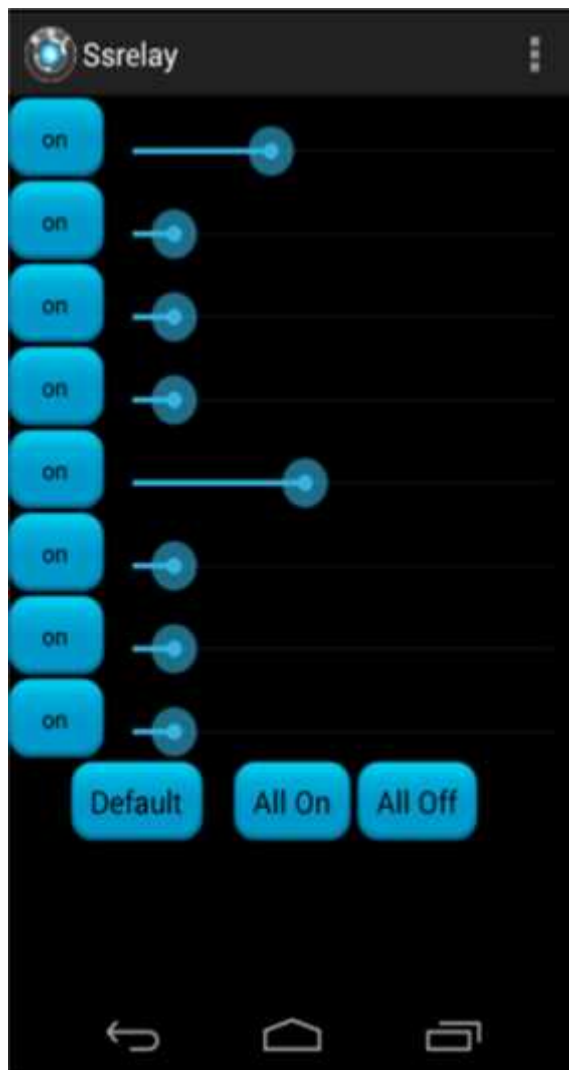
- Download the Bluetooth SPP app of Research design lab from play store









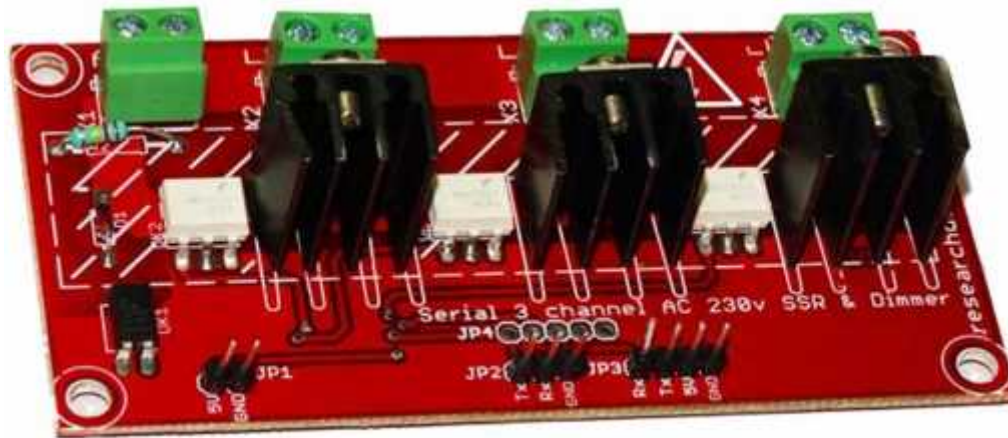




**NOTE:** Since this module working with live 230V AC, while experimenting user has to take proper safety precautions.

## RELATED PRODUCTS

### SERIAL 3 CHANNEL AC 230V SSR AND DIMMER



### DIGITAL DIMMER MODULE

