

Basic Electrical – Make Your Own Lamp

MAX BAREISS

2/7/21

A solid orange horizontal bar spanning the width of the slide at the bottom.

Outline

Lamp Bases

Bulb Types

Mains Safety

Mains Wiring

Smart Outlets

Lamp Bases

Bespoke Make-a-Lamp Bases

- For Wine bottles
 - <https://smile.amazon.com/gp/product/B07QFBPQDB>
 - Some route the cord out the bottom
 - E26 base
- Easy
- No customization



Lamp Bases

E26 (medium) bases

- Various types, threaded bottom shown
 - Lowes
 - Screw terminals
- Requires some work
- Versatile
- Large



Lamp Bases

E12 (candelabra) bases

- Various types, threaded bottom shown
 - Lowes
 - Screw terminals
- Requires some work
- Small
- Low Light output



Bulb Types

- A19 (pear)
 - Normal lightbulb
 - Width is $19/8$ ($2 \frac{3}{8}$)
 - Moderate amount of light
 - Omnidirectional
- PAR38 (parabolic)
- Various candelabra shapes



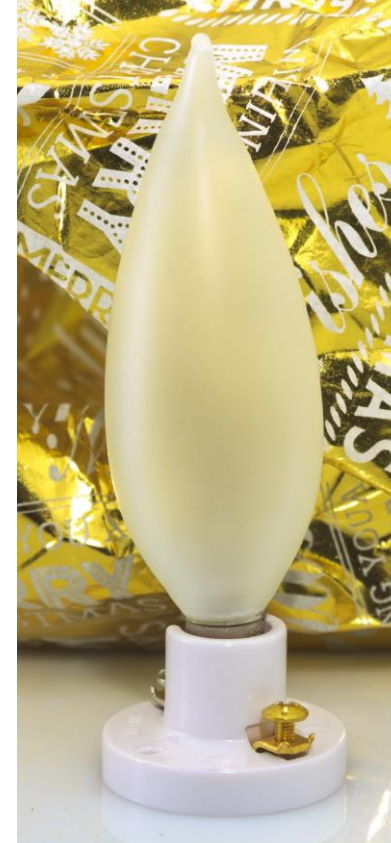
Bulb Types

- A19 (pear)
- PAR38 (parabolic)
 - Width is 38/8 (4 $\frac{3}{4}$)
 - Primarily projects in one direction
 - Large amount of light
- Various candelabra shapes



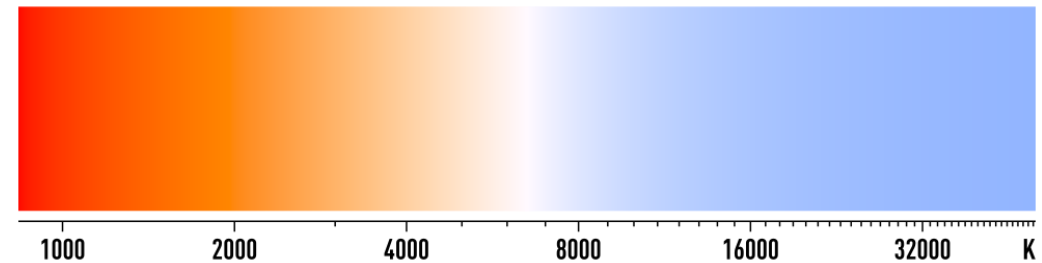
Bulb Types

- A19 (pear)
- PAR38 (parabolic)
- Various candelabra shapes
 - Small amount of light



Color Temperature

- Common household is 2700K (“warm white”)
- Common workspace is 6500K (“daylight”)
- Computer monitor white (unless defined otherwise) is 6500K



Mains Safety

- DO NOT WORK ON ENERGIZED CIRCUITS
- No house wiring in this class
 - No 220V / other high voltage in this class
- Use safety ground on devices with metal chassis
- Use polarized plugs
- Use GFI outlets for testing

Mains Wiring – Two prongs

- Large blade
 - Neutral (white wire)
 - Goes to outside of socket
- Small blade
 - Hot (black wire)
 - Goes to contact on bottom of socket



Mains Wiring – Three prongs

- Large blade
 - Neutral (white wire)
 - Goes to outside of socket
- Small blade
 - Hot (black wire)
 - Goes to contact on bottom of socket
- Safety Ground
 - Goes to metal housing
 - Does not connect to neutral or hot!



Smart Outlets

- Plug modules
 - Easy retrofit
 - Takes up space (partially blocks adjacent outlets)
- In-wall devices



Smart Outlets

- Plug modules
- In-wall devices
 - Nice finished look
 - Ideal for new construction
 - Needs to be installed in the wall
 - Avoid metal boxes



<https://smile.amazon.com/GE-Bluetooth-Smart-Dimmer-13870/dp/B014RK7POW>

Smart Outlets – Technology

- Zigbee
 - Not Wi-Fi
 - Compatibility is tricky
- Z-Wave
 - Not Wi-Fi
 - Compatibility is tricky
- Wi-Fi (ESP8266)
 - Compatibility is great
 - Wi-Fi
 - Oftentimes phones home to China
 - Can be bypassed

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