Smart Home Simulator — Build Guide 03

Electrical Plug, Light Sockets, Plug Adapter, and Power Strip Mounting

TYPE	PHASE	POWER PATH	USE
Tabletop Simulator Panel	Electrical Device Wiring	Power strip feed to outlet and lights	IoT / Smart Home Training

SAFETY:	This guide is for an instructor-approved training simulator, not building wiring. Keep the power strip unplugged while wiring. Final energizing must wait until every connection is enclosed, the cord feed is strain-relieved, the power strip is mounted without damage, and an instructor or qualified electrician has inspected the work.

GOAL OF THIS PHASE

Wire the simulator power path from the secured power strip and plug adapter to the first single outlet box, then continue to two round light socket boxes. The second single-gang box from Guide 02 remains reserved for keystone/CAT cable work and is not part of this electrical circuit.

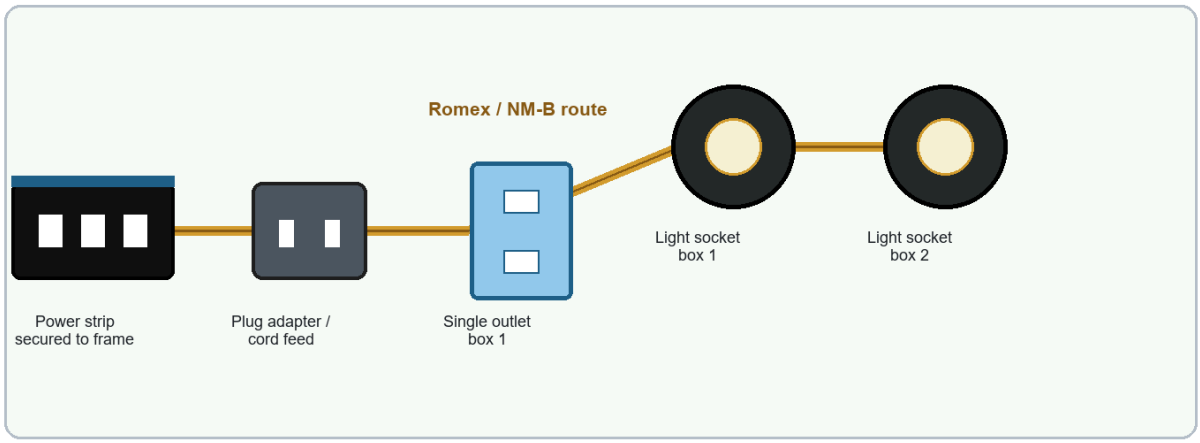
- Use only the instructor-approved wire size, device ratings, plug adapter, light sockets, and power strip.
- Do not energize open boxes, exposed conductors, loose sockets, or an unsecured power strip.
- Keep line-voltage wiring separated from later CAT/keystone low-voltage wiring.
- Do not drill through the power strip case or fasten through the cord.

MATERIALS, HARDWARE & TOOLS

QTY	ITEM	SPEC / NOTES
1	Power strip	Listed/approved strip with intact cord, switch, breaker, and a flat back suitable for Velcro mounting.
1	Plug adapter / cord feed	Instructor-approved feed from the power strip to the simulator wiring.
1	Single outlet / receptacle	Installed in plug box 1. Match device rating to simulator load.
2	Light sockets	Mounted in the two round light boxes. Match socket rating to lamps used.
6’	Romex / NM-B wire	Use the wire gauge and type approved for the training simulator.
As needed	Wire connectors / caps	Correct size for conductor count and wire gauge.
As needed	Cable clamps / strain relief	Required at cord feed and box entries where applicable.
As needed	Heavy-duty Velcro strips	Primary method for securing the power strip to the frame without drilling into the strip.

POWER PATH OVERVIEW

Electrical wiring sequence



Power must remain OFF until every box is covered, strain relief is installed, and the wiring passes instructor inspection.

Fig 1 — Wiring path: secured power strip, plug adapter/feed, outlet box 1, light socket box 1, then light socket box 2.

LEG	FROM	TO	PURPOSE
1	Power strip plug adapter / cord feed	Single outlet box 1	Brings protected simulator power into the device circuit.
2	Single outlet box 1	Round light socket box 1	Continues hot, neutral, and ground to first light point.
3	Round light socket box 1	Round light socket box 2	Continues hot, neutral, and ground to second light point.
Hold	Single outlet box 2	Keystone / CAT later	No electrical power conductors in this box.

TERMINAL COLOR GUIDE

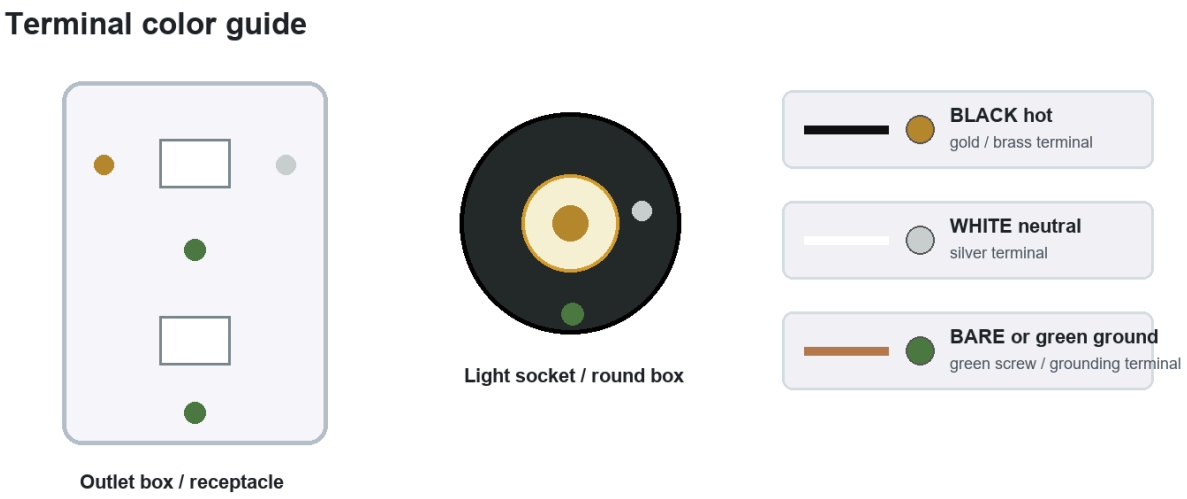


Fig 2 — Common terminal colors: black hot to gold/brass, white neutral to silver, bare/green ground to green grounding screw when used.

WIRE	FUNCTION	TERMINAL	CHECK
Black	Hot / line	Gold or brass screw	No copper exposed outside terminal area.
White	Neutral	Silver screw	Connected only to neutral terminal group.
Bare copper / green	Equipment ground	Green screw or grounding terminal	Bond to metal boxes or grounding points where required.

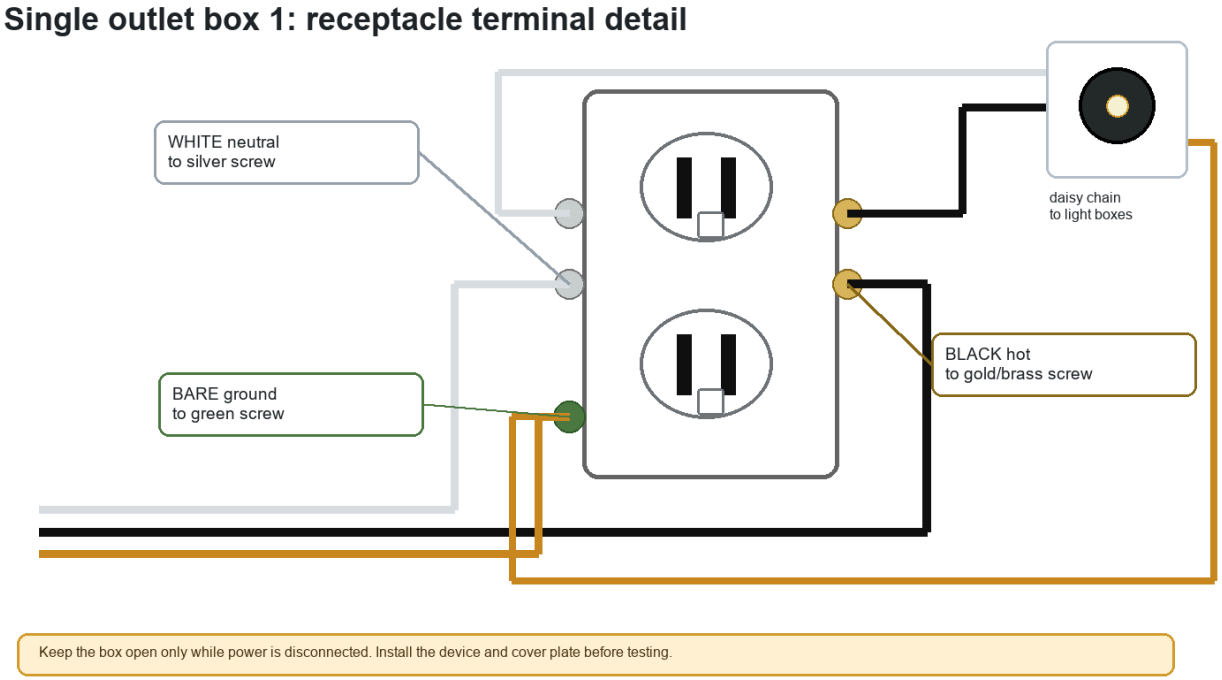


Fig 3 — Outlet detail matching the reference image: white to silver side, black to gold/brass side, and bare ground to green grounding screw.

WIRE THE PLUG ADAPTER AND FIRST OUTLET

1 **Confirm power is disconnected**
Unplug the power strip from the wall and switch it OFF. Use a tester only after instructor approval. Never work on an energized circuit.

2 **Secure the feed into an enclosure**
Route the plug adapter or cord feed into the approved box or enclosure with strain relief. A pull on the cord must not transfer force to the terminals.

3 **Prepare outlet box 1**
Bring the feed conductors and outgoing Romex leg into the first outlet box. Leave a service loop so the receptacle can be pulled forward for inspection.

4 **Connect the receptacle by terminal color**
Connect black hot to the gold/brass terminal, white neutral to the silver terminal, and bare/green ground to the green grounding screw if the device uses one.

5 **Continue the circuit to light box 1**
Use the outgoing Romex leg from outlet box 1 to carry hot, neutral, and ground toward the first round light box. Cap or pigtail conductors using the instructor-approved method.

WIRE THE TWO LIGHT SOCKETS

1. **Prepare light box 1**
   Bring the Romex from outlet box 1 into round light box 1. Bring the outgoing Romex to round light box 2 into the same box.

2. **Connect light socket 1**
   Connect black hot to the socket hot terminal, white neutral to the socket silver/neutral terminal, and bare/green ground to the green grounding point if provided.

3. **Continue to light box 2**
   Join or pigtail the continuing hot, neutral, and ground conductors so the second light socket receives the same protected feed path.

4. **Connect light socket 2**
   At round light box 2, connect black to hot/gold, white to neutral/silver, and bare/green to green grounding point if provided.

5. **Install covers or fixtures**
   No round box should remain open before power is applied. Install the socket, lamp holder, blank cover, or approved fixture ring.

SECURE THE POWER STRIP TO THE FRAME

1. **Choose the mounting location**
   Place the power strip where the switch and breaker are visible, the cord has a smooth path, and plugs will not stick out into a walking or work area.

2. **Attach heavy-duty Velcro**
   Apply heavy-duty Velcro to the back of the power strip and the clean frame surface. Press firmly so the strip is held flat against the frame.

3. **Protect the cord**
   Do not staple, pinch, sharply bend, or screw through the cord. Leave enough slack so the cord is not under tension.

4. **Label the strip**
   Mark it SIMULATOR POWER and add a note that it must be unplugged before service work.

5	**Final tug and clearance check** **Gently tug the Velcro-mounted strip and cord. Nothing should move, chafe, or pull against the plug adapter/feed connection.**

PRE-POWER INSPECTION CHECKLIST

CHECK	PASS CRITERIA	STATUS
Power off	Power strip is unplugged before inspection begins.	[ ] Pass
Terminal colors	Black to gold/brass, white to silver, bare/green to green where used.	[ ] Pass
Strain relief	Cord feed and cable entries cannot pull on terminals.	[ ] Pass
Covered boxes	Outlet box and both round light boxes are covered/enclosed.	[ ] Pass
No exposed copper	Only the proper conductor length is stripped at terminals/connectors.	[ ] Pass
Power strip mount	Strip is secured to the frame with Velcro and the cord is not pinched or damaged.	[ ] Pass
Data box separate	Keystone/CAT box has no power conductors.	[ ] Pass
Instructor approval	Instructor or qualified electrician approves before energizing.	[ ] Pass

NEXT PHASE — KEYSTONE, CAT CABLE & DEVICE LABELS

READY FOR LOW-VOLTAGE WORK	DO NOT SKIP
Keystone jack install CAT cable routing Patch-panel or router labeling Device labels Network test plan	Keep CAT/data cables separated from power wiring Label every cable end Use low-voltage rings/plates only for data Document the final port map Test power and network separately

Prepared by Sonny Bever

For classroom, booth, and smart-home simulator training use.