

ELECTRICAL LAB

ATUL SINGH ARORA



Workshop

Mr. Jatinder Singh

Indian Institute of Science Education and Research, Mohali

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ACRONYMS

TO CONTROL A LAMP WITH A SINGLE WAY SWITCH

August 18, 2012

1.1 AIM

To control a lamp with a single way switch.

1.2 THEORY

1.2.1 *Tools*

1. Pliers
2. Screwdriver
3. Electrical Line Tester

1.2.2 *Material*

1. Single way switch
2. Lamp
3. Lamp Holder
4. Bakelite Sheet
5. Wires
6. Screws
7. Nut Bolts
8. Terminals

1.3 PROCEDURE

1. Took a suitable Bakelite sheet and attached the following using screws & nut-bolts
 - a) Power Connectors
 - b) Switch

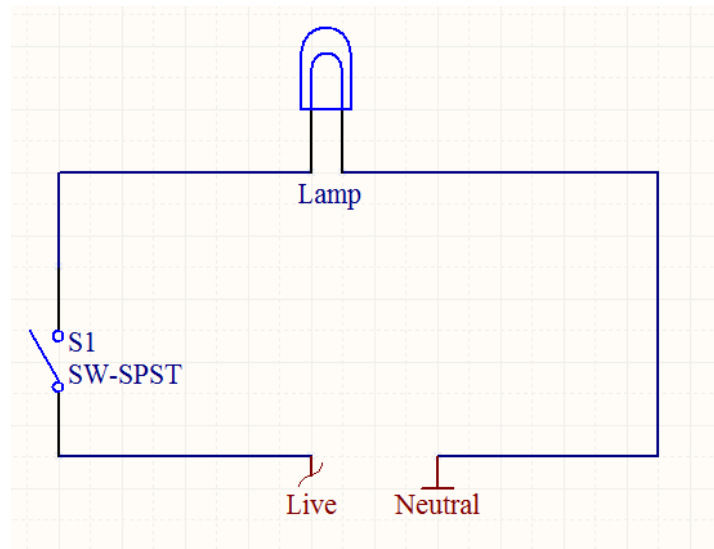


Figure 1: Lamp controlled by a Single Way Switch

2. Connected the circuit according to the circuit diagram as given in [Figure 1](#), keeping the following in mind
 - a) *Red Wires* are used for the phase connections.
 - b) *Black Wires* are used for the neutral connections.
 - c) Colours other than Red, Black and Green can be used for the connecting wires.
3. Attached the Lamp Holder using screws & nut-bolts.

1.4 PRECAUTION

1. Connections should be tight, viz. shouldn't come out when pulled.
2. Wires shouldn't be sticking out of the connections without insulation.
3. Wires should be of appropriate length.
4. Colours of the wires should be chosen in accordance with their type.

1.5 ACKNOWLEDGEMENTS

I thank Mr. Jatinder Singh for his guidance during the experiment.

TO CONTROL A LAMP FROM TWO DIFFERENT PLACES

August 25, 2012

2.1 AIM

To control a lamp from two different places.

2.2 THEORY

Two simple circuits can be used for controlling a lamp from two different places.

[Figure 2](#) shows the first setup, consisting of 2 two way switches (or more precisely, SW-SPDTs, viz. Switch - Single Pole Double Terminal) and a lamp holder. The idea here is to use the two way switches to connect and disconnect the phase of the Lamp holder, while the neutral is hard wired.

In [Figure 3](#), instead of connecting the neutral permanently to the Lamp holder, we use the fact that the Lamp will be operational, as long as one of the terminals is connected to Phase and the other to Neutral. This configuration, as given in the circuit diagram, is a simple realization of the same.

2.2.1 Tools

1. Pliers
2. Screwdriver
3. Electrical Line Tester

2.2.2 Material

1. Two way switches
2. Lamp
3. Lamp Holder
4. Bakelite Sheet
5. Wires
6. Screws

7. Nut Bolts

8. Terminals

2.3 PROCEDURE

1. Took a suitable Bakelite sheet and attached the following using screws & nut-bolts
 - a) Power Connectors
 - b) Switches
2. Connected the circuit according to the circuit diagrams as given in Figure 2 and Figure 3, keeping the following in mind

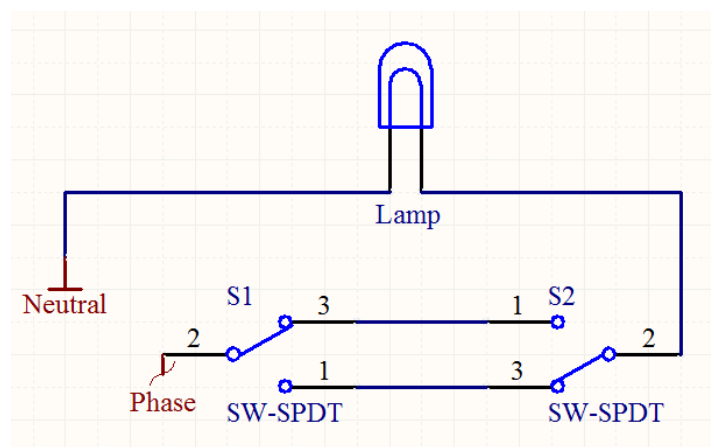


Figure 2: Lamp controlled by 2 different Two Way Switches

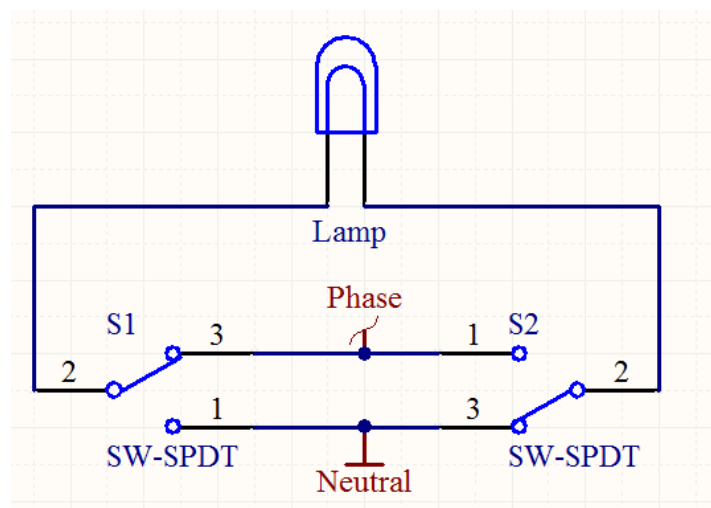


Figure 3: Lamp controlled by 2 different Two Way Switches

- a) *Red Wires* are used for the phase connections.
 - b) *Black Wires* are used for the neutral connections.
 - c) Colours other than Red, Black and Green can be used for the connecting wires.
3. Attached the remaining components using screws & nut-bolts.

2.4 PRECAUTION

- 1. Connections should be tight, viz. shouldn't come out when pulled.
- 2. Wires shouldn't be sticking out of the connections without insulation.
- 3. Wires should be of appropriate length.
- 4. Colours of the wires should be chosen in accordance with their type.

2.5 ACKNOWLEDGEMENTS

I thank Mr. Jatinder Singh for his guidance during the experiment.

TO MAKE A FLUORESCENT TUBE LIGHT CIRCUIT

August 25, 2012

3.1 AIM

To make a fluorescent tube light circuit using a ballast.

3.2 TOOLS

1. Pliers
2. Screwdriver
3. Electrical Line Tester

3.3 MATERIAL

1. Tube Light
2. Tube Light Holder
3. Electronic Ballast
4. Bakelite Sheet
5. Nuts
6. Bolts
7. Wires

3.4 PROCEDURE

Connected the circuit according to the circuit diagram as given in [Figure 4](#), keeping the following in mind

1. *Red Wires* are used for the phase connections.
2. *Black Wires* are used for the neutral connections.
3. Colours other than Red, Black and Green can be used for the connecting wires.

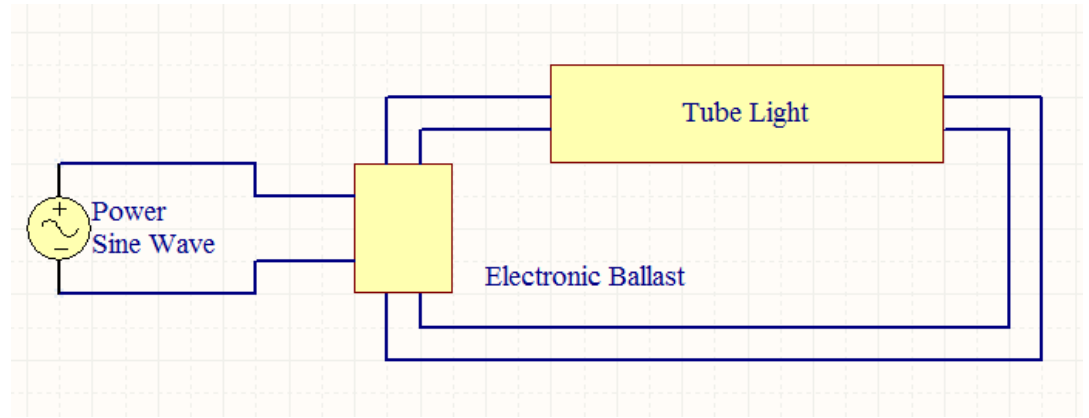


Figure 4: Redistribution Board

3.5 PRECAUTION

1. Connections should be tight, viz. shouldn't come out when pulled.
2. Wires shouldn't be sticking out of the connections without insulation.
3. Wires should be of appropriate length.
4. Colours of the wires should be chosen in accordance with their type.
5. All tools used must be insulated at their handles.

3.6 ACKNOWLEDGEMENTS

I thank Mr. Jatinder Singh for his guidance during the experiment.

TO MAKE A SUB DISTRIBUTION BOARD

September 1, 2012

4.1 AIM

To make a sub-distribution board for controlling a Lamp, a Fan (via a Ceiling Rose) and a Power Socket, using three separate switches.

4.2 THEORY

This sub-distribution board is designed to control one lamp, one power socket and a fan. The switches are connected in parallel. The neutral and earth (ground) connections are common.

4.2.1 Tools

1. Pliers
2. Screwdriver
3. Electrical Line Tester

4.2.2 Material

1. Single way switch
2. Lamp
3. Lamp Holder
4. Bakelite Sheet
5. Wires
6. Screws
7. Nut Bolts
8. Ceiling Hose
9. Terminals

4.3 PROCEDURE

1. Took a suitable Bakelite sheet and attached the following using screws & nut-bolts
 - a) Power Connectors
 - b) Switch
2. Connected the circuit according to the circuit diagram as given in Figure 5, keeping the following in mind

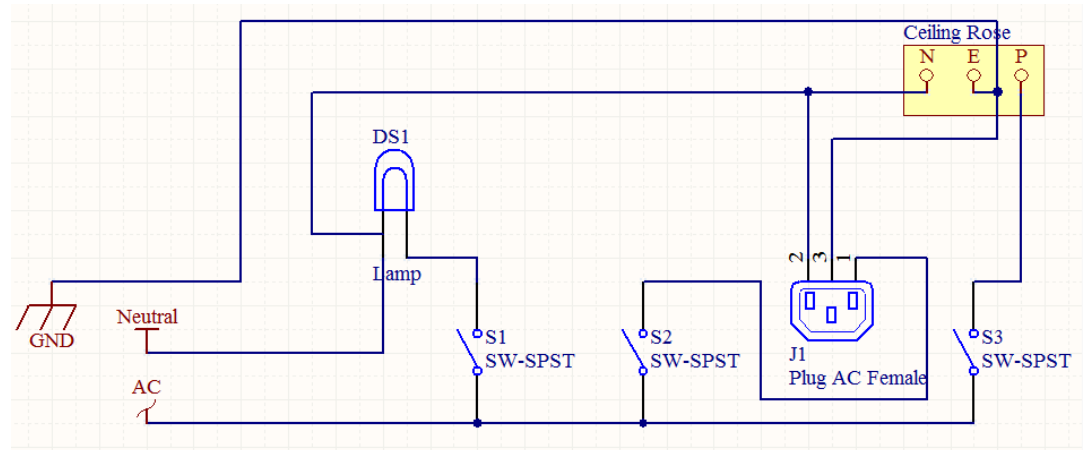


Figure 5: Redistribution Board

- a) *Red Wires* are used for the phase connections.
- b) *Black Wires* are used for the neutral connections.
- c) Colours other than Red, Black and Green can be used for the connecting wires.

3. Attached the remaining components using screws & nut-bolts.

4.4 PRECAUTION

1. Connections should be tight, viz. shouldn't come out when pulled.
2. Wires shouldn't be sticking out of the connections without insulation.
3. Wires should be of appropriate length.
4. Colours of the wires should be chosen in accordance with their type.

4.5 ACKNOWLEDGEMENTS

I thank Mr. Jatinder Singh for his guidance during the experiment.

COLOPHON

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https://github.com/toAtulArora/IISER_repo