EEW PROJECT

ON:

- FAN WIRING
- TUBELIGHT
- TWO WAY WIRING

PRESENTED BY:

GROUP:10 (ELECTRONICS & TELECOMMUNICATION)

MADE BY STUDENTS OF E.T. DEPT

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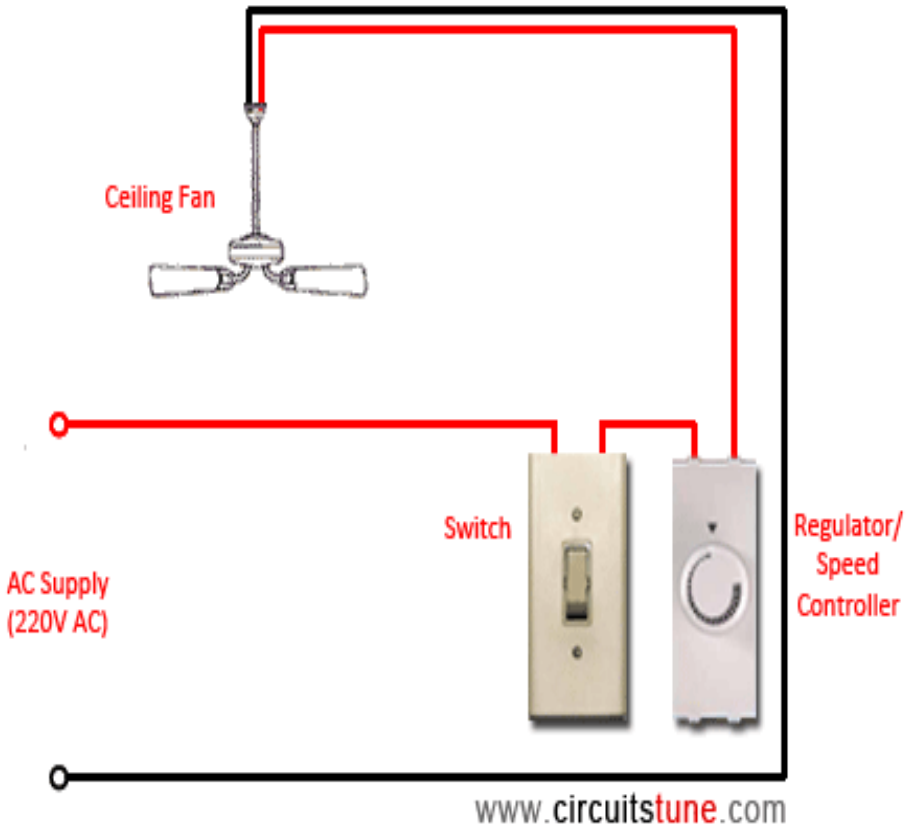
CEILING FAN

- A ceiling fan is a mechanical fan, usually electrically powered, suspended from the ceiling of a room, that uses hub-mounted rotating paddles to circulate air.
- A ceiling fan rotates much more slowly than an electric desk fan; it cools people effectively by introducing slow movement into the otherwise still, hot air of a room, inducing evaporative cooling.
- Fans never actually cool air, unlike air-conditioning equipment, but use significantly less power (cooling air is thermodynamically expensive).
- Conversely, a ceiling fan can also be used to reduce the stratification of warm air in a room by forcing it down to affect both occupants' sensations and thermostat readings, thereby improving climate control energy efficiency.

FAN WIRING

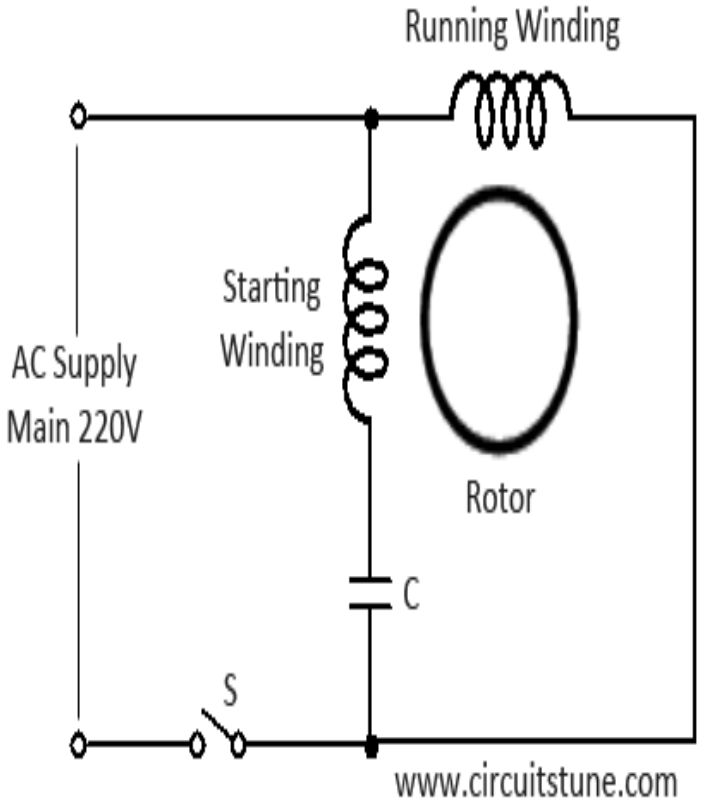


- This is a simple illustrated ***circuit diagram of ceiling fan.***
- To be noted that the wiring diagram is for AC 220V single phase line with single phase ceiling fan motor.
- Here a simple SPST switch is used to supply power or not to the fan motor and a Regulator is used to controlling the fan speed.
- Though it is very simple, but one thing to be noted that **Switch** and **Regulator** Should be connected with the phase line of main power, not neutral.

Capacitor connection diagram of ceiling fan

Ceiling fan has a “capacitor start motor” in its inside. AC single phase capacitor start motor has two winding; one is starting winding and another is running winding.

As it is a ***capacitor start-capacitor run*** type motor; there a capacitor is used in series with **Starting Winding,** It defines the direction of rotation. It is an electrolytic capacitor.



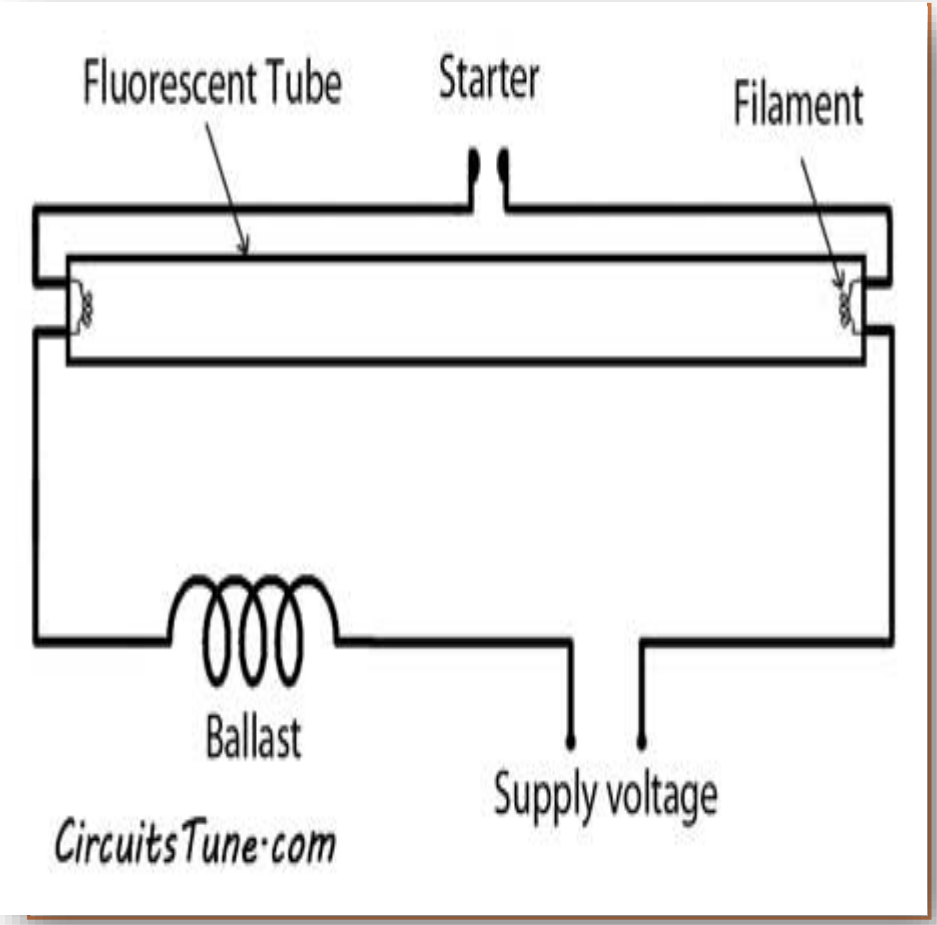
Sometimes you may have faced this type of question...

- Why ceiling fan rotating in reverse?
- What makes a ceiling fan run backwards?
- Two of this question sounds the same; the answer of the both question is “If capacitor is connected with **running winding/main coil** instead of **starting winding/auxiliary coil** then the direction of rotation will changed. That’s mean if you want **to change the direction of rotation of the fan, just connect the capacitor with other winding.**

TUBELIGHT

- Generally speaking, a **light pipe** or **light tube** may refer to:
- a tube or pipe for *transport* of light to another location, minimizing the loss of light;
- a transparent tube or pipe for *distribution* of light over its length, either for equidistribution along the entire length or for controlled light leakage.

TUBELIGHT WIRING



- **Main parts of Fluorescent Tube Light:**
- 1.Fluorescent Tube
- 2.Ballast
- 3.Starter
- 4.Holder, wire etc.

MAIN COMPONENTS OF TUBELIGHT

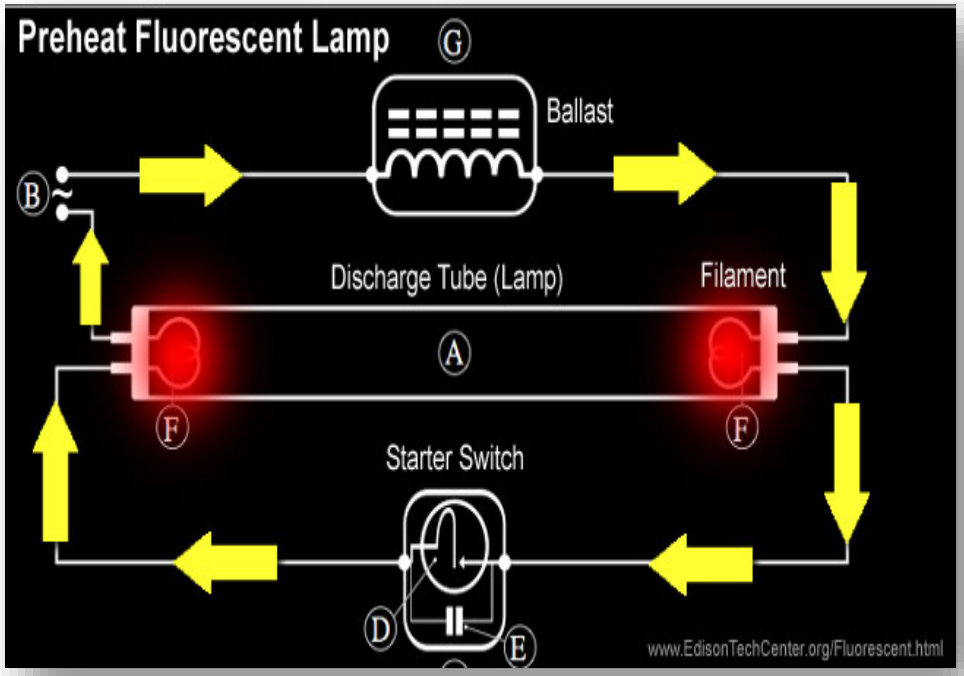
- BALLAST-An **electrical ballast** is a device intended to limit the amount of current in an electric circuit. A familiar and widely used example is the inductive ballast used in fluorescent lamps, to limit the current through the tube.

- BALLAST

STARTER

- STARTER-The starter (which is simply a timed switch) allows current to flow through the filaments at the ends of the tube.

WORKING

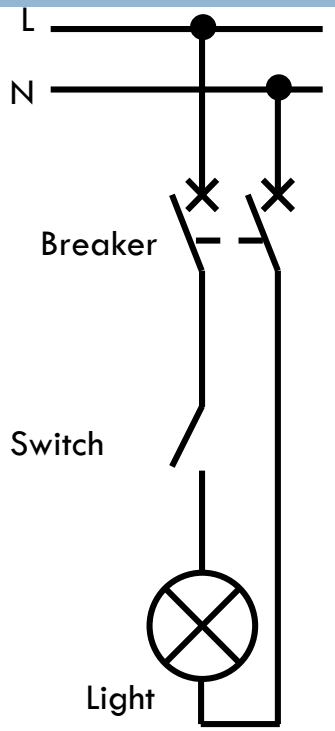


- The starter is like a key of fluorescent light because it is used to light up the tube.
- When we connect the AC supply voltage to the circuit, then the starter act like short circuited and current flow through those filament (located at the first and second end of the tube light) and the filament generate heat and it ionized the gas (mercury vapor) in the fluorescent tube lamp.
- At the same time when the starter opened the circuit path of two filaments from series connected, then the ballast release its stored voltage.
- And it makes the fluorescent tube fully lighten.
- Now the starter has no job in the circuit, if you open it from the circuit the fluorescent tube light will be still lighten, until you release the main supply.

SWITCH WIRING

1. One-way circuit
2. Two-way circuit
3. Three control point circuit
4. Multiple control point circuit

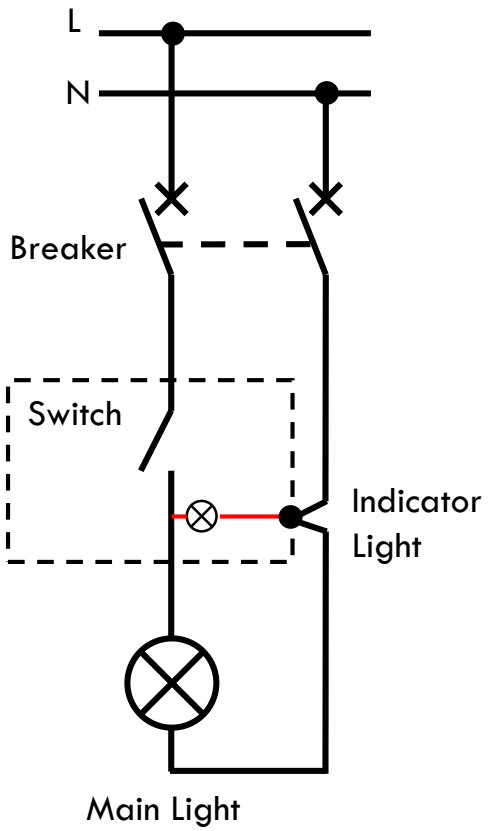
One-way circuit



- 1 switch for one light
  - Can be produced with
    - a "one-way – 2 poles" switch
    - a two-way switch

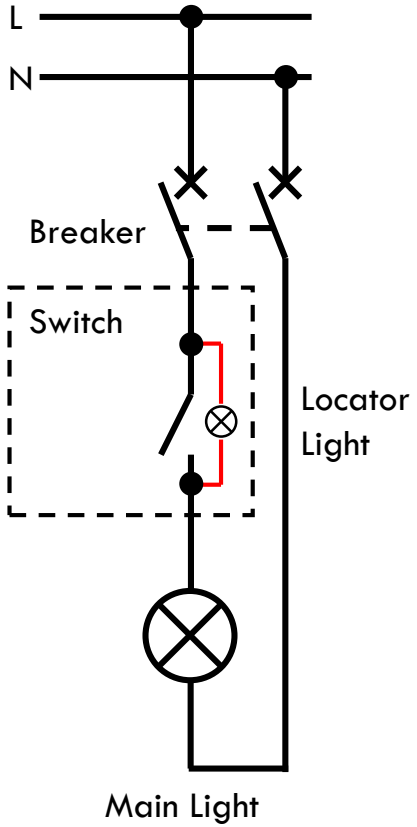
One-way circuit

- Switch with Indicator light
  - Indicator light is **ON** when the switch is **ON**
  - BASIC REMINDER not to forget light ON
  - Presence indication
- Application
  - Placed indoors:
    - Indicates that outdoor light is ON
  - Placed in a room:
    - Indicates that light in another room is ON



One-way circuit

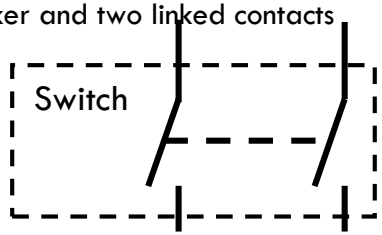
- Switch with Locator light
  - Locator light is **ON** in the dark
    - Avoids people having to search for it
    - Avoids accidents (stairs, garages, etc.)
- Application
  - Staircase, corridors, etc.

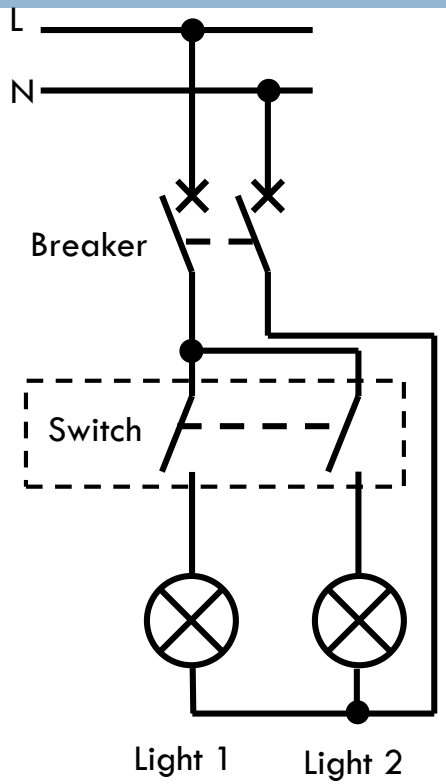


Double "One way circuit"

- 1 switch for two parallel lighting circuits
- Lighting circuits work in exactly the same way

- For applications where:
  - Power exceeds the capacity of one contact
  - All the lights cannot be physically interconnected
  - It may be necessary to open phase and neutral lines
  - Can be produced with
    - A one-way switch – Single rocker and two linked contacts

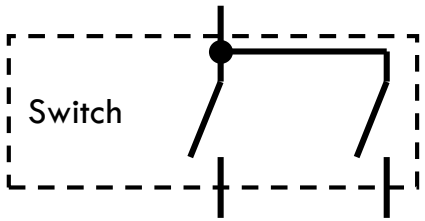


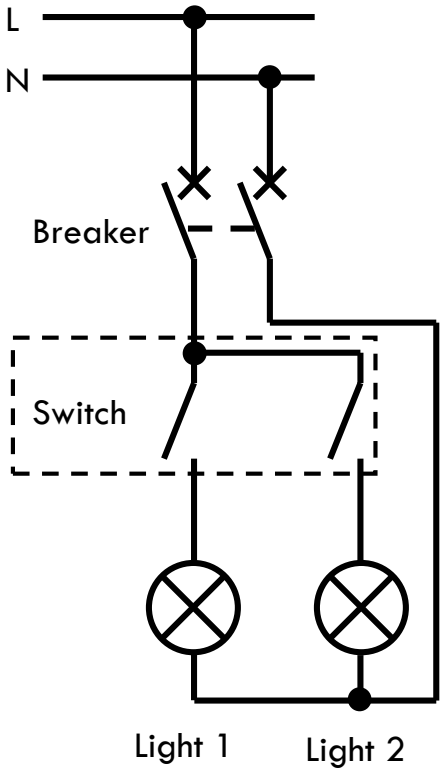


Double "One way circuit"

- 1 switch for two separate lighting circuits
- Each circuit works independently

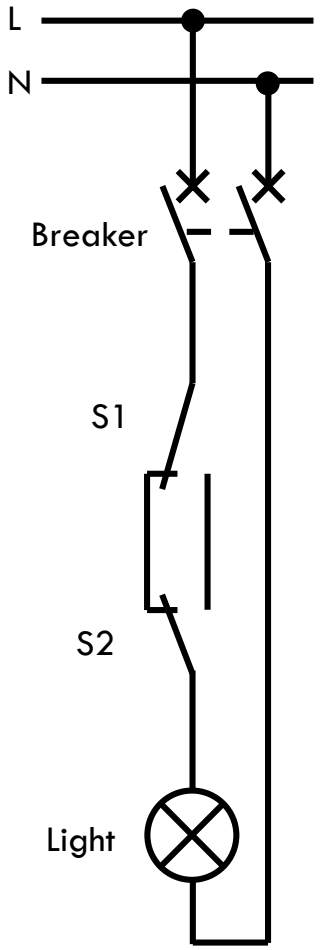
  (i.e. control 1 light indoors + 1 light outdoors)
- For applications where the compactness of the switch is a plus
  - Can be produced with
    - A one-way switch - double independent rockers and contacts





Two-way circuit

- Control a light from 2 different places
  - Can be produced with
    - 2 two-way switches



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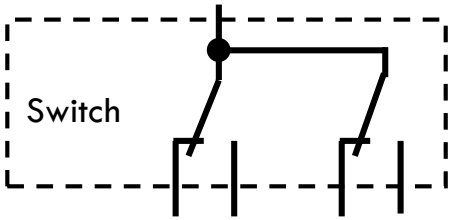
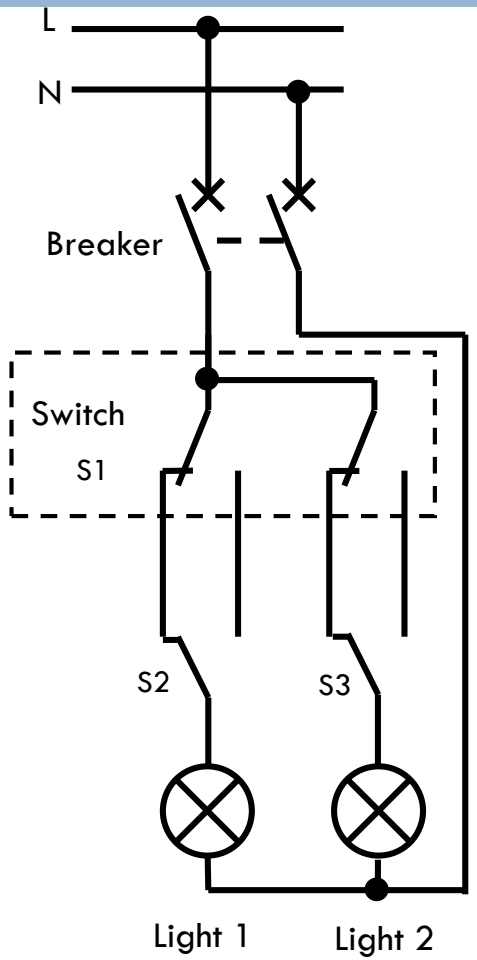
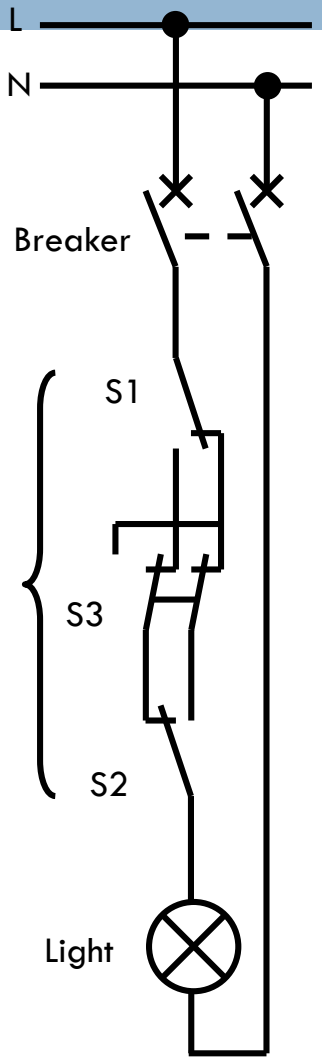




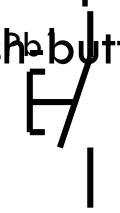
Three control point circuit

- Control a light from 3 different locations
  - Can be produced with
    - 2 two-way switches + 1 intermediate switch

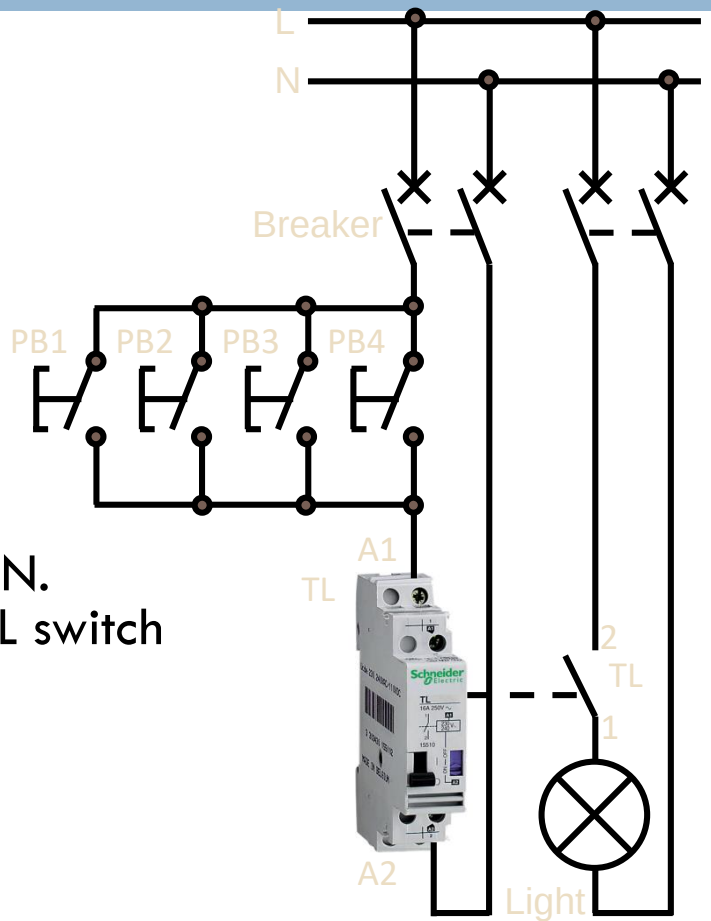


Multiple control point circuit

- Control a light from more than 3 different locations
  - Can be produced with:
    - Push-button(s) + impulse relay



    - 1 impulse from PB makes TL switch ON. Another impulse on a PB makes the TL switch OFF
    - Up to 32 A



THANK YOU