

Relay Module







What is Relay?



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Relay

- A **relay** is a switch that is operated through an electrical signal.
- They are mainly used in controlling high power circuit with a low power signal.
- For example, with the help of a relay, you can control an AC bulb with evive. You can control high power AC as well as DC circuits with the relay.



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• A relay consists of an electromagnetic coil and a Single pole double throw switch (SPDT).

• An SPDT switch has one input and two outputs. As seen in the image there is a part in the symbol with marking NO, NC, and COM on it, that is an SPDT switch.





Working of electromagnetic relays

Working of electromagnetic relays





Working of electromagnetic relays

- In this COM is the input of the switch, NC means normally closed and NO means normally open. Both NC and NO are outputs of SPDT switch. The contact that connects the output to input in SPDT is called **pole**.
- The spring-like structure symbolizes an electromagnetic coil which act as magnet when current passes through it.





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When the coil is not energized NC and COM remains connected in SPDT.

Working of electromagnetic relays

- As soon as the coil is energized NO and COM gets connected.
- When the coil is energized magnetic field is generated around it, the pole gets attracted towards this field and it shifts itself from NC to NO. Hence NO and COM get connected.
- As soon as coil gets de-energized coil losses its magnetic field and pole moves back to original position and NC and COM gets connected again.









Controlling Light Bulb using Relay and evive



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• Fix the bulb holder into the upper plate by removing the outer cap from the bulb holder assembly.







- Take a small piece of electrical wire and attach it to one of the two outlets of the bulb holder.
- Take the electrical wires which have a plug attached. Attach anyone to the other outlet of the bulb holder.





- Bring the open ends of the wire to the top of the plate from the hole given.
- Connect one open wire to NO and the other to COM of the relay module.





- Attach all the four sides, i.e. front, back, left, and right to the top plate using M3 nuts and bolts.
- Before fixing the bottom side of the box, make sure that you pass the wires through one of the holes given at the bottom. Attach the bottom plate using M3 nuts and bolts.







Circuit Diagram

• VCC and GND of the relay are connected to 5V and GND of evive respectively and Signal pin is connected to digital pin 2 on evive.





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Circuit Diagram

• Connect the bulb.





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Interfacing evive with PictoBlox

- Connect evive to your laptop/PC and open PictoBlox.
- In PictoBlox, go to the menu and click on the Boards Select the evive.

Board Connect 💉	My Project	Save
evīve		
ESP32		
Arduino Uno		
Arduino Nano		
Arduino Mega		





Interfacing evive with PictoBlox

• Once you've selected the board, click on the Connect tab and connect the board.

? Help	Connect to Port	
Serial Po	rts Bluetooth Ports	
COM1	Connect	
Device name COM26	Connect	
Select your device in the list above.		
• • •		
Refresh		

? Help	Connect to Port
	Serial Ports Bluetooth Ports
	Connected to COM26
Disconnec	Go to Editor





PictoBlox Script

- Make the Script.
- Set relay at pin () to () block, set the state of the relay to the specified state ON or OFF.





PictoBlox Script

• Upload the code onto evive by clicking on the Upload Code Button:







Testing

STEMpedia

• Be careful while using the AC supply in this project.





